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GLOBAL-MINDEDNESS AND INTERCULTURAL COMPETENCE: A QUANTITATIVE STUDY OF PRE-SERVICE TEACHERS

A Dissertation Presented to
The College of Graduate and Professional Studies
Department of Curriculum, Instruction, and Media Technology
Indiana State University
Terre Haute, Indiana

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by
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May 2013
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Keywords: teacher education, global education, global-mindedness, intercultural competence, cultural intelligence
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ABSTRACT

This study assessed pre-service teachers’ levels of global-mindedness and intercultural competence using the Global-Mindedness Scale (GMS) and the Cultural Intelligence Scale (CQS) and investigated the correlation between the two. The study examined whether the individual scale factors such as gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience were good predictors of pre-service teachers’ global-mindedness and intercultural competence.

The survey was conducted through Qualtrics with privacy protection. The Statistical Package of the Social Science (SPSS) was used and multivariate analysis of variance (MANOVA), multiple regression, and Pearson product-moment correlation tests were utilized to analyze the data. The research results were based on 184 survey responses of undergraduate students who have declared an education major or minor at a Midwest state university.

The results revealed that the independent variables of gender, perceived competence in non-native language or culture, and teaching experience were significant predictors of the pre-service teachers’ levels of global-mindedness. The independent variables of perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience were significant predictors of pre-service teachers’ levels of intercultural competence. There was a moderate, positive, and significant correlation between pre-service teachers’ overall GMS scores and overall CQS scores.
ACKNOWLEDGMENTS

I would like to express my sincere thanks towards the pre-service teachers who have participated in this study. Your willingness to express your opinions and share your experiences made this research possible.

Many individuals at Indiana State University have supported and encouraged me in writing this dissertation. I would like to especially express my appreciation to the members of my dissertation committee, Dr. Susan Kiger, Dr. Leslie Barratt, and Dr. Larry Tinnerman, for their expertise, beneficial comments, and unrelenting support. Dr. Kiger assisted me with establishing the research methodology and the writing structure. I gained benefits from her direct and invaluable guidance and timely responses. Dr. Barratt inspired me to generate the foundation of the dissertation. I enjoyed her regular mentoring group sessions and her exceptional presentations on languages and cultures. Dr. Tinnerman prompted my writing through his collaborative writing workshops and accompanied me to the academic conferences to present my ideas. I appreciated his scholarship and inspiring speeches on and off campus.

Finally, I would like to show my appreciation for my wife and my daughter. Your love is the source of my inspiration to go forward, even on the most stressful days.
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INTRODUCTION

Globalization is an axiomatic and hot topic in political, social, economic, and educational fields. The global education movement started in the 1960s and reached its golden age in the 1980s and 90s (Gaudelli, 2003; Tye, 2009). In recent years, many researchers and practitioners have returned to global education in response to the test-oriented No Child Left Behind legislation, which emphasized subjects such as arts, social studies, and science (Tye, 2009). Global education is an umbrella term that embodies global education initiatives, globalizing curricula, international activities, and global learning outcomes. Teachers develop their global-mindedness and intercultural competence in professional training and development programs and transmit their values to their students.

Global education is a social movement and, as such, calls for consciously infusing global perspectives into all curriculum areas (Tye, 1991). Raby (1999) depicted global education as “education that emphasizes similarities among world cultures and underscores the universality of experience derived from the emergence of new systems, structures, and modalities that combine economic, political, and cultural characteristics” (p. 4). Whereas global education is superior and general, international education is secondary and concrete. Raby and Valeau (2007) suggested that internationalization responds to global education. International education focuses on the comparative study between nations, and multicultural
education emphasizes the issues of diversity within a country. However, global education strives to integrate the nations as one large family without borders. Kirkwood (2001) noted that global education “brings the world into the classroom, where teachers teach from a world-centric rather than an ethno-specific or nation-state perspective” (p. 11). Global education focuses on intercultural communication, cooperation, and interconnectedness of the world. Influential events, such as the fall of Berlin wall and the September 11 attacks, make people aware of the values of cooperation. Revolutionary inventions, such as communication tools and communication media, make people aware of the ideals of interconnectedness. Stakeholders, like government and non-government agencies, universities and colleges, teacher educators and practitioners, advocate the development of global education. The National Governors’ Association (1989) stated that every student must have access to international education in school, and college and university graduates must become acquainted with non-native languages or cultures and be ready to participate in global dialogues and global markets. Merryfield (1994) pointed out that “global and international education should be a high priority of higher education and teacher education” (p. 7), and the American Association of Colleges for Teacher Education (AACTE) is committed to assuring that “a global perspective is brought to policy and programs associated with the preparation of education professionals” (Merryfield, 1994, p. 8). Through the efforts of global-minded teachers, the values of globalization are passed on to students.

Freeman (1989) described teaching as “a decision-making process based on four constituents: knowledge, skills, attitude, and awareness” (p. 31). Knowledge includes mastery of the subject matter and understanding of the students’ personal characteristics related to the social, political, and economic levels within the teaching context. Skills address the
presentation styles, assessment methods, and the adoption of collaborative activities.

Knowledge and skills are in the traditional teacher-training fields, attitude and awareness belong to the development scopes. Attitude is an important component in a teacher’s decision-making process. According to Freeman (1989), attitude encompasses both external and internal variables that affect teachers:

*Attitude* is here defined as the stance one adopts toward oneself, the activity of teaching, and the learners one engages in the teaching/learning process. Attitude is interplay of externally oriented behavior, actions, and levels, on the one hand, and internal intrapersonal dynamics, feelings, and reactions, on the other hand. It becomes a sort of bridge that influences the effective functioning of an individual teacher in particular circumstances. As such, it can begin to account for the differential successes, strengths, and weakness of individual teachers. (p. 32)

A positive attitude poised toward global-mindedness is an anticipated outcome of the AACTE’s commitment to global perspective. It was developed by Hett’s (1993) attitude survey in which she defined it as global-mindedness. There are five dimensions in Hett’s Global-Mindedness Scale (GMS): (a) responsibility, which is a care for others all over the world and an obligation to take action to assist those in need; (b) cultural pluralism, which is a comprehension of different cultures and a willingness to appreciate the difference between cultures; (c) efficacy, which is a commitment to participate in global activities and a conviction that an individual’s effort can make the world better; (d) globalcentrism, which is a tradition of thinking and behaving globally rather than locally and a sense of full global consideration when making decisions; and (e) interconnectedness, which is an acceptance of globalization and an enthusiasm to participate in the global activities to bring the whole world together.
Although the term *cross-cultural* is often used synonymously with *intercultural*, Gudykunst and Kim (2007) clarified that the term cross-cultural “implies a comparison of some phenomena across cultures” (p. 18). In contrast, when discussing communication and interaction among different cultures, people often use the term intercultural. Hett’s (1993) definition of cultural pluralism is focused on cross-cultural understanding of the diverse cultural frameworks. Marginson and Sawir (2011) proposed that intercultural relations that involve the potential for mutual transformation are within the broad category of cross-cultural relations. According to Marginson and Sawir, “the elements of openness and reciprocity are key, distinguishing intercultural relations from all other cross-cultural relations” (p. 17). There is not an agreed upon terminology about intercultural competence. Different disciplines and approaches adopt different terms to describe this concept (Deardorff, 2011). Sercu (2005) identified intercultural competencies and characteristics as the following:

The willingness to engage with foreign culture, self-awareness and the ability to look upon oneself from the outside, the ability to see the world through one’s eyes, the ability to cope with uncertainty, the ability to act as a cultural mediator, the ability to evaluate others’ points of view, the ability to consciously use culture learning skills and to read the cultural context, and the understanding that individuals cannot be reduced to their collective identities. (p. 2)

Intercultural competence includes one’s knowledge, skills, attitudes, and awareness when interacting with people from diverse cultures. Intercultural communicative competence is the actual use of competence in the authentic context to communicate successfully across different cultures.
Fantini (2009) argued that a review of the assessment tools of intercultural competence reveals the dilemma. Some instruments address lingual aspects, but some address cultural aspects. Other instruments focus on international rather than intercultural and therefore exclude diversity within a nation. However, others are simply unclear and their intent is uncertain. One construct, cultural intelligence (CQ), appears to address intercultural competence directly. CQ refers to “a person’s capability for successful adaptation to new cultural settings, that is, for unfamiliar settings attributable to cultural context” (Earley & Ang, 2003, p. 9). CQ is defined in accordance with general intelligence, and it addresses a specific form of intelligence in authentic intercultural settings (Ang et al., 2007). Ang et al. (2007) depicted that CQ is “a multidimensional construct targeted at situations involving cross-cultural interactions arising from differences in race, ethnicity and nationality” (p. 336). The Cultural Intelligence Center (2005) introduced the Cultural Intelligence Scale (CQS) as an instrument to measure one’s intercultural competence. Ang and Van Dyne (2008) compared the other 11 intercultural competency scales with the CQS and concluded that the CQS is a valid instrument that evaluates multiple aspects of intercultural competence. Van Dyne, Ang, and Koh (2008) suggested four dimensions of CQS: (a) metacognitive CQ, which is a person’s foreknowledge, onsite adjustment, and post-evaluation of an interaction with people from different cultures; (b) cognitive CQ, which is a person’s comprehension of different languages, values, and customs; (c) motivational CQ, which is a person’s inner drive to direct his or her appropriate behavior in a new cultural scenario; and (d) behavioral CQ, which is a person’s ability to communicate appropriately with people of diverse backgrounds.
Using the GMS and the CQS as survey instruments, this research assessed the levels of global-mindedness and intercultural competence of pre-service teachers, at the age of 18 years or older, having declared an education major or minor at a Midwest state university.

**Statement of the Problem**

Past research has focused on global education in various forms. Hanvey’s (1976) five dimensions related to global perspectives are perspective consciousness, state of the planet awareness, cross-cultural awareness, knowledge of global dynamics, and awareness of human choices. Other researchers (Anderson, 1982; Lamy, 1982; Torney-Purta, 1982; Tucker, 1982) studied global education in the class and in teacher education programs. Hett (1993) defined global-mindedness and designed an instrument to measure it. Later researchers (Golay, 2006; Hosseinali, 1995) tested the hypothesis that study abroad programs have a positive influence on the development of global-mindedness. However, few research studies have addressed the global-mindedness of pre-service teachers and their levels of intercultural competence. Given the lack of empirical study of the relationship between pre-service teachers’ levels of global-mindedness and intercultural competence, more research is needed.

**Purpose of the Study**

The study assessed pre-service teachers’ global-mindedness using Hett’s (1993) GMS to determine what individual factors such as gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience might influence pre-service teachers’ global-mindedness. The study examined whether those factors are significant predictors of pre-service teachers’ intercultural competence using the CQS. The study also investigated the correlation between pre-service teachers’ global-mindedness and their levels of intercultural competence. Based on the
research results, this dissertation presents the findings and their implications for teacher education programs and provides some suggestions for future studies.

**Significance of the Study**

Past studies defined terms related to global education differently. At the same time, the past research fields of global education are distinct and unconnected. Some people study the topic of global education initiatives, and others research the implementation of global education and the people with global perspectives.

This study sought to clarify critical terms, such as *global education*, *global-mindedness*, *intercultural competence*, and *cultural intelligence*. It investigated a new cycle of global education initiatives, the implementation of global education, and the people with global perspectives in order to avoid ambiguity and overlap within the studies in global education. Global education initiatives enforce the implementation of global education, and then the implementation of global education cultivates people with global perspectives. The people with global perspectives, in turn, are more likely to promote global education initiatives. In this way, the study suggests an integral research cycle and reveals the evolution of global and cultural education in the past. This study investigated pre-service teachers’ global-mindedness, levels of intercultural competence, and the relationship between them in order to add to the literature on global and cultural education.

**Research Questions**

1. Is there a statistically significant difference in the mean scores on any of the five latent variables of global-mindedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors)?
2. Is there a statistically significant difference in the mean scores on any of the four latent variables of cultural intelligence between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors)?

3. Can pre-service teachers’ levels of global-mindedness be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience?

4. Can pre-service teachers’ levels of intercultural competence be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience?

5. What is the relationship between pre-service teachers’ global-mindedness and the perceived levels of intercultural competence?

Assumptions

In this dissertation, it was first assumed that the mission statement of the targeted university addresses the importance of “preparing productive citizens for a diverse world.” Subsequently, it was assumed that academic administrators and faculty members are able to infuse global education into all curricular areas and international activities. The final assumption is that pre-service teachers will transmit their global perspectives to K-12 students in a diverse classroom.

Definition of Terms

Some terms related to global education seem synonymous, and most researchers use them without distinction. However, these terms are different in meaning due to their different
origins (Hicks, 2003). The lack of clarity of the definitions of terms may result in vagueness in this research field. To avoid ambiguous concepts, it is critical for this study to offer some operational definitions as outlined below:

- **Globalization.** The interrelated nature of political, social, economic, and educational issues, which link every corner of the globe (Baliles, 1989; Hicks, 2003).

- **Global education.** A social movement that focuses on the initiative of global programs, the implementation of global curriculum, and the outcomes of global learning, which calls for consciously infusing global perspectives into all curriculum areas (Tye, 1991).

- **Global perspective.** An outcome of a student’s global learning and openness toward the diverse world.

- **Global-mindedness.** An attitude toward cultural diversity and the interconnectedness of the world, a responsibility and self-efficacy of making the world better, and a tradition of thinking and behaving globally (Hett, 1993).

- **Intercultural competence.** A capability of communicating with peoples of diverse backgrounds, which represent different cultural orientations in the world (Spitzberg & Changnon, 2009).

- **Cultural intelligence.** A capability of communicating effectively in a new culture scenario (Ang et al., 2007).

**Delimitations**

The research study evaluated the pre-service teachers’ levels of global-mindedness and intercultural competence. The pre-service teachers here refer to the undergraduate students, at
the age of 18 years or older, having declared an education major or minor at a Midwest state university in the United States. The research study was intended to see whether the following demographic variables are good predictors of pre-service teachers’ global-mindedness and intercultural competence. They are (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience. Other variables, such as global courses taken, were excluded in this particular study because it was hard to define what courses count as global courses. Other interesting research questions, such as a deep investigation of the kinds of effective pedagogies and strategies and their effects on global education, were not pursued in this study because the inquiry was concerned with the outcome of global education. It focused on the people with global perspectives, their levels of global-mindedness and intercultural competence, but not on the implementation process of global education. The research method employed was quantitative rather than qualitative or mixed methods, given a limited amount of time for conducting this research.

Limitations

I recruited subjects, at the age of 18 years or older, having declared an education major or minor at a Midwest state university in the United States. The participants’ living environment may differ from those living in the other areas. Perceptions of competence in a non-native language and culture were self-reported; no instrument was used to objectively determine the level of competence. The sample of the study was a convenience sample. Due to the limitation of the sample selection, this research study may not be generalized to the larger population of the United States.
CHAPTER 2

REVIEW OF THE LITERATURE

The research field of global education has focused on a cycle of global education initiatives, the implementation of global education, and the people with global perspectives (see Figure 1). Global education initiatives have included government and non-government organizations’ goals and endeavors to sponsor and support global education programs. These initiatives have also addressed the education professionals’ efforts to promote global education on campus. The implementation process has included international education, globalizing curricula, a study abroad program, and other global activities. The research on the people with global perspectives has included one’s global perspectives in education, global-mindedness, and intercultural competence.

Figure 1. Circle of research field of global education.
Global Education Initiatives

The Universal Declaration of Human Rights (UDHR) laid the foundation for all subsequent human right acts. UDHR presents 30 articles on human beings’ civil, social, political, cultural, and economic rights (United Nations, 1948). According to Heilman (2009), UDHR acts to “assert a belief in a universal moral world order, one where all humans are equally entitled to human rights” (p. 51). Kirkwood (2001) proposed that the philosophical bases of global education are equalities among human beings regardless of their diverse backgrounds, determination of human behaviors culturally but not racially, human families’ possession of basic human rights, and moral purpose within global education. The philosophy of global education is in accordance with the essence of UDHR (Kirkwood, 2001).

The Evolution of Global Education Initiatives

Tucker (1996) claimed that the conception of global education was developed in 1968 from a pioneering report by the Foreign Policy Association. It was sponsored by the U.S. Office of Education and named An Examination of Objectives and Priorities in International Education in U.S. Secondary and Elementary Schools. The authors of the report, Lee F. Anderson and James M. Becker, together with other such prominent international educators and social scientists as Chadwick F. Alger, Kenneth E. Boulding, Robert A. Harper, Bob G. Henderson, Herbert C. Kelman, Edith W. King, Charles A. McClelland, Roger G. Mastrude, Howard D. Mehlinger, Jerry R. Morre, Donald N. Morris, and Robert C. North, contributed to the November 1968 issue of Social Education, called International Education for the Twenty-First Century (Tucker, 1996). It is significant that “this publication rejected the idea of international education as a study of a collection of nations. Instead, it proposed a focus on problems and issues that cut across national boundaries” (Tye, 2009, p. 7). The scholars
declared that “revolutionary changes on a global scale had outpaced a static curriculum and that the concept of ‘international’ was losing its accuracy and utility” (Tucker, 1996, p. 47). Tucker (1996) asserted that a new term was needed at that time to describe the changes, and global education was coined accordingly. It was the right time to educate a person as a responsible citizen of the world as well as a citizen of the country.

In 1991, the Association for Supervision and Curriculum Development (ASCD) published its yearbook, which was titled Global Education: From Thought to Action, edited by Kenneth A. Tye. The authors of this work included Lee F. Anderson, Barbara Benham Tye, Steven L. Lamy, James Becker, Jane A. Boston, Ida Urso, Jan L. Tucker, Charlotte C. Anderson, and Toni Fuss Kirkwood. They first defined the meaning of global education and explained its importance in school; next, they offered assistance to those who planned to develop their own global education programs; the last and the most complex purpose of the book was to show how global education served as a medium to bring about school improvements like interdisciplinary planning and teaching, the development of critical thinking abilities, service learning, cooperative learning, and intrinsic motivation of student learning (Tye, 1991). Tye (1991) called on Americans to react to the realities of that time, such as the end of the Cold War and the appearing of new democratic life in Eastern Europe, to give up separateness and to support the interdependence and cooperation among nations.

In 2009, Peter Lang published a book named Visions in Global Education: The Globalization of Curriculum and Pedagogy in Teacher Education and Schools, edited by Toni Fuss Kirkwood-Tucker. The book contained a comprehensive study about a history, a development, and a philosophy of global education. Aside from the descriptions of America’s global education, the book also presented the development of global education in Canada and
Russia. It was a summary of the current research and projects, and it provided pedagogy and possibilities in the postmodern world (Kirkwood-Tucker, 2009).

According to Gaudelli (2003) and Tye (2009), the U.S. global education movement began in the 1960s, moved forward in the 1970s, and reached its golden age in the 1980s and the 1990s. This golden age is also when it came under attack. Tye indicated that conservatives “reject the notion that there is any kind of equivalence in the world; the United States is superior in all ways” (p. 20). They regarded global education as part of the left-wing agenda for social change and anti-American in orientation (Gaudelli, 2003). Their criticism was that the teachers over-introduced beliefs like atheism and that the textbooks of global education lacked practical content. However, the research of the 1980s and the 1990s is still compelling, and there is recent growth in the research field.

Global Education Initiatives in Higher Education

Baliles (1989) claimed that the world is becoming smaller. Information technology and fiber-optic communication link every corner of the globe. A popular product may include parts produced in five different countries and fabricated in a sixth. New markets and opportunities may occur instantly. In this competitive and ever-changing world, success is accompanied with those “who most quickly anticipate, adapt, and respond” (Baliles, 1989, p. iv). Baliles suggested that the government must prepare the age of globalization and bring an international perspective to daily life, such as understanding foreign nations and the peoples in other countries and learning the foreign languages of business.

In 1989, the American Council on Education published Richard D. Lambert’s report, *International Studies and the Undergraduate*. Atwell (1989) called it a milestone to understand undergraduate language and international programs. Higher education should commit to
“provide opportunities for American students to become proficient in foreign languages and attain the global awareness they need as responsible citizens” (Atwell, 1989, p. xi). Lambert (1989) conducted the research in four components. The first analysis addressed the benefits of the study abroad program. Students changed their perceptions on stereotypes, improved working habits, and became immersed in foreign cultures; however, there was not enough research on academic benefits, such as the positive effect of instruction in their overseas studies (Lambert, 1989). The second analysis was on foreign language instruction. Lambert claimed that foreign language courses are the beginning of international studies, and foreign language related courses took up half of all the international-oriented courses offered. The third study introduced the topic of international studies using world studies curriculum at Eisenhower College. The topics included “environment, food, health, energy, religious issues, relations among states, war and armaments, international monetary and trade arrangements, human rights, racial and ethnics, and population” (Lambert, 1989, p. 107). Lambert declared that international studies are grouped with elective courses, and the general education’s contribution to it is only modest. The fourth study was on institutional priorities. Research results showed the importance of cooperation among different divisions of an institution. The study suggested that “the internationalizing of undergraduate education still has a long way to go” (Lambert, 1989, p. 153). The stage of international education at that time was still on comparative studies between nations. Foreign languages were the primary courses and study abroad was the main program in international education.

The Association of American Colleges and Universities (AAC&U, 2007) asserted that “learning about cultures and social structures dramatically different from one’s own is no longer a matter just for specialists. Intercultural learning is already one of the new basics in a
contemporary liberal education, because it is essential for work, civil society, and social life” (p. 15). AAC&U promoted intercultural learning in global education. It suggested incorporating global courses within liberal education.

Some researchers also addressed global education initiatives across campuses. Genelin (2005) developed a Global Education Initiatives Faculty and Administrator Questionnaire with the assistance of a panel of experts including two administrators and 10 faculty members. It was a 42-item, 5-point Likert-type scale questionnaire with an open-ended question in the end. Items 1 to 4 and 35 to 42 addressed the category of institutional support, such as a college-wide task force/committee to advance global education initiatives and a college funding program to support faculty’s participation. Items 7 to 13 addressed the category of internationalizing curriculum, such as a requirement of a foreign language and courses with global focus for graduation. Items 5, 6, and 17 to 24 addressed the category of campus and community activities to increase global awareness, such as a college’s sponsorship of community forums and extracurricular activities with a global focus. Items 14 to 16 and 25 to 34 addressed the category of international experience and cooperation, such as a college’s promotion of the study abroad program and faculty’s travel to international conferences. The open-ended question asked about the three most critical barriers to implementation of global education initiatives. Genelin sent out the survey to 170 academic administrators, technical, and general education faculty members randomly selected from Minnesota State Colleges and Universities and received 106 responses. Data analysis showed that the highest mean score for all groups was in the category of campus and community activities to increase global awareness. The mean scores for technical faculty were lower than general education faculty. Analysis of the final open-ended question responses indicated that (a) lack of money, (b) lack of global education
notions in college mission statements, and (c) lack of time within the curriculum were the main obstacles that might prevent or limit the implementation of global education initiatives.

To be an advocate of global education, a college professor must put the theory into practice and act on it. Jean-Francois (2010) conducted research on perceptions of global education initiatives by U.S. college professors. In addition to his self-developed Faculty Motivational Factor toward Global Education Survey and a demographic questionnaire, he adopted Hett’s (1993) GMS and Genelin’s (2005) Global Education Initiatives Faculty and Administrator Questionnaire to gather data. A total of 418 college professors responded to the survey. Research results suggested that more than two-thirds of the participants had at least experienced another culture other than the United States. Motivational factors and worldview magnitudes were statistically significant predictors of the perceptions of global education initiatives by U.S. college professors. Jean-Francois provided recommendations for practice. The recommendations included introducing global practices and policies in all university and college educational functions; embodying global education in the mission statement; modifying vision, mission, strategic goals, and administrative policies and procedures to support global education; creating an institution-wide interdisciplinary council; creating incentive programs and platforms for academic exchanges; recognizing global initiatives and achievement; revising and adapting curricula with global perspectives; mentoring and engaging professors in international scholarships; and supporting global activities on and off campus. College professors are the direct initiators of global education. They play an important role in global education initiatives. Their global behaviors, such as acclaiming global education and initiating global activities are likely to influence their students to be a global-ready graduate.
Implementation of Global Education

The AAC&U (2007) stated that higher education should take the primary responsibility in this new global century to help the students engage in the global community collaboratively and competitively. Specifically, educators should adopt new approaches and create interdisciplinary curricula to guide the students to achieve higher standards while avoiding the drawbacks of standardization (AAC&U, 2007). Deardorff (2011) noted that there are two means to develop intercultural competence. One is through the curriculum; the other is through co-curricular activities. Past development of international and intercultural learning is an indispensable part of global education. It paved the way of the development of global education.

College’s Influence on the Development of a Global Perspective

Merryfield (1995) claimed that global education is vitally important in preparing college students to participate in the increasingly interconnected and diversified world. The implementation of global education requires new methods and solutions for educators of future teachers. Merryfield and her colleagues at Ohio State University Professional Development School Network in Social Studies and Global Education formulated three hypotheses about learning and teaching in global education. The first hypothesis was that educators should have intercultural experiences and deep perceptions concerning the diverse world and obtain cross-cultural skills through education and service learning. It was also hypothesized that educators should have knowledge on globalization to avoid stereotypes or misconceptions. Lastly, it was proposed that educators should collaborate with each other and reflect upon the school environment and global curriculum (Merryfield, 1995). In order to prepare students for the 21st
century, Deardorff (2011) suggested internationalizing the campus to incorporate global perspectives into students’ personal development programs.

Braskamp and Engberg (2011) stated that “we need to understand and empathize with persons who differ dramatically in terms of national origin, ethnicity, and religious or spiritual orientation as well as in terms of race, gender, and sexual orientation” (p. 34). Thus, the journey to develop a global perspective in the colleges is complex due to the lasting influence of multiple worldviews and noticeable cultural traditions in this pluralistic and global society (Braskamp & Engberg, 2011). Deardorff (2011) suggested designing platforms to join American and international students together through meaningful interaction. Braskamp and Engberg proposed an approach to answer the questions about environmental conditions, campus strategies, and the methodologies that the educators adopted when helping students develop global perspective and intercultural competence. The approach is based on two permanent themes of student learning and development: meaning-making, which is making sense of the world, and building symbiotic relationships between students and the environment.

**Meaningful interaction and its assessment.** Learning is a permanent changing of students’ behaviors or cognition through exposure to knowledge and skills. Students obtain learning through instruction, teaching, and other educational means. Students can also obtain learning through their experience. Caine and Caine (2006) claimed that the actor (or learner) centered adaptive decision making (ACADM) method is indispensable in learning because “it is in the making of those decisions and in dealing with feedback that people come to make sense of things and acquire useful knowledge” (p. 55). Caine and Caine also suggested that a student develops awareness and becomes mature in the solutions that really matter to him or her.
Universities and colleges should create more opportunities to engage students in the diverse world.

Freeman (1989) claimed that teaching is a decision-making process. When making decisions, teachers should “practice observation and look for clues to what is happening in the body and mind of learners” (Caine & Caine, 2006, p. 59). Leighton, Gokiert, Cor, and Heffernan (2010) proposed that an assessment should be cognitively diagnostic to “(a) measure learning process, (b) influence meaningful learning, and (c) reflect learning strategies” (p. 8).

Given the diverse classroom as a learning environment, a collaborative approach rather than a research, development, and diffusion model helps the development of meaningful interaction because the collaborative model is most consistent with an experiential perspective (Posner, 2004). McKeachie and Svinicki (2006) suggested that “more of our time will be spent in helping students work together effectively, less time in preparing lectures” (p. 219). The interaction between teachers and students develops students’ mental cognition. The interaction between students of diverse backgrounds promotes their intercultural communication skills.

A way to assess students’ meaningful interactions is to examine their fulfillment of a given task. For example, in language acquisition, Krashen (1982) stated that the meaningful comprehensive input is important for language learning. Long (1983) focused on the importance of modified interaction. Lightbown and Spada (2006) summarized Long’s formulation of the interaction hypothesis and indicated that interactional modification makes input comprehensible and, thus, promotes acquisition. In a language teaching classroom, interactional modification is a task. Using a discovery approach or a problem-solving approach, students can solve the problems or accomplish the tasks and thus develop meaningful cognitive learning in a multicultural environment. University faculties should bear in mind that they
should master, employ, and design interactive activities to ensure their students’ interactions are meaningful.

The assessment of meaningful interaction is not based on *measure-based methods* assessment but on *integrated methods* assessment. Posner (2004) distinguished these two terms. Measure-based methods assessment is “scientific, objectives-driven, group- or individually-administered, norm- or criterion-referenced and standardized” and integrated methods assessment is “growth-oriented, student-controlled, dynamic, contextualized, informal, flexible and action-oriented” (Posner, 2004, p. 272). In the book *Instructional Design*, Smith and Ragan (2005) introduced *authentic assessment*, which is one of the most applicable methods to assess the meaningful interaction. Authentic assessment includes “observation, open-ended problems, microworlds, essays, simulations, projects and portfolios” (Smith & Ragan, 2005, p. 112). According to Merryfield (1995), the educators of future teachers should collaborate with each other and reflect on the school learning environments when they globalize their curricula and examine students’ outcomes.

A collaborative approach is the most appropriate way to present meaningful interaction. The integration between students and teachers is vitally important. Khan (2000) concluded that “collaborative learning emphasizes cooperative efforts among faculty and students. This learning process stresses active participation and interaction on the part of both instructors and students” (p. 21). Khan introduced two types of features using the World Wide Web to create a meaningful learning environment:

Key features: interactive, multimodal, open system, online search, device-distance-time independent, globally accessible, electronic publishing, uniformity world-wide, online
resources, distributed, cross-cultural interaction, multiple expertise, industry supported, learner controlled.

Additional features: convenient, self-contained, ease of use, online support, authentic, course security, environmentally friendly, non-discriminatory, cost effective, ease of coursework development and maintenance, collaborative learning, formal and informal environment, online evaluation, virtual cultures. (p. 22)

The teacher’s observation online to monitor students’ participation is a good means of assessment. The examination of students’ simulation work and projects reveals students’ global abilities in the distance learning environment.

Meaningful learning is particularly effective, efficient, and appealing to higher order knowledge development. Curriculum theories, like the structure of disciplines, experiential learning, and cognitive theory, support meaningful interaction and meaningful cognitive learning. Concerning the teaching and instruction processes, teachers and instructors are the decision makers. In order to make their teaching and instruction in global education meaningful, they act in different roles in different settings. They are performers who present knowledge vividly, and they are diagnosticians who conduct assessment accurately.

Educators of future teachers should create and maintain diverse environments on campus and include environmental elements in their curricula and program design. Furthermore, they should acknowledge global and cultural education, gain enough knowledge and skills, and engage their students in a larger social context that is beyond the campus community. Ultimately, they should motivate their students and encourage them to explore the diverse community and to discover the interconnectedness of the world.
The content of global education. According to Braskamp and Engberg (2011), the college environment, “which extends beyond the campus itself, is more diverse than ever before” (p. 35). The uniqueness of global education is “its substantive focus, drawn from a world increasingly characterized by pluralism, interdependence and change” (Kniep, 1986, p. 437). Based on the realities of describing and defining the world as a global society, Kniep (1986) proposed four content areas of a global education, which include human values, global systems, global issues, and global history.

Kniep (1986) further explained these basic research areas of a global education. First of all, Kniep claimed that values determine the view of the world, and they influence human beings’ decisions and behaviors. There are universal values and diverse human values. A global education helps students to respect diverse values and experience commonality with those different from themselves. To further his first notion, Kniep claimed that the familiarity of global systems prepares students as actors and responsible participants in the interdependent world. Accommodating his previous ideas, Kniep claimed that the understanding of global issues provides students with the opportunity to grapple with such questions in their own development as responsible citizens and members of the world community. None of Kniep’s preceding areas can be accomplished without including his final area, that of a global historical perspective which, rather than just concentrating on Western civilization or Western influences on the world, enables students to understand the contemporary interdependence of the world.

Case (1993) agreed with Kniep’s (1986) categories of the content areas in global education, and he asserted that these categories coincided with his substantive dimension of a global perspective. Furthermore, Case added another dimension, which he defined as the perceptual dimension. Case described it as the lens of substantive dimension, which is “made
up of various intellectual values, dispositions, and attitudes that distinguish a parochial perspective from a broad-minded perspective” (p. 320). Case suggested that global educators address key cognitive and affective attributes associated with a global perspective.

Merryfield (1995) proposed that global education is “enriched by interdisciplinary examinations of global issues, such as skills in research, decision-making, and cross-cultural interaction” (p. 20). However, classroom learning alone is not enough for developing global-mindedness and intercultural competence. Deardorff (2011) declared that intercultural learning is a transformational process. Beyond the interaction of global outcomes with courses, international service learning and study abroad programs are two avenues that further develop students’ intercultural competence and lead to students’ transformation.

**Multicultural Education and Global Education**

Some research has indicated that global education includes multicultural education (Tiedt & Tiedt, 2002), whereas some research has suggested that global education is the same as multicultural education. Other research has claimed that global education and multicultural education are twains, two fields of research, or two sides of the same coin (Baker, 1999; Gaudelli, 2003; Heilman, 2009; Hill, 2007; Lucas, 2010). This research reviewed the literature that supported the last opinion.

Sleeter and Grant (2009) suggested that multicultural education is a study of theories and practices related to diversity. However, there are no agreed upon forms of diversity that multicultural education addresses. Some people have researched on racial or cultural diversity, and some people have theorized on social class, gender, disability, or even sexual preference. Still others have concentrated on the traditional issues like immigration and bilingualism
The development of multilingualism is an epitome of the evolution of multiculturalism.

**Multilingualism and the English-only movement.** Grant (2009) traced the origin of American lingualism. In the beginning, Native Americans had numerous languages, and they maintained their own cultures. When the first immigrants came, they brought new languages and cultures (Grant, 2009). This was the first period of American diversity, and multilingualism emerged as “a number of states passed legislation that approved bilingual education or native language education” (Grant, 2009, p. 34). Grant called it the permissive stage. Later, the Indians were forced to “adopt ‘American’ ways of speaking, dressing, and behaving” (Grant, 2009, p. 35). Assimilation has been a popular word since then. English became the dominant language in society, and it was the main teaching language in public school systems. However, minority groups struggled to gain their own rights in education. The winning of a series of cases, *Brown v. Board of Education* and *Lau v. Nichols*, paved the way of support for non-native English speakers in the classroom (Grant, 2009).

Instead of using English as the “‘social glue’ that holds the U S. together—a claim that would have seemed strange to our country’s founders” (Crawford, 1994, p. 54), founders of the United States of America adopted multiculturalism to strengthen the foundation of the society in this “polyglot” country. Researchers (Dicker, 2003; Edwards, 2004; Fishman, 2004; Grant, 2009; Pan, 2002) described the desirability of multilingualism in their articles.

Holding cultural and ethno-linguistic perspectives, Fishman (2004) expressed his support for multilingualism. His first argument was that multilingualism maintains American identity. The United States of America is a country of immigration (Fishman, 2004). The foundation of the country made multilingualism one of its characteristics. The immigrants’
languages joined together with the variety of Native American languages, making the United States a multilingual country. The immigrants enjoyed the freedom of expressing themselves in their own languages and felt respected by doing so.

Fishman’s (2004) subsequent assertion was that multilingualism is one of the indispensable resources in society. Education was strengthened in the United States of America by using language resources. For example, higher education, in the linguistics and language subjects, can benefit with the contribution of “non-English multilingual talents of faculty members and students” (Fishman, 2004, p. 125). Multilingualism can also help the country’s political, social, and economic development. Fishman criticized the neglect of multilingualism resources: “It is as scandalous and injurious to waste ‘native’ language resources as to waste our air, water, mineral, animal, and non-linguistic human resources” (p. 124).

Fishman (2004) concluded his claims by stating that multilingualism saves endangered languages. Linguistic resources can be devastated like other nonrenewable resources. Multilingualism is one of the best ways to preserve the resources, and keeping languages alive and healthy makes the cultures independent; therefore, they can survive in society (Fishman, 2004). However, Fishman did not discuss any disadvantages he saw on multilingualism, making his arguments seem less convincing.

However, not everyone was as satisfied with multilingualism as Fishman (2004) was. Some statesmen and scholars commented on the English Language Amendment (ELA) which would make English the official language of the United States if it were added to the Constitution. In 1981, Senator Hayakawa argued for adding the ELA to the Constitution to make English the official language at the federal level to maintain the unity of the country (Lang, 1995). Garcia (2007) conducted a quantitative study: using logistic regressions, she
found that most respondents supported the idea of using English as the only language in public schools and supported using tax money to maintain non-native speakers’ English programs. Organizations like English First and U.S. English are supporters of the English-only movement. The supporters of the English-only movement declared that

> English is in danger of being displaced by other languages. They advocate stricter standards for assessing proficiency in English for naturalization, and end to bilingual ballots, and limitation on all but transitional bilingual education. They argue that speaking a language other than English reflects a divided national loyalty and that lack of English-language proficiency prevents immigrants from entering the economic mainstream. (Betancourt, 1994, p. 127)

The proposal of adding the ELA to the Constitution was never passed by the Senate or the House of Representatives (Lang, 1995).

Some research studies have addressed the issues of bilingualism and the English-only movement. Through action research and video recording methods, Kenner, Gregory, Ruby, and Al-Azami (2008) found that bilingualism was helpful for intellectual development on the second and third Bangladeshi generations living in the United States of America. Other researchers (de Jong, 2008; Flores & Murillo, 2001; Schmidt, 2002) have also presented the advantages of bilingualism. Reviewing the studies on English-only issues across disciplines and within media reports, Barker, Giles, Noels, Duck, and Clément (2001) suggested that the English-only movement might limit the promotion of minority languages, such as Spanish, and neglect the language needs of limited English proficiency groups, such as some Latino immigrants. Mitchell (2005) presented a case study conducted in Massachusetts which addressed a legislation change in 2002: “The U.S. Congress passed legislation that transformed
the Bilingual Education Act into the English Language Acquisition Act as part of the larger No
Child Left Behind Act” (p. 254). It meant that the legislation did not support bilingual
programs anymore, and English should be the only lawful language of instruction. Mitchell
found that the legislation made it difficult for the school principal to hire bilingual teachers to
help the limited English proficiency student. Mitchell was unhappy to see the 68% majority
vote for the English-only referendum in Massachusetts in 2002. Mitchell said, “Sadly, as we
enter the 21st century, our country harks back to an ideological perspective prevalent early in
the 20th century” (p. 269). After the case study, Mitchell suggested that the English-only
movement maintains an academic underclass wherein members have lost their ethnic character
and language, and are often working in bad conditions. Combs and Lynch (1990) presented
California and Arizona cases and suggested that English Plus maintains the languages and
cultures of majority and minority groups and paves the way toward a unified society.

Bilingualism, as well as multilingualism and pluralism, represents the language
diversity in the United States. The language issue is an essential part of multicultural education
because it plays an important role in one’s personality and culture (Tiedt & Tiedt, 2002). Other
issues, such as human relations and ethnic studies, are also indispensable in multicultural
education.

**Two sides of the same coin.** Multicultural education is a teaching and learning
procedure that involves students in developing self-esteem, discovering empathy of diverse
populations, and feeling equity to achieve to their fullest potential (Tiedt & Tiedt, 2002). Global
education is a curriculum that prepares students to live in a gradually more problematic
and interconnected world with a socially meaningful reaction toward complex and diverse
information (Gaudelli, 2003). Globalization is concerned with issues of diversity worldwide.
Baker (1999) explained the relationship between international studies, ethnic studies, and global education:

International studies is a part of global education, but the focus of global education is the interdependence of human beings and their common fate, regardless of the national boundaries within which they live. Many confuse global education and international studies with ethnic studies, which deal with the ethnic groups within a national boundary, such as the United States. (p. 98)

Global education includes international studies though it discusses world issues in one integrated system. The subject of ethnic studies is one of the research fields of multicultural education.

Multicultural education and global education both address intercultural issues. Deardorff (2011) suggested that intercultural competence is the same as *global competence* in engineering and the same as *multicultural competence* in diversity because “it applies to any [people] who interact with those from different backgrounds, regardless of location” (p. 66).

According to Deardorff, “the overall external outcome of intercultural competence is defined as effective and appropriate behavior and communication in intercultural situations, which again can be further detailed in terms of indicators of appropriate behavior in specific contexts” (p. 66). In this way, multicultural education and global education are strongly connected to the commitment of developing intercultural competence (see Figure 2). Baker (1999) suggested conceiving multicultural education and global education as two sides of the same coin because they both work on diversity and multilingual issues. Further, he considered the important influence of educators. When designing courses, Baker pointed out that “multicultural educators must consciously include global perspectives in their courses and global educators
must consciously include ethnicity as a component of global education” (p. 99), and he suggested developing a truly multicultural/globalized curriculum.

Figure 2. Intercultural competence in global and multicultural education.

According to Heilman (2009), the civil rights movement provided the context for the development of multicultural education. For example, efforts of minority groups to gain rights in the 1950s and 1960s paved the way to it. The intergroup education movement of the 1950s and the ethnic studies movements in the 1960s and 1970s were the precedents of the multicultural education movement. Heilman suggested that the recognition of global human rights provided the environment for the development of global education. Further, the cooperation among nations, the sharing of human legacies, and the interrelatedness of the world in trade, communication, and environmental protection promoted the development of global education. Heilman described the difference between multicultural education and global education, pointing out that multicultural education is backed up by law and includes issues of curriculum, instruction, learner’s culture, and learning style, whereas global education has no legal authority and is only focused on curriculum. Heilman called for “a different approach to global education and multicultural education and more broadly, to citizenship education” (p. 44) to educate students to become broad-minded, responsible, and tolerant citizens.
People with Global Perspectives

The research on people with global perspectives concentrates on the outcome of global education. The three categories of it are people’s global perspectives, global-mindedness, and intercultural competence.

Implication of Global Perspectives

Kirkwood (2001) pointed out that scholars used certain terms, such as global perspectives in education and global education, interchangeably. When clarifying the definitional ambiguities on global education, Kirkwood adopted Hanvey’s (1976) definition as a criterion because “it is among the first scholarly definitions attempted in the field” (p. 11). Hanvey proposed that the five dimensions on global perspective are attainable, and young people might be able to acquire them through formal and informal education, asserting that the global perspectives “can become part of the school curriculum” (p. 2).

Perspective consciousness is the recognition of other people’s worldviews that are different from their own. This worldview has been and continues to be developed mostly unconsciously and quite often differently from the views of others in the world (Hanvey, 1976). Specifically, perspective consciousness aligns with the individual’s point of view. Different people have different educational and cultural backgrounds, so they perceive these similar entities in different ways. Haakenson, Savukova, and Mason (1999) pointed out that the tendency toward difference “has been one of the main causes of conflict and confrontation in the history of mankind” (p. 38), and it is vital to advise students to “look upon a certain phenomenon or event from different perspectives so as to encourage respect and appreciation for beliefs, customs, and values different from their own” (p. 38). A Chinese student may vote for global education because he or she hears about the prestige of American higher education
and wants to learn more from the United States. However, an American student may support global education because he or she wants to see what the reality is in China, why the Chinese respect hard-working scholars, and how Chinese educators use the legacies of the ancestors’ philosophies in education. Hanvey (1982) used the term *perspective* instead of *opinion* because he argued that perspective reveals a deeper layer of people’s thinking. Furthermore, he agreed that students can pick up the “well-developed methods and techniques” (p. 163) to probe this deep layer.

State-of-the-planet awareness is the understanding of prevalent world situations and progress, including evolving worldwide phenomena, such as social, economic, and political development; science and technology innovations; environmental protection; population growth; and migrations (Hanvey, 1976). In other words, state-of-the-planet awareness deals with the local people’s perceptions of the world. It is common that a resident in a local community has never been abroad and has little direct experience with the outside world. However, the exposure to public media like radio broadcasts, television shows, and news websites enables him or her to gain indirect experience on world stocks and environmental conditions. Schools and specialists hold the responsibility to guide the public in the right direction of developing state-of-the-planet awareness despite the distortions made by some of the public news (Hanvey, 1976).

Cross-cultural awareness is the knowledge of the diversified customs and traditions of humans around the world and how such customs and practices of culture are observed, compared, and recognized from other perspectives. This perspective is the hardest to achieve (Hanvey, 1976). Specifically, cross-cultural awareness is an ability to recognize, appreciate, and understand a different or alien culture. Hanvey (1976) distinguished between four levels of
this awareness. They are superficial cultural traits, indirect cultural traits that are incredible, indirect cultural traits that are credible, and the ability to understand another culture as an insider. There are various means through which these levels can be experienced. Spring (2010) discussed the Anglo-Americans’ significant and subtle changes in attitude towards Chinese immigrants from an inferior group to “model minority.” According to Spring, the changing of the “coolie” image to educated and hard-working people happened after the Chinese joined the Allies and fought shoulder to shoulder with Americans against the Axis powers. The study abroad program and travel study are effective ways to develop a cultural awareness as an insider. Golay (2006) concluded that a study abroad program offers students cultural and contextual experience, and it is effective in the development of global mindedness. The U.S. Department of State sponsors various Fulbright programs to encourage scholars and students to participate in intercultural studies. Many Fulbright scholars are active in passing on the cross-cultural values to others.

Knowledge of global dynamics is the perception of the world as an interrelated organization and integral system. It focuses on the principles and conceptions that may develop intellectual awareness of this rapidly changing world (Hanvey, 1976). Haakenson et al. (1999) addressed the idea that students acquire knowledge of global dynamics and “learn to identify subtle cause-effect relationships, anticipate side effects, model processes, and make decisions about eliminating or altering undesirable consequences” (p. 40). One of the results of World War II was the founding of the United Nations. The United Nations is the headquarters of the global community. It exerts its influence on world peace, health, trade, culture, and education issues. The purposes of the United Nations (1945) are to enhance cooperation among nations, to encourage mutual respect for human rights, and to ensure fundamental freedoms without
discrimination. The United Nations promotes global awareness among people all over the world.

Mutual understanding is necessary in developing mutual respect between nations. Some world organizations, such as the United Nations Educational, Scientific, and Cultural Organization (UNESCO), contribute to maintain and extend world heritage to promote and enhance universal respect. For example, Confucianism explains Chinese people’s behaviors. According to de Bary (2007), Confucius emphasized the importance of education. His ideal universal schooling was to enable all levels of society to have access to education. In reality, only a few of the leisured elites have had the privilege of receiving quality education given the limited resources and the competition for it. These people became the leaders of society, and they were the models for the followers. Even today, most of the Chinese people still adhere to Confucius’s principles and expect their children to work hard in school in order to become responsible leaders in the future. Further, to understand modern China’s central aim of education, one should understand Mao Zedong’s influence on the whole child and well-being education, which still remain as the guidelines for education in China today (Zhao, 2007).

Awareness of human choices refers to “some awareness of the problems of choice confronting individuals, nations, and the human species as consciousness and knowledge of the global system expands” (Hanvey, 1976, p. 34). Hanvey (1976) used the DDT situation as an example. There are two possible reactions towards the usage of DDT. One is to use DDT because it solves a problem, but one might not use DDT because it threatens health in the long run. The fact that the human species continues to use DDT indicates that the immediate and short-term effects win out (Hanvey, 1976). Haakenson et al. (1999) criticized that “most people are concerned with immediate and short-term effects; this attitude has already brought humanity
to the brink of ecological disaster” (p. 40). Awareness of human choices “fosters a sense of responsible citizenship on local and global levels” (Haakenson et al., 1999, p. 40).

**Global-Mindedness and its Measurements**

Hett (1993) suggested that global-minded people were those “who possess an ecological world view, believe in the unity of the human species and the interdependence of humanity, have multiple loyalties and are futurists” (p. 69). Hett defined global-mindedness as “a worldview in which one sees oneself as connected to the world community and feels a sense of responsibility for its member. This commitment is reflected in an individual’s attitudes, beliefs and behaviors” (p. 143). She developed a valid Global-Mindedness Scale assessing the levels of global-mindedness on responsibility, cultural pluralism, efficacy, globalcentrism, and interconnectedness aspects. Hett listed the characteristics that higher GMS students would have:

(a) be female, (b) have attained junior or senior class standing in college, (c) have taken several internationally-oriented courses, (d) report regularly reading international news in a newspaper, (e) express high political interest and liberal political attitudes, (f) be an activist, (g) often interact with persons from countries and cultures other than their own, (h) be proficient in a second language, and (i) have spent significant time outside of their own country. (p. 148)

Applying the GMS as a research tool, Hett (1993) confirmed a variety of hypotheses she generated from a literature review: (a) women score higher on the GMS than men, (b) there is a significant correlation between the number of global study courses learned and global-mindedness, (c) there is a significant difference in the global-mindedness scores between students who attend internationally oriented programs frequently and those who do not, (d)
students who report their political attitude as more liberal score higher than those who say they are more conservative, (e) students with two or more of their friends from countries or cultures other than their own score higher than students with fewer than two such friends, (f) second language proficiency is slightly related to global-mindedness, and (g) there is a significant difference in GMS between students with different levels of international experience.

Zhai and Scheer (2004) conducted a quantitative study on undergraduate students declaring agriculture majors in the College of Food, Agriculture, and Environment Sciences at Ohio State University (OSU). Zhai and Scheer combined an adapted GMS with the Attitudes towards Cultural Diversity and Pluralism Scale to use as a survey instrument. The research results showed that the students’ global and cultural sensitivities were moderate. There was a statistically significant correlation between students’ global perspectives and their attitudes toward cultural diversity. Female students were more sensitive towards global and cultural issues than male students. Students who frequently contacted people of diverse backgrounds had higher scores in this survey. The research results suggested that overseas experience, age, home origin, and global courses taken were not related with their levels of global and cultural sensitivity. Zhai and Scheer recommended a blueprint for future research. Some of their suggestions were to conduct the research among freshmen, sophomores, juniors, and seniors to see any differences, recruit research subjects from other majors or minors, and administer the survey in a different study period or at different colleges.

Using GMS and the Teacher Multicultural Attitude Survey (TMAS) as data collection instruments, Acolatse (2010) investigated global-mindedness and multicultural attitudes of 102 teacher candidates in a Mid-Atlantic university. Half of the 102 participants were post-bachelor teacher candidates, and another half of them were 5-year teacher candidates. This cross-
sectional causal-comparative study indicated that teacher candidates with a prior bachelor’s degree scored higher than those without bachelor’s degrees in responsibility, cultural pluralism, efficacy, and interconnectedness dimensions. It further specified that teacher candidates with a prior bachelor’s degree have a more positive orientation regarding diversity issues in the classroom. The research also showed a positive relationship between GMS and TMAS scores. Contrary to Hett’s (1993) findings, the research signified that gender and ability to speak a second or foreign language had no effect on the GMS and TMAS scores. However, age, global courses taken, teaching experience, travelling abroad, and exposure to diversity displayed positive interactions.

Adopting a mixed-methods research design, Carano (2010) first conducted two separate surveys among 13 participants. The participants were high school social studies teachers from Hillsborough and Pasco counties in Florida. His two instruments were a background questionnaire and the GMS. He then interviewed three participants who scored highest on the GMS and three participants who scored lowest on it. Carano claimed that family, exposure to diversity, minority status, curious disposition, and global education courses were the themes that emerged from the data within the initial development of global perspectives, and international travel, global education courses, mentoring, and professional services were the themes that emerged from the data within the intensification of global perspectives. The participants stated that every theme, except curious disposition, provides resources in curricular decision making, and six of the eight themes, except exposure to diversity and international travel, provide strategies in curricular decision making. One participant stated that exposure to diversity had made her more empathic to her students.
Cogan and Grossman (2009) reviewed the literature focused on globally-minded teachers and proposed eight key practices employed by effective teachers. The eight key practices listed in no specific order are (a) supporting the curriculum and developing students’ creative thinking, (b) inspiring students to obtain useful information through multiple media, (c) infusing global perspective in all areas of curriculum, (d) using outside resources and designing cooperative activities with other schools, (e) incorporating community service into the curriculum, (f) upholding the school as a center and integral part of the community, (g) promoting cooperative and experiential learning, (h) respecting student’s thoughts and actions. It is critical for higher education to take the responsibility for adding global education to mission and vision statements, to globalize curriculum, and to educate future globally-minded educators.

The development of teachers’ global-mindedness. The review of literature indicates that there are effective ways of developing teachers’ global-mindedness. Zahn, Sandell, and Lindsay (2007) suggested that creating international partnerships and learning experiences are effective ways for teachers to develop global-mindedness. Zahn et al. addressed the function of the International Program Advisory Committee and International Studies Committee of the College of Education at Minnesota State University, Mankato (MSU). They reviewed MSU’s cooperation with the partner universities in Russia, Australia, Thailand, and Mexico. The review results showed that the College of Education focused on students’ experiential learning and maintained student teaching and practicum through the exchange programs of the partner universities.

Kehl and Morris (2008) investigated the differences in global-mindedness among three different groups of students. The three groups of students were students who were preparing to
participate in a study abroad program, students who had finished a study abroad program of eight weeks, and students who had finished a study abroad program of a semester. There were no significant differences between students who were preparing to participate in a study abroad program and students who had finished a study abroad program of eight weeks. There were significant differences between students who were preparing to participate in a study abroad program and students who had finished a study abroad program of a semester. There were significant differences between students who had finished a study abroad program of eight weeks and students who had finished a study abroad program of a semester. Kehl and Morris (2008) suggested participation in a semester-long study abroad and a curriculum requirement for developing global-mindedness.

Lamy (1982) introduced the Center for Teaching International Relations at the University of Denver and analyzed its work on global perspective education. Next, Lamy presented the graduate-credit courses, the teacher in-service workshops, and the master of arts program in curriculum and instruction with a concentration in international studies. In addition, Lamy pointed out the need for improving teachers’ education on international issues and called for immediate actions from administrators, teachers, and community members “to develop new educational programs which meet the requirement for creating citizens with basic competencies in global affairs” (p. 211).

**Intercultural Competence and Cultural Intelligence Scale**

Intercultural competence includes one’s knowledge, skills, attitudes, and awareness when interacting with people from different languages and cultures. Given the need to educate students for the interconnected and diverse world, educators must highlight intercultural competence in the curriculum of higher education (Deardorff, 2011). Global education,
multicultural education, and intercultural education all address the development of intercultural competence.

**Culture and intercultural competence.** In their book *Crossing Cultures in the Language Classroom*, DeCapua and Wintergerst (2007) wrote that different research fields such as linguistics, anthropology, sociology, psychology, and communication influenced the definition of culture. DeCapua and Wintergerst asserted that culture can be viewed as the set of fundamental ideas, practices, and experiences shared by a group of people. Culture can also refer to a set of shared beliefs, norms, and attitudes that are used to guide the behaviors of a group of people, to explain the world around them, and to solve their problems. (p. 12)

The elements of culture include beliefs, values, norms, taboos, and attitudes. “Beliefs are an individual’s convictions about the world, convictions that are shaped by the culture a person is raised in” (DeCapua & Wintergerst, 2007, p. 17). Cultural beliefs represent the reality and the expectations of the world. People from the same culture hold similar beliefs. For example, American people will open gifts given to them and express their thanks. Chinese people also receive gifts from their relatives, friends, and colleagues, but they do not open the gifts immediately. They often open the gifts and find an opportunity to show their appreciation later. “Values are ideas or abstract standards, whether good or bad, that members of a cultural group hold in strong affective regard. They are shared assumptions or judgments about what is good, right, and important” (DeCapua & Wintergerst, 2007, p. 17). It is quite common, for example, that some Asian parents pay college tuition or even housing for their children, and their children respect them and take care of them when they are old. “Norms are the fixed behavior patterns for members of a cultural group. They are culturally shared notions about what is
appropriate behavior. They may also be described as culturally established patterns of doing things” (DeCapua & Wintergerst, 2007, p. 19). In the United States of America, there is an age minimum for people purchasing alcohol or tobacco, but in other countries, there is no such regulation. Taboos regulate actions that are or are not allowed in a society, and attitudes are emotional reactions toward people and surroundings. When people enter or encounter an alien culture, they find a difference or conflict exists between cultures. They may feel uncomfortable or even frustrated. They are experiencing cultural shock. Intercultural competence enables people to communicate effectively.

According to Fantini (2009), there are different terms addressing intercultural abilities. They are bilingualism, multilingualism, multiculturalism, cross-cultural adaptation, cultural or intercultural sensitivity, global competence, and global competitive intelligence. Deardorff (2011) suggested using intercultural competence because “it applies to any [people] who interact with those from different backgrounds, regardless of location” (p. 66). Rathje (2007) reviewed three models describing intercultural competence. The list models described intercultural competence using subsequent catalogues such as reducing anxiety or using empathy. The structural models described intercultural competence as a larger framework incorporating behavioral, cognitive, and affective dimensions. The situational and interactionistic models described intercultural competence in a social context where the interaction took place.

Rathje (2007) discussed the current debate of intercultural competence in terms of goal, scope, application, and foundation. There are two viewpoints toward the goal of intercultural competence: the efficiency model focuses on productivity and sees intercultural competence as “an instrument and a means to success” (Rathje, 2007, p. 256) in an intercultural environment;
the human development viewpoint “emphasizes the importance of effective human interaction in the expectation that successful intercultural competence will manifest itself in the participants as a kind of palpable personal development” (Rathje, 2007, p. 257). The scope of intercultural competence includes culture-specific competence that discusses intercultural competence rooted in one or more specific foreign cultures; generalized intercultural competence discusses intercultural competence as a means of human development among people with different cultures; general social competence gathers the separate intercultural competences as a whole and regards it as a form of social competence; transfer of generalized action competence places intercultural competence in the framework of action competence, which is necessary for a successful communication (Rathje, 2007). The application of intercultural competence falls in two categories as either inter-national or inter-collective. Intercultural competence with inter-national interpretation describes the interaction between individuals from different national cultures. Intercultural competence with inter-collective interpretation describes interaction between individuals of specific collectives with distinct culture (Rathje, 2007). The cultural foundation uses the scenario of intercultural competence to address the term culture. The coherence-oriented approach is a traditional understanding on culture, which describes culture as “something unifying which produces common characteristics shared by a significant number of the members of that culture” (Rathje, 2007, p. 260). Rathje (2007) called the opposite approaches, which choose to “accentuate differentiation within a specific culture and embrace the fundamental contradictions present within them” (p. 261)—cohesion-oriented approaches.

Rathje’s (2007) research addressed intercultural competence in both global and multicultural settings. Rathje reviewed the existing definitions of intercultural competence and
analyzed the goal, scope, application, and foundation of it. Based on the above analysis, Rathje proposed a tentative definition of intercultural competence: it is a cultural-oriented capability focusing on communication and interaction between peoples of diverse cultural backgrounds to achieve the goal of mutual understanding of the difference between cultures and thus become familiar with and be able to appreciate a different culture.

According to Deardorff (2011), the increase of intercultural competence is a continuing process. It involves the progress of critical thinking skills, the development of a global perspective, and other worldviews. It also involves the progress of attitudes including respect, openness, and curiosity.

The United States of America is a country of immigration. Cultural diversity is one of its indispensable identities. Teachers should develop intercultural competence to communicate with their students effectively. Based on M. J. Bennett’s Development Model of Intercultural Sensitivity (DMIS) and the related instrument, the Intercultural Development Inventory (IDI), DeJaeghere and Zhang (2008) investigated factors that influenced the intercultural competence through an in-service American teachers’ professional development program. In their study, they regarded intercultural competence as “the ability to think and act in interculturally appropriate ways as applied to the school/classroom setting for teachers” (p. 256). Guo, Arthur, and Lund (2009) suggested that educational institutions are the primary vehicles for developing pre-service teachers’ intercultural competence through a trial and error process of learning their own and others’ cultures.

**Cultural intelligence and its application.** Cultural intelligence (CQ) is a construct that “assesses multiple aspects of intercultural competence in a single instrument, based on a theoretically grounded, comprehensive, and coherent framework” (Ang & Van Dyne, 2008, p.
In developing the CQS and examining its validity and reliability, Ang et al. (2007) followed Schmidt and Hunter’s definition of general intelligence and described cultural intelligence as “a specific form of intelligence focused on capabilities to grasp, reason and behave effectively in situations characterized by cultural diversity” (p. 337). They conceptualized cultural intelligence through four dimensions according to Sternberg’s multiple-loci of intelligence in cultural diversity settings (Ang et al., 2007). Metacognitive CQ refers to the abilities of planning, evaluating, and adjusting cultural norms in intercultural settings. “While metacognitive CQ focuses on higher-order cognitive processes, cognitive CQ reflects knowledge of the norms, practices, and conventions in different cultures acquired from education and personal experiences,” and “motivational CQ reflects the capability to direct attention and energy toward learning about and functioning in situations characterized by cultural differences” (Ang et al., 2007, p. 338). Behavioral CQ demonstrates the overt actions while communicating with people from diverse cultures. The CQS was developed in accordance with the constructs of CQ. Ang et al. (2007) concluded that CQS is a powerful tool to predict three aspects of intercultural effectiveness: “cultural judgment and decision making (a cognitive outcome), cultural adjustment and wellbeing (an affective outcome), and task performance (a behavioural outcome)” (p. 340). It is a scale that measures language, culture, intercultural, and communication issues. Many researchers have utilized CQS to assess people’s intercultural competence.

Shannon and Begley (2008) conducted confirmatory analyses on psychometric measures of CQ. The result of the study based on 333 Irish and international business students supported the validity of CQS. Their first hypothesis was that second language acquisition will positively relate to (a) cognitive CQ and (b) behavioral CQ. They found that there was a
statistically significant relationship between second language acquisition and cognitive CQ. This finding suggested that multilingual people are sensitive to use language as a tool to obtain intercultural knowledge. Their second hypothesis was that international work experience will positively relate to (a) metacognitive CQ, (b) motivational CQ, and (c) behavioral CQ. They found that there was a statistically significant relationship between international work experience and motivational CQ. This finding indicated that people with multiple international work experiences are inclined to work with people from diverse backgrounds and are willing to explore in an unfamiliar cultural setting. Their third hypothesis was that diversity of social contacts will positively relate to (a) metacognitive CQ, (b) cognitive CQ, and (c) behavioral CQ. They did not find a positive relationship between diversity of social contacts and self-reported CQ. Shannon and Begley suggested future research exploring additional antecedents beyond language acquisition, international work experiences, and diversity of social contact. Besides that, it would be of great value to conduct a future study that focuses on the evaluation of the ongoing CQ dimensions.

Tarique and Takeuchi (2008) stressed that the amount of intercultural exposure is one of the factors that contributes to the development of cultural intelligence. The participants in this study were undergraduate students in a management course at a medium-sized university in New York City. The research results showed that the increase in number of international non-work experiences was associated with higher scores of all four latent variables of cultural intelligence. Tarique and Takeuchi suggested that future researchers investigate this important area following their initial empirical research.

Using CQs as a research instrument, Amiri, Moghimi, and Kazemi (2010) conducted a study to investigate the relationship between CQ and employees’ performances in a university
in Iran. The research method was a correlation-survey. They received 80 returned questionnaires from the staff of a religious–scientific entity. Data analysis showed that three out of the four cultural intelligence dimensions, except behavior CQ, had a statistically significant relationship with employees’ performance. There was a statistically significant relationship between overall CQS and the employees’ performance. Amiri, Moghimi, and Kazemi (2010) recommended that future research may consider other demographic variables’ influence on cultural intelligence.

Banning (2010) examined the predicative relationships in a study abroad population. Participants were from three public research universities in the Southeastern United States. A total of 166 students responded to the CQS survey. Among them, 68% were undergraduates, and 32% were graduate students. They all had a first, short-term study abroad experience. This non-experimental post-test only research was to determine the extent that gender, degree level, major, and previous international travel experience could predict the levels of CQ. Through quantitative data analysis, degree level was found to be a significant predictor of all four constructs of CQ. Students’ majors were found to be a significant predictor of cognitive CQ, motivational CQ, and aggregate scores of CQS. International travel experience was found to be a significant predictor of behavioral CQ. Banning suggested a future study using pre-tests and post-tests to detect the effects of study abroad on CQ scores. A comparative analysis between short-term and long-term study abroad participants was also suggested as an area for further study. Banning also suggested a qualitative study utilizing interviews with targeted populations as another way to examine the relationships between study abroad programs and CQ.

Franklin-Craft (2010) adopted the CQS, a Multicultural Competence in Student Affairs-Preliminary 2 Scale (MSCA-P2), and a personal data form as survey instruments to answer
three questions. Are there relationships between student affairs practitioners’ identities and intercultural competence? Which and to what degree do experiential variables influence the outcomes of intercultural cultural competence? Are student affairs practitioners’ self and peer-assessment of intercultural competency related? A sample of 465 student affairs practitioners nationwide responded to the survey. The research results showed that there were no relationships between race, identification, and CQS scores. Experiential variables including international exposure, frequency of workshop attendance, workplace interaction with people of diverse backgrounds, and workplace conversation about intercultural difference were found to account for 20% of the variance in intercultural competence holding demographic characteristics constant. There was not a statistically significant relationship between self-and peer-reported CQS scores. Franklin-Craft suggested future research to conduct confirmatory studies to test the arguments because this study was the first introduction of CQS in assessing intercultural competence within student affairs.

Báez (2012) used the CQS as an instrument to examine students’ cultural awareness, sensitivity to diversity, and holistic application, which were three out of four objectives of the Foundational Studies 2010 Non-Native Language Program for Spanish 101 at Indiana State University. Among the students enrolled in the six sections of the Spanish 101 course during the spring semester of 2012, 105 students participated in the pre-test, and 89 students participated in the post-test. The research results revealed that there was a significant difference between students’ pre-test and post-test mean scores with respect to cognitive, motivational, and behavioral dimensions of CQ. There was also a significant change in the motivational dimension between female and male students. Báez (2012) suggested future
research addressing different majors and different programs with respect to cultural intelligence.
CHAPTER 3

METHODOLOGY

The purpose of the proposed study was to evaluate pre-service teachers’ global-mindedness and their levels of intercultural competence and to investigate the correlation between them. The research method for this study was a quantitative survey design. This chapter describes the research methods and procedures. It addresses research questions, hypotheses, population of the study and the sample, protection of the subjects, research instrumentation, and data collection and data analysis processes.

Research Questions

1. Is there a statistically significant difference in the mean scores on any of the five latent variables of global-mindedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors)?

2. Is there a statistically significant difference in the mean scores on any of the four latent variables of cultural intelligence between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors)?

3. Can pre-service teachers’ levels of global-mindedness be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience?
4. Can pre-service teachers’ levels of intercultural competence be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience?

5. What is the relationship between pre-service teachers’ global-mindedness and the perceived levels of intercultural competence?

**Hypotheses**

*Null Hypothesis 1:* There is not a statistically significant difference in the mean scores on any of the five latent variables of (a) responsibility, (b) cultural pluralism, (c) efficacy, (d) globalcentrism, and (e) interconnectedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors).

*Null Hypothesis 2:* There is not a statistically significant difference in the mean scores on any of the four latent variables of (a) metacognitive CQ, (b) cognitive CQ, (c) motivational CQ, and (d) behavioral CQ between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors).

*Null Hypothesis 3:* Gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience do not predict a significant proportion of the variance in global-mindedness total scores.

*Null Hypothesis 4:* Gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience do not predict a significant proportion of the variance in cultural intelligence total scores.

*Null Hypothesis 5:* There is not a statistically significant relationship between the overall scores of GMS and CQS.
Population of the Research Study and the Sample

The population of the research study included the undergraduate students, at the age of 18 years or older, having declared an education major or minor at a Midwest state university in the United States of America. The sample of the study was a convenience sample from the university. The moderate effective size for this research study was 86. Data analysis included all the valid responses. Due to the limitation of the sample selection, this research study may not be generalized to the larger U.S. population.

Protection of the Subjects

The Institutional Review Board (IRB) at my university reviewed the description of the research. In the informed consent, I notified the subjects that they could choose whether to respond to the survey or not. The participants were also informed that they had the right to withdraw at any time during the survey session. Their data were protected in an aggregated form and were only used in this study.

The survey was designed using campus data collection software, Qualtrics, and was carried out online with privacy protection. I did not collect participants’ personally identifiable information during the survey. The survey process was confidential. Data used for analysis and publication were in an aggregated form. No personal information was associated with the data. Records associated with the research project were securely stored.

Research Instruments

To assess pre-service teachers’ global-mindedness, I used Hett’s (1993) GMS (Appendix A), which includes 30 items on a five-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. Hett invited four content judges to establish the content validity index (CVI) for the scale. The CVI for the GMS was .88 (Hett, 1993). In terms of internal
consistency reliability, the Cronbach’s alpha was .90. The reliability of each of the five factors ranged from .65 to .80, thus establishing factorial validity (Hett, 1993).

There are five dimensions in Hett’s (1993) GMS: (a) responsibility, which is a care for others all over the world and an obligation to take action to assist those in need; (b) cultural pluralism, which is a comprehension of different cultures and a willingness to appreciate the difference between cultures; (c) efficacy, which is a commitment to participate in global activities and a conviction that an individual’s effort can make the world better; (d) globalcentrism, which is a tradition of thinking and behaving globally rather than locally and a sense of full global consideration when making decisions; and (e) interconnectedness, which is an acceptance of globalization and an enthusiasm to participate in the global activities to bring the whole world together.

Items on the GMS that relate to responsibility are 2, 7, 12, 18, 23, 26, and 30. Items related to cultural pluralism are 1, 3, 8, 13, 14, 19, 24, and 27. Items related to efficacy are 4, 9, 15, 20, and 28. Items related to globalcentrism are 5, 10, 16, 21, and 29. Items related to interconnectedness are 6, 11, 17, 22, and 25. A request for using the GMS was sent and permission to use it was granted (Appendix D).

To assess pre-service teachers’ intercultural competence, I used the CQS (Appendix B), which includes 20 items on a seven-point Likert-type scale, ranging from strongly disagree to strongly agree. Van Dyne et al. (2008) suggested four dimensions of CQS: (a) metacognitive CQ, which is a person’s foreknowledge, onsite adjustment, and post-evaluation of an interaction with people from different cultures; (b) cognitive CQ, which is a person’s comprehension of different languages, values, and customs; (c) motivational CQ, which is a person’s inner drive to direct his or her appropriate behavior in a new cultural scenario; (d)
behavioral CQ, which is a person’s ability to communicate appropriately with people of diverse backgrounds.

According to Deardorff’s (2011) grounded theory-based intercultural competence model, a successful assessment tool ought to evaluate students’ critical thinking skills; their attitudes regarding respect, openness, and curiosity; and their holistic, contextual understanding of a culture. Van Dyne et al. (2008) claimed that metacognitive CQ promotes active thinking, triggers critical thinking, and increases the awareness of diverse cultures; cognitive CQ provides knowledge for decision-making in intercultural settings; motivational CQ addresses the curiosity in novel settings; and behavioral CQ exhibits appropriate and effective communication in diverse backgrounds. The four dimensions of CQ coincide with Deardorff’s theories in the intercultural competence model. CQS measures the internal and external outcomes of intercultural competence. With regard to cross-validation of the CQS, “corrected item-to-total correlations for each subscale (0.46–0.66) demonstrated strong relationships between items and their scales, supporting internal consistency” (Ang et al., 2007, p. 345). The aggregated reliabilities of CQS surpassed .70 (Ang et al., 2007). A request for using the CQS was sent and permission to use it was granted (Appendix D).

**Participant Demographics**

The participants were full-time undergraduate students, at the age of 18 years or older, having declared an education major or minor at a Midwest state university in the United States of America. I used a demographic questionnaire (Appendix C) to collect the data to measure the participant demographics with respect to the following:

1. gender
2. class standing
3. perceived competence in non-native language or culture
4. frequency of interaction with people of diverse backgrounds
5. teaching experience

Participants were expected to indicate the perceived competence in non-native language or culture by choosing either Statement 1, “I feel competent in using a non-native language or interacting with others of another culture,” or Statement 2, “I do not feel competent in using a non-native language or interacting with others of another culture.” Participants had to select the frequency of interaction with people of diverse backgrounds. The options for this category included never, seldom, occasionally, often, and always. Participants also had to indicate whether they have had teaching experience by marking either yes or no under this category.

**Data Collection and Analysis Methods**

Using campus data collection software, Qualtrics, I designed a survey that combined the GMS, the CQS, and the demographic questionnaire to collect data. The survey was carried out online with privacy protection. With the assistance in identifying undergraduate students who had declared education majors or minors from the Office of Vice President for Student Affairs and Dean of Students at a Midwest state university, emails that requested responses from potential participants were sent. Each email contained an informal cover letter to inform the participants of the purpose of the study and the basics of their rights. The email also included a web link to the designed survey for the convenience of participants. I used the Statistical Package of the Social Science (SPSS), version 19, to analyze the data. Multivariate analysis of variance (MANOVA) tests were used to analyze data for the first two research questions. Multiple regression tests were used to analyze data for the third and the fourth research
questions, and a bivariate correlational analysis was used to analyze data for the fifth research question.

For Questions 1 and 2, I used MANOVA tests to analyze data. A t-test was used to compare two means, and an analysis of variance (ANOVA) test was used to compare multiple means. Field (2009) specified that the reason for not selecting multiple t-tests but choosing ANOVA is that multiple t-tests would result in an increased probability of falsely rejecting the null hypothesis, a type I error. Field (2009) explained that “this error rate across statistical tests conducted on the same experimental data is known as familywise or experimentwise error rate” (p. 348). The reason for not selecting multiple individual ANOVAs but choosing MANOVA is the same. It is possible to presume that the outcome variables are correlated. Field (2009) further asserted that “MANOVA, by including all dependent variables in the same analysis, takes account of the relationships between outcome variables” (p. 586). MANOVA is more effective and powerful to discover the truth because “ANOVA can tell us only whether groups differ along a single dimension whereas MONOVA has the power to detect whether groups differ along a combination of dimensions” (Field, 2009, p. 586). A significant MANOVA test “more often than not, reflects a significant difference for one, but not all, of the dependent variables” (Field, 2009, p. 586). Therefore, applying the Bonferroni correction, I planned to follow up with separate ANOVA tests on each of the dependent variables and planned to follow up with a discriminant function analysis when the MANOVA test is a significant. Two samples of data, one from Group 1, which includes freshmen and sophomores, and another from Group 2, which includes juniors and seniors, were collected.

For Question 1, the research study detected whether these two groups differed along a combination or each of the five dimensions of GMS: responsibility, cultural pluralism, efficacy,
globalcentrism, and interconnectedness. For Question 2, the research study detected whether these two groups differed along a combination or each of the four dimensions of CQS: metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ.

For Questions 3 and 4, I used multiple regression tests to analyze data. According to Field (2009), “Regression analysis is a way of predicting an outcome variable from one predictor variable (simple regression) or several predictor variables (multiple regression)” (p. 198). This study used four independent variables: gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience to predict pre-service teachers’ levels of global-mindedness and intercultural competence. Multiple regression analysis was an appropriate test to examine whether the four independent variables were good predictors or not.

For Question 5, I used a bivariate correlational analysis test to analyze data. I examined the scales of measurement to make sure that they were at least interval variables. I also evaluated the assumptions of linearity, normality of distribution, random, and independent sampling.
CHAPTER 4

DATA MANIPULATION AND ANALYSIS

I combined the GMS, CQS, and a demographic questionnaire as survey instruments to collect the data. Given the limited time and money for conducting this research, the sample of the study was a convenience sample. There were a total of 184 participants who had declared an education major or minor at a Midwest state university that provided complete responses.

Demographic Analysis for the Sample

I applied for an IRB review and obtained a letter of approval to conduct the research. The survey was sent through email with a campus announcement in the 2012 fall semester. When sending the survey to the anticipated subjects, I got assistance from the administrators in the Office of Vice President for Student Affairs and Dean of Students at a Midwest state university. As further information, no consequential events happened domestically or abroad that might have influenced the pre-service teachers’ global-mindedness and intercultural competence. The survey was conducted in an ordinary college environment.

There were 184 complete responses. It exceeded the moderate effective size. I downloaded the data at the end of the 2012 fall semester, and I continued to analyze the data using SPSS, version 19. This study was a complete case analysis. Table 1 contains demographic information for the sample.
Table 1

*Frequencies for Demographic Variables (N = 184)*

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<thead>
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<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
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</thead>
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<td><strong>Gender</strong></td>
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<tr>
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<tr>
<td>Female</td>
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<td><strong>Class standing</strong></td>
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<td>Junior</td>
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<td>Senior</td>
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<td>26.10</td>
</tr>
<tr>
<td><strong>Perceived competence in non-native language or culture</strong></td>
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<td></td>
</tr>
<tr>
<td>Feel competent</td>
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</tr>
<tr>
<td>Not feel competent</td>
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<td>58.20</td>
</tr>
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<td><strong>Frequency of interaction with people of diverse backgrounds</strong></td>
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</tr>
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<tr>
<td>Often</td>
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<tr>
<td>Always</td>
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<td><strong>Teaching experience</strong></td>
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</tr>
<tr>
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</tbody>
</table>
Among the 184 participants, 98 of them (53%) were freshmen and sophomores, and 86 of them (47%) were juniors and seniors. There were 142 female participants (77%), making them the majority group in this sample. There were 77 participants (42%) who felt competent in using a non-native language or interacting with others of another culture, and another 107 (58%) who did not. There were 22 participants (12%) who seldom interacted with people of diverse backgrounds. There were 83 of them (45%) who occasionally did. There were 51 participants (28%) who often interacted with people of diverse backgrounds and 28 of them (15%) who always did. There were a total of 90 participants (49%) who had teaching experience and 94 participants (51%) who had no teaching experience.

**Data Manipulation**

The GMS instrument, GMS, which includes 30 items on a five-point Likert-type scale, provides responses that range from *strongly disagree* to *strongly agree*. The range of the scores is from 30 to 150. There are five dimensions in Hett’s (1993) GMS: (a) responsibility is an obligation to take action to help those in need, (b) cultural pluralism is a willingness to appreciate the differences between cultures, (c) efficacy is a commitment to participate in global activities and to contribute to the diverse world, (d) globalcentrism is a sense of full global consideration when making decisions, and (e) interconnectedness is an appreciation of globalization and a willingness to participate in the global activities to bring the whole world together.

Another instrument, the CQS, which includes 20 items on a seven-point Likert-type scale, provides responses that range from *strongly disagree* to *strongly agree*. The range of the scores is from 20 to 140. Van Dyne et al. (2008) proposed four dimensions of CQS: (a) metacognitive CQ focuses on a person’s pre-planning, onsite adjustment, and post-evaluation of
an interaction with people from different cultures; (b) cognitive CQ addresses a person’s knowledge on languages, values, and customs; (c) motivational CQ is a person’s inner drive to behave appropriately in a new cultural setting; and (d) behavioral CQ is a person’s appropriate reaction and behavior toward peoples of diverse backgrounds. Table 2 shows the latent variables of the survey and the associated survey item numbers.

Table 2

*Latent Variables of the GMS and the CQS and Associated Survey Item Numbers (N = 184)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Associated survey item numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMS</td>
<td>1-30 (reverse score items: 4, 5, 9, 10, 16, 21, 25, 27, and 29)</td>
</tr>
<tr>
<td>Responsibility</td>
<td>2, 7, 12, 18, 23, 26, 30</td>
</tr>
<tr>
<td>Cultural pluralism</td>
<td>1, 3, 8, 13, 14, 19, 24, 27</td>
</tr>
<tr>
<td>Efficacy</td>
<td>4, 9, 15, 20, 28</td>
</tr>
<tr>
<td>Globalcentrism</td>
<td>5, 10, 16, 21, 29</td>
</tr>
<tr>
<td>Interconnectedness</td>
<td>6, 11, 17, 22, 25</td>
</tr>
<tr>
<td>CQS</td>
<td></td>
</tr>
<tr>
<td>Metacognitive CQ</td>
<td>1-4</td>
</tr>
<tr>
<td>Cognitive CQ</td>
<td>1-6</td>
</tr>
<tr>
<td>Motivational CQ</td>
<td>1-5</td>
</tr>
<tr>
<td>Behavioral CQ</td>
<td>1-5</td>
</tr>
</tbody>
</table>

*Note.* GMS = Global-Mindedness Scale; CQS = Cultural Intelligence Scale

The GMS 4, 5, 9, 10, 16, 21, 25, 27, and 29 are reverse-score items. I recoded these items into new variables using SPSS, and ran the cross tabulation analysis on each new variable against the original variable to make sure that everything was correct. I ran a descriptive
statistical analysis on GMS variables. The top two items with the highest mean scores were GMS 8 and GMS 15. The content of GMS 8 was “Americans can learn something of value from all different cultures,” and the content of GMS 15 was “It is very important to me to choose a career in which I can have a positive effect on the quality of life for future generations.” The bottom two items with the lowest mean scores were GMS 5 and GMS 10. The content of GMS 5 was “The needs of the United States must continue to be our highest priority in negotiating with other countries,” and the content of GMS 10 was “Americans should be permitted to pursue the standard of living they can afford if it only has a slight negative impact on the environment.”

I ran a descriptive statistics analysis on CQS variables. The top two items with the highest mean scores were motivational CQ 1 and metacognitive CQ 2. The content of motivational CQ 1 was “I enjoy interacting with people from different cultures,” and the content of metacognitive CQ 2 was “I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.” The bottom two items with the lowest mean scores were cognitive CQ 1 and cognitive CQ 2. The content of cognitive CQ 1 was “I know the legal and economic systems of other cultures,” and the content of cognitive CQ 2 was “I know the rules (e.g., vocabulary, grammar) of other languages.”

I used the compute variable function in SPSS, to create new variables to sum up responsibility, cultural pluralism, efficacy, globalcentrism, interconnectedness, metacognitive CQ, cognitive CQ, motivational CQ, behavioral CQ, overall GMS, and overall CQS scores. Table 3 lists the 11 variables and the measures of central tendency.
Table 3

*Descriptive Statistics for 11 Summed Variables (N = 184)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SEM</th>
<th>SD</th>
<th>Possible Range</th>
<th>Sample Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMS</td>
<td>108.98</td>
<td>.93</td>
<td>12.61</td>
<td>30-150</td>
<td>71-145</td>
</tr>
<tr>
<td>Responsibility</td>
<td>25.65</td>
<td>.30</td>
<td>4.00</td>
<td>7-35</td>
<td>14-35</td>
</tr>
<tr>
<td>Cultural pluralism</td>
<td>31.60</td>
<td>.31</td>
<td>4.23</td>
<td>8-40</td>
<td>18-40</td>
</tr>
<tr>
<td>Efficacy</td>
<td>18.21</td>
<td>.21</td>
<td>2.78</td>
<td>5-25</td>
<td>11-25</td>
</tr>
<tr>
<td>Globalcentrism</td>
<td>15.07</td>
<td>.23</td>
<td>3.12</td>
<td>5-25</td>
<td>5-25</td>
</tr>
<tr>
<td>Interconnectedness</td>
<td>18.46</td>
<td>.20</td>
<td>2.66</td>
<td>5-25</td>
<td>10-25</td>
</tr>
<tr>
<td>CQS</td>
<td>92.89</td>
<td>1.23</td>
<td>16.63</td>
<td>20-140</td>
<td>49-140</td>
</tr>
<tr>
<td>Metacognitive CQ</td>
<td>20.78</td>
<td>.28</td>
<td>3.82</td>
<td>4-28</td>
<td>8-28</td>
</tr>
<tr>
<td>Cognitive CQ</td>
<td>23.52</td>
<td>.55</td>
<td>7.46</td>
<td>6-42</td>
<td>6-42</td>
</tr>
<tr>
<td>Motivational CQ</td>
<td>25.15</td>
<td>.42</td>
<td>5.67</td>
<td>5-35</td>
<td>10-35</td>
</tr>
<tr>
<td>Behavioral CQ</td>
<td>23.43</td>
<td>.42</td>
<td>5.74</td>
<td>5-35</td>
<td>5-35</td>
</tr>
</tbody>
</table>

*Note. GMS = Global-Mindedness Scale; CQS = Cultural Intelligence Scale*

Table 3 lists the means, standard errors of the means, standard deviations, possible score ranges, and sample score ranges of GMS and CQS total scores. It shows the measures of central tendency for summed scores of five GMS latent variables, including (a) responsibility, (b) cultural pluralism, (c) efficacy, (d) globalcentrism, and (e) interconnectedness, and summed scores of four CQS latent variables, including (a) metacognitive CQ, (b) cognitive CQ, (c) motivational CQ, and (d) behavioral CQ.
Tests of Hypotheses

I ran MANOVA, multiple regression, and Pearson product-moment correlation tests to analyze the data.

Analysis of Research Question 1

Research Question 1: Is there a statistically significant difference in the mean scores on any of the five latent variables of global-mindedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors)?

Null Hypothesis 1: There is not a statistically significant difference in the mean scores on any of the five latent variables of (a) responsibility, (b) cultural pluralism, (c) efficacy, (d) globalcentrism, and (e) interconnectedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors).

Assumption analysis of MANOVA. I ran Levene’s test to evaluate the univariate equality of variances for each group. The Levene’s test for responsibility was $F(1,182) = .26, p = .61$; for cultural pluralism was $F(1,182) = .99, p = .32$; for efficacy was $F(1,182) = 1.69, p = .20$; for globalcentrism was $F(1,182) = 2.21, p = .14$; and for interconnectedness was $F(1,182) = .61, p = .43$. The Levene’s test for each latent variable, (a) responsibility, (b) cultural pluralism, (c) efficacy, (d) globalcentrism, and (e) interconnectedness, was not significant, $p > .05$. It failed to reject the null hypothesis that the error variance of the dependent variable was equal across groups. The assumption of homogeneity of variance was met. The Box’s test for equality of covariance matrices was Box’s $M = 12.50, F(15, 128548), p = .67$. Box’s M test was not significant, $p > .05$. It failed to reject the null hypothesis that the observed covariance matrices of the dependent variable were equal across groups. The assumption of homogeneity
of covariance matrices was met. Data were most certainly not random. Data were assumed
independent because there was no information to conclude otherwise.

**Analysis of test results of Question 1.** I ran the descriptive statistics for the means
scores on the five latent variables of global-mindedness between Group 1 (freshmen and
sophomores) and Group 2 (juniors and seniors). Table 4 shows the results.

Table 4

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility</td>
<td>1</td>
<td>25.65</td>
<td>3.78</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>25.64</td>
<td>4.33</td>
<td>86</td>
</tr>
<tr>
<td>Cultural pluralism</td>
<td>1</td>
<td>31.28</td>
<td>4.34</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>31.97</td>
<td>4.09</td>
<td>86</td>
</tr>
<tr>
<td>Efficacy</td>
<td>1</td>
<td>18.18</td>
<td>2.65</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>18.23</td>
<td>2.94</td>
<td>86</td>
</tr>
<tr>
<td>Globalcentrism</td>
<td>1</td>
<td>14.91</td>
<td>2.90</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>15.26</td>
<td>3.36</td>
<td>86</td>
</tr>
<tr>
<td>Interconnectedness</td>
<td>1</td>
<td>18.29</td>
<td>2.56</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>18.65</td>
<td>2.76</td>
<td>86</td>
</tr>
</tbody>
</table>

*Note.* †Group 1 = freshmen and sophomores; Group 2 = juniors and seniors

Descriptive statistics in this general linear model showed that pre-service teachers in
Group 2 (juniors and seniors) had higher mean scores on the latent variables of cultural
pluralism, efficacy, globalcentrism, and interconnectedness than those in Group 1 (freshmen
and sophomores). Pre-service teachers in Group 1 (freshmen and sophomores) had slightly
higher mean scores on the latent variable of responsibility than those in Group 2 (juniors and seniors). Pillai’s trace indicated that there was not a significant effect of class standing on the mean scores of any of the five latent variables of global-mindedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors), $V = .01, F(5, 178) = .50, p = .77$. Wilks’ lambda indicated that there was not a significant effect of class standing on the mean scores of any of the five latent variables of global-mindedness between the two groups, $\Lambda = .99, F(5, 178) = .50, p = .77$. Hotelling’s trace indicated that there was not a significant effect of class standing on the mean scores of any of the five latent variables of global-mindedness between the two groups, $T = .01, F(5, 178) = .50, p = .77$. Roy’s largest root indicated that there was not a significant effect of class standing on the mean scores of any of the five latent variables of global-mindedness between the two groups, $\Theta = .01, F(5, 178) = .50, p = .77$. Multivariate tests of Pillai’s trace, Wilks’ lambda, Hotelling’s trace, and Roy’s largest root were not significant, $p > .05$, two tailed.

The test results failed to reject the null hypothesis. The differences in the mean scores on latent variables of responsibility, cultural pluralism, efficacy, globalcentrism, and interconnectedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors) were only by chance alone. I stopped and did not conduct the follow-up ANOVA tests on each of the dependent variables and the follow-up discriminant function analysis.

**Analysis of Research Question 2**

Research Question 2: Is there a statistically significant difference in the mean scores on any of the four latent variables of cultural intelligence between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors)?
Null Hypothesis 2: There is not a statistically significant difference in the mean scores on any of the four latent variables of (a) metacognitive CQ, (b) cognitive CQ, (c) motivational CQ, and (d) behavioral CQ between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors).

**Assumption analysis of MANOVA.** I ran Levene’s test to evaluate the univariate equality of variances for each group. The Levene’s test for metacognitive CQ was $F(1,182) = .08, p = .78$; for cognitive CQ was $F(1,182) = 3.27, p = .07$; for motivational CQ was $F(1,182) = .46, p = .50$; and for behavioral CQ was $F(1,182) = .85, p = .36$. The Levene’s test for each latent variable, (a) metacognitive CQ, (b) cognitive CQ, (c) motivational CQ, and (d) behavioral CQ, was not significant, $p > .05$. It failed to reject the null hypothesis that the error variance of the dependent variable was equal across groups. The assumption of homogeneity of variance was met. The Box’s test for equality of covariance matrices was Box’s $M = 11.44, F(10, 152331), p = .35$. Box’s M test was not significant, $p > .05$. It failed to reject the null hypothesis that the observed covariance matrices of the dependent variable were equal across groups. The assumption of homogeneity of covariance matrices was met. Data were most certainly not random. Data were assumed independent because there was no information to conclude otherwise.

**Analysis of test results of Question 2.** I ran the descriptive statistics for the means scores between Group 1 (freshmen and sophomores) and Group 2 (juniors and seniors). Table 5 shows the results.
Table 5
Descriptive Statistics for the Means Scores on the Four Latent Variables of CQS Between Two Groups (N = 184)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group*</th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacognitive CQ</td>
<td>1</td>
<td>20.18</td>
<td>3.76</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>21.47</td>
<td>3.79</td>
<td>86</td>
</tr>
<tr>
<td>Cognitive CQ</td>
<td>1</td>
<td>23.70</td>
<td>7.12</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>23.31</td>
<td>7.86</td>
<td>86</td>
</tr>
<tr>
<td>Motivational CQ</td>
<td>1</td>
<td>24.55</td>
<td>5.79</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>25.84</td>
<td>5.49</td>
<td>86</td>
</tr>
<tr>
<td>Behavioral CQ</td>
<td>1</td>
<td>23.16</td>
<td>5.50</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>23.74</td>
<td>6.02</td>
<td>86</td>
</tr>
</tbody>
</table>

*Note.* Group 1 = freshmen and sophomores; Group 2 = juniors and seniors

Descriptive statistics in this general linear model showed that pre-service teachers in Group 2 (juniors and seniors) had higher mean scores on the latent variables of metacognitive CQ, motivational CQ, and behavioral CQ than those in Group 1 (freshmen and sophomores). Pre-service teachers in Group 1 (freshmen and sophomores) had higher mean scores on the latent variable of cognitive CQ than those in Group 2 (juniors and seniors). Pillai’s trace indicated that there was not a significant effect of class standing on the mean scores of any of the four latent variables of cultural intelligence between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors), $V = .04, F(4, 179) = 1.84, p = .12$. Wilks’ lambda indicated that there was not a significant effect of class standing on the mean scores of any of the four latent variables of cultural intelligence between the two groups, $A = .96, F(4, 179) = 1.84, p = .12$. Hotelling’s trace indicated that there was not a
significant effect of class standing on the mean scores of any of the four latent variables of cultural intelligence between the two groups, \( T = .04, F(4, 179) = 1.84, p = .12 \). Roy’s largest root indicated that there was not a significant effect of class standing on the mean scores of any of the four latent variables of cultural intelligence between the two groups, \( \Theta = .04, F(4,179) = 1.84, p = .12 \). Multivariate tests of Pillai’s trace, Wilks’ lambda, Hotelling’s trace, and Roy’s largest root were not significant, \( p > .05 \), two tailed.

The test results failed to reject the null hypothesis. The difference in the mean scores on any of the four latent variables of metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors) was only by chance alone. I stopped and did not conduct the follow-up ANOVA tests on each of the dependent variables and the follow-up discriminant function analysis.

Analysis of Research Question 3

Research Question 3: Can pre-service teachers’ levels of global-mindedness be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience?

Null Hypothesis 3: Gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience do not predict a significant proportion of the variance in global-mindedness total scores.

Assumption analysis of multiple regression. I checked to see if the dependent variable was linearly related to each of the independent variables as appropriate. Independent variables of gender, perceived competence in non-native language or culture, and teaching
experience are dichotomous variables. These variables were not included in this linearity checking. Examination of the scatterplot revealed that there is no evidence to indicate the non-linearity between respondents’ global-mindedness total scores and frequency of interaction with people of diverse backgrounds (see Figure 3).

Figure 3. Scatterplot of frequency of interaction with people of diverse backgrounds with overall GMS scores.

For verifying whether the model fit the observed data, I evaluated the multicollinearity, linearity, outliers, and influential cases of the datasets. I ran a correlation analysis for the variables of interest. Evaluation on the generated matrix revealed that there was no multicollinearity between independent variables. I analyzed the multicollinearity diagnostics. None of the variance inflation factor (VIF) values were equal or greater than 10. The average VIF value was not substantially greater than 1. None of the tolerance values were less than .10. Interpretation of the VIF values and tolerance values did not indicate multicollinearity.
Interpretation of variance proportions did not indicate multicollinearity, either. The condition indexes (CI) of the final dimension was 11.55, and it was considerably higher than the last remaining CI, which was 4.95. It was somewhat, but not significantly, higher than the other three dimensions. There was no overwhelming evidence of a problem in and of itself. In conclusion, there was no multicollinearity between independent variables upon investigation.

I ran scatterplots that plotted each individual variable against the outcome variable as appropriate. Examination of the scatterplots revealed that there was no evidence to indicate the non-linearity between each individual variable and respondents’ global-mindedness total scores. Besides the scatterplot in Figure 3, I also included the scatterplots of the dichotomous variables, which were gender, perceived competence in non-native language or culture, and teaching experience, in order to check for outliers and influential cases (see Figures 4, 5, and 6).

![Scatterplot of gender with overall GMS scores.](image)

*Figure 4. Scatterplot of gender with overall GMS scores.*
Figure 5. Scatterplot of perceived competence in non-native language or culture with overall GMS scores.

Figure 6. Scatterplot of teaching experience with overall GMS scores.

I analyzed the casewise diagnostics. The standardized residual of Case 115 was 3.11. It was higher than 3, so I determined it to be an outlier. There were less than 5% of cases that had
absolute standardized residual values larger than 2. There was nothing yet that led me to question adequacy of model fit or to indicate an outlier of consequence. There were approximately 3% of cases that had absolute standardized residual values larger than 2.5. The percentage exceeded 1%. This result led me to question adequacy of model fit or to indicate an outlier of consequence. Cases 7, 28, 61, 114, and 115 needed further investigating.

I generated minimum and maximum values for Mahalanobis distance, Cook’s distance, leverage, covariance ratio, and the standardized DFFit and DFBeta values to check the influential cases. Concerning Mahalanobis distance, the critical value for chi-square was $X^2(5) = 20.52, p = .001$. The maximum value for Mahalanobis distance in this model was 9.47, and it was less than the critical value for chi-square. The maximum value for Cook’s distance was .09, and it was less than 1. The maximum value for leverage was .05, and it was less than .08. There were no standardized DFFit and DFBeta values that were greater than 1. Investigation on the values for Mahalanobis distance, Cook’s distance, leverage, and standardized DFFit and DFBeta indicated there was nothing yet that led me to question adequacy of model fit or to indicate an influential case of consequence. Investigation on the covariance ratio values that were greater than 1.08 and less than .92 indicated that Cases 7, 28, 61, 76, 83, 114, 115, and 166 needed further investigating. Evaluation on scatterplots revealed that Cases 7, 28, 61, 114, and 115 were possible influential cases. Observation on scatterplots and datasets showed that Case 115 did not follow the general tendency of the rest of the data. Case 115 was an extreme outlier. It influenced some parts of the regression analysis, especially on the estimated coefficients of the slopes and the results of the hypothesis test. I deleted Case 115 from the datasets. However, the other influential cases were within the score ranges of each corresponding construct. They were not extreme outliers and influential cases based on the
evaluation of the scatterplots. The possible outliers and influential cases ranked less than 3% of the total sample. I retained the other possible outliers and influential cases in this quantitative research. The model was an adequate fit of the sample data. The model would fit the sample better without the extreme and influential Case 115.

I then verified the assumptions of independence of errors, the normal distribution of residuals, linearity, and homoscedasticity to determine whether the model could generalize to other samples. I ran the Durbin-Watson test to determine the assumption of independence of errors. The Durbin-Watson value was 2.24. It was close to 2. The test result did not contradict this assumption. The distribution of standardized residuals did not differ significantly from normal, skew = -.29, t(182) = -1.59, p > .01; kurtosis = .37, t(182) = 1.03, p > .01. All significant tests for normality were conducted at alpha = .01, two tailed. The assumption of normal distribution of residuals was met (see Figures 7 and Figure 8).

Figure 7. Histograms of normally distributed residuals in Question 3.
Figure 8. Normal P-P plots of normal distributed residuals in Question 3.

Evaluation of the residual scatterplot indicated that the assumption of homoscedasticity was met. The variance of the residuals at all levels of the independent variables seemed relatively constant. Evaluation of this scatterplot revealed that there was nothing to indicate the non-linearity. The assumption of linearity was met (see Figure 9). The model could generalize to other samples.

Figure 9. Plots of standardized residuals against standardized predicted values in Question 3.
Analysis of test results of Question 3. I recoded the variables of gender, perceived competence in non-native language or culture, and teaching experience. Evaluation of frequency statistics and cross tabulation outcomes indicated that the new variables were successfully created. Table 6 shows the descriptions of independent variables predicting the global-mindedness total scores.

Table 6

Descriptions of Independent Variables Predicting the Overall GMS Scores (N = 183)

<table>
<thead>
<tr>
<th>Name</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.78</td>
<td>--</td>
<td>0</td>
<td>1</td>
<td>0 = Male; 1 = Female</td>
</tr>
<tr>
<td>Perceived competence in non-native language or culture</td>
<td>.42</td>
<td>--</td>
<td>0</td>
<td>1</td>
<td>0 = Not feel competent; 1 = Feel competent</td>
</tr>
<tr>
<td>Frequency of interaction with people of diverse backgrounds</td>
<td>3.46</td>
<td>.89</td>
<td>2</td>
<td>5</td>
<td>5-point Likert-type scale from 1 Never to 5 Always</td>
</tr>
<tr>
<td>Teaching experience</td>
<td>.49</td>
<td>--</td>
<td>0</td>
<td>1</td>
<td>0 = No; 1 = Yes</td>
</tr>
</tbody>
</table>

Note. Min = minimum; Max = maximum

Among the 183 participants, 78% were female and 49% had teaching experience. There were 42% of participants in this sample who felt competent in using a non-native language or interacting with others of another culture. The average score of frequency of interaction with people of diverse backgrounds is 3.46 ($M = 3.46, SD = .89$).

I ran the multiple regression analysis using the recoded independent variables. Table 7 shows the results.
Table 7

Regression Analysis for Variables Predicting the Overall GMS Scores (N = 183)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>4.16</td>
<td>2.05</td>
<td>.14*</td>
</tr>
<tr>
<td>Perceived competence in non-native language or culture</td>
<td>5.31</td>
<td>1.79</td>
<td>.21**</td>
</tr>
<tr>
<td>Frequency of interaction with people of diverse backgrounds</td>
<td>1.63</td>
<td>1.00</td>
<td>.12</td>
</tr>
<tr>
<td>Teaching experience</td>
<td>4.90</td>
<td>1.73</td>
<td>.20**</td>
</tr>
</tbody>
</table>

Note. $R^2 = .15$; Adjust $R^2 = .13$, *$p < .05$, **$p < .01$, two tailed. *Standard Error of $B$

Concerning the F-test in the ANOVA table, $F = 7.54, p < .001$, the model was significant. The model was significantly better at predicting the outcome than the mean. There was a total of 15% of the variance in the pre-service teachers’ levels of global-mindedness that could be explained by the model. When adjusted for sample size and numbers of predictors, the variance explained dropped to 13%.

The test results rejected the Null Hypothesis 3. The pre-service teachers’ levels of global-mindedness could be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience.

The independent variable of gender was a significant predictor of the pre-service teachers’ levels of global-mindedness, $p < .05$, two tailed. The independent variables of perceived competence in non-native language or culture and teaching experience were significant predictors of the pre-service teachers’ levels of global-mindedness, $p < .01$, two tailed. Female students scored 4.16 points higher on the GMS than male students, holding the
other variables constant. Students who felt competent in using a non-native language or interacting with others of another culture scored 5.31 points higher on the GMS than students who did not feel competent in using a non-native language or interacting with others of another culture, holding the other variables constant. Students who had teaching experience scored 4.90 points higher on the GMS than students who did not have teaching experience, holding the other variables constant. The variable of frequency of interaction with people of diverse backgrounds was not a significant predictor of the pre-service teachers’ levels of global-mindedness in this model.

**Analysis of Research Question 4**

Research Question 4: Can pre-service teachers’ levels of intercultural competence be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience?

Null Hypothesis 4: Gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience do not predict a significant proportion of the variance in cultural intelligence total scores.

**Assumption analysis of multiple regression.** I checked to see if the dependent variable was linearly related to each of the independent variables as appropriate. Independent variables of gender, perceived competence in non-native language or culture, and teaching experience were dichotomous variables. These variables were not included in this linearity checking. Examination of the scatterplot revealed that there was no evidence to indicate the non-linearity between respondents’ cultural intelligence total scores and frequency of interaction with people of diverse backgrounds (see Figure 10).
For verifying whether the model fit the observed data, I evaluated the multicollinearity, linearity, outliers, and influential cases of the datasets. I ran a correlation analysis for the variables of interest. Evaluation on the generated matrix revealed that there was no multicollinearity between independent variables. I analyzed the multicollinearity diagnostics. As in the discussion for the preceding research question, none of the VIF values were equal or greater than 10. The average VIF value was not substantially greater than 1. None of the tolerance values were less than .10. Interpretation of the VIF values and tolerance values did not indicate multicollinearity. Interpretation of variance proportions did not indicate multicollinearity, either. The CI of the final dimension was 11.55, and it was considerably higher than the last remaining CI, which was 4.95. It was somewhat, but not significantly, higher than the other three dimensions. There was no overwhelming evidence of a problem in
and of itself. In conclusion, there was no multicollinearity between independent variables upon the investigation.

I ran scatterplots that plotted each individual variable against the outcome variable as appropriate. Examination of the scatterplot revealed that there was no evidence to indicate the non-linearity between each individual variable and respondents’ cultural intelligence total scores. Besides the scatterplot in Figure 10, I also included the scatterplots of the dichotomous variables, which were gender, perceived competence in non-native language or culture, and teaching experience, in order to check for outliers and influential cases (see Figures 11, 12, and 13).

Figure 11. Scatterplot of gender with overall CQS scores.
Figure 12. Scatterplot of perceived competence in non-native language or culture with overall CQS scores.

Figure 13. Scatterplot of teaching experience with overall CQS scores.
I analyzed the casewise diagnostics. There was not a case with absolute standardized residual value higher than 3. There were approximately 6% of cases that had absolute standardized residual values larger than 2. The percentage exceeded 5%. This led me to question adequacy of model fit or to indicate an outlier of consequence. There were approximately 2% of cases that had absolute standardized residual values larger than 2.5. The percentage exceeded 1%. This led me to question adequacy of model fit or to indicate an outlier of consequence. Cases 1, 35, 38, 47, 57, 88, 102, 109, 136, 160, and 162 needed further investigating.

I generated minimum and maximum values for Mahalanobis distance, Cook’s distance, leverage, covariance ratio, and the standardized DFFit and DFBeta values to check the influential cases. Concerning Mahalanobis distance, the critical value for chi-square was $\chi^2(5) = 20.52$, $p = .001$. The maximum value for Mahalanobis distance in this model was 9.47, and it was less than the critical value for chi-square. The maximum value for Cook’s distance was .09, and it was less than 1. The maximum value for Leverage was .05, and it was less than .08. There were no standardized DFFit and DFBeta values that were greater than 1. Investigation on the values for Mahalanobis distance, Cook’s distance, leverage, and standardized DFFit and DFBeta indicated there was nothing yet that led me to question adequacy of model fit or to indicate an influential case of consequence. Investigation on the covariance ratio values that were greater than 1.08 and less than .92 indicated that Cases 1, 35, 47, 88, 114, 136, and 160 needed further investigating. Evaluation on scatterplots revealed that Cases 1, 35, 47, 88, 136, and 160 were possible influential cases. However, these possible outliers and influential cases were within the score ranges of each corresponding construct. They were not extreme outliers and influential cases based on the evaluation of the scatterplots and the datasets. The possible
outliers and influential cases ranked 3% of the total sample. I retained these possible outliers and influential cases in this quantitative research. The model was an adequate fit of the sample data.

I then checked the assumptions of independence of errors, the normal distribution of residuals, linearity, and homoscedasticity to determine whether the model could generalize to other samples. I ran the Durbin-Watson test to determine the assumption of independence of errors. The test result did not contradict this assumption. The distribution of standardized residuals did not differ significantly from normal, skew = -.02, t(183) = -.12, p > .01; kurtosis = .25, t(183) = .70, p > .01. All significant tests for normality were conducted at alpha = .01, two tailed. The assumption of normal distribution of residuals was met (see Figures 14 and 15).

Figure 14. Histograms of normally distributed residuals in Question 4.
Figure 15. Normal P-P plots of normal distributed residuals in Question 4.

Evaluation of the residual scatterplot indicated that the assumption of homoscedasticity was met. The variance of the residuals at all levels of the independent variables seemed relatively constant. Evaluation of this scatterplot revealed that there was nothing to indicate the non-linearity. The assumption of linearity was met (see Figure 16). The model could generalize to other samples.

Figure 16. Plots of standardized residuals against standardized predicted values in Question 4.
Analysis of test results of Question 4. I recoded the variables of gender, perceived competence in non-native language or culture, and teaching experience. Evaluation of frequency statistics and cross tabulation outcomes indicated that the new variables were successfully created. Table 8 shows the descriptions of independent variables predicting the intercultural competence total scores.

Table 8

*Descriptions of Independent Variables Predicting the Overall CQS Scores (N = 184)*

<table>
<thead>
<tr>
<th>Name</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.77</td>
<td>--</td>
<td>0</td>
<td>1</td>
<td>0 = Male; 1 = Female</td>
</tr>
<tr>
<td>Perceived competence in non-native language or culture</td>
<td>.42</td>
<td>--</td>
<td>0</td>
<td>1</td>
<td>0 = Not feel competent; 1 = Feel competent</td>
</tr>
<tr>
<td>Frequency of interaction with people of diverse backgrounds</td>
<td>3.46</td>
<td>.89</td>
<td>2</td>
<td>5</td>
<td>5-point Likert-type scale from 1 Never to 5 Always</td>
</tr>
<tr>
<td>Teaching experience</td>
<td>.49</td>
<td>--</td>
<td>0</td>
<td>1</td>
<td>0 = No; 1 = Yes</td>
</tr>
</tbody>
</table>

*Note.* Min = minimum; Max = maximum

Among the 184 participants, 77% were female and 49% had teaching experience. There were 42% of participants in this sample who felt competent in using a non-native language or interacting with others of another culture. The average score of frequency of interaction with people of diverse backgrounds was 3.46 ($M = 3.46$, $SD = .89$). I ran the multiple regression analysis using the recoded independent variables. Table 9 shows the results.
Table 9

Regression Analysis for Variables Predicting the Overall CQS Scores (N = 184)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-1.26</td>
<td>2.69</td>
<td>-.03</td>
</tr>
<tr>
<td>Perceived Competence in Non-native Language or Culture</td>
<td>8.33</td>
<td>2.36</td>
<td>.25**</td>
</tr>
<tr>
<td>Frequency of Interaction with People of Diverse Backgrounds</td>
<td>4.18</td>
<td>1.33</td>
<td>.22**</td>
</tr>
<tr>
<td>Teaching Experience</td>
<td>4.59</td>
<td>2.29</td>
<td>.14*</td>
</tr>
</tbody>
</table>

Note. $R^2 = .17$; Adjust $R^2 = .15$. *$p < .05$, **$p < .01$, two tailed. \(^1\)Standard Error of $B$

Concerning the F-test in the ANOVA table, $F = 9.17$, $p < .001$, the model was significant. The model was significantly better at predicting the outcome than the mean. There was a total of 17% of the variance in the pre-service teachers’ levels of intercultural competence that could be explained by the model. When adjusted for sample size and numbers of predictors, the variance explained dropped to 15%.

The test results rejected Null Hypothesis 4. The pre-service teachers’ levels of intercultural competence could be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience.

The independent variables of perceived competence in non-native language or culture and frequency of interaction with people of diverse backgrounds were significant predictors of pre-service teachers’ levels of intercultural competence, $p < .01$, two tailed. The independent variable of teaching experience was a significant predictor of pre-service teachers’ levels of intercultural competence, $p < .05$, two tailed. Students who felt competent in using a non-
native language or interacting with others of another culture scored 8.33 points higher on the CQS than students who did not feel competent in using a non-native language or interacting with others of another culture, holding the other variables constant. For every additional point on the frequency of interaction with people of diverse backgrounds, the pre-service teachers’ levels of intercultural competence increased by 4.18 points, holding the other variables constant. Students who had teaching experience scored 4.59 points higher on the CQS than students who did not have teaching experience, holding the other variables constant. The variable of gender was not a significant predictor of the pre-service teachers’ levels of intercultural competence.

**Analysis of Research Question 5**

Research Question 5: What is the relationship between pre-service teachers’ global-mindedness and the perceived levels of intercultural competence?

Null Hypothesis 5: There is not a statistically significant relationship between the overall scores of GMS and CQS.

**Assumption analysis of Pearson product-moment correlation.** The data of overall GMS and CQS scores were the sum of Likert-type scale scores and were assumed interval. There was no evidence of non-linearity upon the examination of the scatterplot. Data were most certainly not random. Data were assumed independent because there was no information to conclude otherwise. There were a full range of scores on the overall GMS and CQS (see Figure 17).
The distribution of overall GMS scores that ranged from 71 to 145 (\(M = 108.98, SD = 12.61\)) did not differ significantly from normal, skew = -.25, \(t(183) = -1.40, p > .01\); kurtosis = .69, \(t(183) = 1.94, p > .01\). All significant tests for normality were conducted at alpha = .01, two tailed (see Figure 18). The distribution of overall CQS scores that ranged from 49 to 140 (\(M = 92.89, SD = 16.63\)) did not differ significantly from normal, skew = .11, \(t(183) = .59, p > .01\); kurtosis = .12, \(t(183) = .34, p > .01\). All significant tests for normality were conducted at alpha = .01, two tailed (see Figure 19).

**Figure 17.** Scatterplot of scores on the overall GMS with overall CQS.

**Figure 18.** Histogram of overall GMS scores.
**Figure 19.** Histogram of overall CQS scores.

**Analysis of test results of Question 5.** Pearson product-moment correlation was conducted to investigate the relationship between the pre-service teachers’ overall scores of the global-mindedness scale and the cultural intelligence scale. Higher overall GMS scores were associated with higher overall CQS scores, $r(182) = .43$, $p < .001$, two tailed. The moderate, positive, and significant correlation indicated that as overall GMS scores increase or decrease, the overall CQS scores increase or decrease respectively. The test results rejected Null Hypothesis 5. There was a statistically significant positive relationship between the overall scores of GMS and CQS.
CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

This chapter summarizes the findings of the research questions. It depicts how the findings relate to the previous research and discusses their implications for the teacher education programs. It also includes the recommendations for future studies.

Findings and Implications

The study assessed the pre-service teachers’ levels of global-mindedness and intercultural competence using Hett’s (1993) GMS and the Cultural Intelligence Center’s (2005) CQS and investigated the correlation between the two. The study examined whether the individual factors such as gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience were good predictors of pre-service teachers’ global-mindedness and intercultural competence. A demographic questionnaire was used together with GMS and CQS to collect the data. There were a total of 184 students who had declared an education major or minor in the 2012 fall semester at a Midwest state university that participated in this study and returned their completed responses.

Concerning the GMS scores, the top two items with the highest mean scores were GMS 8 and GMS 15. The content of GMS 8 was “Americans can learn something of value from all different cultures,” and the content of GMS 15 was “It is very important to me to choose a
career in which I can have a positive effect on the quality of life for future generations.” GMS 8 was in the category of cultural pluralism, and GMS 15 belonged to the category of efficacy. According to Hett (1993), cultural pluralism was an appreciation of different cultures, and efficacy was a commitment to participate in the global activities to make the world better. The bottom two items with the lowest mean scores were GMS 5 and GMS 10. The content of GMS 5 was “The needs of the United States must continue to be our highest priority in negotiating with other countries,” and the content of GMS 10 was “Americans should be permitted to pursue the standard of living they can afford if it only has a slight negative impact on the environment.” GMS 5 and GMS 10 were in the category of globalcentrism. Hett (1993) defined it as a tradition of thinking and behaving globally rather than locally. Because the pre-service teachers scored lowest on globalcentrism, colleges and universities should go further to develop pre-service teachers’ global sensitivities to embrace the global society.

Concerning CQS scores, the top two items with the highest mean scores were motivational CQ 1 and metacognitive CQ 2. The content of motivational CQ 1 was “I enjoy interacting with people from different cultures,” and the content of metacognitive CQ 2 was “I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.” According to Van Dyne et al. (2008), motivational CQ addresses a person’s inner drive to behave appropriately in a new cultural scenario, and metacognitive CQ is a person’s pre-planning strategies of an interaction with people from different cultures. The bottom two items with the lowest mean scores were cognitive CQ 1 and cognitive CQ 2. The content of cognitive CQ 1 was “I know the legal and economic systems of other cultures,” and the content of cognitive CQ 2 was “I know the rules (e.g., vocabulary, grammar) of other languages.” Cognitive CQ addresses a person’s comprehension of different languages and cultures (Van
Because the pre-service teachers scored lowest on cognitive CQ, colleges and universities should equip pre-service teachers with an abundance of knowledge on languages and cultures in order to prepare qualified global scholars and practitioners for the 21st century classroom.

Using SPSS, the study explored five research questions:

1. Is there a statistically significant difference in the mean scores on any of the five latent variables of global-mindedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors)?

2. Is there a statistically significant difference in the mean scores on any of the four latent variables of cultural intelligence between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors)?

3. Can pre-service teachers’ levels of global-mindedness be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience?

4. Can pre-service teachers’ levels of intercultural competence be predicted from demographic variables of (a) gender, (b) perceived competence in non-native language or culture, (c) frequency of interaction with people of diverse backgrounds, and (d) teaching experience?

5. What is the relationship between pre-service teachers’ global-mindedness and the perceived levels of intercultural competence?
Findings and Implications of Question 1

I ran a multivariate analysis of variance (MANOVA) test for Question 1. The MANOVA test was not significant, $p > .05$, two tailed. I stopped and did not run the follow-up ANOVA tests on each of the dependent variables and the follow-up discriminant function analysis because the MANOVA test was not significant.

The test results failed to reject Null Hypothesis 1: There is not a statistically significant difference in the mean scores on any of the five latent variables of (a) responsibility, (b) cultural pluralism, (c) efficacy, (d) globalcentrism, and (e) interconnectedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors). In this model, there was not a statistically significant difference in the mean scores on any of the five latent variables of global-mindedness between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors).

The research results showed that students who had declared an education major or minor at a Midwest state university in the United States had consistent scores on the five latent variables of the GMS, regardless of their class standings. The results did not confirm Hett’s (1993) statement that higher GMS students would be juniors or seniors in college. However, there was a limitation for this study. Group 1 students were freshmen and sophomores; Group 2 students were juniors and seniors. The sophomores and juniors were so close in grade level, but they were assigned into two groups. This may be a bias in this research. Further research is needed to investigate the bipolar groups, such as freshmen and seniors, to see whether there is a statistically significant difference in the mean scores on any of the five latent variables of (a) responsibility, (b) cultural pluralism, (c) efficacy, (d) globalcentrism, and (e)
interconnectedness between the bipolar groups. There is also a need to conduct this research on different samples across the country.

**Findings and Implications of Question 2**

I ran a MANOVA test for Question 2. The MANOVA test was not significant, \( p > .05 \), two tailed. I stopped and did not run the follow-up ANOVA tests on each of the dependent variables and the follow-up discriminant function analysis because the MANOVA test was not significant.

The test results failed to reject Null Hypothesis 2: There is not a statistically significant difference in the mean scores on any of the four latent variables of (a) metacognitive CQ, (b) cognitive CQ, (c) motivational CQ, and (d) behavioral CQ between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors). In this model, there was not a statistically significant difference in the mean scores on any of the four latent variables of cultural intelligence between pre-service teachers in Group 1 (freshmen and sophomores) and those in Group 2 (juniors and seniors).

The research result showed that students who had declared an education major or minor in the 2012 fall semester at a Midwest state university in the United States had consistent scores on the four latent variables of the CQS, regardless of their class standings. As in the discussion for the preceding research question, a limitation was found for this study. Group 1 students were freshmen and sophomores; Group 2 students were juniors and seniors. The sophomores and juniors were so close in grade level, but they were assigned into two groups. This may be a bias in this research. Further research is needed to investigate the bipolar groups, such as freshmen and seniors, to see whether there is a statistically significant difference in the mean scores on any of the four latent variables of (a) metacognitive CQ, (b) cognitive CQ, (c)
motivational CQ, and (d) behavioral CQ between the bipolar groups. There is also a need to conduct this research on different samples across the country.

Findings and Implications of Question 3

I ran a multiple regression test for Question 3. Concerning the F-test in the ANOVA table, $F = 7.54, p < .001$, the model was significant. The test results rejected Null Hypothesis 3: Gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience do not predict a significant proportion of the variance in global-mindedness total scores. The independent variables of gender, perceived competence in non-native language or culture, and teaching experience were significant predictors of the pre-service teachers’ levels of global-mindedness.

Female students scored higher on the GMS than male students. This result concurred with Hett’s (1993) and Zhai and Scheer’s (2004) findings. Hett’s study (1993) suggested that women would score higher on the GMS than men. Zhai and Scheer’s study (2004) stated that female students are more sensitive towards global issues.

Students who felt competent in using a non-native language or interacting with others of another culture scored higher on the GMS than students who did not feel competent in using a non-native language or interacting with others of another culture. This confirmed Hett’s (1993) findings that higher GMS students would be proficient in a second language. This explained why the National Governor’s Association (1989) proposed that college and university graduates must be familiar with or fluent in non-native languages and cultures to be ready to meet the challenge of global communication and global business. Lambert (1989) asserted that foreign language courses are the beginning of international studies. Colleges and universities should provide sufficient non-native language and cultural courses for students and focus on students’
proficiency in non-native language teaching and learning. In the meantime, culture-related courses, such as intercultural communication and adaptation to multicultural learners, are helpful to develop pre-service teachers’ global-mindedness. Campus offices, such as the Department of International Affairs, should organize activities to engage students in experiencing different cultures. Colleges and universities should host students with different cultures and provide opportunities for those students to exhibit their cultures and interact with each other.

Students who had teaching experience scored higher on the GMS than students who did not have teaching experience. This concurred with Acolatse’s (2010) statement that teaching experience displayed a positive interaction with GMS scores. Teacher education programs in colleges and universities should establish good relationships with school districts to engage pre-service teachers to participate in practical teaching. Teacher educators and administrators should build field observations, practica, student teaching, and internships into their curricula to prepare future teachers with a more positive attitude toward global issues. The supervisors of student teachers should remind the pre-service teachers that the United States of America is a country of immigration. The students in their future classrooms may have different language and cultural backgrounds. Multilingual and multicultural students are not rare in school. Future teachers should be ready to work with students of diverse backgrounds and develop global-mindedness through interaction with the students in their classrooms.

The variable of frequency of interaction with people of diverse backgrounds was not a significant predictor of the pre-service teachers’ levels of global-mindedness in this model. There were other variables that might affect the pre-service teachers’ levels of global-mindedness, such as the length of study abroad experience and the number of global courses
taken, that were not included in the model. Further research should take into account those factors that would impact the overall GMS scores.

**Findings and Implications of Question 4**

I ran a multiple regression test for Question 4. Concerning the F-test in the ANOVA table, $F = 9.17, p < .001$, the model was significant. The test results rejected Null Hypothesis 4: Gender, perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience do not predict a significant proportion of the variance in cultural intelligence total scores. The independent variables of perceived competence in non-native language or culture, frequency of interaction with people of diverse backgrounds, and teaching experience were significant predictors of pre-service teachers’ levels of intercultural competence.

Students who felt competent in using a non-native language or interacting with others of another culture scored higher on the CQS than students who did not feel competent in using a non-native language or interacting with others of another culture. The research results supported Shannon and Begley’s (2008) findings that multilingual students are likely to use language as a method to gather intercultural knowledge. The results concurred with Báez’s (2012) research results that a university’s Spanish 101 course made a significant difference between students’ pre-test and post-test mean scores concerning cognitive, motivational, and behavioral dimensions of the CQS. Sercu (2005) stated that the willingness to engage with foreign cultures is one of the characteristics of interculturally competent students. Colleges and universities should make great efforts to maintain and extend non-native language courses for the sake of developing students’ intercultural competence. Colleges and universities should continue to recruit students from other cultures to enhance diversity on campus. Deardoff
(2011) suggested designing appropriate media to bring American and international students together. University departments, such as the Office of Overseas Studies and the Office of Global Programs, should encourage students to participate in domestic and study abroad exchange programs to develop intercultural competence.

The pre-service teachers’ levels of intercultural competence increased with additional points on the frequency of interaction with people of diverse backgrounds. One must be reminded that the independent factor of the frequency of interaction with people of diverse backgrounds was self-reported and there was no criterion given to establish a basis for judgment in terms of frequency. The research results were in accordance with Tarique and Takeuchi’s (2008) findings that intercultural exposure is one of the factors that contributes to the development of cultural intelligence. Deardoff (2011) proposed to bring American and international students together through meaningful interaction on campus. Experiential learning is critical in developing pre-service teachers’ intercultural competence. Caine and Caine (2006) stated that students develop awareness and become mature in the solutions that are relevant to them. A collaborative approach is most consistent with an experiential perspective and is the most appropriate way to present meaningful interaction (Posner, 2004). Colleges and universities should continue creating more opportunities to engage students who were not very successful in their global-mindedness and intercultural competence to collaborate with each other and participate in activities on and off campus. Faculty members should continue designing appropriate projects and assignments to encourage their students to interact with people of diverse backgrounds. Deardorff (2011) stated that there were two ways to develop intercultural competence. One was through the curriculum; the other was through co-curricular activities. University offices, such as the Office of Diversity Management and Equal
Opportunity, should sponsor more co-curricular activities to involve domestic and international students.

Students who had teaching experience scored higher on the CQS than students who did not have teaching experience. The United States of America is a country of diversity. Students in the classroom are from different ethnic groups and have different language and cultural backgrounds. Interaction with the students of diverse backgrounds in a classroom can assist pre-service teachers to develop their intercultural competence. Teacher education programs in colleges and universities should highlight the role of student teaching and accommodate the future teachers with real classroom teaching experience as early as possible.

The variable of gender was not a significant predictor of the pre-service teachers’ levels of intercultural competence in this model. There were other variables that might affect the pre-service teachers’ levels of intercultural competence, such as the number of culturally-oriented courses and the number of friends from other countries, that were not included in the model. Further research should take into account other factors that would impact the overall CQS scores. For instance, Hett (1993) suggested that interaction with persons from other countries and cultures might influence scores.

Findings and Implications of Question 5

I ran the Pearson product-moment correlation to investigate the relationship between the pre-service teachers’ overall scores of the global-mindedness scale and the cultural intelligence scale. The test was significant, $r(182) = .43, p < .001$, two tailed. The test results rejected Null Hypothesis 5: There is not a statistically significant relationship between the overall scores of GMS and CQS. In this model, higher overall GMS scores were associated with higher overall CQS scores. The moderate, positive, and significant correlation indicated that as overall GMS
scores increase or decrease, the overall CQS scores increase or decrease respectively, and vice versa.

Review of the literature showed that there were few research studies that addressed the relationship between the pre-service teachers’ levels of the global-mindedness and intercultural competence. A similar study was conducted by Acolatse (2010) to investigate global-mindedness and multicultural attitudes of 102 teacher candidates in a Mid-Atlantic university using GMS and the Teacher Multicultural Attitude Survey as data collection instruments. The research showed a positive relationship between GMS and TMAS scores.

Cultural pluralism was one of the dimensions in Hett’s (1993) GMS. It was a comprehension of different cultures and a willingness to appreciate the difference between cultures (Hett, 1993). Cultural intelligence is the capability of communicating effectively in a new culture scenario, using cognitive and metacognitive strategies (Ang et al., 2007). This empirical study revealed that GMS and CQS were correlated. They are valid instruments to assess the pre-service teachers’ cultural sensitivities. The higher GMS scores were associated with higher CQS scores. This study suggested that there were certain variables, such as perceived competence in non-native language or culture and teaching experience, that were good predictors for both GMS and CQS. A qualified teacher candidate should be successful in both global-mindedness and intercultural competence to meet the challenge of global education. Past researchers have studied the levels of global-mindedness and intercultural competence separately. However, this research focused on pre-service teachers’ levels of global-mindedness and intercultural competence and investigated the correlation between the two. The findings of the moderate, positive, and significant relationship between the pre-service
teachers’ overall scores of the GMS and the CQS in this study added to the literature on global education and cultural education.

**Recommendations for Future Research**

Though the findings of the research revealed pre-service teachers’ global-mindedness and intercultural competence and added to the knowledge base, there is more research that needs to be conducted to promote a deeper understanding of this topic. Further research will analyze a full range of effects on the development of global mindedness and intercultural competence. Suggestions for future research follow.

Future studies may replicate this study using different samples to test all the hypotheses. For instance, one might look at a setting with more cultural diversity or a setting in another country. Because the frequency of interaction with people of diverse backgrounds data were self-reported, it would be interesting to establish criteria to define interactions and then run the study again to learn if the findings hold. In concert with this, one could also examine how the teaching experience factor is influenced by the amount of time teaching or time teaching in diverse settings. For the individual factor of class standing, future researchers may divide the participants into different groups, such as bipolar groups, or examine all four class standings instead. If all four class standings were examined, then bipolar groups could be pulled from the data. Next, future studies may focus on a comparative study of pre-service teachers’ and in-service teachers’ levels of global-mindedness and intercultural competence to find whether there are some differences between the two groups. When compared, a positive correlation was found between the two scales (GMS and CQS); it would be interesting to investigate whether the correlation remains positive for other groups such as in-service teachers with six or more years of teaching experience. Future researchers may use different research methods to
investigate people’s global-mindedness and intercultural competence. For instance, a mixed-methods approach would allow both quantitative and qualitative data inputs to be woven together to bring broader understanding. In addition, future researchers may select other effective instruments to assess the pre-service teachers’ global-mindedness and intercultural competence, perhaps then comparing the research results with those in this study.
REFERENCES


*Journal of Sociology & Social Welfare, 34*(1), 63-82.


APPENDIX A: GLOBAL-MINDEDNESS SCALE (GMS)

On the following pages you will find a series of statements. Please read each statement and decide whether or not you agree with it. Then circle the response that most reflects your opinion. There are no “correct” answers.

Strongly Disagree = 1, Disagree = 2, Unsure = 3, Agree = 4, Strongly Agree = 5

1. I generally find it stimulating to spend an evening talking with people from another culture.  
   SD D U A SA
   1 2 3 4 5

2. I feel an obligation to speak out when I see our government doing something I consider wrong internationally.  
   SD D U A SA
   1 2 3 4 5

3. The United States is enriched by the fact that it is comprised of many people from different cultures and countries.  
   SD D U A SA
   1 2 3 4 5

4. Really, there is nothing I can do about the problems of the world.  
   SD D U A SA
   1 2 3 4 5

5. The needs of the United States must continue to be our highest priority in negotiating with other countries.  
   SD D U A SA
   1 2 3 4 5

6. I often think about the kind of world we are creating for future generations.  
   SD D U A SA
   1 2 3 4 5

7. When I hear that thousands of people are starving in an African county, I feel very frustrated.  
   SD D U A SA
   1 2 3 4 5

8. Americans can learn something of value from all different cultures.  
   SD D U A SA
   1 2 3 4 5

9. Generally, an individual’s actions are too small to have a significant effect on the global ecosystem.  
   SD D U A SA
   1 2 3 4 5
10. Americans should be permitted to pursue the standard of living they can afford if it only has a slight negative impact on the environment.

11. I think of myself, not only as a citizen of my county but also as a citizen of the world.

12. When I see the conditions some people in the world live under, I feel a responsibility to do something about it.

13. I enjoy trying to understand people’s behavior in the context of their culture.

14. My opinions about national policies are based on how those policies might affect the rest of the world as well as the United States.

15. It is very important to me to choose a career in which I can have a positive effect on the quality of life for future generations.

16. American values are probably the best.

17. In the long run, America will probably benefit from the fact that the world is becoming more interconnected.

18. The fact that a flood can kill 50,000 people in Bangladesh is very depressing to me.

19. It is important that American universities and colleges provide programs designed to promote understanding among students of different ethnic and cultural backgrounds.

20. I think my behavior can impact people in other countries.

21. The present distribution of the world’s wealth and resources should be maintained because it promotes survival of the fittest.

22. I feel a strong kinship with the worldwide human family.

23. I feel very concerned about the lives of people who live in politically repressive regimes.

24. It is important that we educate people to understand the impact that current policies might have on future generations.
25. It is not really important to me to consider myself as a member of the global community. 1 2 3 4 5

26. I sometimes try to imagine how a person who is always hungry must feel. 1 2 3 4 5
27. I have very little in common with people in underdeveloped nations. 1 2 3 4 5

28. I am able to affect what happens on a global level by what I do in my own community. 1 2 3 4 5

29. I sometimes feel irritated with people from other countries because they don’t understand how we do things. 1 2 3 4 5

30. Americans have a moral obligation to share their wealth with the less fortunate peoples of the world. 1 2 3 4 5

SCORING KEY: Reverse score items: 4, 5, 9, 10, 16, 21, 25, 27 and 29

SCORING: *Range of scores 30 – 150

*Sum all responses

*Higher scores indicate a higher level of global-mindedness

ITEMS REFLECTING THEORETICAL DIMENSIONS

RESPONSIBILITY: 2, 7, 12, 18, 23, 26, 30

CULTURAL PLURALISM: 1, 3, 8, 13, 14, 19, 24, 27

EFFICACY: 4, 9, 15, 20, 28

GLOBALCENTRISM: 5, 10, 16, 21, 29

INTERCONNECTEDNESS: 6, 11, 17, 22, 25
APPENDIX B: THE CULTURAL INTELLIGENCE SCALE (CQS)

Read each statement and select the response that best describes your capabilities. Select the answer that BEST describes you AS YOU REALLY ARE (1 = strongly disagree; 7 = strongly agree)

<table>
<thead>
<tr>
<th>CQ Factor</th>
<th>Questionnaire Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metacognitive CQ:</td>
<td></td>
</tr>
<tr>
<td>MC1</td>
<td>I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.</td>
</tr>
<tr>
<td>MC2</td>
<td>I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.</td>
</tr>
<tr>
<td>MC3</td>
<td>I am conscious of the cultural knowledge I apply to cross-cultural interactions.</td>
</tr>
<tr>
<td>MC4</td>
<td>I check the accuracy of my cultural knowledge as I interact with people from different cultures.</td>
</tr>
<tr>
<td>Cognitive CQ:</td>
<td></td>
</tr>
<tr>
<td>COG1</td>
<td>I know the legal and economic systems of other cultures.</td>
</tr>
<tr>
<td>COG2</td>
<td>I know the rules (e.g., vocabulary, grammar) of other languages.</td>
</tr>
<tr>
<td>COG3</td>
<td>I know the cultural values and religious beliefs of other cultures.</td>
</tr>
<tr>
<td>COG4</td>
<td>I know the marriage systems of other cultures.</td>
</tr>
<tr>
<td>COG5</td>
<td>I know the arts and crafts of other cultures.</td>
</tr>
<tr>
<td>COG6</td>
<td>I know the rules for expressing nonverbal behaviors in other cultures.</td>
</tr>
<tr>
<td>Motivational CQ:</td>
<td></td>
</tr>
<tr>
<td>MOT1</td>
<td>I enjoy interacting with people from different cultures.</td>
</tr>
<tr>
<td>MOT2</td>
<td>I am confident that I can socialize with locals in a culture that is unfamiliar to me.</td>
</tr>
<tr>
<td>MOT3</td>
<td>I am sure I can deal with the stresses of adjusting to a culture that is new to me.</td>
</tr>
<tr>
<td>MOT4</td>
<td>I enjoy living in cultures that are unfamiliar to me.</td>
</tr>
<tr>
<td>MOT5</td>
<td>I am confident that I can get accustomed to the shopping conditions in a different culture.</td>
</tr>
<tr>
<td>Behavioral CQ</td>
<td></td>
</tr>
<tr>
<td>BEH1</td>
<td>I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.</td>
</tr>
<tr>
<td>BEH2</td>
<td>I use pause and silence differently to suit different cross-cultural situations.</td>
</tr>
<tr>
<td>BEH3</td>
<td>I vary the rate of my speaking when a cross-cultural situation requires it.</td>
</tr>
</tbody>
</table>
BEH4  I change my nonverbal behavior when a cross-cultural situation requires it.
BEH5  I alter my facial expressions when a cross-cultural interaction requires it.

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Note: Use of this scale granted to academic researchers for research purposes only. For information on using the scale for purposes other than academic research (e.g., consultants and non-academic organizations), please send an email to cquery@culturalq.com. The Chinese version of the scales is available on the MOR website.
APPENDIX C: DEMOGRAPHIC QUESTIONNAIRE

1. Gender: 1 Male _________ 2 Female _________

2. Class standing: 1 Freshman _____ 2 Sophomore _____ 3 Junior _____ 4 Senior _____

3. Perceived competence in non-native language or culture:
   ______ 1 I feel competent in using a non-native language or interacting with others of another culture.
   ______ 2 I do not feel competent in using a non-native language or interacting with others of another culture.

4. Frequency of interaction with people of diverse backgrounds:
   1 Never _____ 2 Seldom_____ 3 Occasionally_____ 4 Often_____ 5 Always_____ 

5. Teaching experience:
   1 No _____ 2 Yes _____
APPENDIX D: LETTER OF REQUEST

201 Crawford St. Apt. 405
Terre Haute, IN 47807

April 6, 2011

Dear Dr. Dallas Boggs,

I am writing to Dr. Boggs who owns the copyright of Dr. E. Jane Hett’s dissertation –

*The development of an instrument to measure global-mindedness.*


Dr. E. Jane Hett’s Global-Mindedness Scale fits my research study very well. It would allow me to collect the necessary data for my study, and I would love to be able to use it in continuing my research. I understand that you are the contact people regarding this request. Please let me know how to proceed in order to obtain permission to use the scale. I would be happy to answer any questions on this matter if you need additional information from me.

I appreciate your consideration in this matter and look forward to your reply.

Sincerely,

Qi Cui

qcui@sycamores.indstate.edu
812-237-7439
From: Dallas Boggs

Sent: Saturday, April 23, 2011 11:53

To: Qi Cui

Subject: RE: Request of using Global-Mindedness Scale (GMS)

Dear Qi Cui,

You have my permission to use my late wife Jane Hett's Global -Mindedness scale in any way that you see fit.

Best of luck with your dissertation.

Dallas B. Boggs
To whom it may concern,

I am a doctoral candidate in the Bayh College of Education at Indiana State University. My dissertation concerns pre-service teachers’ global-mindedness and intercultural competence.

Your Cultural Intelligence Scale (CQS) © would allow me to collect the necessary data for my study, and I would love to be able to use it in continuing my research. Please let me know how to proceed with obtaining the permission I need and if there are any updated versions of the scale. I am available to answer any questions you may have in regards to how I will use CQS.

Thank you for considering my request. I look forward to hearing from you.

Sincerely,

Qi Cui

qcui@sycamores.indstate.edu

812-237-7439
From: Linn Van Dyne [vandyne@culturalq.com]

Sent: Monday, April 18, 2011 17:42

To: Qi Cui

Subject: RE: Request for using Cultural Intelligence Scale (CQS)

Hello Qi Cui,

We are delighted that you want to use the 20-items CQS in your dissertation. Although the scale is copyrighted and cannot be used for consulting or evaluation, we make it freely available for scholarly research aimed at publication in research journals. Accordingly, you have my permission to use the scale in your dissertation.

Best wishes with your research and please keep in touch so that we can learn about your findings.

Linn Van Dyne

Cultural Intelligence Center

vandyne@culturalq.com

For research papers - see

   http://linnvandyne.com

For information on cultural intelligence - see

   http://culturalq.com