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A comparative study of student engagement, satisfaction, and academic success among international and American students

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A comparative study of student engagement, satisfaction, and academic success among international and American students

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To My Mother

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ABSTRACT

Higher education is becoming increasingly globalized and internationalized, and the number of international students studying in U.S. institutions of higher education is continuously growing. International students contribute to their own success, campus diversity, campus internationalization, and the U.S. economy. However, it is not merely enough to bring international students—it is critical to serve them, retain them, and graduate them. Programs and services that stimulate international student engagement in educationally purposeful activities are crucial. Student engagement in effective educational practices is associated with high levels of learning and personal development. While student engagement has been studied extensively for American students, this is not the case for international students. The purpose of this study was to examine the relationship between student engagement and student satisfaction and the academic success of international and American students using 2008 National Survey of Student Engagement (NSSE) data. Specifically, it investigated how institutional type (classification and control) and critical mass (percentage of international students and academic major) affect student engagement (represented by five NSSE benchmarks) and how student engagement affects student satisfaction and academic success. In addition, this study compared student engagement of international and American students.

This study is significant for research by informing the audience about the extent to which international students are satisfied with their experiences, how they interact with peers and faculty, and how they participate in educational activities. It contributes to policy by informing institutions how funds should be allocated toward particular effective educational practices and to practice by informing administrators, faculty, and staff about

what international students do while they are in college thus informing them how to intervene in order to improve their experience while studying in the U.S. In addition, this study informs professional organizations and graduate leadership programs in higher education regarding specialized opportunities that could be offered for international educators' professional development. Findings could be also used by international students and parents to inform them of effective education practices that could improve their student engagement, satisfaction, and consequently, their academic success.

CHAPTER 1. INTRODUCTION

Introduction

Friedman (2005) argued that the collapse of the Berlin Wall as well as growth in internet and digitization, workflow software, outsourcing/insourcing, and offshoring all contributed to leveling the global playing field. The world is now flat, and we all need to embrace the perceptual shift in order to survive, compete, and strive in this world (Friedman, 2005). He also connected globalization to higher education, emphasizing global collaboration and the importance of teaching students how to collaborate on research and work in real time without regard to geography, distance, or language. It is beyond doubt that higher education is increasingly becoming globalized and internationalized.

In 2010-2011, 723,277 international students were enrolled in U.S. institutions of higher education (Institute of International Education, 2012) which was about 4.7% over the previous year. Recent trends in the increase of students have been especially evident among students from China (from 59K in 2000-2001 to 127K in 2009-2010) and India (from 54K in 2000-2001 to 104K in 2009-2010) (Institute of International Education, 2011). With a burgeoning middle class rapidly expanding in Shanghai, Seoul, Delhi, and Taipei among others, studying abroad for international students is becoming more widespread, and it is predicted that this number will continue to grow (Fischer, 2011).

The presence of international students on U.S. campuses greatly contributes to their own academic and career success, exposes domestic students to modern international trends, and teaches domestic students how to work with someone different from themselves. It also contributes to the diversity and internationalization of

institutions and contributes to the overall economy. Student-body diversity was found to be indirectly related to gains in understanding people from diverse backgrounds, acting through information interactional diversity (Pike, Kuh, & Gonyea, 2007). International students choose to study in the U.S. for academic excellence, a variety of educational opportunities, cutting-edge technology, opportunities for research, flexibility, support services, global education, career prospects, and campus life experiences among other reasons (Envisage International Corporation, 2011). In addition, according to Lee (2007), international students can also broaden perspectives of domestic students by increasing their appreciation for cultures other than their own. The presence of international students on campuses contributes greatly to all aspects of campus internationalization (Altbach & Knight, 2007; Knight, 2006; Knight & deWitt, 1995), including the process of integrating an international, intercultural, or global dimension into the purpose, function or delivery of postsecondary education (as defined by Knight, 2003). Finally, international students bring in nearly $20 billion to the U.S. economy (Institute of International Education, 2011), placing higher education among one of the highest U.S. exports.

However, it is not merely enough to recruit international students to study in U.S. institutions of higher education; it is critical to serve them, retain them, and graduate them. The Associate Provost for International Programs at one institution said, "If colleges aren't responding to international student needs, then we're wasting our time and money recruiting them" (Fischer, 2011). As Byrd (1991) stated, along with selection of appropriate students, appropriateness of the services provided to meet their particular needs is critical for their retention. Assuring their successful academic and social

experiences becomes vital. Student engagement has been linked to academic success for American students in previous literature and has been studied extensively (Astin, 1977 & 1993; Chickering, 1969; Chickering & Gamson, 1987; Ewell & Jones, 1996; Pascarella & Terenzini, 2005).

Nevertheless, literature is silent on the extent to which international students engage in educational practices other than academic achievement (Zhao, Kuh, & Carini, 2005). The majority of literature centers on challenges they face adapting to the new living and learning environment. Thus, in their study Zhao, Kuh, and Carini (2005) focused on the extent of which international students engage in effective educational practices by comparing activities of international undergraduate students with American students in selected areas related to student learning, personal development, and satisfaction with college. Based on recommendations from their study, this study addressed similar issues. This study replicated some of their study using the latest available data and examined international student engagement further using different variables. Thus, this study used National Survey of Student Engagement (NSSE) data. NSSE annually collects information about student participation in programs and activities that four-year institutions provide for student learning and personal development. This information is collected directly from students using the College Student Report. NSSE data are used by institutions to assess and improve undergraduate education by changing their practices and policies to be more aligned with good practices in undergraduate education. The data also informs students, parents, counselors, advisers, and researchers about what students do while they are in college and what they gain from their experiences.

Problem

The number of international students enrolled in U.S. institutions of higher education is continually increasing. However, merely increasing this number will not necessarily enhance the quality of many aspects of the undergraduate experience (Chang, 2002). Programs and services that stimulate the engagement of international and American students and the involvement of international students in educationally purposeful activities are crucial.

While the number of international students is increasing, their profiles are changing: a typical undergraduate student is young, from Asia (particularly, from East Asia, China, or India), and has sufficient financial support from family, as opposed to more mature students financed by scholarships that used to prevail in the past. Consequently, many institutions are re-examining their international student services to be more responsive "to this new breed of students' academic, social, and emotional needs" (Fischer, 2011, para. 5). In addition to selecting appropriate international students for admission, institutions must also provide appropriate services to meet their particular needs in order to serve, retain, and graduate them (Byrd, 1991). Such needs include poor language skills, frequent plagiarism, being unaccustomed to questioning professors, an unfamiliarity with group work, understanding or being a part of country or ethnic-specific cliques, a cultural rejection of counseling, and a need for sexual education, among others. Thus, it is critical for institutions to address these matters to assure successful academic and social experiences for these students. Previous literature has linked student engagement in effective educational practices with high levels of learning and personal development. Chickering and Gamson (1987) identified seven principles based on

research for good teaching and learning: encouragement of contact between students and faculty, development of reciprocity and cooperation among students, encouragement of active learning, giving prompt feedback, emphasis of time on task, communication of high expectations, and respect of diverse talents and ways of learning.

Literature has also linked student engagement in effective educational practices with academic success for American students and has been studied extensively (Astin, 1977, 1993; Chickering, 1969; Chickering & Gamson, 1987; Ewell & Jones, 1996; Pascarella & Terenzini, 2005). However, no literature was found on the extent to which international students engage in educational practices other than academic achievement (Zhao, Kuh, & Carini, 2005; Yebei, 2011). The majority of literature studies the challenges they face adapting to the new living and learning environment. Mori (2001) studied psychological problems and mental health, Aubrey (1991) discussed special issues in counseling, Dillard and Chisolm (1983) examined how the culture of international students influenced their behavior in and out of a counseling situation, and Kwon (2009) examined factors affecting international students' transitions to higher education institutions, among others.

In addition, in their study, Zhao, Kuh, and Carini (2005) did examine the extent to which international students engage in effective educational practices. They compared activities of international undergraduate students with American students in selected areas that research showed are related to student learning, personal development, and satisfaction with college. Their study revealed previously unknown aspects of international students' engagement in educationally purposeful activities. The authors found that international students are more engaged than American students in such

activities, particularly freshmen, and they report gaining more in their desired outcomes of college; however, by their senior year, the engagement patterns of international and American students were more alike.

Zhao, Kuh, and Carini (2005) suggested further study to explore the group differences within the international student by country of origin to understand how and why density affects student engagement on campuses, to determine the factors that contribute to Asian students spending more time socializing and less time participating in diversity-related activities than other international students, and to study why international students perceive their campus to be less supportive as their proportion increases. This study replicated some of their study using the latest available data (2008 as opposed to 2001). In addition, it examined international student engagement further using different variables. The findings inform administrators, faculty, and staff about what current international students do while they are in college, thus informing them how to intervene in order to improve their experience while studying in the U.S.

Purpose of the Study

The purpose of this study was to examine the relationship between student engagement and student satisfaction and academic success of international and American students using NSSE data. Specifically, it investigated how institutional type (classification and control) and critical mass (percentage of international students and academic major) affect student engagement (represented by five NSSE benchmarks) and how student engagement affects student satisfaction and academic success. In addition, this study compared student engagement of international and American students.

Zhao, Kuh, and Carini (2005) compared "the activities of international undergraduate students with American students in selected areas that research shows is related to student learning, personal development, and satisfaction with college, including the degree to which they perceive their campus to be supportive of academic and social needs" (p. 211). In addition, they examined self-reporting gains in personal and social development, general education, and job related skills. This study replicated some of their study using the latest available data and examined international student engagement further using different variables, specifically, how does critical mass (percentage of international students and academic major) affect student engagement, satisfaction, and gains, among others.

First, the effect of institutional type (classification and control) on student engagement were examined. Carnegie classification and control (public vs. private) were provided by the Indiana University Center for Postsecondary Research (IUCPR). Carnegie classification was developed by the Carnegie Foundation for the Advancement of Teaching with a goal to attract attention and emphasize the importance of the significant institutional diversity of U.S. higher education. It "provided a way to represent the diversity by grouping roughly comparable institutions into meaningful, analytically manageable categories" (McCormick & Zhao, 2005). Carnegie classification is widely used by researchers in higher education. It was first published in 1973 and has been redesigned six times since then.

Second, the effect of critical mass (percentage of international students and academic major) on student engagement was examined. Critical mass in higher education generally refers to the level of representation that brings comfort or familiarity

within the education environment (Hagedorn et al., 2007). Zhao, Kuh, and Carini (2005) suggested that because international students devote more time than American students to academics, critical mass of international students is expected to have consistently positive effects on other aspects of student engagement. They found that as the proportion of international students increases, both international and American students report more experiences with diversity. However, at the same time, both international and American students perceive their campus to be less supportive. Weick (1979) offered one possible explanation for that—negative amplification—where focusing on the disappointment of others leads to interpretation of one's own neutral situation as disappointing as well. Disappointments that students experience in college are discussed with their peers, leading to their growth in magnitude and possibly proportion. Critical mass, as a percentage of international students, was provided by IUCPR.

With reference to the affect of academic major on student engagement, Kuh (2003) suggested that major-field specific outcomes could and should be looked at as they link with student engagement. In addition, Harper (2004) proposed that the relationship between engagement, academic major selection, and the development of career aspirations also should be explored further. The top fields of study for international students in the U.S. in 2009-2010 were Business/Management (21.1%), Engineering (18.4%), Physical/Life Sciences (8.9%), Math and Computer Sciences (8.8%), Social Sciences (8.7%), Fine and Applied Arts (5.2%), and Health Professions (4.6%) (Institute of International Education, 2011). Enrollment in Agriculture increased by 15.1% from 2008-2009 to 2009-2010, Math and Computer Sciences by 7.8%, Engineering by 7.1%, and Social Sciences by 4.4%; while it decreased in Intensive

English Language by 8.6%, Health professions by 8.4%, and Humanities by 6.2% (Institute of International Education, 2011). International students need different sets of skills and they behave differently depending on their major; consequently, their student engagement might differ as well. Thus, academic major was an important and critical variable when examining student engagement and as such is one of the variables in the survey.

Finally, the study looked at how background characteristics, institutional type, critical mass, and student engagement affect student satisfaction and academic success.

Research Questions

The study was guided by the following research questions:

1. What are the demographics of international and American students in the U.S. institutions of higher education who responded to 2008 NSSE survey?
2. How does enrollment of international and American students differ by the critical mass measured by proportion of international students and academic major?
3. How does enrollment of international and American students differ by institutional classification measured by institutional type and institutional control?
4. What is the association between enrollment of international and American students and the critical mass measured by proportion of international students and academic major?
5. What is the association between enrollment of international and American students and institutional classification measured by institutional type and institutional control?

6. What is the interrelationship among the variables that measure the five NSSE benchmarks of effective educational practice for international and American students during their senior year?
7. What are the levels of satisfaction with entire educational experience at this institution of international and American students during their senior year? Is there a statistically significant difference in the level of satisfaction between international and American students during their first and senior years?
8. What is the academic success measured by most of the grades up to now at this institution of international and American students during their senior year? Is there a statistically significant difference in the academic success between international and American students during their first and senior years?
9. Is there a statistically significant difference between international and American students in the levels of student engagement as represented by new benchmarks during their senior year?
10. To what extent can student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice predict the levels of satisfaction with the entire educational experience at this institution during their senior year?
11. To what extent can student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective

educational practice predict the academic success measured by most of the grades up to now at this institution?

Conceptual and Theoretical Framework

Conceptual Framework

To develop a framework for this study, Astin's (1962, 1993, 1999) Input-Environment-Output (I-E-O) model and theory of involvement was used as a conceptual framework for studying student development. According to this model, college outcomes are functions of three sets of elements: inputs, environment, and outcomes. Astin (1993) states that "inputs refer to characteristics of the student at the time of initial entry to the institution; environment refers to the various programs, policies, faculty, peers, and educational experiences to which the student is exposed; and outcomes refers to the students' characteristics after exposure to the environment" (p. 7). Thus, change in student development is measured by comparing outcome characteristics with input characteristics. This model allows us to assess the impact of environmental experiences by determining whether students change differently under different environments (Astin, 1993). Astin's model provided those involved in higher education a useful way of thinking about college impacts and offered conceptual and analytical foundations for many researchers. Educational environment can affect student outcomes, and student inputs can affect both educational environment and student outcomes. In this study, background characteristics (including nationality) were treated as input. Institutional type, critical mass, and benchmarks of effective educational practice were treated as environment. Finally, student satisfaction and academic achievement/success were treated as output.

Theoretical Framework

Two theories and one framework were used as the theoretical framework of this study: Astin's (1999) Student Involvement Theory, Pascarella's (1985) General Model for Assessing Change, and the Critical Mass framework. According to Astin's (1999) Student Involvement Theory, "the greater the student's involvement in college, the greater will be the amount of learning and personal development" (p. 529). Astin (1999) defined student involvement as "quantity and quality of the physical and physiological energy that students invest in college experience" (p. 528). The NSSE survey instrument measures student engagement such as interacting with other students, interacting with faculty, participating in extracurricular activities, spending time on campus, among others. Thus, it is appropriate to use NSSE data for this study under Astin's I-E-O model.

In addition, components of Pascarella's General Model for Assessing Change (1985) were utilized. This is a general causal model that includes explicit consideration of an institution's structural characteristics and its environment. Pascarella suggested that growth is a function of the direct and indirect effects of five main sets of variables: student background/precollege traits and structural/organizational characteristics of institutions together shape institutional environment (these influence interactions with agents of socialization and shape quality of student effort), and learning and cognitive development is affected by all sets of variables (Pascarella & Terenzini, 2005). Student background and precollege traits together with structural and organizational characteristics of institutions were particularly important for this study as they are vital input and environment components.

Finally, Critical Mass framework was used in this study. In education, "this term has been adapted to indicate a level of representation that brings comfort or familiarity within the education environment" (Hagedorn et al., 2007, p. 74). Hagedorn et al. (2007) looked at the critical mass theory as it related to Latinos in higher education and Etzkowitz et al. (1994) and Townsend (1999, 2007) as it related to women in higher education. Their findings could be conceptually applied to international students overall as well. According to Etzkowitz et al. (1994), "the discrete point at which the presence of a sufficient number brings about qualitative improvement in conditions and accelerates the dynamics of change […] has been defined as a strong minority of at least 15%" (p. 51). Thus, presence of critical mass fosters inclusion, increases feelings of support and comfort, increases presence of role models, and consequently, affects student engagement and academic success. Absence of it, on the other hand, could lead to marginalization and other academic and personal negative consequences that are likely to hinder student engagement and academic success.

Significance of the Study

As stated above, this study replicated some of the Zhao, Kuh, and Carini's (2005) study utilizing a newer dataset: 2008 as opposed to 2001. It compared activities of international undergraduate students with American undergraduate students in areas related to student learning, personal development, and satisfaction with college. However, this study went further; it examined international student engagement using different variables, specifically, how institutional type and critical mass affect student engagement as expressed by the five benchmarks of effective educational practices. This

study also examined if student engagement of international students affects student satisfaction and their academic success.

This study attempted to address some of the suggestions for further study that Zhao, Kuh, and Carini (2005) proposed. Specifically, they recommended further study to understand how and why density affects student engagement on campuses. As a result, this study examined how critical mass of international students affects student engagement. In addition, they recommended further study to explore the group differences within the international student population by country of origin. Regrettably, the NSSE dataset does not provide country of origin data; however, instead, this study looked at how academic major of international students affects student engagement. Two other recommendations for further study, namely to determine factors that contribute to Asian students spending more time socializing and less time participating in diversity-related activities (as compared to other international students) and to understand why international students perceive their campus to be less supportive as their proportion increases, were not addressed in this study due to dataset limitations. Overall, this study examined international student engagement further using different variables. The findings inform administrators, faculty, and staff about what international students do while they are in college, thus informing them about how to improve their experience in U.S. institutions of higher education.

This study is significant for research, policy, and practice. In terms of research, it informs others about the extent to which international students are satisfied with their experiences, how they interact with peers and faculty, and how they participate in educational activities. In terms of policy, this study informs institutions how funds

should be allocated toward particular effective educational practices. In terms of practice, it informs administrators, faculty, and staff more about what international students do while they are in college thus informing them how to intervene in order to improve their experience while studying in the U.S. Additionally, this study informs professional organizations and graduate leadership programs in higher education regarding specialized opportunities that could be offered for international educators' professional development. Finally, findings could be used by international students and their parents to inform them which effective education practices could improve their student engagement and, consequently, their academic success.

Definition of Terms

Academic achievement/success – outcome of education; traditionally, grade point average (Astin, 1993, p. 186); based on students' answers to 2008 NSSE survey question #25: *What have most of your grades been up to now at this institution?*

Academic major – a subject of academic study chosen as a field of specialization (Merriam-Webster Dictionary, 2011); based on students' answers to 2008 NSSE survey question #28: *Please print your major(s) or your expected major(s).*

American students – students who are U.S. citizens (Indiana University Center for Postsecondary Research, 2011); students who answered *No* to 2008 NSSE survey question #17 *Are you an international student or foreign national?*

Benchmarks of effective educational practices – 1. Level of academic challenge. 2. Active and collaborative learning. 3. Student-faculty interaction. 4. Enriching educational experiences. 5. Supportive campus environment (Indiana University Center for Postsecondary Research, 2011).

Critical mass – level of representation that brings comfort or familiarity within the education environment (Hagedorn et al., 2007, p. 74).

Effective educational practices – good practice in undergraduate education: 1. Encourages contact between students and faculty. 2. Develops reciprocity and cooperation among students. 3. Encourages active learning. 4. Gives prompt feedback. 5. Emphasizes time on task. 6. Communicates high expectations. 7. Respects diverse talents and ways of learning. (Chickering & Gamson, 1987, p. 3).

Freshmen students – students at their first year of college education.

Institutional type/classification – institutional Carnegie classification; provided by Indiana University Center for Postsecondary Research.

Institutional type/control – institutional control (public vs. private); provided by Indiana University Center for Postsecondary Research.

International students – students who are enrolled at institutions of higher education in the U.S. who are not citizens of the U.S., immigrants, or refugees. These may include holders of F (student) visas, H (temporary worker/trainee) visas, J (temporary educational exchange-visitor) visas, and M (vocational training) visas. Data thus excludes students who have long-term or permanent residency (World Education Services, 2007); students who answered *Yes* to 2008 NSSE survey question #17 *Are you an international student or foreign national?*

Percentage of international students – percentage of international students at an institution in ranges; provided by Indiana University Center for Postsecondary Research.

Senior students – students at their fourth year of college or year preceding their graduation.

Student engagement – the amount of time and effort students put into their studies and other educationally purposeful activities (National Survey of Student Engagement, 2011).

Student satisfaction – satisfaction with the environment and ratings of the college environment (Astin, 1993, p. 273); based on students' answers to 2008 NSSE survey question #13: *How would you evaluate your entire educational experience at this institution?*

Summary

This study attempted to build upon existing research in student engagement to add the new knowledge of international student engagement in effective educational practices through examination and comparison to American student engagement. More specifically, it examined how institutional type and critical mass of international students affect their student engagement, satisfaction, and gains.

Chapter 2 summarizes relevant literature on international students, institutional type, critical mass, student engagement, NSSE benchmarks of effective education practice, NSEE and effective educational practice, satisfaction with educational experience, academic achievement/success, and offers a critique of NSSE and response to this critique.

Chapter 3 describes methods, more specifically overview, research questions, epistemology and theoretical perspective, conceptual and theoretical frameworks, research design and methodology, population and sample, data collection methods, instrumentation, data collection, variables in the study, data analysis, method of analysis, reliability and validity of the instrument, ethical issues, limitations, and delimitations.

Chapter 4 contains results of the study by describing analyses for each of the eleven research questions.

Chapter 5 includes a summary of the study, discussion of results for each of the eleven research questions, implications for practice and policy, and recommendations for future research.

CHAPTER 2. LITERATURE REVIEW

Introduction

Chapter 2 presents a review of relevant literature focusing on student engagement in effective educational practices. Such terms as international students, foreign students, student involvement, student engagement, effective educational practices, National Survey of Student Engagement (NSSE), critical mass, academic achievement, and academic success, among others, were utilized to conduct the search. Of the literature found, an overwhelming majority examined student engagement of American students.

The literature is organized around independent and dependent variables. First, relevant literature describing international students is briefly summarized. Second, literature focusing on environment 1 (institutional type and critical mass) is reviewed. Third, literature relating to environment 2 (NSSE benchmarks of effective education practice) is presented. Fourth, literature covering output (satisfaction with educational experience and academic achievement/success) is summarized. And finally, NSSE's critique and response to this critique are highlighted.

International Students

Much literature has been written on international students. Almost every study examines their background and demographic characteristics, such as age, gender, race/ethnicity, among others. A vast amount of literature discusses challenges they face adapting to the new living and learning environment in the host country. Studies have been conducted on topics such as psychological problems and mental health of international students (Mori, 2001); special issues in counseling of international students (Aubrey, 1991); influence of culture of international students on their behavior in and out

of counseling situations (Dillard & Chisolm, 1983); marital status, ethnicity, and academic achievement in relation to adjustment strains (Poyrazli & Kavanaugh, 2006); and factors affecting international students' transitions to higher education institutions (Kwon, 2009).

Institutional Type

IUCPR provided data with Carnegie classification and control. Control refers to institution being public vs. private. Carnegie classification is "the leading framework for recognizing and describing institutional diversity in U.S. higher education for the past four decades" (Carnegie Foundation for the Advancement of Teaching, n.d., para. 1). This framework is derived from empirical data and was originally published in 1973 and updated several times with the last update in 2010. It is used to represent and control institutional differences and to ensure adequate representation of sampled institutions (Carnegie Foundation for the Advancement of Teaching, n.d.). The structure includes six parallel classifications: Basic classification (traditional Carnegie Classification Framework), Undergraduate and Graduate Instructional Program classifications, Enrollment Profile and Undergraduate Profile classifications, and Size and Setting classification.

Although the Carnegie Classification has been used to describe, characterize, and categorize colleges and universities for over 30 years, McCormick and Zhao (2005) found it ironic that it had a homogenizing influence "as many institutions sought to *move up* the classification system for inclusion among the *research-type* universities" (p. 53). Further, by attracting interest of stakeholders and with the expansion of ideas as to what classification should be, at times classification causes a conflict among them.

Additionally, problems arise when Carnegie classification is seen as an adequate representation of institutional identity. Thus, McCormick (2005), who is a senior scholar at the Carnegie Foundation for the Advancement of Teaching, acknowledges that "no classification can be perfectly neutral or objective" (p. 56). However, it is the most prevalent classification used.

Thus, this study examined if institutional classification and institutional control affect student engagement of international students and if predictions regarding student satisfaction and academic success can be made based on the institutional type.

Institutions that participated in the 2008 NSSE survey were classified as Research Universities (very high research activity), Research Universities (high research activity), Doctoral/Research Universities, Master's Colleges and Universities (larger programs), Master's Colleges and Universities (medium programs), Master's Colleges and Universities (smaller programs), Baccalaureate Colleges—Arts & Sciences, Baccalaureate Colleges—Diverse Fields, and Other.

Critical Mass

In education, the term *critical mass* "has been adapted to indicate a level of representation that brings comfort or familiarity within the education environment" (Hagedorn et al., 2007, p. 74). As Etzkowitz et al. (1994) stated, "critical mass was expected to be achieved through affirmative action, to clear up blockages in the pipeline on the premise that a sufficient number of persons from a previously excluded social category will foster inclusion of others from that background" (p. 53). Etzkowitz et al. (1994) looked at the critical mass theory as it related to women in science (1994); Townsend (1999) and Townsend and Twombly (2007) to women in higher education;

Hagedorn et al. (2007) to Latinos in higher education; and Zhao, Kuh, and Carini (2005) to international students.

Etzkowitz et al. (1994) analyzed the paradox of critical mass for women in science. According to them, "the discrete point at which the presence of a sufficient number brings about qualitative improvement in conditions and accelerates the dynamics of change […] has been defined as a strong minority of at least 15%" (Etzkowitz et al., 1994, p. 51). They found that "modest increases in the number of women did bring about some change in departments… there is more support and safety in numbers" (Etzkowitz et al., 1994, p. 52). However, simultaneously, as the number of women faculty members increased, they divided into subgroups and at times worked against each other, which presented a paradox of critical mass.

Townsend (1999) and Townsend and Twombly (2007) analyzed the concept of critical mass and women in higher education. They developed further the notion that despite some existing criticism, women's colleges provided a uniquely supportive climate for women. Townsend (1999) found that both women administrators and women students at women's colleges have more leadership opportunities than in coeducational institutions. In addition, there was a strong correlation between the women's achievement and ratio of women faculty to women students. Townsend and Twombly (2007) examined the status of women in community colleges considering that community colleges have a higher percentage of female students, faculty, and administrators than four-year colleges. Because of these higher numbers, the campus climate was generally relatively good for women. Townsend and Twombly (2007) found "that women's needs have typically been addressed by the community college primarily when women

mobilized to get them met" (p. 214), thus proving the validity of critical mass theory once again.

Hagedorn et al. (2007) examined critical mass, specifically the role and effect of Latino community college students on their academic outcomes. The lack of critical mass in higher education institutions may result in isolation, loneliness, and even culture shock; therefore, actual or perceived power is the result of a critical mass (Hagedorn et al., 2007). Hagedorn et al. (2007) also found a relationship between academic success of Latino community college students and the proportion of Latino students and faculty on campus. Their findings suggested that critical mass of Latinos may be a positive influence encouraging minority students to higher academic performance. The authors recommended that further studies in the area of critical mass and its effects are warranted.

Zhao, Kuh, and Carini (2005) suggested that because international students devote more time than American students to academics, critical mass of international students is expected to have consistently positive effects on other aspects of student engagement. Thus, they found that as the proportion of international students increased, both international and American students reported more experience with diversity. Nevertheless, as the proportion of international students increased, both international and American students perceived their campus to be less supportive. Weick (1979) suggested that focusing on disappointments of others may lead to a disappointing interpretation of one's own neutral situation, which he called negative amplification. Disappointments students experience in college are discussed with peers, which in turn may lead to their growth in magnitude and possibly grow out of proportion.

Thus, presence of critical mass fosters inclusion and increases feelings of support and comfort, presence of role models, and consequently, student engagement and academic success. An absence of it, on the other hand, could lead to marginalization and other academic and personal negative consequences that are likely to hinder student engagement and academic success. Therefore, this study applied the concept of critical mass to international students as percentage of international students in an institution. It examined if percentage of international students affects their student engagement and if predictions regarding student satisfaction and academic success can be made based on their critical mass.

Academic Major

The Merriam-Webster dictionary defines academic major as a subject of academic study chosen as a field of specialization (Merriam-Webster Dictionary, 2011). Studies have been conducted on this topic such as student engagement and field of study (Indiana University Center for Postsecondary Research, 2010), the role academic major plays in NSSE (Kuh, 2003), the impact of major fields on students (Astin, 1977, 1993), academic major as a within-college effect (Pascarella & Terenzini, 2005), and academic major and gender differences among African Americans undergraduates at historically black colleges and universities (Harper, 2004).

The Indiana University Center for Postsecondary Research (2010) analyzed results from specific major fields to investigate disciplinary influences and student characteristics of student engagement. They demonstrated that participation in high-impact practices among seniors varied by majors in general biology, business, English, and psychology. The Indiana University Center for Postsecondary Research (2010)

found that half of students majoring in history and political science completed a senior culminating experience (average 33%), and three out of four seniors in nursing and physical education did service-learning as a part of their coursework (average 49%). However, they also found that only two in five seniors majoring in business administration or accounting held internships or field placements (average 50%).

In continuation of his studies of student engagement and educational effectiveness, Kuh (2003) found that some institutions combine their NSSE results with evidence from other surveys that contain more academic major information. He suggested that major-field specific outcomes could and should be looked at as the link with student engagement.

Using students' freshman major, Astin (1977) found that students majoring in mathematics, physical sciences, engineering, or premedicine show larger increases in intellectual self-esteem. Social science majors show a greater than average increase in liberalism, artistic interest, altruism, and religious apostasy, while engineering majors show contrary results. Further, Astin (1997) discovered that academic majors impact undergraduate grades, aspirations for advanced degrees, attaining career objectives, and starting salaries. Astin (1997) also discovered that only two major fields (agriculture and mathematics/statistics) produced no significant effects on student outcomes.

While examining within-college effects, Pascarella and Terenzini (2005) indicated that undergraduate students make the greatest knowledge gains in areas consistent with their academic major. In addition, major field of study did not lead to different effects on general measures of critical thinking. Additionally, different disciplines attracted different kinds of students and accentuated initial differences among

students across disciplines. Finally, students majoring in sciences, engineering, business, and health-related fields were more likely to graduate than students in other majors.

Harper (2004) examined gender differences in student engagement among African American undergraduates at historically Black colleges and universities. He discovered that female students were selecting majors where men were once almost exclusively represented. Women were choosing traditionally masculine majors but still aspiring to lower-level careers within those fields. He proposed that the relationship between engagement, academic major selection, and the development of career aspirations should be explored further.

Thus, considering that international students tend to have higher representation in certain majors, this study applied the concept of academic major as critical mass to international students. It examined if academic major of international students affects their student engagement and if predictions regarding student satisfaction and academic success can be made based on their critical mass.

NSSE uses only primary majors and distinguishes nine major field categories: arts and humanities, biological sciences, business, education, engineering, physical science, other professions, social sciences, and other majors (National Survey of Student Engagement, n.d., a). NSEE majors are shown in Table 2.1.

Table 2.1

NSSE's Major Field Categories

Categories of majors	Majors
Arts and Humanities	Art (fine and applied)
	English (language and literature)
	History
	Language and literature (except English)
	Music
	Philosophy
	Speech
	Theater or drama
	Other arts and humanities
Biological Sciences	Biology (general)
	Biochemistry or biophysics
	Botany
	Environmental science
	Marine (life) science
	Microbiology or bacteriology
	Zoology
	Other biological science
Business	Accounting
	Business administration (general)
	Finance
	International business
	Marketing
	Management
	Other business
Education	Business education
	Elementary/middle school education
	Music or recreation
	Secondary education
	Special education
	Other education
Engineering	Aero-/astronautical engineering
	Civil engineering
	Chemical engineering
	Electrical or electronic engineering
	Industrial engineering
	Materials engineering
	Mechanical engineering
	General/other engineering

Table 2.1 (continued)

NSSE's Major Field Categories

Categories of majors	Majors
Other Professions	Architecture
	Urban planning
	Health technology (medical, dental, laboratory)
	Law
	Library/archival science
	Medicine
	Dentistry
	Veterinarian
	Nursing
	Pharmacy
	Allied health/other medical
	Therapy (occupational, physical, speech)
	Other professional
Social Sciences	Anthropology
	Economics
	Ethnic studies
	Geography
	Political science (including government, international relations)
	Psychology
	Social work
	Sociology
	Gender studies
	Other social science
Other Majors (not categorized)	Agriculture
	Commutations
	Computer science
	Family studies
	Natural resources and conservation
	Kinesiology
	Criminal justice
	Military science
	Parks, recreation, leisure studies, sports management
	Public administration
	Technical/vocational
	Other field
	Undecided

Student Engagement

Student Involvement Theory

In basic terms, "student involvement refers to the amount of physical and psychological energy that the student devotes to the academic experience" (Astin, 1999, p. 518). Thus, a student who spends significant time with other students, frequently interacts with faculty, is involved in extracurricular activities, and spends considerable time on campus is highly involved. On the contrary, uninvolved students spend limited time with other students, seldom interact with faculty, are not involved in extracurricular activities, and spend insignificant time on campus. Astin (1999) proposed five basic postulates for his involvement theory: involvement is investment of physical and psychological energy in various objects; it occurs along a continuum; it has both quantitative and qualitative features; the amount of student learning and personal development is directly proportional to student involvement; and effectiveness of educational policy and practice is directly related to its capacity to increase student involvement (p. 519). He suggested that the theory of student involvement provided the link between variables emphasized in traditional pedagogical theories (such as subject-matter theory, resource theory, and individualized [eclectic] theory) and learning outcomes desired by the student and faculty. According to Astin (1999), student involvement theory emphasizes active participation of the student in the learning process and encourages educators to focus on what students do rather on what they are. Thus, involvement in some way resembles motivation. The theory of student involvement is focused on behavioral mechanisms that facilitate student development rather than on outcomes.

Otsu (2008) investigated whether students' satisfaction could be predicted by how satisfied they are with various aspects of campus and interpersonal relationships, when English is not their first language, and other background and experience variables. Undergraduate students were found to be more involved in their academic experiences than graduate students. In addition, they had a greater amount of campus involvement and interpersonal relationships on campus and were more satisfied with their campus experience. Otsu (2008) also found that overall student satisfaction with campus could be predicted by how satisfied they are with campus services and interpersonal relationships.

Student Engagement of American Students

Why study student engagement? As Kuh (2003) indicated, hundreds of studies demonstrated that "college students learn more when they direct their efforts to a variety of educationally purposeful activities" (p. 25). There are many definitions of student engagement in higher education literature; therefore, it was determined that the NSSE definition would be utilized in this study. According to NSSE, student engagement represents two vital features of collegiate quality: "the amount of time and effort students put into their studies and other educationally purposeful activities, [and] …how the institution deploys its resources and organizes the curriculum and other learning opportunities to get students to participate in activities that decades of research studies show are linked to student learning" (National Survey of Student Engagement, 2011).

Axelson and Flick (2011) suggested that level of student engagement at an institution of higher education is increasingly seen as a valid indicator of institutional excellence that is more meaningful than traditional education and has more easily

measured characteristics. Student engagement of American students has been studied extensively (Astin, 1993; Chickering, 1969; Chickering & Gamson, 1987; Ewell & Jones, 1996; Kuh et al., 2005; Pascarella & Terenzini, 2005).

Kuh et al. (2005) stated that "what students do during college generally matters more to what they learn and whether they persist to graduation than who they are or even where they go to college" (p. 4). High levels of student engagement are associated with purposeful student-faculty contact, active and collaborative learning, and inclusive and affirming institutional environments. These factors are related to student satisfaction, learning, and development. Thus, "high levels of student engagement are necessary for and contribute to collegiate success" (Kuh et al., 2005, p. 4).

Pascarella and Terenzini (2005) examined the influence of postsecondary education on learning and cognitive development, personal growth and change, socioeconomic attainment process, and quality of life. They found that "the greater a student's engagement in academic work or in the academic experience in college, the greater his or her level of knowledge acquisition and general cognitive growth" (p. 608). Pascarella and Terenzini (2005) concluded that the "impact of college is largely determined by individual effort and involvement in the academic, interpersonal, and extracurricular offerings on a campus" (p. 62), and that the best predictors of whether a student will graduate are academic preparation, motivation, and student engagement.

Student Engagement of International Students

Foot (2009) researched how international students perceived their academic engagement activities by researching academic engagement patterns that emerged among international students at a Midwest regional state university. Key findings of his study

indicated common success strategies of international students changed as they adapted to academic climate and varied among students. These strategies echoed NSSE student engagement strategies as coping strategies that international students use when they first arrive.

NSSE Benchmarks of Effective Educational Practice

Student behaviors and institutional characteristics are considered to be the most powerful contributors to learning and personal development. Thus, NSSE established five benchmarks of effective educational practice (see Appendix A) based on 42 key questions: level of academic challenge, active and collaborative learning, student-faculty interaction, supportive campus environment, and enriching educational activities (National Survey of Student Engagement, n.d., a). Irungu (2010) examined the extent to which these five engagement benchmarks predicted various dimensions of self-reported or perceived academic, personal, and social development/growth for senior international students at research universities. Results indicated that a supportive campus environment and the level of academic challenge were the best predictors of the self-assessed outcomes. Specifically, international students reported gaining more in thinking critically and analytically and acquiring a broad general education. However, they had lower engagement in student-faculty interaction and enriching educational experiences benchmarks.

Benchmark 1: Level of Academic Challenge

NSSE's first benchmark of effective educational practice recognizes that challenging intellectual and creative work is critical to student learning and collegiate quality. High expectations for student performance and emphasis on importance of

academic effort promote high levels of student achievement. Such activities include time spent preparing for class; number of assigned textbooks, books, papers, and reports; and coursework emphasizing analyzing, synthesizing, making judgments and applying theories.

Benchmark 2: Active and Collaborative Learning

Intense involvement and collaboration with peers facilitates and enhances student learning. This benchmark includes asking questions in class, contributing to class discussions, making class presentations, working with peers during and outside of class, and tutoring. Interaction with peers has a direct effect on students' academic achievement (Astin, 1993; Chickering, 1969; Pascarella & Terenzini, 2005). Astin (1993) stated that "the student's peer group is the single most potent source of influence on growth and development during the undergraduate years. […] Students' values, beliefs, and aspirations tend to change in the direction of the dominant values, beliefs, and aspirations of the peer group" (p. 398). He concluded that frequent student-student interaction, as opposed to student-nonstudent (coworkers, family members, outside friends) interaction, emphasized values and behaviors that distinguished students from nonstudents.

Pascarella and Terenzini (2005) stated that "peers constitute … powerful socializing agents in shaping persistence and degree completion" (p. 418). Studies they reviewed indicated that peer influence is a statistically significant and positive force in students' persistence decisions. Furthermore, "peer interactions … that reinforce the ethos of the formal academic program and extend into nonclassroom settings" (Pascarella & Terenzini, 2005, p. 121) had a net positive impact on learning. Such interactions

included discussion of policies and issues related to campus activities; religious, philosophical, or political beliefs; personal problems; and arts, science, technology, or international relations among others. Many studies revealed a statistically significant impact of peer interactions on student learning even when controlling for student involvement. Pascarella and Terenzini (2005) also found that students' peers affect their general cognitive growth and intellectual development in college, and in some cases, this influence is stronger than formal classroom experience.

Benchmark 3: Student-Faculty Interaction

NSSE states that by observing faculty inside and outside the classroom students see how experts solve real-life problems; thereby, faculty become role models, mentors, and guides for continuous learning. Activities include discussing grades, ideas from readings, and career plans with an instructor; receiving prompt feedback; and working on a research project with a faculty member. Student involvement with faculty overall has a direct effect on their academic achievement (Astin, 1993; Chickering, 1969; Pascarella & Terenzini, 2005). Chickering (1969) argued that educational environment influences student development via seven key factors, student-faculty relationships being one of them. Further, Evans, Forney, and Guido-DiBrito (1998) stated that extensive and varied interaction between faculty and students facilitates development. It is imperative for students to see faculty in various roles and responsibilities to perceive them as people who are interested in them beyond the classroom. In addition, Astin (1993) highlighted the critical importance of frequent interaction between faculty and students for student development as well. He found that overall student-faculty interaction had strong positive correlations with satisfaction with faculty, every self-reposted area of intellectual

and personal growth, variety of personality and attitudinal outcomes, and behavioral outcomes. Astin (1993) suggested that "variations in student-faculty contact *within* any given institutional environment can also have important positive implications for student development" (p. 384). Finally, Pascarella and Terenzini (2005) concluded that student contact with faculty members outside the classroom promotes student persistence, educational aspirations, and degree completion. Socialization of students to the normative values and attitudes of the academy and the bond between students and intuitions that appears to be promoted by positive interactions with faculty were listed as the main reasons for persistence, aspirations, and degree completion. Interactions with faculty also impact students' general cognitive skills and intellectual development.

Literature emphasized that student involvement with faculty overall has a direct effect on their academic achievement (Astin, 1993 & 1999; Chickering, 1969; Indiana University Center for Postsecondary Research and Planning, 2000; National Survey of Student Engagement, n.d. a; Pascarella & Terenzini, 2005). According to the Indiana University Center for Postsecondary Research and Planning (2000), the more contact students have with their teachers the better. By collaborating with students, faculty become role models, mentors, and guides for continuous learning. However, according to Kuh (2003), more does not necessarily mean better when discussing interaction with faculty; the key is substantive contact.

Astin (1999) suggested that faculty interaction is related to college satisfaction (student friendships, variety of courses, intellectual environment, and administration of the institution) stronger than any other institutional characteristic. Therefore, it is critical to find ways to encourage greater student/faculty and faculty/student involvement. In

addition, Pascarella and Terenzini (2005) concluded that student contact with faculty members outside the classroom promotes student persistence, educational aspirations, and degree completion. Socialization of students to the normative values and attitudes of the academy and the bond between student and intuitions (which appears to be promoted by positive interactions with faculty) were listed as the main reasons for it.

Benchmark 4: Enriching Educational Experiences

This benchmark focuses on complementary learning opportunities inside and outside the classroom that enhance academic programs. Interaction with students of different races, ethnicities, religious backgrounds, social backgrounds, and the use of technology make learning more meaningful and more useful. Additionally, opportunities for internships, field experiences, community service, volunteer work and other similar activities provide students with another opportunity to apply their knowledge.

Benchmark 5: Supportive Campus Environment

NSSE states that students are more satisfied and perform better at colleges that are committed to their success and that nurture positive working and social relations among campus groups. This benchmark includes a campus environment that provides support needed to succeed academically, non-academically, and socially.

In addition to relationships with other students and faculty members, relationships with staff and administration affect students' academic achievement (Astin, 1993; Pascarella & Terenzini, 2005). Astin (1993) found that a positive perception of administration produced a number of direct positive effects on academic outcomes. Pascarella and Terenzini (2005) found that institutional staff members shape students'

perceptions of an overall campus climate; particularly valuable were support and encouragement from administrators, advisers, and academic counselors.

Student Engagement, Academic Major, and Academic Success

Sanford (2009) analyzed noncognitive student variables (positive self-concept, realistic self-appraisal, successfully handling the system, preference for long-term goals, leadership experience, presence of a strong support person, community services, and knowledge of the field) and institutional characteristics with a purpose of predicting international graduate student success in U.S. universities. The analysis showed a relationship between the noncognitive scores and the degree level, GPA, and time to degree completion. Sanford's findings emphasized the academic discipline as a variable in studies on international graduate students, where discipline moderates the predictive value of noncognitive abilities on achievement.

Student Engagement and Academic Performance

Alexander (2009) examined the relationship between student engagement and academic performance at historically Black public higher education institutions, specifically, the relationship between NSSE benchmarks and self-reported academic performance. He discovered that while some independent variables had a statistically significant linear relationship with the dependent variable, others did not, thus, concluding that student engagement has a multi-dimensional effect.

Student Engagement of International Students

Considering that little is known about international students' group differences in their co-curricular engagement, Yebei (2011) examined the background and demographic factors that explain international student engagement. He found that College Student

Experiences Questionnaire measures were unidimensional, and upper-level students had higher co-curricular engagement scores than first-year students; however, upper-level students were less satisfied with their college experience than first-year students. In addition, background characteristics (such as past volunteering experience, parents' education level, gender, length of residency in the U.S., and socio-economic status of the family) were important explanatory variables.

Literature described direct relationships between student engagement and academic success. Parikh (2008), for example, examined the relationship between student engagement and academic performance of international undergraduate students. Her mixed-method study looked at the relationship between engagement and academic performance as measured by GPA. She explored and described a paradox where international students who seem to have lower than average campus involvement had higher than average GPAs. Additionally, Kuh (2003) reported that in the first three years of NSSE findings, international students appeared to be more engaged (p. 27).

Comparison of Student Engagement of International Students and American Students

Very few studies were found comparing student engagement of international and American students. Grayson (2008a) assessed the degree of involvement of international students compared to domestic students and related involvement to educational outcomes. He found that international students were as involved in campus activities as domestic students; however, international students lacked academic support in comparison to domestic students. Moreover, international students' scores on objectively measured and self-assessed outcomes were lower than those of domestic students. Additionally, Grayson (2008b) studied sense of coherence and academic achievement of domestic and international students. He modified traditional models of educational outcomes relating to academic achievement to university experience by including sense of coherence as a possible contributor to first year academic achievement. He found that a model including sense of coherence fit the data better for both kinds of students than the model that did not include it. Further, "students who perceive their problems as comprehensible and manageable are more likely than others to achieve academically" (p. 489). Grayson (2008b) concluded that sense of coherence should be included in attempts to explain first year achievement. It is important to note that both studies were conducted in Canada.

Song (2004) looked at information-seeking behaviors of domestic and international students seeking degrees in business in an attempt to explain different perceptions of domestic and international students with respect to library use and research strategies. Her study focused on examining how domestic and international business

students assess the effectiveness of library instruction sessions, how they use library services, and how they use the Internet for their research. Song (2004) found that both domestic and international business students perceived that instruction sessions were highly effective and helpful for their research needs. While domestic business students perceived the library as a place that provides print and electronic resources for their research, international business students used it as a place to study. In addition, domestic business students had faster access to Internet than international business students.

Finally, Zhao, Kuh, and Carini (2005) compared activities of international and American students in selected areas related to student learning, personal development, and satisfaction with college, including the degree to which they perceive their campus to be supportive of academic and social needs. Additionally, they examined self-reporting gains in personal and social development, general education, and job related skills. They found that first-year international students were more engaged in educational activities than American students, and they reported more gains in desired college outcomes. By their senior year, however, the engagement patterns become more similar.

NSSE and Effective Educational Practice

Chickering and Gamson (1987) offered seven good practices in undergraduate education: "1. Encourages contact between students and faculty. 2. Develops reciprocity and cooperation among students. 3. Encourages active learning. 4. Gives prompt feedback. 5. Emphasizes time on task. 6. Communicates high expectations. 7. Respects diverse talents and ways of learning." (p. 3). They offered these practices as guidelines for faculty, students, and administrators to improve teaching and learning and provided notable examples of each practice. The first practice, encouragement of contact between

students and faculty, is of the most value for the current study as this is the most important factor in student motivation and involvement.

Kuh and Vesper (1997) compared student experiences with good practices in undergraduate education between 1990 and 1994. Their study intended to determine whether students' experiences with these practices increased considering pressures to reform undergraduate education. Kuh and Vesper found that the good practices had positive effects on faculty-student interaction at baccalaureate institutions but not in doctoral-granting ones.

Koljatic and Kuh (2001) conducted a longitudinal assessment of college student engagement in good practices in undergraduate education. They examined where student engagement in three of the practices (cooperation with peers, active learning, and faculty-student interaction) increased between 1983 and 1997 in response to calls to improve the quality of undergraduate education. Koljatic and Kuh found that frequency of involvement in the three good practices did not change significantly over time; however, they suggested that changes were in motion on U.S. campuses.

Satisfaction with Educational Experience

Student satisfaction with the college environment is vital as it "covers the students' subjective experience during the college years and perceptions of the value of educational experience" (Astin, 1993, p. 273). It is a separate and significant educational outcome considering the time and energy students invest in attending college. Astin's (1993) satisfaction measures included satisfaction with the total undergraduate experience and satisfaction with relationships with faculty, curriculum and instruction, student life, individual support services, and facilities. He found that satisfaction was

enhanced by frequent interaction with faculty and other students, which ties into one of the benchmarks of effective educational practice: student-faculty interaction. In addition, Astin found that student satisfaction differed by major: engineering majors reported the lowest satisfaction levels with curriculum and instruction, relationships with faculty, student life, individual support services, and opportunities to take interdisciplinary courses.

Academic Achievement/Success

There are many definitions of student academic achievement. It is commonly defined as the extent to which students are achieving their education goals, and it is often measured by assessment. Academic achievement has been extensively covered by the literature as well (Delgado, 2008; Duran, 2008). Delgado (2008) examined student demographics as they relate to academic achievement. Further, literature described challenges in the field of assessment of English learners' achievement as the large-scale assessments intend to hold schools accountable for what students know on the basis of their performance assessment. Duran's research (2008) suggested that an alternative foundation for assessments that provides more valid information about the learning capabilities and achievements must be developed. As Pascarella and Terenzini (2005) suggested, grade performance attracts more attention than any other variable as it relates to academic performance. Although grades cannot be considered a perfect measure of learning and intellectual development, "[g]rade point-averages are the lingua franca of the academic instructional world, the keys to students' standing and continued enrollment, to admission to majors and enrollment caps, to program and degree completion, to admission to graduate and professional schools, and to employment

opportunities" (Pascarella & Terenzini, 2005, p. 397). Grades are among the most consistent predictors of student persistence, degree completion, and graduate school enrollment (Adelman, 1999; Astin, 1993; Berkner et al., 1996; Horn, 1998). In addition, academic achievement or grades is a convenient quantitative summary of a prospective employee's success in college (Pascarella & Terenzini, 2005).

Academic Achievement as a Coping Mechanism

A majority of existing literature on international students is centered on challenges they face adapting to the new host societies and learning environment. Adapting to customs and traditions, campus life, and American society is often quite challenging for international students. Therefore, they are more likely than their American counterparts to feel lonely and isolated (Dillard & Chisolm, 1983; Mori, 2000), which at times reduces their participation in activities tied to success in college. Thus, Dozier (2001) described focusing more on academic achievement as one of the common coping mechanisms. Novera (2004) also suggested that academic success enhanced personal confidence and status, helping students to fit in. In addition, Parikh (2008) described and explored a paradox where international students who seem to have lower than average campus involvement had higher than average GPAs. Hence, some literature suggested that to compensate for problems in social life, international students channel their efforts toward academics.

Academic Success of International Students

Several studies were found on academic success of international students. Boyer and Sedlacek (1987), for example, studied the effectiveness of noncognitive variables in predicting college grades and persistence for international students. Noncognitive

dimensions were self-confidence, realistic self-appraisal regarding academic abilities, community service, knowledge of their field, leadership experiences related to cultural background, preference for long-range goals, understanding racism, and having a strong support person. Boyer and Sedlacek (1987) found that self-confidence and availability of a strong support person consistently predicted GPA.

Further, Abel (2002) recommended strategies for international students to be academically successful in U.S. classrooms based on teaching and learning research. He suggested international students should prepare for the American education experience, determine the *learning time* available for each course, plan study and recreation time, get the right kind of peer tutoring, develop visual models of what they are learning, and join a study group to discuss study material with friends. For this particular study, however, Abel's recommendations of what to look for in professors present the most interest. He recommended that students seek out professors who encourage class participation, specifically professors who ask rhetorical questions, who provide nonthreatening forms of participation, and who catch attention through stories, metaphor, and myth.

Furthermore, Hagedorn and Mi-Chung (2005) compared academic success of international students in community colleges depending on their GPA, course completion, and other measures. They found that international students in community colleges perform slightly better academically than American students. In addition, Westwood and Barker (1990) investigated relationships of academic achievement, drop-out rates, and aspects of social adjustment among international students who participated in a peer-pairing program compared to those who did not. The peer-pairing program was an eight-month-long program that linked each individual international student to a

matched host peer who served as cultural interpreters, facilitators and information givers, referral agents, confidants, and friends. The results indicated that overall achievement rates were higher and drop-out rates were lower for international students who participated in a peer-pairing program.

Finally, Haydon (2004) surveyed the academic needs of international students at Dominican University of California and compared their reported needs with the needs of the larger population of international students. She found that social integration and cultural adaptation directly and positively correlated to academic success. Additionally, Stoynoff (1997) examined factors associated with the academic achievement of international freshman and proved that language proficiency and selected learning strategies correlated with students' academic performance as measured by GPA, credits earned, and number of withdrawals.

However, this literature review confirmed what was stated by Zhao, Kuh, & Carini, 2005; and Yebei, 2011, namely, that the literature is silent on the extent to which international students engage in educational practices other than academic achievement. Therefore, the present study attempted to fill this gap.

Critique of NSSE and Response to This Critique

Naturally, Surveys of Student Engagement receive some criticism. A Special Issue of the Review of Higher Education on Student Engagement published in 2011 assembled papers that critiqued pieces of these surveys and raised some serious concerns.

First, Olivas (2011) challenged Kuh's et al.'s literature review citing that in one of their recent works, out of 75 references, 18 are authored by Kuh and 10 authored by Pike. Additionally, several studies did not have identifiable authors. He concluded that one size

cannot fit all and assessment and evaluation should at least do no harm. Second, Dowd, Sawatzky, and Korn (2011) expressed alarm that "the engagement benchmarks are based on indicators of educational «best practices» without consideration of the racialized «bad practices» that minoritized students experience as harmful to their self-worth" (p. 19). They stated that research needs to develop different measures to help institutions recognize how to reduce institutional racism and racial bias. Dowd, Sawatzky, and Korn (2011) concluded that minoritized students experience real, identifiable, and measurable intercultural constraints on their college success; thus, it is essential to measure these constraints in order to address and alleviate them.

Third, Porter (2001) questioned validity of a typical college survey concluding it has minimal validity; NSSE and other college student surveys cannot withstand scrutiny in his opinion. Many college surveys lack validity because "they assume that college students can easily report information about their behaviors and attitudes […], [the students] have problems correctly answering even simple questions about factual information, […] evidence of validity and reliability actually demonstrates the opposite" (p. 46). He concluded that NSSE's validity is very limited and a new approach to surveying college students must be adopted by both researchers and institutions. And finally, Campbell and Cabrera (2011) pointed out that the researchers at NSSE "have not reported construct validation of the five benchmarks of effective educational practices… [and] they cite no research examining how well the benchmarks hold true for individual institutions" (p. 85). They examined if there were five separate, stable benchmarks that appraised engagement; if they applied to a single, large, public, research institution; and if they predicted cumulative GPA. They found that the benchmarks did not hold for

examined institutions; thus, they suggested the modification of NSSE benchmarks to be more valid and reliable.

Naturally, this Special Issue of the Review of Higher Education on Student Engagement led to a response by Ewell, McClenney, and McCormick (2011) where they reminded the above critics about the purposes of their surveys and the encouragement for users "to employ survey results with caution, to triangulate them with other available evidence, and to use them as the beginning point for campus discussion" (para. 6). Additionally, while McCormick, the director of NSSE, and McClenney, the director of the Center for Community College Student Engagement (CCSSE) (2012) recognized that their surveys were not perfect, they corrected factual errors and omissions in the preface of the issue and provided detailed responses to the substantive critiques of the articles. They held that along with providing detailed statistical data to participating institutions, NSSE and CCSSE are able to catalyze conversations on campus among faculty, administrators, and students. McCormick and McClenney (2012) responded to the validity critique, alleged neglect of intercultural effort, and challenges to multidimensional benchmarks of effective educational practice. Specifically, they stated that NSSE and CCSSE results are and should be used to make *relative* comparisons between the groups of students; both NSSE and CCSSE do not consider campuses to be culturally neutral spaces, and their findings indicate that at-risk, underrepresented, and underserved student populations show higher levels of student engagement and positive benefits.

Finally, McCormick and McClenney (2012) emphasized that benchmarks of effective educational practice are not latent constructs, "[t]hey are summative indices of a

range of effective educational practices" (p. 324); they were created out of NSSE survey items using a combination of theory and exploratory factor analysis. Further, "[t]hey were created as a point of entry into an institution's results, one that might initiate campus conversations about the character of undergraduate education, how it compares to the educational efforts of other colleges and universities, what an institution does well, and where improvement is needed" (p. 326). Thus, the benchmarks held together conceptually and empirically in order to serve their communicative purpose. McCormick and McClenney (2012) concluded that NSSE and CCSSE are serving their purpose, which is to reduce the gap between research and practice and provide data and tools useful for higher education practitioners.

Summary

The present literature review summarized relevant literature describing international students. It also covered literature focusing on institutional type and critical mass. Moreover, this literature review highlighted literature relating to NSSE benchmarks of effective education practice and summarized literature covering satisfaction with educational experience. In addition, it presented literature describing academic achievement/success, and finally, it highlighted some of NSSE's critique and response to this critique.

CHAPTER 3. METHODOLOGY

Introduction

Chapter 3 provides an overview of the methodology, research questions, epistemology and theoretical perspective, and conceptual and theoretical frameworks. Additionally, it describes methods, population and sample, data collection methods, and instrumentation. It contains data collection, variables in the study, data analysis, and method of analysis. Furthermore, it discusses reliability and validity of the instrument, ethical issues, and limitations and delimitations.

Overview

The purpose of this study was to examine the relationship between student engagement and student satisfaction and academic success of international and American students using NSSE data. Specifically, it investigated how institutional type, critical mass, and academic major affect student engagement, how student engagement (represented by five NSSE benchmarks) affects student satisfaction, and how student satisfaction affects academic success. In addition, this study compared student engagement of international and American students.

Research Questions

The study was guided by the following research questions:

1. What are the demographics of international and American students in U.S. institutions of higher education who responded to the 2008 NSSE survey?
2. How does enrollment of international and American students differ by the critical mass measured by proportion of international students and academic major?

3. How does enrollment of international and American students differ by institutional classification measured by institutional type and institutional control?
4. What is the association between enrollment of international and American students and the critical mass measured by proportion of international students and academic major?
5. What is the association between enrollment of international and American students and institutional classification measured by institutional type and institutional control?
6. What is the interrelationship among the variables that measure the five NSSE benchmarks of effective educational practice for international and American students during their senior year?
7. What are the levels of satisfaction with the entire educational experience at this institution of international and American students during their senior year? Is there a statistically significant difference in the level of satisfaction between international and American students during their first and senior years?
8. What is the academic success measured by most of the grades up to now at this institution of international and American students during their senior year? Is there a statistically significant difference in the academic success between international and American students during their first and senior years?
9. Is there a statistically significant difference between international and American students in the levels of student engagement as represented by benchmarks for this particular sample during their senior year?

10. To what extent can student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice predict the levels of satisfaction with the entire educational experience at this institution during their senior year?
11. To what extent can student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice predict the academic success measured by most of the grades up to now at this institution?

Epistemology and Theoretical Perspective

This study used quantitative research design, postpositive philosophical worldview, survey research as a quantitative strategy of inquiry, and quantitative research methods.

According to Creswell (2009), "quantitative research is means for testing objective theories by examining the relationship among variables" (p. 4). Further, these variables are measured utilizing instruments and data is analyzed using statistical procedures. "Those who engage in this form of inquiry have assumptions about testing theories deductively, building in protections against bias, controlling for alternative explanations, and being able to generalize and replicate findings" (Creswell, 2009, p. 4).

Postpositivist epistemology "holds deterministic philosophy in which causes probably determine effects or outcomes; [t]hus the problems studied by postpositivists reflect the need to identify and assess the causes that influence outcomes…" (Creswell,

2009, p. 7). This worldview also has been called the scientific method, science research, positivist/postpositivist research, empirical science, and postpositivism. Here, the knowledge developed is based on observation and measurement of the objective reality. In this, the researcher "begins with theory, collects data that either supports or refutes the theory, and then makes necessary revisions before additional tests are made" (Cresswell, 2009, p. 7). Phillips and Burbules (2000) suggested following postpositivist assumptions: knowledge is conjectural; research involves making, refining, and abandoning claims; data, evidence, and rational considerations shape knowledge; research aims to explain situations by developing true statements; objectivity and checking for bias is the key.

Strategies of inquiry (or approaches to inquiry) represent "designs or models that provide specific direction for procedures in the research design" (Creswell, 2009, p. 11). Survey research quantitative strategy used in this study "provides a quantitative or numeric description of trends or options of a population by studying a sample of that population" (Cresswell, 2009, p. 12). This strategy uses questionnaires for data collection and includes cross-sectional and longitudinal studies to generalize from a sample to a population.

Finally, quantitative research methods, that were used in this study, included pre-determined methods; instrument based questions; performance data, attitude data, observational data, and census data; statistical analysis; and statistical interpretation (Creswell, 2009, p. 15). The researcher tested or verified theories or explanations; identified variables to study; related variables in questions or hypotheses; used standards of validity and reliability; observed and measured information numerically; used unbiased approaches; and employed statistical procedures (Creswell, 2009).

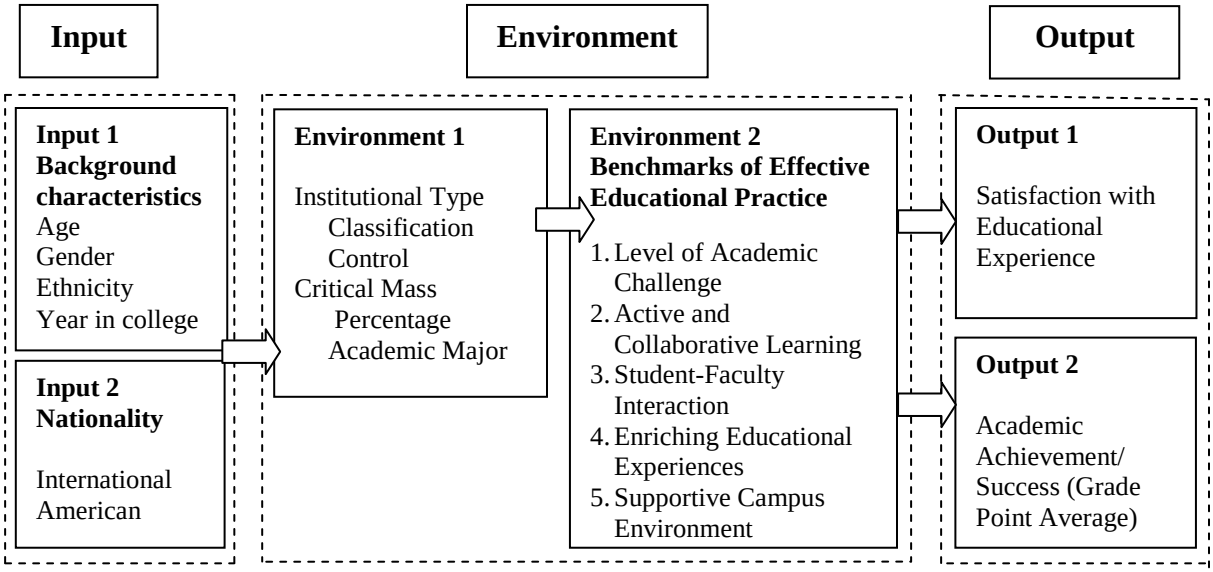
Conceptual and Theoretical Framework

Conceptual Framework

The conceptual framework that was used for this study was Astin's (1962, 1993, 1999) Input-Environment-Output (I-E-O) model. His model assesses "the impact of various environmental experiences by determining whether students grow or change differently under varying environmental conditions" (Astin, 1993, p.7). According to Astin (1993), student outcomes are functions of three basic elements: inputs (characteristics of the student at the time of initial entry to the institution), environment (various programs, policies, faculty, peers, and educational experiences to which the student is exposed), and outcomes (students' characteristics after exposure to the environment). For the model to work properly, it is critical to specify relevant inputs, environmental experiences, and outcomes to be assessed. Figure 3.1 reflects the adapted conceptual framework/prediction model. For this study, input element 1 includes demographic characteristics (age, gender, race/ethnicity, and year in college), and input element 2 includes nationality (international or American). Further, environmental element 1 is comprised of institutional type (Carnegie classification and control) and critical mass (percentage of international students and academic major), and environmental element 2 includes five benchmarks of effective educational practice (level of academic challenge, active and collaborative learning, student-faculty interaction, enriching educational experiences, and supportive campus environment). Finally, output element 1 includes satisfaction with educational experience and output element 2 – academic achievement/success (measured by grades).

Figure 3.1

Conceptual Framework/ Prediction Model



Based on Astin's (1962, 1993, 1999) Input-Environment-Output Model

Theoretical Framework

Cresswell (2009) defined theory as "an interrelated set of constructs (or variables) formed into propositions, or hypotheses, that specify the relationship among variables (typically in terms of magnitude or direction)" (p. 51). Thus, theory is an organizational model and framework for the entire study. To build theoretical framework for this study, Astin's (1999) Student Involvement Theory, Pascarella's (1985) General Model for Assessing Change, and Critical Mass Framework were used. The first component of the theoretical framework is represented by Astin's (1999) Student Involvement Theory, which states that the more students are involved in college, the greater the amount of learning and personal development will be. By "involvement," Astin meant "quantity and quality of the physical and physiological energy that students invest in the college experience" (p. 528). Thus, students who spend a considerable amount of time and

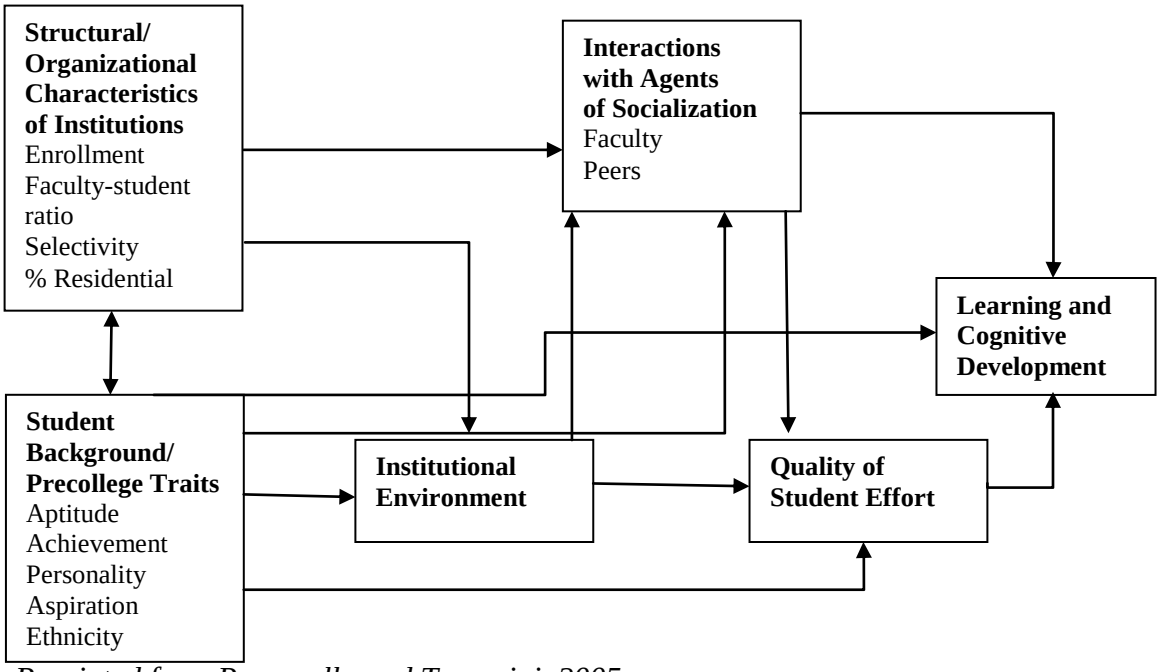
energy studying; spend a lot of time on campus; actively participate in student organizations; and frequently interact with other students, faculty, and staff are highly involved. On the contrary, students who spend an insignificant amount of time and energy studying; spend little time on campus; are not involved in student organizations; and rarely interact with other students, faculty, and staff are uninvolved students. Astin's (1999) theory of involvement emphasizes students' active participation in the learning process. In this study, data collected by the NSSE survey instrument was utilized, which measures student engagement such as interacting with other students, interacting with faculty members, interacting with administration/staff, participating in extracurricular activities, spending time on campus, among others.

The second component of the theoretical framework is represented by Pascarella's General Model for Assessing Change (1985), where Pascarella suggested a general causal model which includes consideration of an institution's structural characteristics and its environment. According to this theory, growth is a function of the direct and indirect effects of five main sets of variables. The first set of variables is represented by structural/organizational characteristics of institutions (enrollment, faculty-student ratio, selectivity, % residential), and the second set of variables is represented by student background/precollege traits (aptitude, achievement, personality, aspiration, ethnicity) which affects the third variable: institutional environment. Institutional environment affects the fourth set of variables represented by interactions with agents of socialization (faculty, peers), and the fifth set of variables is represented by the quality of effort which is shaped by students background/precollege traits, institutional environment, and interactions with agents of socialization. Finally, learning and cognitive development is

affected by all sets of variables (Pascarella & Terenzini, 2005). In this study, student background and precollege traits together with structural and organizational characteristics of institutions are particularly important as they are vital input and environment components (see Figure 3.2).

Figure 3.2

Pascarella's General Model for Assessing Change



Reprinted from Pascarella and Terenzini, 2005

Finally, the third component of theoretical framework is represented by the Critical Mass Framework. In education, "this term has been adapted to indicate a level of representation that brings comfort or familiarity within the education environment" (Hagedorn, et al., 2007, p. 74). Components of critical mass studied by Etzkowitz et al. (1994), Townsend (1999), Townsend and Twombly (2007), Hagedorn et al. (2007), and Zhao, Kuh, and Carini (2005) were utilized. Etzkowitz et al. (1994) defined critical mass as "a strong minority of at least 15%" (p. 51). According to critical mass theory, the

presence of critical mass fosters inclusion and increases feelings of support and comfort, the presence of role models, and consequently, student engagement and academic success; absence of it leads to marginalization and other academic and personal negative consequences that are likely to hinder student engagement and academic success. In this study, the effect of critical mass (percentage) of international students on their student engagement was examined.

Research Design and Methodology

Survey methodology was utilized as a research design. According to Creswell (2009), "a survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (p. 145). Further, generalizations about the entire population are made from the sample results. A self-administered questionnaire was used as a form of data collection. No actual experiment was conducted, so this study is ex post facto (after the fact) and used secondary data.

According to the Data Sharing Agreement between the Indiana University Center for Postsecondary Research and the researcher (see Appendix B), NSSE 2008 data was provided to the researcher in a Statistical Package for Social Sciences (SPSS) software file. All survey items and certain institutional characteristics (Carnegie classification, control, and percentage of international students) were provided to the researcher. All student and institution identifying information was removed. A 20% random sample of all first-year and senior-year international students who attended a U.S. institution was available. In addition, a 20% random sample of all first-year and senior students who were U.S. citizens and attended a U.S. institution was available as well. According to the

agreement, the data were encrypted when not in use by the researcher and will be destroyed once this particular research project (dissertation) is completed. The data has not been used for other purposes besides completing the designated project (dissertation). For the duration of this research, data has been stored in a password-protected computer with the password known only to the researcher.

Population and Sample

According to Gravetter and Wallnau (2007), population is "a set of all the individuals of interest in a particular study" (p. 5) and a sample is "a set of individuals selected from a population, usually intended to represent the population in a research study" (p. 5). For this particular study, the target population was all international and American students that took the NSSE survey. The sample was 20% of international and American students that did take the 2008 College Student Report (CSR) Survey (see Appendix C), which is accompanied by the NSSE 2008 Codebook (see Appendix D). A 20% random sample of each of the two categories was provided to the researcher by IUCPR. In 2008, 769 institutions administered the survey with an average response rate of 37%; 67 institutions administered the paper version, 463 institutions administered the web-only version, and 233 institutions administered the web+ version. Overall, 300 institutions were public and 414 institutions were private; 29 institutions were research universities with very high research activity, 44 were research universities with high research activity, 30 were doctoral/research universities, 173 were master's colleges and universities with larger programs, 84 were master's colleges and universities with medium programs, 46 were master's colleges and universities with smaller programs, 140

were baccalaureate colleges offering arts and sciences, 104 were baccalaureate colleges offering diverse fields, and 113 were other institutions.

Data Collection Methods

Through the CSR Survey, "NSSE annually collects information at hundreds of four-year colleges and universities about student participation in programs and activities that institutions provide for their learning and personal development" (National Survey of Student Engagement, 2011, para. 2). The results provide an estimate of how undergraduate students spend their time and what they gain from attending college. According to Kuh (2001), it represents student behaviors that are highly correlated with many desirable learning and personal development outcomes of college. Students reflect on what they are putting into and getting out of their college experience, thus it is consistent with effective educational practice (Kuh, 2001). Data was collected via the 2008 CSR Survey.

Instrumentation

Data were collected via the NSSE 2008 CSR Survey (see Appendix C). This survey contained 28 questions, including 109 items which represent good practices in undergraduate education that "reflect behaviors by students and institutions that are associated with desired outcomes of college" (National Survey of Student Engagement, 2011). NSSE established five benchmarks of effective educational practice based on 42 key questions: level of academic challenge, active and collaborative learning, student-faculty interaction, supportive campus environment, and enriching educational activities (National Survey of Student Engagement, n.d., a):

1. Level of academic challenge: time spent preparing for class, working harder than students thought they could to meet faculty's standards, number of assigned textbooks, number of written papers, among others.
2. Active and collaborative learning: asking questions in class, making class presentations, working with other students, tutoring, participating in community-based projects, among others.
3. Student-faculty interaction: discussing grades or assignments with faculty, talking about career plans with faculty, discussing ideas from readings with faculty, working with faculty on activities other than coursework, among others.
4. Enriching educational experiences: talking with students with different religious beliefs, talking with students of a different race, determining if the institutional climate encourages contact among students from different backgrounds, using electronic technology to complete assignments, among others.
5. Supportive campus environment: campus environment that helps students to succeed academically; campus environment that helps students cope with non-academic responsibilities; campus environment that provides support socially; campus environment that supports quality relationships with other students, faculty, among others.

These student behaviors and educational features were measured via a Likert scale, which is a psychometric scale used commonly in questionnaires and survey research with a continuum ranging from strongly agree to strongly disagree.

In addition, background information was collected, such as age, gender, classification in college, grades, major, among others.

Data Collection

To date, over 1,400 institutions of higher education in the U.S. and Canada participated in NSSE since 2000. In 2008, 769 institutions administered the survey with an average response rate of 37%, with the web response rate exceeding paper response rate by 7%. Out of these institutions, 67 institutions administered the paper version, 463 institutions administered the web-only version, and 233 institutions administered the web+ version. Additionally, 300 institutions were public and 414 institutions were private. The survey was administered during the spring semester. First-year and senior-year students who were enrolled in the previous fall semester were randomly selected. From the institutions that participated in 2008, 758 administered the first-year survey and 762 administered the senior-year survey. NSSE did not provide incentives for survey completion. Information was supplemented by institutional records, results from other surveys, and data from the Integrated Postsecondary Education Data System (Indiana University Center for Postsecondary Research, 2008). The summary of the 2008 data is available publically at http://nsse.iub.edu/NSSE_2008_Results/docs/withhold/NSSE2008_Results_revised_11-14-2008.pdf.

Variables in the Study

Major variables listed in the study are shown in Appendix E. Dependent variables were satisfaction by entire educational experiences (question 13: How would you evaluate your entire educational experience at this institution?) and grades (question 25: What have most of your grades been up to now at this institution?).

Independent variables were age (question 15: Select your year of birth), gender (question 16: Your sex), nationality (question 17: Are you an international student or foreign national?), race/ethnicity (question 18: What is your racial or ethnic identification?), year in college (question 19: What is your current classification in college?), institutional type/Carnegie classification (provided by IUCPR), institutional type/control (provided by IUCPR), critical mass/percentage of international students (provided by IUCPR), and academic major (question 28a: Please enter your major(s) or your expected major(s) (write-in major coded by IUCPR). Additionally, the following constructs were used as independent variables: level of academic challenges (11 variables), active and collaborative learning (7 variables), student-faculty interaction (6 variables), enriching educational experiences (12 variables), and supportive campus environment (6 variables).

Data Analysis

Data were analyzed using SPSS (Statistical Package for the Social Sciences) 20.0 software. Survey results were provided to the researcher in the SPSS. IBM SPSS Statistics offers the full scope of statistical and analytical capabilities: "it addresses the entire analytical process from planning and data preparation to analysis, reporting and deployment; provides tailored functionality and custom interfaces for different skill levels and functional responsibilities of business users, analysts and statisticians" (International Business Machines, n.d., para. 2). Descriptive statistics, bivariate statistics, prediction for numerical outcomes, and prediction for identifying groups are among statistics included in the software.

Method of Analysis

The following methods of analysis were used to answer each of the research questions.

Research question 1: What are the demographics of international and American students in the U.S. institutions of higher education who responded to the 2008 NSSE survey? Descriptive statistics and frequencies were used to answer this question. Descriptive statistics are "statistical procedures used to summarize, organize, and simplify the data" (Gravetter & Wallnau, 2007, p. 6) and they "describe samples of subjects in terms of variables or combinations of variables" (Tabachnik & Fidell, 2007, p. 7). According to Gravetter and Wallnau (2007), "frequency distribution is an organized tabulation of the number of individuals located in each category on the scale of measurement" (p. 37). Specifically, numbers, percentages, and means were used, among others.

$$\text{percentage} = p(100) = \frac{f}{N}(100)$$

where f is the frequency of scores and N is the number of scores (Gravetter & Wallnau, 2007, p. 39). "Mean for a distribution is the sum of the scores divided by the number of scores:

$$\mu = \frac{\Sigma X}{N} \text{ or } M = \frac{\Sigma X}{n}$$

where X are scores and $N(n)$ is the number of scores" (Gravetter & Wallnau, 2007, p. 74).

Research question 2: How does enrollment of international and American students differ by the critical mass measured by proportion of international students and academic major? Crosstabulation was used to answer this question. According to SPSS version 20.0, crosstabulation procedure "forms two-way and multiway tables and provides a

variety of tests and measures of association for two-way tables [and] measures of association are computed for two-way tables only". Specifically, numbers, percentages, and means were compared, among others.

Research question 3: How does enrollment of international and American students differ by institutional classification measured by institutional type and institutional control? Crosstabulation was used to answer this question. Crosstabulation was described in research question 2.

Research question 4: What is the association between enrollment of international and American students and the critical mass measured by proportion of international students and academic major? Crosstabulation and chi-square test were used to answer this question. Crosstabulation was described in research question 2. According to Tabachnik and Fidell (2007), "the chi-square (χ^2) test of independence is used to examine the relationship between two discrete variables" (p. 58):

$$\text{chi-square} = \chi^2 = \Sigma \frac{(fo - fe)^2}{fe}$$

where *fo* is a set of observed frequencies and *fe* is a set of expected frequencies. "The chi-square statistics simply measures how well the data (*fo*) fit the hypothesis (*fe*) (Gravetter & Wallnau, 2007, p. 586-587). Percentage of international students and academic major as critical mass were examined.

Research question 5: What is the association between enrollment of international and American students and institutional classification measured by institutional type and institutional control? Crosstabulation and chi-square test were used to answer this question. Crosstabulation was described in research question 2 and chi-square test was described in research question 4. Institutional type according to Carnegie classification

and institutional control (public vs. private) were examined. Institutional types were recoded to match the ones used by Zhao, Kuh, and Carini (2005): Doctoral Research Universities Extensive, Doctoral Research Universities Intensive, Masters I and II, Baccalaureate Liberal Arts, Baccalaureate General, and Other.

Research question 6: What is the interrelationship among the variables that measure the five NSSE benchmarks of effective educational practice for international and American students during their senior year? Exploratory factor analysis was used to answer this question. According to Tabachnik and Fidell (2007), factor analysis is a "statistical technique applied to a single set of variables when the researcher is interested in discovering which variables in the set form coherent subsets that are relatively independent of one another" (p. 607). It is conducted when responses to different questions are suspected to be driven by factors or underlying structures (Tabachnik & Fidell, 2007). According to Tabachnik and Fidell (2007), in exploratory factor analysis "one seeks to describe and summarize data by grouping together variables that are correlated" (p. 609); variables may or may not be chosen with potential underlying method in mind. "Factors are interpreted by the variables that correlate with them" (Tabachnik & Fidell, 2007, p. 611). Exploratory factor analysis tested if variables grouped for each of the benchmarks hold for the sample. Components were extracted based on Kaiser's measure of sampling adequacy which is "a ratio of sum squared correlations to the sum of squared correlations plus sum of squared partial correlations" (Tabachnik & Fidell, 2007, p. 614). Values of .6 and above were extracted for this factor analysis. After extraction, rotation was used "to improve the interpretability and scientific utility of the solution" (Tabachnik & Fidell, 2007, p. 637). Factors with

Cronbach's alpha >.6 (meaning acceptable or high reliability) were selected as new benchmarks for this sample.

Research question 7: What are the levels of satisfaction with the entire educational experience at this institution for international and American students during their senior year? Is there a statistically significant difference in the level of satisfaction between international and American students during their first and senior years? An independent samples t-test was used to answer this question. T-test "uses data from two separate samples to draw inferences about the mean difference between two populations" (Gravetter & Wallnau, 2007, p. 323). Specifically, numbers, percentages, and means were compared. If the test was not significant ($p>.05$), equal variances across the groups were assumed, and if the test was significant ($p<.05$), equal variance across the groups were not assumed.

Research question 8: What is the academic success measured by most of the grades up to now at this institution for international and American students during their senior year? Is there a statistically significant difference in the academic success between international and American students during their first and senior years? An independent samples t-test was used to answer this question. An independent samples t-test was described in research question 7. Specifically, numbers, percentages, and means were compared.

Research question 9: Is there a statistically significant difference between international and American students in the levels of student engagement as represented by benchmarks for this particular sample during their senior year? An independent

samples t-test was used to answer this question. An independent samples t-test was described earlier in research question 7.

Research question 10: To what extent can student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice predict the level of satisfaction with the entire educational experience at this institution during their senior year? Sequential/hierarchical multiple regression was used to answer this question. According to Tabachnik and Fidell (2007), "regression analyses are a set of statistical techniques that allow one to assess the relationship between one DV and several IVs" when the intent of study is prediction or testing interactions (p. 117). Specifically, in sequential/hierarchical multiple regression "predictors are assigned priorities and then assessed in terms of their contribution to prediction of group membership given their priority" (Tabachnik & Fidell, 2007, p. 25):

$$Y' = A + B1X1 + B2X2 + \ldots + BkXk$$

where Y' is the predicted value on the DV, A is the Y intercept (the value of Y when all the X values are zero), the Xs represent the various IVs (of which there are k), and the Bs are the coefficients assigned to each of the IVs during regression (Tabachnik & Fidell, 2007, p. 118).

An analytical approach of this regression model emerged from previous literature and research. The dependent variable was question 13: "How would you evaluate your entire educational experience at this institution?" Independent variables were grouped into 5 blocks. The first block included background characteristics: age (6-point scale) and gender (0=male and 1=female). The second block contained nationality

(0=American and 1=international). The third block included institutional type: institutional control (0=public and 1=private) and 6 kinds of institutional classification variable reorganized using dummy coding (1=yes and 0=no). The fourth block contained critical mass: percentage of international students enrolled in ranges (7-point scale) and 5 kinds of academic major variable reorganized using dummy coding (1=yes and 0=no). Finally, the fifth block included new benchmarks that emerged for this sample (described in research question 6). It is important to note that academic majors were earlier recoded to match the ones used by Zhao, Kuh, and Carini (2005): Social Sciences, Humanities, Math and Sciences, Pre-professional, and Other.

Research question 11: To what extent can student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice predict the academic success measured by most of the grades up to now at this institution during their senior year? Sequential/hierarchal multiple regression was used to answer this question. Sequential/hierarchal multiple regression was described in research question 10. Analytical approach, variables (coding and rationale), and regression model details were also described in question 10. The dependent variable, however, was question 25: "What have most of your grades been up to now at this institution?"

Overall, the following analytical approach has been applied to formulation and order of research questions: questions 1 through 6 were descriptive, questions 7 through 9 contained comparative analysis, and questions 10 and 11 held prediction.

Reliability and Validity of the Instrument

"The NSSE survey was designed by experts and extensively tested to ensure validity and reliability and to minimize nonresponse bias and mode effects" (Indiana University Center for Postsecondary Research, 2008). According to Gravetter and Wallnau (2008), reliability is stability or consistency of the measurement, and validity is the degree to which a test measures what it claimed to measure.

Data used in this research was self-reported. Kuh (2001) summarized previous research and noted that accuracy of self-reported data could be affected by two problems: the inability of respondents to provide accurate information in response to a question and the unwillingness of respondents to provide what they know to be truthful information. In addition, self-reported time and halo effects (where students inflate certain behaviors or performances) could also threaten the validity. However, the CSR survey was intentionally designed to satisfy five general conditions for the self-reports to be valid as identified by Kuh (2001): "when the information requested is known to the respondents; the questions are phrased clearly and unambiguously; the questions refer to recent activities; the respondents think the questions merit a serious and thoughtful response; and answering the questions does not threaten, embarrass, or violate the privacy of the respondent or encourage the respondent to respond in socially desirable ways" (p. 4). Kuh (2001) summarized that students are accurate and credible reporters of their college experiences and college gains, providing they have the information required to accurately answer the questions and items are clearly worded. Additionally, generally students respond carefully and with personal interest to such questionnaires; therefore, it is

appropriate and reasonable to pay attention to what college students say about their college experiences and gains.

Ethical Issues

The Iowa State University Institutional Review Board has been consulted, and an Exempt Study Review Form has been filed with the office (see Appendix B). This was the appropriate form considering that this research involved only de-identified data as all student and institution identifying information was removed by IUCPR. Thus, the project has been declared exempt from the requirements of human subject protections regulations.

Limitations and Delimitations

There are several limitations for this study. First, NSSE's sample included only 20% of students that have taken the survey. Second, NSSE data describes only an undergraduate student population. Third, not all institutions administer NSSE surveys; therefore, only data from those who choose to participate were used. Fourth, question 17 asks, "Are you an international student or foreign national?"; therefore, there is no way to distinguish international students from foreign nationals. Fifth, students are not asked to indicate their country of origin; thus, it was not possible to compare students by country or area of origin. Sixth, NSSE does not measure language proficiency; hence, critical effect of language proficiency was not taken into consideration. Seventh, the question inquiring about the students' majors is open-ended as opposed to multiple-choice, which might lead to some discrepancies and inaccuracies. Finally, data is self-reported, which often raises questions of validity and reliability as discussed above.

Delimitations of this study were that major categories and Carnegie classification categories were limited to major categories and Carnegie classification categories utilized in the previous study. Also, ethnic background (race) was not looked at in depth.

Summary

Chapter 3 summarized the purpose of the study and research questions. In addition, it presented the epistemology and theoretical perspective, theoretical framework, research design and methodology used in the study. This chapter also discussed population and sample, data collection methods, instrumentation, data collection, and variables in the study. Furthermore, it described data analysis, method of analysis, reliability and validity of the instrument. Finally, it concluded with ethical issues and limitations and delimitations.

CHAPTER 4. RESULTS

Introduction

Chapter 4 provides an overview of the quantitative findings of this study by describing results and is organized according to eleven research questions. Demographics section describes the demographics of international and American students in the U.S. institutions of higher education who responded to the 2008 NSSE survey. Enrolment and critical mass section examines how enrollment of international and American students differs by the critical mass measured by proportion of international students and academic major. Enrollment and institutional classification section describes how enrollment of international and American students differs by institutional classification measured by institutional type and institutional control. Association between enrollment and critical mass section explains the association between enrollment of international and American students and the critical mass measured by proportion of international students and academic major. Association between enrollment and institutional classification section examines the association between enrollment of international and American students and institutional classification measured by institutional type and institutional control. Interrelationships among NSSE benchmarks section covers the interrelationship among the variables that measure the five NSSE benchmarks of effective educational practice for international and American students during their senior year.

Further, levels of satisfaction with the entire educational experience section describes the levels of satisfaction with the entire educational experience of international and American students during their senior year at this institution and explores if there is a

statistically significant difference in the level of satisfaction between international and American students during their first and senior years. Academic success measured by most of the grades up to now section describes the academic success measured by most of the grades up to now of international and American students during their senior year at this institution and explores if there is a statistically significant difference in the academic success between international and American students during their first and senior years. Student engagement section examines if there is a statistically significant difference between international and American students in the levels of student engagement as represented by new benchmarks during their senior year. Prediction of level of satisfaction section covers the extent to which student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice can predict the level of satisfaction with the entire educational experience at this institution during their senior year. Finally, prediction of academic success section covers the extent to which student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice can predict the academic success measured by most of the grades up to now at this institution.

Results

Demographics

What are the demographics of international and American students in U.S. institutions of higher education who responded to the 2008 NSSE survey? Descriptive statistics and frequencies were used to answer this question.

By running frequencies, it was determined that out of 66,056 sample, 3,245 (or 4.9%) were international students and 62,811 (95.1%) were American students, as shown in Table 4.1. This characterizes the 20% sample provided to the researcher.

Table 4.1

Nationality Distribution (N=66,065)

Nationality	*N*	%
International	3,245	4.9
American	62,811	95.1
Total	66,056	100.0

By running frequencies, it was determined that 1,120 (34.8%) of international students were 19 years old or younger; 1,302 (40.3%) were between the ages of 20 and 23; 455 (14.1%) were between the ages of 24 and 29; 236 (7.3%) were between the ages of 30 and 39; 108 (3.3%) were between the ages of 40 and 55; and 6 (0.2%) were older than 55 years old. Alternatively, 26,131 (41.8%) American students were 19 years old or younger; 24,101 (38.5%) were between the ages of 20 and 23; 5,476 (8.7%) were between the ages of 24 and 29; 3,582 (5.7%) were between the ages of 30 and 39; 3,100 (4.9%) were between the ages of 40 and 55; and 282 (0.4%) were older than 55 years old as shown in Table 4.2. Eighteen (0.6%) international students and 139 (0.2%) American students did not reply to the question about age.

Table 4.2

Age Distribution of International and American Students (N=65,899, International=3,227, American=62,672)

Age	International		American	
	n	%	*n*	%
19 or younger	1,120	34.8	26,131	41.8
20-23	1,302	40.3	24,101	38.5
24-29	455	14.1	5,476	8.7
30-39	236	7.3	3,582	5.7
40-45	108	3.3	3,100	4.9
Over 55	6	0.2	282	0.4
Total	3,227	100.0	62,672	100.0
TOTAL	65,672			

By running frequencies, it was determined that 1,312 (40.5%) international students were males and 1,926 (59.5%) were females, while 22,169 (35.4%) American students were males and 40,405 (64.6%) were females as shown in Table 4.3. Seven (0.2%) international and 138 (0.2%) American students did not reply to the question about gender. Thus, international students had a higher proportion of men than women than American students did.

Table 4.3

Gender Distribution of International and American Students (N=65,911, International=3,238, American=62,673)

Gender	International		American	
	n	%	*n*	%
Males	1,312	40.5	22,169	35.4
Females	1,926	59.5	40,504	64.6
Total	3,238	100.0	62,673	100.0
TOTAL	65,911			

By running frequencies, it was determined that 13 (0.4%) international students were American Indian or other Native American; 1,137 (35.2%) were Asian, Asian

American or Pacific Islander; 384 (11.9%) were black or African American; 794 (24.6%) were white (non-Hispanic); 139 (4.3%) were Mexican or Mexican American; 32 (1.0%) were Puerto Rican; 275 (8.5%) were other Hispanic or Latino; 86 (2.7%) were multiracial; and 232 (7.2%) were of other race. Alternatively, 530 (0.8%) of American students were American Indian or other Native American; 2,749 (4.4%) were Asian, Asian American or Pacific Islander; 4,130 (6.6%) were black or African American; 45,789 (73.0%) were white (non-Hispanic); 1,499 (2.4%) were Mexican or Mexican American; 451 (0.7%) were Puerto Rican; 1.329 (2.1%) were other Hispanic or Latino; 1,503 (2.4%) were multiracial; and 745 (1.2%) were of other race as shown in Table 4.4. One hundred thirty-eight (4.3%) international students and 3,973 (6.3%) of American students indicated that they preferred not to respond, and 15 (0.5%) international and 104 (0.2%) American students did not reply to the question about racial or ethnic identification. Thus, international students had higher racial and ethnic diversity than American students.

In race distribution, "Other" for international students was significantly higher than for American students (7.1% vs. 1.2%), which could be due to them having difficulties identifying their race to fit in the provided categories. Further, a combination of "Other" and "Prefer not to Respond" accounts for a significantly higher proportion (11.4% vs. 7.5%).

Table 4.4

Race/Ethnicity Distribution of International and American Students (N=65,962, International=3,245, American=62,707)

Race/Ethnicity	International		American	
	n	%	*n*	%
American Indian or Native American	13	0.4	530	0.8
Asian, Asian American or Pacific Islander	1,137	35.2	2,749	4.4
Black or African American	384	11.9	4,130	6.6
White (non-Hispanic)	794	24.6	45,798	73.0
Mexican or Mexican American	139	4.3	1,499	2.4
Puerto Rican	32	1.0	451	0.7
Other Hispanic or Latino	275	8.5	1,329	2.1
Multiracial	86	2.7	1,503	2.4
Other	232	7.2	745	1.2
Prefer not to Respond	138	4.3	3,973	6.3
Total	3,230	100.0	62,707	100.0
TOTAL	65,962			

By running descriptive statistics, it was determined that 1,343 (41.6%) international students were freshmen; 219 (6.8%) were sophomores; 175 (5.4%) were juniors; and 1.396 (43.2%) were seniors. Alternatively, 25,669 (41.0%) American students were freshmen; 3,260 (5.2%) were sophomores; 2,156 (3.4%) were juniors; and 30,454 (48.6%) were seniors. Freshman and senior categories are significantly larger than sophomore and junior categories which could be explained by the fact that NSSE survey is given to freshmen and seniors. Ninety-eight (3.0%) international students and 1,108 (1.8%) American students were unclassified, and 14 (0.4%) international students and 164 (0.3%) American students did not reply to the questions about current classification in college (university) as shown in Table 4.5. NSSE is given to first-year and senior students, which explains why there are significantly more freshmen and

seniors than sophomores and juniors. Presence of sophomores and juniors could be explained by the fact that the current classification in college was self reported.

Table 4.5

Year in College Distribution of International and American Students (N=65,878, International=3,231, American=62,647)

Year in College	International		American	
	n	%	*n*	%
Freshman	1,343	41.6	25,669	41.0
Sophomore	219	6.8	3,260	5.2
Junior	175	5.4	2,156	3.4
Senior	1,396	43.2	30,454	48.6
Unclassified	98	3.0	1,108	1.8
Total	3,231	100.0	62,647	100.0
TOTAL	65,878			

Given that several questions of this study concern seniors, selective characteristics of international and American seniors can be found in Appendix F.

Enrollment and Critical Mass

How does enrollment of international and American students differ by the critical mass measured by proportion of international students and academic major? Crosstabulation was used to answer this question.

First, percentages of international students as critical mass were looked at. Percentages of international students in ranges were provided by NSSE.

By running crosstabulation, it was determined that for this sample 433 (13.4%) international students were enrolled in an institution where percentage of international students was less than 0.75%; 608 (18.8%) were enrolled in institutions where it ranged between 0.75% and 1.5%; 478 (14.8%) were enrolled in institutions where it ranged between 1.6% and 3%; 603 (18.6%) were enrolled in institutions where it ranged between

3.1% and 5%; 821 (25.4% which is the largest proportion) were enrolled in institutions where it ranged between 5.1% and 10%; 202 (6.2%) were enrolled in institutions where it ranged between 10.1% and 15%; and 93 (2.8%) were enrolled in institutions where it was more than 15% as shown in Table 4.6. The researcher checked with the two leading professional organizations in the field – Association of International Educators (NAFSA) and Institute of International Education (IIE); however, neither had classification of institutions by percentage of international students enrolled in place (personal communication, December 13 and December 16, 2011).

Table 4.6

Number and Percentage Distribution of International Students in Institutions by Percentage of International Students in Ranges (N=3,238)

Percentage of International Students in Ranges	International Students	
	n	%
Less than 0.75%	433	13.4
0.75% to 1.5%	608	18.8
1.6% to 3%	478	14.8
3.1% to 5%	603	18.6
5.1% to 10%	821	25.4
10.1% to 15%	202	6.2
15% or more	93	2.8
Total	3,238	100.0

Second, academic major as critical mass was looked at. The survey asked student's major or expected major and second major or expected major (not minor or concentration). NSSE staff created these variables based on student responses and recodes them in 58 majors (listed earlier). Thus, NSSE lists two majors for each student – primary and secondary; however, only primary major was selected for this study. Zhao, Kuh, & Carini (2005) used only primary major. Additionally, only 16,830 (25.5%)

of respondents indicated secondary major. Thus, this study used only primary major as well.

By running crosstabulation, it was determined that 324 (10.4%) international students and 9,447 (15.4%) American students majored in arts and humanities; 323 (10.3%) international students and 4,808 (7.9%) American students majored in biological sciences; 779 (24.9%) international students and 9,842 (16.1%) American students majored in business; 109 (3.5%) international students and 6,057 (9.9%) American students majored in education; 276 (8.8%) international students and 3,330 (5.4%) American students majored in engineering; 153 (4.9%) international students and 2,266 (3.7%) American students majored in physical science; 271 (8.7%) international students and 6,027 (9.9%) American students majored in professional majors; 425 (13.6%) international students and 8,641 (14.1%) American students majored in social science; 434 (13.9%) international students and 9.543 (15.6%) American students majored in other majors; and 33 (1.1%) international students and 1,212 (2.0%) American students were undecided. Thus, international students favored biological sciences (10.3% vs. 7.9%), business (24.9% vs. 16.1%), engineering (8.8% vs. 5.4%), and physical science (4.9% vs. 3.7%). On the other hand, American students favored arts and humanities (15.4% vs. 10.4%), education (9.9% vs. 3.5%), professional majors (9.9% vs. 8.7%), and social science (14.1% vs. 13.6%). Finally, more American students majored in other majors (15.6% vs. 13.9%) and were undecided (2.0% vs. 1.1%) as shown in Table 4.7.

Table 4.7

Crosstabulation of International and American Students by Academic Major (N= 64,296, International=3,127, American=61,169)

Academic Major	International		American	
	n	%	*n*	%
Arts and Humanities	324	10.4	9,447	15.4
Biological Sciences	323	10.3	4,804	7.9
Business	779	24.9	9,842	16.1
Education	109	3.5	6,507	9.9
Engineering	276	8.8	3,330	5.4
Physical Science	153	4.9	2,266	3.7
Professional	271	8.7	6,027	9.9
Social Science	425	13.6	8,641	14.1
Other	434	13.9	9,543	15.6
Undecided	33	1.1	1,212	2.0
Total	3,127	100.0	61,169	100.0
TOTAL	64,269			

This is not a national picture, however; this is a pure description of the sample. According to the 2008 Open Doors Report (Institute of International Education, 2009), 19.6% of international students enrolled in 2006-07 and 2007-08 majored in business and management, 17.0% – engineering, 9.3% – physical and life sciences, 8.7% – social sciences, 8.2% – math and computer sciences, 5.6% – fine and applied arts, 5.1% – health professions, 4.6% – intensive English language, 3.1% – education, 3.1% – humanities, and 1.6% – agriculture.

Enrollment and Institutional Classification

How does enrollment of international and American students differ by institutional classification measured by institutional type and institutional control? Crosstabulation was used to answer this question.

First, institutional classification as type was looked at. Type of an institution was provided by NSSE based on basic Carnegie classification.

By running crosstabulation, it was determined that 339 (10.4%) international students and 6,934 (11.0%) American students were enrolled in research universities with very high research activity; 428 (13.2%) international students and 7,919 (12.6%) American students were enrolled in research universities with high research activity; 171 (5.3%) international students and 3,307 (5.3%) American students were enrolled in doctoral/research universities; 907 (28.0%) international students and 18,218 (29.0%) American students were enrolled in masters colleges and universities with large programs; 276 (8.5%) international students and 6,990 (11.1%) American students were enrolled in masters colleges and universities with medium programs; 130 (4.0%) international students and 2,783 (4.4%) American students were enrolled in masters colleges and universities with smaller programs; 553 (17.0%) international students and 8,958 (14.3%) American students were enrolled in arts and sciences baccalaureate colleges; 252 (7.8%) international students and 4,948 (7.9%) American students were enrolled in diverse fields baccalaureate colleges; 72 (2.2%) international students and 1,195 (1.9%) American students were enrolled in other baccalaureate/associate colleges; 4 (0.1%) international students and 127 (0.2%) American students were enrolled in theological seminaries, bible colleges, and other faith-related institutions; 7 (0.2%) international students and 133 (0.2%) American students were enrolled in medical schools and other health profession schools; 22 (0.7%) international students and 361 (0.6%) American students were enrolled in engineering, technology, and business/management schools; 58 (1.8%) international and 552 (0.9%) American

students were enrolled in schools of art, music and design; and 26 (0.8%) international students and 356 (0.6%) American students were enrolled in other institutions. Thus, international students favored research universities with high research activity (13.2% vs. 12.6%); arts and sciences baccalaureate colleges (17.0% vs. 14.3%); other baccalaureate/associate colleges (2.2% vs. 1.9%); engineering, technology, and business/management schools (0.7% vs. 0.6%); schools of art, music and design (1.8% vs. 0.9%); and other institutions (0.8% vs. 0.6%). On the other hand, American students favored research universities with very high research activity (11.0% vs. 10.4%); masters colleges and universities with large programs (29.0% vs. 28.0%); masters colleges and universities with medium programs (11.1% vs. 8.5%); masters colleges and universities with smaller programs (4.4% vs. 4.0%); diverse fields baccalaureate colleges (7.9% vs. 7.8%); and theological seminaries, bible colleges, and other faith-related institutions (0.2% vs. 0.1%). Medical schools and other health profession schools enrolled the same percentage of international and American students (0.2%) as shown in Table 4.8.

Table 4.8

Crosstabulation of International and American Students by Institutional Classification (Type) (N=66,056, International=3,245, American=62,811)

Institutional Type	International		American	
	n	%	*n*	%
Research Universities with Very High Research Activity	339	10.4	6,934	11.0
Research Universities with High Research Activity	428	13.2	7,919	12.6
Doctoral/Research Universities	171	5.3	3,307	5.3
Masters Colleges and Universities with Larger Programs	907	28.0	18,218	29.0
Masters Colleges and Universities with Medium Programs	276	8.5	6,990	11.1
Masters Colleges and Universities with Smaller Programs	130	4.0	2,783	4.4
Baccalaureate Colleges with Arts and Sciences	553	17.0	8,958	14.3
Baccalaureate Colleges with Diverse Fields	252	7.8	4,978	7.9
Other Baccalaureate/Associate Colleges	72	2.2	1,195	1.9
Theological Seminaries, Bible Colleges, and Other Faith-Related	4	0.1	127	0.2
Medical Schools and Other Health Profession Schools	7	0.2	133	0.2
Engineering, Technology, and Business/ Management Schools	22	0.7	361	0.6
Schools of Art, Music, and Design	58	1.8	552	0.9
Other	26	0.8	356	0.6
Total	3,245	100.0	62,811	100.0
TOTAL	66,056			

Second, institutional control as type was looked at. Control was provided by IPEDS.

By running crosstabulation, it was determined that 1,735 (53.5%) international students were enrolled in public institutions and 1,505 (46.5%) in private. Alternatively, 37,678 (60%) American students were enrolled in public institutions and 25,105 (40%) in private as shown in Table 4.9.

Table 4.9

Crosstabulation of International and American Students by Institutional Classification (Control) (N=66,023, International=3,240, American 62,783)

Institutional Type	International		American	
	n	%	*n*	%
Public	1,735	53.5	37,678	60.0
Private	1,505	46.5	25,105	40.0
Total	3,240	100.0	62,783	100.0
TOTAL	66,023			

Association between Enrollment and Critical Mass

What is the association between enrollment of international and American students and the critical mass measured by proportion of international students and academic major? Crosstabulation and chi-square test were used to answer this question.

First, percentage of international students enrolled as critical mass was examined. Chi-square test tests revealed that for the present sample there was a statistically significant difference between where international and American students are enrolled in considering percentages of international students as shown in Table 4.10. In other words, association between enrollment of international and American students and proportion of international students was statistically significant. Distribution of proportion of international students depends on nationality of the students (international or American). Significant chi-square value indicates that international and American students were represented differently in institutions with different proportion of international students.

Table 4.10

Chi-Square Analysis of Critical Mass (Percentage) among International and American Students (N=65,821, International=3,238, American=62,583)

Percentage of International Students	International	American		
	n	*n*	χ^2	*p*
Less than .75%	433	14,535	1243,632	<.001*
.75% to 1.5%	608	18,337		
1.6% to 3%	478	11,100		
3.1% to 5%	603	9,375		
5.1% to 10%	821	7,837		
10.1% to 15%	202	974		
15% or more	93	425		
Total	3,238	62,583		
TOTAL	65,821			

df=6
*p<.001

Second, academic major as critical mass was examined. Majors were recoded to match the ones used in research by Zhao, Kuh, and Carini (2005) as shown in Table 4.11.

Table 4.11

Crosstabulation of International and American Students by Academic Major Recoded According to Zhao, Kuh, and Carini (2005) (N=9,218, International=300, American=8,918)

Academic Major	International		American	
	n	%	*n*	%
Social Sciences	0	0	56	0.6
Humanities	112	37.3	2,037	22.8
Math & Sciences	94	31.3	2,758	30.9
Pre-professional	9	3.0	277	3.1
Other	85	28.3	3,790	42.5
Total	300	100.0	8,918	100.0
TOTAL	9,218			

Chi-square test revealed that there is a statistically significant difference between majors of international and American students as shown in Table 4.12. In other words,

association between enrollment of international and American students and academic major was statistically significant. Distribution of academic major depends on nationality of the students (international or American). Significant chi-square value indicates that international and American students were represented differently across all majors.

Table 4.12

Chi-Square Analysis of Critical Mass (Academic Major) among International and American Students (N=9,218, International=300, American=8,918)

Academic Major	International	American		
	n	*n*	χ^2	*p*
Social Sciences	0	56	41,909	<.000*
Humanities	112	2,037		
Math & Sciences	94	2,758		
Pre-professional	9	277		
Other	85	3,790		
Total	300	8,918		
TOTAL	9,218			

df=4
*p<.001

Association between Enrollment and Institutional Classification

What is the association between enrollment of international and American students and institutional classification measured by institutional type and institutional control? Crosstabulation and chi-square test were used to answer this question.

First, institutional type according to Carnegie classification was examined. Institutional types were recoded to match the ones used in research by Zhao, Kuh, and Carini (2005) as shown in Table 4.13.

Table 4.13

Crosstabulation of International and American Students by Institutional Classification Recoded According to Zhao, Kuh, and Carini (2005) (N=66,056, International=3,245, American=62,811)

Institutional Type	International		American	
	n	%	*n*	%
Doctoral Research Universities Extensive	339	10.4	6,934	11.0
Doctoral Research Universities Intensive	559	18.1	11,226	17.9
Masters I and II	1,313	40.5	27,991	44.6
Baccalaureate Liberal Arts	553	17.0	8,958	14.3
Baccalaureate General	324	10.0	6,173	9.8
Other	117	3.6	1,529	2.4
Total	3,245	100.0	62,811	100.0
TOTAL	66,056			

Chi-square test revealed that there is a statistically significant difference between types of institutions (Carnegie classification) where international and American students are enrolled in as shown in Table 4.14. In other words, association between enrollment of international and American students and institutional type was statistically significant. Institutional type depends on nationality of the students (international or American). Significant chi-square value indicates that international and American students were represented differently across different institutional types.

Table 4.14

Chi-Square Analysis of Institutional Classification (Type) among International and American Students (N=66,056, International=3,245, American=62,811)

Institutional Type	International	American		
	n	*n*	χ^2	*p**
Doctoral Research Universities	339	6,934	46.902	<.000
Extensive	559	11,226		
Doctoral Research Universities Intensive	1,313	27,991		
Masters I and II	553	8,958		
Baccalaureate Liberal Arts	324	6,173		
Baccalaureate General	117	1,529		
Other	3,245	62,811		
Total				
TOTAL	66,056			

df=5
**p*<.001

Second, institutional control (private vs. public) as institutional type was examined as shown in Table 4.9.

Chi-square test revealed that there is a statistically significant difference between types of institutions (public vs. private control) where international and American students are enrolled in as shown in Table 4.15. In other words, association between enrollment of international and American students and institutional control was statistically significant. Institutional control depends on nationality of the students (international or American). Significant chi-square value indicates that international and American students were represented differently across public and private institutions.

Table 4.15

Chi-Square Analysis of Institutional Classification (Control) among International and American Students (N=66,023, International=3,240, American 62,783)

Institutional Type	International	American		
	n	*n*	χ^2	*p**
Public	1,735	37,678	53.500	<.000
Private	1,505	25,105		
Total	3,240	62,783		
TOTAL	66,023			

df=1
**p*<.001

Interrelationship among NSSE Benchmarks

What is the interrelationship among the variables that measure the five NSSE benchmarks of effective educational practice for international and American students during their senior year? Exploratory factor analysis was used to answer this question.

"Institutional benchmarks are created by calculating weighted averages of the student-level scores for each class (first-year students and seniors)" (Indiana University Center for Postsecondary Research, 2012, para. 6). For the present study, seniors were selected not only because NSSE measures benchmarks separately for each year, but also because dependent variables for this study measure experience and grades during their senior year. The purpose of this study was to see if years spent in college made a difference; thus, only seniors were selected.

First, descriptive statistics for each of the variables that measure the five NSSE benchmarks were run. Table 4.16 shows means and standard deviations for benchmark 1 (level of academic challenge) for the present sample. Among 11 questions that measure benchmark 1 responses to questions "number of written papers or reports of 20 pages or

more," "number of written papers or reports between 5 and 19 pages," and "number of reports of fewer than 5 pages" had lower means of 1.65 (between none and 1-4), 2.65 (between 1-4 and 5-10), and 3.07 (about 5-10), respectively, with the standard deviation (or deviation from the mean) of 0.757, 0.954, and 1.262, respectively, which is still close to the other variables in this benchmark.

Table 4.16

Means and Standard Deviations for Variables that Measure Benchmark 1: Level of Academic Challenge for Students during Their Senior Year (N=30,903)

Variables	*M*	*SD*
Worked harder than you thought you could to meet an instructor's standards or expectations	2.76	0.846
Coursework emphasized: analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	3.27	0.730
Coursework emphasized: synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	3.09	0.815
Coursework emphasized: making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	3.05	0.848
Coursework emphasized: applying theories or concepts to practical problems or in new situations	3.23	0.805
Number of assigned textbooks, books, or book-length packs of course readings	3.27	1.027
Number of written papers or reports of 20 pages or more	1.65	0.757
Number of written papers or reports between 5 and 19 pages	2.65	0.954
Number of written papers or reports of fewer than 5 pages	3.07	1.262
Hours per 7-day week spent preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)	4.20	1.724
Institutional emphasis: spending significant amounts of time studying and on academic work	3.17	0.764

Table 4.17 shows means and standard deviations for benchmark 2 (active and collaborative learning) for the present sample. Among 7 questions that measure

benchmark 2, responses to questions "tutored or taught other students (paid or voluntarily)" and "participated in a community-based project (e.g., service learning) as part of a regular course" had lower means of 1.91 and 1.79 (between never and sometimes), respectively, with the standard deviation (or deviation from the mean) of 0.968 and 0.928, respectively, which is close to the other variables in this benchmark.

Table 4.17

Means and Standard Deviations for Variables that Measure Benchmark 2: Active and Collaborative Learning for Students during Their Senior Year (N=30,752)

Variables	*M*	*SD*
Asked questions in class or contributed to class discussions	3.14	0.841
Made a class presentation	2.86	0.848
Worked with other students on projects during class	2.52	0.873
Worked with classmates outside of class to prepare class assignments	2.78	0.892
Tutored or taught other students (paid or voluntary)	1.91	0.968
Participated in a community-based project (e.g., service learning) as part of a regular course	1.79	0.928
Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	2.87	0.844

Table 4.18 shows means and standard deviations for benchmark 3 (student-faculty interaction) for the present sample. Among 6 variables that measure benchmark 3, responses to questions "worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)" and "discussed ideas from your readings of classes with faculty members outside of class" had a lower mean of 1.93 (between never and sometimes) and 2.16 (between sometimes and often), respectively, with the standard deviation (or deviation from the mean) of 0.977 and 0.931, respectively, which is close to the other variables in this benchmark.

Table 4.18

Means and Standard Deviations for Variables that Measure Benchmark 3: Student-Faculty Interaction for Students during Their Senior Year (N=30,887)

Variables	*M*	*SD*
Worked on a paper or project that required integrating ideas or information from various sources	3.36	0.711
Discussed grades or assignments with an instructor	2.85	0.874
Talked about career plans with a faculty member or advisor	2.51	0.957
Discussed ideas from your readings or classes with faculty members outside of class	2.16	0.931
Received prompt written or oral feedback from faculty on your academic performance	2.86	0.797
Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)	1.93	0.977

Table 4.19 shows means and standard deviations for benchmark 4 (enriching educational experience) for the present sample. Among 12 questions that measure benchmark 4, responses to questions "practicum, internship, field experience, co-op experience, or clinical assignment" and "community service or volunteer work" had higher means of 3.29 (between plan to do and done) and 3.33 (between plan to do and done), respectively, with the standard deviation (or deviation from the mean) of 0.962 and 1.002, respectively, which is close to the other variables in this benchmark.

Table 4.19

Means and Standard Deviations for Variables that Measure Benchmark 4: Enriching Educational Experience for Students during Their Senior Year (N=30,538)

Variables	*M*	*SD*
Used an electronic medium (listserv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment	2.81	1.021
Had serious conversations with students of a different race or ethnicity than your own	2.66	0.988
Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values	2.74	0.950
Practicum, internship, field experience, co-op experience, or clinical assignment	3.29	0.962
Community service or volunteer work	3.33	1.002
Participate in a learning community or some other formal program where groups of students take two or more classes together	2.50	1.025
Foreign (additional) language coursework	2.90	1.060
Study abroad	2.34	0.895
Independent study or self-designed major	2.39	0.921
Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, etc.)	2.97	0.987
Hours per 7-day week spent participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)	2.24	1.594
Institutional emphasis: encouraging contact among students from different economic, social, and racial or ethnic backgrounds	2.52	0.981

Table 4.20 shows means and standard deviations for benchmark 5 (supportive campus environment) for the present sample. Among 6 questions that measure benchmark 5, responses to questions "quality of your relationships with other students," "quality of your relationships with faculty members," and "quality of your relationships with administrative personnel and offices" had higher means of 5.65, 5.52, and 4.59 (closer to friendly, supportive, sense of belonging), respectively, with the standard

deviations (or deviations from the means) of 1.349, 1.318, and 1.662, respectively, which is close to the other variables in this benchmark.

Table 4.20

Means and Standard Deviations for Variables that Measure Benchmark 5: Supportive Campus Environment for Students during Their Senior Year (N=31,248)

Variables	*M*	*SD*
Quality: your relationship with other students	5.65	1.349
Quality: your relationships with faculty members	5.52	1.318
Quality: your relationships with administrative personnel and offices	4.59	1.662
Institutional emphasis: providing the support you need to help you succeed academically	3.00	0.828
Institutional emphasis: helping you cope with your non-academic responsibilities (work, family, etc.)	2.03	0.942
Institutional emphasis: providing the support you need to thrive socially	2.26	0.934

Second, exploratory factor analysis was run for each one of the five NSSE benchmarks. It tested whether variables grouped for each of them hold for the sample.

This sample was very specific as it included a disproportionally larger percentage of international students than the population of the 2008 NSSE respondents. Thus, there was a need to generate the constructs of the benchmarks for this specific sample.

Variables that measure benchmarks were selected based on NSSE benchmarks (see Appendix A). Other components were extracted that measure benchmarks more accurately for this sample. Kaiser's measure values of .6 and above were selected for this factor analysis and rotation was used. It was determined that for the first benchmark (level of academic challenge) 3 components were extracted as shown in Table 4.21: emphasis of homework on synthesizing, making judgments, and applying theories;

number of papers and reports written and textbooks assigned; and time studying and academic work.

Table 4.21

Components of Benchmark 1: Level of Academic Challenge for Students during Their Senior Year

Components	1	2	3
Coursework emphasized: synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	.814		
Coursework emphasized: making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	.799		
Coursework emphasized: applying theories or concepts to practical problems or in new situations	.790		
Coursework emphasized: analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	.786		
Number of written papers or reports between 5 and 19 pages		.807	
Number of written papers or reports of fewer than 5 pages		.670	
Number of assigned textbooks, books, or book-length packs of course readings		.634	
Hours per 7-day week spent preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)			.734
Institutional emphasis: spending significant amounts of time studying and on academic work			.721

It was determined that for the second benchmark (active and collaborative learning) 2 components were extracted as shown in Table 4.22: working with classmates inside and outside of class and discussions inside and outside of class.

Table 4.22

Components of Benchmark 2: Active and Collaborative Leaning for Students during Their Senior Year

Components	1	2
Worked with classmates outside of class to prepare class assignments	.779	
Worked with other students on projects during class	.765	
Made a class presentation	.657	
Discussed ideas from your readings or class discussions with others outside of class (students, family members, co-workers, etc.)		.704
Asked questions in class or contributed to class discussions		.685
Tutored or taught other students (paid or voluntary)		.626

It was determined that for the third benchmark (student-faculty interaction) 1 component was extracted as shown in Table 4.23: interaction with faculty outside of class.

Table 4.23

Components of Benchmark 3: Student-Faculty Interaction for Students during Their Senior Year

Components	1
Talked about career plans with a faculty member of advisor	.786
Discussed ideas from your readings or classes with faculty members outside of class	.783
Discussed grades or assignments with an instructor	.694
Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)	.662
Received prompt written or oral feedback from faculty on your academic performance	.624

It was determined that for the fourth benchmark (enriching educational experiences) 3 components were extracted as shown in Table 4.24: interaction with students different than self, experiences outside of classroom, and international experiences.

Table 4.24

Components of Benchmark 4: Enriching Educational Experiences for Students during Their Senior Year

Components	1	2	3
Had serious conversations with students of a different race or ethnicity than your own	.862		
Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values	.845		
Practicum, internship, field experience, co-op experience, or clinical assignment		.690	
Community service or volunteer work		.677	
Participate in a learning community or some other formal program where groups of students take two or more classes together		.627	
Study abroad			.740
Foreign (additional) language coursework			.686

Finally, it was determined that for the fifth benchmark (supportive campus environment) 2 components were extracted as shown in Table 4.25: quality of relationships with others and institutional non-academic emphasis.

Table 4.25

Components of Benchmark 5: Supportive Campus Environment for Students during Their Senior Year

Components	1	2
Quality: your relationships with faculty members	.823	
Quality: your relationships with administrative personnel and offices	.751	
Quality: your relationships with other students	.726	
Institutional emphasis: Helping you cope with your non-academic responsibilities (work, family, etc.)		.891
Institutional emphasis: Providing the support you need to thrive socially		.869

Based on the results from exploratory factor analysis, five new benchmarks with Cronbach's alpha >.6 (meaning acceptable or high reliability) emerged for this sample. Table 4.26 shows inter-item correlation mean and reliability statistics for these new benchmarks.

Table 4.26

Inter-Item Correlation Mean and Reliability Statistics for the New Benchmarks for Students during Their Senior Year

Benchmarks	Cronbach's Alpha
Benchmark 1 Level of Academic Challenge	.834
Coursework emphasized: synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	
Coursework emphasized: making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	
Coursework emphasized: applying theories or concepts to practical problems or in new situations	
Coursework emphasized: analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	
Benchmark 3 Enriching Educational Experiences	.831
Had serious conversations with students of a different race or ethnicity than your own	
Had serious conversation with students who are very different from you in terms of their religious beliefs, political opinions, or personal values	
Benchmark 5 Supportive Campus Environment/Institutional Emphases	.801
Institutional emphasis: helping you cope with your non-academic responsibilities (work, family, etc.)	
Institutional emphasis: providing the support you need to thrive socially	

Table 4.26 (continued)

Inter-Item Correlation Mean and Reliability Statistics for the New Benchmarks for Students during Their Senior Year

Benchmarks	Cronbach's Alpha
Benchmark 2 Student-Faculty Interaction	.768
Talked about career plans with a faculty member or advisor	
Discussed ideas from your readings or classes with faculty members outside of class	
Discussed grades or assignments with an instructor	
Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)	
Received prompt written or oral feedback from faculty on your academic performance	
Benchmark 4 Supportive Campus Environment/Quality of Relationships	.708
Quality: your relationships with faculty members	
Quality: your relationships with administrative personnel and offices	
Quality: your relationships with other students	

Finally, five new benchmarks were constructed using the same technique as IUCPR used to construct the original benchmarks, specifically, "all items that contribute to a benchmark were converted to a 0-100 point scale" (Indiana University Center for Postsecondary Research, 2012). Thus, items with 4-point scales were converted into values of 0, 33.33, 66.67 or 100. Similarly, items with 7-point scales were converted into values of 0, 16.67, 33.34, 50, 66.67, 83.34 or 100. Next, student scores were created for each group by taking the mean of each student's scores if a student answered all questions in each particular benchmark. Descriptive statistics for the five new benchmarks are shown in Table 4.31.

Levels of Satisfaction with the Entire Educational Experience

What are the levels of satisfaction with the entire educational experience at this institution for international and American students during their senior year? Is there a

statistically significant difference in the level of satisfaction between international and American students during their first and senior years? An independent samples t-test was used to answer this question.

First, descriptive statistics of dependent variables (satisfaction by entire educational experience in this institution) were run. By running frequencies, it was determined that 74 (2.3%) international students evaluated their entire experience at their current institution as poor; 353 (11.0%) as fair; 1,615 (50.2%) as good; and 1,177 (36.6%) as excellent as shown in Table 4.27. Alternatively, 1,234 (2.0%) American students evaluated their entire experience at their current institution as poor; 6,651 (10.6%) as fair; 30,055 (48.0%) as good; and 24,672 (39.3%) as excellent. By running descriptive statistics, it was further determined that the mean of how international students and American students evaluate their entire educational experience at their current institution was good, with American students evaluating it slightly higher than international students.

Table 4.27

Student Satisfaction with the Entire Educational Experience at This Institution Distribution and Means of International and American Students (N=66,030, International=3,210, American=62,811)

Satisfaction	International		American	
	n	%	*n*	%
Poor	74	2.3	1,234	2.0
Fair	353	11.0	6,651	10.6
Good	1,615	50.2	30,055	48.0
Excellent	1,177	36.6	24,672	39.4
Total	3,219	100.0	62,811	100.0
M	3.21		3.25	
TOTAL	66,030			

Then, the t-test revealed that for students during their senior year, p=.543 or p>.05, meaning there were no statistically significant differences in the levels of satisfaction between international and American students during their senior year. Mean for international students was 3.25 and mean for American students was 3.26, meaning they both evaluated their experience between good and excellent. For students during their first year, p=.026 or p<.05, meaning there were statistically significant differences in the levels of satisfaction between international and American students during their first year. Mean for international students was 3.21 and mean for American students was 3.25, meaning they both evaluated their experience between good and excellent; however, American students evaluated it higher than international as shown in Table 4.28.

Table 4.28

Independent Samples T-Test for Satisfaction with Entire Educational Experience at This Institution for International and American Students

Year in College	International		American		Sig.	Mean Diff.	95% Confidence Interv. Diff.	
							Lower	Upper
	M	*SD*	*M*	*SD*				
Senior Year	3.25	.729	3.26	.700	.543	0.012	-0.027	0.051
First Year	3.21	.714	3.26	.712	.026	0.044	0.055	0.083

Academic Success Measured by Most of the Grades up to Now

What is the academic success measured by most of the grades up to now at this institution of international and American students during their senior year? Is there a statistically significant difference in the academic success between international and American students during their first and senior years? An independent samples t-test was used to answer this question.

First, descriptive statistics of dependent variables (most of grades up to now at this institution) were run. By running frequencies, it was determined that 33 (1.1%) international students reported most of their grades up to now at their current institution as C- or lower; 78 (2.4%) as C; 139 (4.3%) as C+; 208 (6.5%) as B-; 587 (18.3%) as B; 643 (20.0%) as B+; 662 (20.6%) as A-; and 864 (26.9%) as A. Alternatively, it was determined that 584 (0.9%) American students reported most of their grades up to now at their current institution as C- or lower; 1,628 (2.6%) as C; 2,984 (4.7%) as C+; 4,846 (7.8%) as B-; 12,609 (20.2%) as B; 12,764 (20.4%) as B+; 13,015 (20.8) as A-; and 14,035 (22.5%) as A. By running descriptive statistics, it was determined that the mean of the grades up to now of international and American students at their current

institutions was B+ with international students' grades being slightly higher as shown in Table 4.29.

Table 4.29

Most Grades up to Now at This Institution Distribution and Mean of International and American Students (N=65,679, International=3,214, American=62,465)

Most Grades up to Now	International		American	
	n	%	*n*	%
C- or Lower	33	1.0	584	0.9
C	78	2.4	1,628	2.6
C+	139	4.3	2,984	4.8
B-	208	6.5	4,846	7.8
B	587	18.3	12,609	20.2
B+	643	20.0	12,764	20.4
A-	662	20.6	13,015	20.8
A	864	26.9	14,035	22.5
Total	3,214	100.0	62,465	100.0
M	6.15		6.01	
TOTAL	65,679			

Then, the t-test revealed that for students during their senior year, p=-.062 or p>.05, meaning there were no statistically significant differences between grades of international and American students during their senior year. Mean for international students was 6.15 and mean for American students was 6.10, meaning they both evaluated their grades between B+ and A-. For students during their first year p<.001, meaning there were statistically significant differences between grades of international and American students during their first year. Mean for international students was 6.06 and mean for American students was 5.81, meaning international students evaluated their grades as B+ and American students as B as shown in Table 4.30.

Table 4.30

Independent Samples T-Test for Most Grades up to Now at This Institution for International and American Students

Year in College	International		American		Sig.	Mean Diff.	95% Confidence Interv. Diff.	
							Lower	Upper
	M	*SD*	*M*	*SD*				
Senior Year	6.15	1.514	6.10	1.733	.137	-0.062	-0.143	0.020
First Year	6.06	1.547	5.81	1.751	.000	-0.250	-0.345	-0.154

Student Engagement

Is there a statistically significant difference between international and American students in the levels of student engagement as represented by benchmarks for this particular sample during their senior year? An independent samples t-test was used to answer this question.

For Benchmark 1, p=.059 or p>.05, meaning there were no statistically significant differences in variables measuring this benchmark between international and American students during their senior year. Mean for international students was 73.09 and mean for American students was 71.67, meaning international students scored slightly higher in this benchmark.

For Benchmark 2, p=.440 or p>.05, meaning there were no statistically significant differences in variables measuring this benchmark between international and American students during their senior year. Mean for international students was 52.84 and mean for American students was 53.32, meaning American students scored slightly higher in this benchmark.

For Benchmark 3, p=.009 or p<.05, meaning there were statistically significant differences in variables measuring this benchmark between international and American

students during their senior year. Mean for international students was 58.84 and mean for American students was 56.52, meaning international students scored higher in this benchmark.

For Benchmark 4, p=.470 or p>.05, meaning there were no statistically significant differences in variables measuring this benchmark between international and American students during their senior year. Mean for international students was 71.27 and mean for American students was 70.88, meaning American students scored slightly higher in this benchmark.

For Benchmark 5, p<.001, meaning there were statistically significant differences in variables measuring this benchmark between international and American students during their senior year. Mean for international students was 43.91 and mean for American students was 38.03, meaning international students scored significantly higher in this benchmark as shown in Table 4.31.

Table 4.31

Means and Standard Deviations for New Benchmarks for International and American Students during Their Senior Year and Independent Samples T-Test for New Benchmarks for International and American Students (N=31, 570, International=1,384, American=30,186)

Bench marks	International		American		Sig.	Mean Diff.	95% Confidence Interval Difference	
	M	*SD*	*M*	*SD*			Lower	Upper
LAC	73.09	22.78	71.97	21.82	059	-1.13	-2.30	0.05
SFI	52.84	22.78	53.32	22.78	.440	0.47	-0.73	1.67
EEE	58.84	32.35	56.52	28.49	.009	-2.32	-4.96	-0.59
SCE/QR	71.27	19.97	73.09	21.63	.480	-0.39	-1.46	0.69
SCE/IE	43.91	30.31	52.84	22.78	.000	-5.88	-7.51	-4.25

Prediction of Level of Satisfaction

To what extent can student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice predict the level of satisfaction with the entire educational experience at this institution during their senior year? Sequential/hierarchical multiple regression was used to answer this question.

H0 There is no relationship between student background characteristic (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and benchmarks of effective educational practice and student engagement of students during their senior year.

H1 There is a relationship between student background characteristic (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and benchmarks of effective educational practice and student engagement of students during their senior year.

As described earlier, multiple regression assesses the degree to which the continuous dependent variable is related to a set of independent, usually continuous, variables that have been combined to create a new composite variable. In sequential/hierarchical multiple regression, independent variables are given priorities before their contributions to prediction of dependent variable are assessed. The effects of independent variables entered first are assessed and removed before the effects of independent variables are entered and later assessed. Higher-priority independent variables act as covariates for lower-priority independent variables, and the degree of

relationship between dependent variable and independent variables is reassessed at each step of the sequence. Thus, multiple correlation is re-computed as each new independent variable is added (Tabachnik & Fidell, 2007).

The institutional classification variable was reorganized into DRU Extensive, DRU Intensive, MA I & II, BA Liberal Arts, BA General, and Other using dummy coding (1=yes and 0=no). Similarly, the academic major variable reorganized into Social Sciences, Humanities, Math and Sciences, Pre-professional, and Other using dummy coding (1=yes and 0=no). SPSS selected variables with the highest frequencies as reference groups; thus for institutional classification, it selected MA I & II (frequency=29,304) and for major – other (frequency=3,875).

The correlations table is shown in Appendix G which demonstrates that the five assumptions of multiple regression were satisfied. First, the cases-to-independent variables ratio was substantial (9,086 to 21). Second, outliers among independent variables and dependent variables were deleted. Third, there was no multicollinearity and singularity (none of the correlations were >.6). Fourth, examination of residuals scatterplots proved the assumption of normality, linearity, and homoscedasticity between predicted dependent variable scores and errors of prediction. Finally, residual plot has a small number of outliers in the solution. As shown in Appendix H, histogram and residual plot revealed that the equation does account for a significant proportion of variance in the dependent variable scores.

As shown in Table 4.32, first adjusted r^2=.002, meaning that about .2% of satisfaction with entire educational experience can be predicted by student background characteristics; third adjusted r^2=.029, meaning that about 3% – by student background

characteristics, nationality, and institutional type; fourth adjusted r^2=.032, meaning that about 3% – by student background characteristics, nationality, institutional type, and critical mass; and fifth adjusted r^2=.360, meaning that about 36% – by student background characteristics, nationality, institutional type, critical mass, and benchmarks of effective educational practice. According to Sig. F change (*p* value), first, third, forth, and fifth are significant at the .001 level and the second one is not significant. Thus, all groups of independent variables with the exception of nationality were significant in predicting satisfaction with the entire experience; however, the benchmarks group was the one that really predicted satisfaction with the entire experience.

Analysis of Variance (ANOVA) revealed that the regression was significant as a group of independent variables at .05 level as shown in Table 4.32. For student background characteristics F=9.50, p<.001; for student background characteristics and nationality F=6.33, p<.001; for student background characteristics, nationality, and institutional type F=31.00, p<.001; for student background characteristics, nationality, institutional type, and critical mass F=22.72, p<.001; and for student background characteristics, nationality, institutional type, critical mass, and benchmarks of effective educational practice F=266.80, p<.001.

Table 4.32

Model Summary for Prediction of Satisfaction with Entire Educational Experience and ANOVA for Prediction of Satisfaction with Entire Educational Experience

Model	Adjusted R Square	Sig.F Change	*df*	*F*	*η*	*p*
1	.002	.000	2	9.50	5.21	.000
2	.002	.922	3	6.33	3.47	.000
3	.029	.000	9	31.00	16.54	.000
4	.032	.000	14	22.72	12.08	.000
5	.360	.000	19	296.80	94.86	.000

Regression table shown in Table 4.33 revealed that 11 predictors of satisfaction with the entire educational experience were found significant with $p<.001$: gender ($p=.001$), Institutional Control ($p=.001$), DRU Extensive ($p<.001$), BA Liberal Arts ($p<.001$), BA General ($p=.001$), Percentage of International Students ($p=.001$), Humanities ($p=.001$), Benchmark 1 ($p<.001$), Benchmark 2 ($p=.001$), Benchmark 4 ($p<.001$), and Benchmark 5 ($p<.001$). The strongest predictor of satisfaction with the entire educational experience was Benchmark 4 with standardized coefficient $\beta=.432$, meaning that it can be predicted that students enrolled in institutions with a supportive campus environment as it relates to quality of relationship had higher satisfaction with the entire experience compared to students enrolled in institutions without such a supportive campus environment. Benchmark 5 had $\beta=.138$, meaning that students enrolled in institutions with a supportive campus environment as it relates to institutional emphasis have higher satisfaction compared to students enrolled in institutions without such a supportive campus environment. Benchmark 1 had $\beta=.137$, meaning that students enrolled in institutions with a higher level of academic challenge have higher satisfaction compared to students enrolled in institutions with a lower level of academic challenge.

DRU Extensive had β=.067, meaning that students enrolled in DRU Extensive institutions compared to students enrolled in MA I & II institutions have higher satisfaction. BA Liberal Arts had β=.060, meaning that students enrolled in BA Liberal Arts institutions compared to students enrolled in MA I & II institutions have higher satisfaction. Benchmark 2 had β=.035, meaning that students enrolled in institutions with high student-faculty interaction have higher satisfaction compared to students enrolled in institutions with low student-faculty interaction. Institutional Control had β=.033, meaning that students enrolled in institutions with public control have higher satisfaction compared to students enrolled in institutions with private control. Humanities had β=-.031, meaning that students majoring in humanities have lower satisfaction than students majoring in other majors. BA General had β=-.030, meaning that students enrolled in BA general institutions have lower satisfaction than students enrolled in MA I & II institutions. And finally, gender had β=.028, meaning that being a female student predicts higher satisfaction than being a male student; however, this is the weakest predictor.

Table 4.33

Regression for Prediction of Satisfaction with Entire Educational Experience

Variables	*B*	*β*	*p*	CI	
				Lower	Upper
Age	.010	.012	.159	-.004	.023
Gender (female)	.044	.028	.001	.017	.070
Nationality (international)	-.045	-.011	.205	-.115	.025
Institutional Control	.049	.033	.001	.019	.079
DRU Extensive	.159	.067	<.001*	.115	.202
DRU Intensive	.026	.012	.182	-.012	.063
BA Liberal Arts	.105	.060	<.001*	.069	.140
BA General	-.086	-.030	.001	-.137	-.036
Other Institutional Type	.045	.015	.141	-.015	.104
Percentage of International Students	.014	.030	.001	.006	.023
Social Sciences	-.168	-.018	.037	-.327	-.010
Humanities	-.054	-.031	.001	-.088	-.021
Math and Sciences	-.017	-.010	.261	-.046	.012
Pre-professional	-.008	-.002	.831	-.081	.065
Benchmark 1	.005	.137	<.001*	.004	.005
Benchmark 2	.001	.035	.001	.000	.002
Benchmark 3	.000	.008	.371	.000	.001
Benchmark 4	.017	.432	<.001*	.016	.018
Benchmark 5	.004	.138	<.001*	.003	.004

*p<.001

Thus, based on the results, we reject the hull hypothesis and accept the alternative hypothesis that there is a relationship between student background characteristic (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and benchmarks of effective educational practice and student engagement of students during their senior year.

Prediction of Academic Success

To what extent can student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice

predict the academic success measured by most of the grades up to now at this institution during their senior year? Sequential/hierarchical multiple regression was used to answer this question.

H0 There is no relationship between student background characteristic (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and benchmarks of effective educational practice and academic success of students during their senior year.

H1 There is a relationship between student background characteristic (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and benchmarks of effective educational practice and academic success of students during their senior year.

Sequential/hierarchical regression used for research question 11 was similar to the one used for research question 10 with the exception of the dependent variable. The correlations table is shown in Appendix I which demonstrates that the five assumptions of multiple regression were satisfied. First, the cases-to-independent variables ratio was substantial (9,075 to 21). Second, outliers among independent variables and dependent variables were deleted. Third, there was no multicollinearity and singularity (none of the correlations were >.6). Fourth, examination of residuals scatterplots proved the assumption of normality, linearity, and homoscedasticity between predicted dependent variable scores and errors of prediction. Finally, residual plot has a small number of outliers in the solution. As shown in Appendix J, histogram and residual plot revealed that the equation does account for a significant proportion of variance in the dependent variable scores.

As shown in Table 4.34, first adjusted r^2=.027, meaning that about 3% of academic success can be predicted by student background characteristics; third adjusted r^2=.038, meaning that about 4% – by student background characteristics, nationality, and institutional type; fourth adjusted r^2=.045, meaning that about 5% – by student background characteristics, nationality, institutional type, and critical mass; and fifth adjusted r^2=.077, meaning that about 8% – by student background characteristics, nationality, institutional type, critical mass, and benchmarks of effective educational practice. According to Sig. F change (*p* value), first, third, fourth, and fifth are significant at .001 level and the second one is not significant. Thus, all groups of independent variables with the exception of nationality were significant in predicting academic success with the benchmarks group predicting academic success the most.

ANOVA revealed that the regression was significant as a group of independent variables at the .05 level as shown in Table 4.34. For student background characteristics F=128.10, p<.001; for student background characteristics and nationality F=85.69, p<.001; for student background characteristics, nationality, and institutional type F=39.53, p<.001; for student background characteristics, nationality, institutional type, and critical mass F=30.54, p<.001; and for student background characteristics, nationality, institutional type, critical mass, and benchmarks of effective educational practice F=39.96, p<.001.

Table 4.34

Model Summary for Prediction of Academic Success and ANOVA for Prediction of Academic Success

Model	Adjusted R Square	Sig. F Change	*df*	*F*	*η*	*p*
1	.027	.000	2	128.10	284.10	.000
2	.028	.431	3	85.69	189.86	.000
3	.038	.000	9	39.53	86.72	.000
4	.045	.000	14	30.54	66.54	.000
5	.077	.000	19	39.96	84.14	.000

The regression table shown in Table 4.35 revealed that 10 predictors of academic success were found significant with $p<.001$: age ($p<.001$), gender ($p<.001$), Institutional Control ($p<.001$), BA Liberal Arts ($p<.001$), Percentage of International Students ($p=.001$), Math and Sciences ($p<.001$), Pre-professional ($p=.030$), and Benchmark 1 ($p<.001$), Benchmark 2 ($p<.001$), Benchmark 3 ($p=.001$), Benchmark 4 ($p<.001$) and Benchmark 5 ($p<.001$). The strongest predictor of academic success was Benchmark 4 with standardized coefficient $\beta=.123$, meaning that it can be predicted that students enrolled in institutions with a supportive campus environment is as it relates to quality of relationships have higher academic success compared to students enrolled in institutions without such supportive campus environment. Gender had $\beta=.110$, meaning that being a female student predicts higher academic success than being a male student. Age had $\beta=.095$, meaning that older students have higher academic success than younger students. Benchmark 1 had $\beta=.089$, meaning that students enrolled in institutions with a high level of academic challenge have higher academic success compared to students enrolled in institutions with a lower level of academic challenge. Institutional Control had $\beta=.087$, meaning that students enrolled in public institutions have higher academic success

compared to students enrolled in private institutions. Benchmark 5 had β=-.081, meaning that student enrolled in institutions with a supportive campus environment is as it relates to institutional emphasis have lower academic success compared to students enrolled in institutions without such environment. Benchmark 2 had β=.075, meaning that students enrolled in institutions with high student-faculty interaction there have higher academic success compared to students enrolled in institutions with low student-faculty interaction. Math and Sciences had β=.068, meaning that students majoring in math and sciences have higher academic success compared to students majoring in other majors. BA Liberal Arts had β=-.042, meaning that students enrolled in BA Liberal Arts institutions have lower academic success compared to students enrolled in MA I & II institutions. Percentage of International Students had β=.037, meaning that students enrolled in institutions with a higher percentage of international students enrolled have higher academic success compared to students enrolled in institutions with a lower percentage of international students enrolled. Benchmark 3 had β=-.036, meaning that students enrolled in institutions with enriching educational experiences have lower academic success compared to students enrolled in institutions without enriching educational experiences. Finally, Pre-professional had β=.023, meaning that being enrolled in pre-professional majors predicts higher academic success than being enrolled in other majors; however, this is the weakest predictor.

Table 4.35

Regression for Prediction of Academic Success

Variables	*B*	*β*	*p*	CI	
				Lower	Upper
Age	.151	.095	<.001*	.118	.184
Gender (female)	.354	.110	<.001*	.289	.419
Nationality (international)	.009	.001	.917	-.161	.179
Institutional Control	.263	.087	<.001*	.189	.337
DRU Extensive	.164	.034	.002	.058	.271
DRU Intensive	.085	.020	.070	-.007	.177
BA Liberal Arts	-.151	-.042	.001	-.238	-.064
BA General	-.079	-.014	.210	-.202	.044
Other Institutional Type	.042	.007	.573	-.104	.188
Percentage of International Students	.035	.037	.001	.015	.056
Social Sciences	-.438	-.023	.027	-.826	-.051
Humanities	.045	.013	.279	-.037	.127
Math and Sciences	.222	.068	<.001*	.150	.293
Pre-professional	.198	.023	.030	.019	.376
Benchmark 1	.006	.089	<.001*	.005	.008
Benchmark 2	.005	.075	<.001*	.003	.007
Benchmark 3	-.002	-.036	<001	-.003	-.001
Benchmark 4	.010	.123	<.001*	.008	.012
Benchmark 5	-.004	-.081	<.001*	-.006	-.003

*p<.001

Thus, based on the results we reject the hull hypothesis and accept the alternative hypothesis that there is a relationship between student background characteristic (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and benchmarks of effective educational practice and academic success of students during their senior year.

Summary

Chapter 4 provided results of the quantitative findings of this study by describing results of the eleven research questions. It described the demographics of international and American students in U.S. institutions of higher education who responded to the

2008 NSSE survey, examined how their enrollment differed by the critical mass measured by proportion of international students and academic major and by institutional classification measured by institutional type and institutional control. Additionally, it explained the association between their enrollment and the critical mass measured by proportion of international students and academic major and institutional classification measured by institutional type and institutional control. It also covered the interrelationship among the variables that measure the five NSSE benchmarks of effective educational practice for international and American students during their senior year.

Further, Chapter 4 described the levels of satisfaction with the entire educational experience at this institution for international and American students during their senior year and explored if there is a statistically significant difference in the level of satisfaction between them. It described the academic success measured by most of the grades up to now of international and American students during their senior year at this institution and explored if there was a statistically significant difference in their academic success. In addition, it examined if there was a statistically significant difference between international and American students in the levels of student engagement during their senior year as represented by new benchmarks. Finally, it covered the extent to which student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice can predict the level of satisfaction with the entire educational experience and academic success measured by most of the grades up to now during their senior year at this institution.

CHAPTER 5. DISCUSSION AND CONCLUSIONS

Introduction

Chapter 5 contains a summary of the study followed by the discussion of results for each of the eleven research questions. Further, it contains conclusions, implications for practice, and policy and recommendation for future research.

Summary of the Study

While higher education is becoming increasingly internationalized and globalized, the number of international students studying in U.S. institutions of higher education continues to grow. International students add to their own success, campus diversity, campus internationalization, and the U.S. economy. However, in addition to recruiting and bringing in international students, it is important to serve them, retain them, and graduate them. Thus, enhancement of programs and services that stimulate international student engagement in educationally purposeful activities is essential. Student engagement of American students in effective educational practices is associated with high levels of learning and personal development and it has been studied extensively. However, there is a void in the research of student engagement of international students. The purpose of this study was to examine the relationship between student engagement and student satisfaction and the academic success of international and American students using 2008 NSSE data. Specifically, it investigated how institutional type (classification and control) and critical mass (percentage of international students and academic major) affect student engagement (represented by five NSSE benchmarks) and how student engagement affects student satisfaction and academic success. Additionally, it compared the student engagement between international and American students.

Discussion of Results

Demographics

This study described demographics of international and American students in the U.S. institutions of higher education who responded to the 2008 NSSE survey. The 20% sample provided to the researcher included 66,056 respondents, while Zhao, Kuh, and Carini's (2005) study included 175,000 respondents. This sample included 4.6% of international students and 95.1% of American students, which is similar to Zhao, Kuh, and Carini's (2005) study that included about 4% and 96% respectively. The largest proportion of international students were between the ages of 20 and 23 (40.3%), while the largest proportion of American students were 19 or younger (41.7%) which is again similar to Zhao, Kuh, and Carini's (2005) study with 40% and 42.9% respectively. Also, the proportion of students between the ages of 24 and 29 was much higher for international students (14.1% vs. 8.7% in this study and 18.6% vs. 8.2% in Zhao, Kuh, and Carini's 2005 study) which could be explained by the change in international student demographics described in Chapter 1.

The majority of both groups were females – 59.4% and 64.6% respectively – which is similar to Zhao, Kuh, and Carini's (2005) study showing 57.0% and 65.7% respectively. The largest proportion of international students were Asian, Asian American, or Pacific Islander (35.2%) while the majority of American students were white (73.0%), which could be explained by countries of origin for the majority of international students which were India, China, South Korea, and Japan in 2008 (Institute of International Education, 2009). This is again similar to Zhao, Kuh, and Carini's (2005) study showing 34.6% and 79.8% respectively. Further, proportion of the

international students who selected the Other race/ethnicity was significantly higher than of American students (7.1% vs. 1.2%), which could be due to their difficulty identifying their race to fit in one of the provided categories. An overwhelming proportion of international students were Freshmen and Seniors (41.6% and 43.2%) which is similar to the overwhelming proportion of American students (41.0% and 48.6% respectively). This could be explained by the fact that NSSE survey is given to freshmen and seniors.

International student demographics, however, have changed since 2008 and continue to change. The majority of international students coming to the U.S. are young, from Asia (particularly, from China, India or East Asia), are well prepared academically, and have sufficient financial support from family. Thus, relevant and appropriate housing options (single rooms), dining center menus (vegetarian and vegan options), technological access and support on campuses and in the dormitories (high speed Wi-Fi throughout), extracurricular events, and clubs and activities (providing a mix of interaction among international students and with American students) should be considered.

Enrollment and Critical Mass

The researcher examined how enrollment of international and American students differs by the critical mass measured by the proportion of international students and academic major. The largest proportion of students in this 20% sample were enrolled in the institutions with international students comprising between 5.1% to 10% of enrollment (25.4%), with 0.75% to 1.5% and 3.1% to 5% following closely (18.8% and 18.6% respectively). Unfortunately, there is no such data on a national level to compare.

This trend appears to be natural; international students favor those institutions where substantial numbers of other international students are already enrolled in (from 0.75% to 10%). However, this does not necessarily mean that they prefer institutions with the highest concentration of their counterparts (more than 10%). Thus, one might conclude that the key to attracting international students lies in maintaining this viable balance of international and American students.

The largest proportion of international students majored in Humanities (37.3%) and Math and Sciences (31.3%), while the largest proportion of American students majored in Other majors (42.5%) and Math and Sciences (30.9%). Zhao, Kuh, and Carini's (2005) international students sample differed in that the largest proportion of them majored in Pre-professional majors (36.0%) and Math and Sciences (35.0%), while the largest proportion of the American students sample similarly majored in Other majors and Math and Sciences (42.2% and 23.4% respectively). It is interesting to note that none of the international students in this sample majored in Social Sciences. The sample for the present study does not necessarily fit the profile described in the Open Doors 2008 report, which indicated that the majority of international students majored in Business and Management, Engineering, Physical and Life Sciences, Social Sciences, and Math and Computer Sciences (Institute of International Education, 2009) which could be explained, in part, by different classifications used and by students writing in their own major in the NSSE survey instead of selecting from options provided.

Just like international student demographics, majors they enroll in have changed since 2008 and continue to change. According to the Open Doors Report 2011 (Institute of International Education, 2012), international students favor Business and Management,

Engineering, Math and Computer Science, and Physical and Life Sciences. This reflects current trends in workforce in the U.S. and in their home countries alike. Consequently, in order to recruit international students, institutions of higher education should highlight and emphasize these majors and academic areas in their marketing materials. Institutions need to be prepared for an increasing demand for instruction and internship offerings in these fields.

This also has implications for faculty-student interaction. Traditionally, faculty members from Science, Technology, Engineering, and Mathematics (STEM) fields have been involved less with international recruitment and study abroad than faculty members from humanities and social science fields. Thus, it seems that in order for institutions to succeed in their internationalization goals their faculty members should get more involved in all aspects of the process from recruitment of international students, to advising, to leading groups of American students abroad, to conducting research overseas, and so forth.

As described in Chapters 1 and 2, critical mass in higher education generally refers to the level of representation that brings comfort or familiarity within the education environment. The proportion of international students and academic major were used as the proxy measures of critical mass for this study. These measures were selected based on the available NSSE data.

Enrollment and Institutional Classification

The present study examined how enrollment of international and American students differs by institutional classification measured by institutional type and institutional control. The largest proportion of both international and American students

in the present sample were enrolled in Masters I and II institutions (40.5% and 44.6% respectively), which is similar to Zhao, Kuh, and Carini's study (2005) having shown 33.2% and 39.7% respectively. A significant drop in enrollment in Doctoral Research Universities Extensive is evident between Zhao, Kuh, and Carini's study (2005) (25.3% for international students and 23.7% for American students) and present study (10.4% and 11.0% respectively), which could be explained by both changing student profiles described in Chapter 1 and recent changes in Carnegie classification.

It is possible that this significant drop in enrollment in Doctoral Research Universities Extensive is once again explained by changes in the demands in the workforce and in the cost of education. International students continue to strongly favor Masters I and II institutions which apparently provide them with the education they are looking for: a reasonable price accompanied by a comfortable and suitable atmosphere.

Changes observed in enrollment by type of institutional control are worth mentioning as well. In both studies, the majority of international students were enrolled in institutions with public control (53.5% in present study and 50.9% in Zhao, Kuh, and Carini's 2005 study). However, in 2008, the majority of American students were enrolled in institutions with public control (60.9%) as opposed to private (56.5%) in Zhao, Kuh, and Carini's study (2005). This could be explained by the changing economical situations of American students in recent years. As tuition and fees continue to rise throughout the U.S., public institutions are becoming more and more attractive than private institutions as cost of attending increases at a slower rate. Thus, students favor enrollment in public institutions over private institutions.

When applying for student visas, international students must provide a financial statement with evidence of sufficient funds for the entire academic year. With an emergence and strengthening of the Chinese middle and upper middle class, for example, it is possible that the majority of international students will continue to demonstrate sufficient funds to attend public institutions and as a result will continue to favor public institutions. Another trend that is likely to persist has to do with community colleges. Both international and American students continue to find the option of beginning their higher education at two-year institutions and then transferring to four-year institutions more attractive. Thus, community colleges should be prepared to serve an increased number of international students. In anticipation of this trend, they should develop infrastructure designed to support academic and social needs of international students to ensure their success.

Institutional type and control were used as the other proxy measures of critical mass for this study. These measures were again selected based on the available NSSE data. But are there other ways for institutions to measure critical mass? Perhaps future studies could explore this question.

Association between Enrollment and Critical Mass

The researcher explained the association between enrollment of international and American students and the critical mass measured by the proportion of international students and academic major. Chi-square tests revealed that for the present sample there was a statistically significant difference between where international and American students are enrolled in considering percentages of international students and that there was a statistically significant difference between majors of international and American

students. Thus, more international students were enrolled in institutions with 5.1% to 10%, 0.75% to 1.5%, and 3.1% to 6% of international student enrollment while more American students – in institutions with 0.75% to 1.5%, less than 0.75%, and 1.6% to 3% of international student enrollment. Additionally, more international students majored in Humanities, Math and Sciences, and Other (in that order), while more American students – in Other, Math and Sciences, and Humanities (in that order).

As discussed earlier, this evidence suggests that more international students are enrolled in institutions with a balance of international and American students enrolled. An artificial increase of proportion of international students enrolled does not necessarily make an institution an instant magnet for international students. Other tools such as institutional emphasis on helping students cope with their non-academic responsibilities; on providing the support students need to thrive socially; and on improving the quality of relationships with faculty members, administrative personnel and offices, and other students are critical and significant contributors to effective educational practice and student success.

Association between Enrollment and Institutional Classification

The researcher explained the association between enrollment of international and American students and institutional classification measured by institutional type and institutional control. Chi-square tests revealed that for the present sample there was a statistically significant difference between types of institutions (Carnegie classification) where international and American students were enrolled. Thus, more international students were enrolled in Doctoral Research Universities Intensive, Baccalaureate Liberal

Arts, Baccalaureate General, and Other institutions, while more American students – in Doctoral Research Universities Extensive and Masters I and II institutions.

It may be that international students favor Doctoral Research Universities Intensive because many of them select their U.S. institution based on rankings, and Doctoral Research Universities tend to score high in such rankings. For example, Harvard University is ranked second according to Times Higher Education World University Rankings 2011/12 (Thomson Reuters, 2012) and was number ten host of international students in 2010/2011 (Institute of International Education, 2012). Another reason could be the prestige factor of such institutions. Additionally, these universities often offer significant graduate scholarships. It is possible that Baccalaureate Liberal Arts and Baccalaureate General institutions continue to be attractive because of the services they provide to international students. Often times these institutions boast a wide range of quality services they provide to international students, a variety of extracurricular programs offered, numerous opportunities to interact with American students, favorable student/advisor ratio, small campus physical size, superior campus safety among others. Additionally, physical location and campus safety of these institutions are likely to continue attract international students as well since this is what many of them and their parents are looking for when selecting a U.S. institution.

Interrelationship among NSSE Benchmarks

The study covered the interrelationship among the variables that measure the five NSSE benchmarks of effective educational practice for international and American students during their senior year. For the present sample for benchmark 1, responses to questions "number of written papers or reports of 20 pages or more," "number of written

papers or reports between 5 and 19 pages," and "number of reports of fewer than 5 pages" had lower means than others, meaning that of the activities contributing to level of academic challenge, students did less of these compared to other activities. For benchmark 2, responses to questions "tutored or taught other students (paid or voluntarily)" and "participated in a community-based project (e.g., service learning) as part of a regular course" had lower means, meaning that of the activities contributing to active and collaborative learning, students did less of these activities compared to others. For benchmark 3, responses to questions "worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)" and "discussed ideas from your readings of classes with faculty members outside of class" had lower means, meaning that of the activities contributing to student-faculty interactions, students did less of these compared to others. For benchmark 4, responses to questions "practicum, internship, field experience, co-op experience, or clinical assignment" and "community service or volunteer work" had higher means, meaning that of the activities contributing to enriching educational experiences, students did less of these compared to others. Finally, for benchmark 5, responses to questions "quality of your relationships with other students," "quality of your relationships with faculty members," and "quality of your relationships with administrative personnel and offices" had higher means, meaning that of the conditions contributing to supportive campus environment, students felt institutions provided more of these conditions compared to other conditions.

Personal observations by the researcher, as a professional in the field, support these findings. First, during their senior year, students are offered more coursework

emphasizing analyzing ideas, synthesizing ideas, and making judgments about values and applying theories to practice; spend more hours per week preparing for class; and work harder then they think to meet instructors' expectations. Second, they work more with other students on projects in and out of class; contribute to class discussions and make class presentations; and discuss ideas from class outside of class. Third, seniors tend to work on papers and projects that require integration of ideas from various sources; talk more about career plans with faculty; and receive prompt feedback from faculty on their performance. Fourth, they spent less time on co-curricular activities; participate in learning communities; and study abroad. Finally, during their senior year, students are less concerned with institutional emphasis on providing support to succeed academically, socially, and helping cope with non-academic responsibilities.

New benchmarks that held true for the present sample were benchmark 1, level of academic challenge; benchmark 2, student-faculty interaction; benchmark 3, enriching educational experiences; benchmark 4, supportive campus environment/quality of relationships; and benchmark 5, supportive campus environment/institutional emphases. It is important to note that the new benchmarks included different variables that the NSSE benchmarks and NSSE's active and collaborative learning benchmark did not held true for the present sample. Examination of the new benchmarks revealed that international students scored higher compared to American students in level of academic challenge, enriching educational experiences, and supportive campus environment/quality of relationships during their senior year, while American students scored higher in student-faculty interaction and supportive campus environment/quality of relationships. This echoes Zhao, Kuh, and Carini's (2005) study who found that

international students were more engaged than American students in some areas and less engaged in others.

As a professional in the field (and former exchange international student), the researcher observed that international students tend to study in groups, often in their native language as opposed to English; study longer hours; and often study more on weekends when American students work or travel home. It may be that these study strategies proved more effective for them. Additionally, international students tend to interact and connect more with international faculty, particularly from countries or areas of the world where they are from. A previous study conducted by the researcher suggested that interaction with bilingual faculty has a positive correlation with academic achievement. This could be explained by the enhanced level of student-faculty interaction that occurs when such communication takes place. The critical mass piece plays in here indirectly, meaning that representation of international faculty contributes to bringing comfort or familiarity within the education environment. Further, international students tend to experience less practicum experiences, internships, field experiences, co-op experiences, or clinical assignments. The reasons for this may be cultural barriers, financial constraints, visa status limitations, transportation difficulties, and others.

NSSE does not have an intention to measure the issues described above. In other words, it is not focused on examining and comparing the experiences and activities of international students in particular. Thus, many of the issues described in the preceding paragraph cannot be substantiated using NSSE data. NSSE is still, however, a valuable tool "sought to enrich the impoverished national discourse about college quality by shifting the conversation away from reputation, resources, and the preparation of entering

students in favor of the student experience, especially activities and behaviors empirically linked to teaching and learning" (McCormick & McClenney, 2012, p. 309). This data enabled the researcher to conduct a comparative study of student engagement, satisfaction, and academic success among international and American students.

Levels of Satisfaction with Entire Educational Experience

The researcher investigated the levels of satisfaction of international and American students for their entire educational experience at this institution during their senior year and examined if there was a statistically significant difference in the level of satisfaction between international and American students during their first and senior years. The level of satisfaction of the largest proportion of international and American students for the present sample was good (50.2% and 48.9% respectively) followed by excellent (36.6% and 39.4% respectively) during their senior year. T-tests revealed that there were statistically significant differences in levels of satisfaction between international and American students during their first year, but there were no statistically significant differences in the levels of satisfaction between international and American students during their senior year. This could be partially explained by the adaptation and assimilation of international students that happens over the four years of college.

It is also important to note that international and American students may have different definitions of satisfaction with the entire educational experience. For American students, this might mean they ask themselves whether they are treated equally and with respect and whether they are satisfied with the level of customer service at this particular institution of higher education. The notion of customer service has been imbedded in U.S. higher education in the recent past and is now a compulsory component of it.

International students, on the other hand, might come from cultures where such customer service does not exist at all or where such customer service is a norm. Thus, their interpretation and definition of satisfaction with entire educational experience could be completely different from their American counterparts. Definition of satisfaction may also depend on enrollment in public vs. private institutions. In private institutions, students may have the philosophy of "I am paying for us this and I deserve it" and in public institutions have a philosophy of "I have to work to earn it." Therefore, engagement levels of these students might consequently be different as well.

Academic Success Measured by Most of the Grades up to Now

The present study described the academic success of international and American students during their senior year as measured by most of the grades up to now at this institution and examined if there was a statistically significant difference in the academic success between international and American students during their first and senior year. The largest proportion of the grades of international and American students in the present study were A, A-, B+, and B (in that order) (26.9%, 20.6%, 20.9%, 18.3% and 22.5%, 20.8%, 20.4%, 20.2% respectively) during their senior year. T-tests revealed that there were statistically significant differences between grades of international and American students during their first year and there were no statistically significant differences between grades of international and American students during their senior year. Again, an explanation for this may have to do with adaptation and assimilation.

International freshmen had higher grades then American freshmen, while the grades of international and American seniors were similar. Some of the international students who have a special connection with the researcher revealed that immediately

after their arrival they spend more time studying to succeed academically and to compensate for a less vibrant social life. However, as time goes on and they get involved as much if not more than their American peers, they spend less time studying and their grades experience slight dips equaling the grades of American students. It is important to note that by no means should grades be the only measure of academic success. However, grades were used for this study as they were provided by NSSE.

Student Engagement

The researcher examined if there was a statistically significant difference between international and American students in the levels of student engagement as represented by benchmarks for this particular sample during their senior year. Independent samples t-test revealed that for the present sample there were no statistically significant differences in variables measuring level of academic challenge, student-faculty interaction, and supportive campus environment/quality of relationships, and there were statistically significant differences in variables measuring enriching educational experiences and supportive campus environment/institutional emphasis for students during their senior year. International students scored slightly higher on enriching educational experiences and supportive campus environment/institutional emphasis. This echoes Zhao, Kuh, and Carini's (2005) study who found that "by their senior year, international students tend to be more adapted to the cultural milieu and generally do not differ from American seniors in their patterns of student engagement…" (p. 224).

This evidence supports the researcher's personal and professional observations. International students during their senior year tend to have more serious conversations with students of different races or ethnicity and students who are different from them in

terms of their religious beliefs, political opinions, or personal values. In addition, they value more institutional emphasis on helping them cope with their non-academic responsibilities and providing the support they need to thrive socially.

Prediction of Level of Satisfaction

In terms of prediction, the present study covered the extent student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice can predict the level of satisfaction with the entire educational experience at this institution during their senior year. Sequential/hierarchical regression revealed that for the present sample the most significant predictor of satisfaction with the entire educational experience were the five benchmarks of effective education practice: level of academic challenge, student-faculty interaction, enriching educational experiences, supportive campus environment/quality of relationships, and supportive campus environment/institutional emphasis. Thus, as these activities and conditions increase, satisfaction with the educational experience increases as well. Particularly, students enrolled in institutions with a supportive campus environment as it relates to quality of relationship had higher satisfaction with the entire experience compared to students enrolled in institutions without such a supportive campus environment. Additionally, students enrolled in institutions with a supportive campus environment as it relates to institutional emphasis had higher satisfaction compared to students enrolled in institutions without such a supportive campus environment. Finally, students enrolled in institutions with a higher the level of academic

challenge had higher satisfaction compared to students enrolled in institutions with a lower level of academic challenge.

Adding nationality to the prediction model did not make any difference, meaning that this is true for both international and American students. Interestingly, students majoring in humanities have lower satisfaction than students majoring in other majors, and students enrolled in BA general institutions have lower satisfaction than students enrolled in MA I and II institutions. Thus, as these activities and conditions increase, academic success increases as well.

Prediction of Academic Success

Finally, this study explored the extent student background characteristics (age, gender), nationality (international or American), institutional type (classification and control), critical mass (percentage and academic major), and new benchmarks of effective educational practice can predict the academic success measured by most of the grades up to now at this institution during students' senior year. Sequential/hierarchical regression revealed that for the present sample the most significant predictor of academic success (similar to satisfaction with entire education experience) were the five benchmarks of effective education practice: level of academic challenge, student-faculty interaction, enriching educational experiences, supportive campus environment/quality of relationships, and supportive campus environment/institutional emphasis. Particularly, students enrolled in institutions with a supportive campus environment as it relates to quality of relationships had higher academic success compared to students enrolled in institutions without such a supportive campus environment. Additionally, female students have higher academic success compared to male students. Further, older

students also have higher academic success than younger students. Finally, students enrolled in institutions with a high level of academic challenge had higher academic success compared to students enrolled in institutions with a lower level of academic challenge.

Adding nationality to the prediction model did not make any difference (similar to satisfaction with the entire educational experience), meaning that this is true for both international and American students. Interestingly, students enrolled in BA Liberal Arts institutions have lower academic success compared to students enrolled in MA I and II institutions, and students enrolled in institutions with enriching educational experiences had lower academic success compared to students enrolled in institutions without enriching educational experiences.

Conclusion

The purpose of the present study was to examine the relationship between student engagement, student satisfaction, and academic success of international and American students using NSSE data.

Student Engagement

This study found that international students scored slightly higher than American students on enriching educational experiences and supportive campus environment/institutional emphasis during their senior year. Specifically, international students have more conversations with students of a different race or ethnicity than their own and with students who are very different from them in terms of their religious beliefs, political opinions, or personal values. Additionally, they feel more strongly than American students that institutions they are enrolled in emphasize helping them cope

with their non-academic responsibilities (work, family, etc.) and provide the support they need to thrive socially.

Student Satisfaction and Academic Success

The present study found that international and American students similarly evaluated their entire educational experience at this institution between good and excellent. Further, academic success measured by grades was between B+ and A- for both groups of students.

The study also found that the best predictors of satisfaction with the entire experience at this institution and academic success measured by grades were the five benchmarks of effective educational practice: level of academic challenge, student-faculty interaction, enriching educational experiences, supportive campus environment/quality of relationships, and supportive campus environment/institutional emphasis. Thus, it can be predicted that the more a student is involved in such activities and the more these conditions increase, the higher student satisfaction and academic success is for both international and American students. Further, both institutional type and critical mass affect student satisfaction and academic success.

Implications for Practice and Policy

It is important to remember that NSSE did not design its instrument for the purposes of national study; it was designed to offer "administrators and faculty members tools for examining and comparing the prevalence of effective educational practices on their campuses…" (McCormick & McClenney, 2012). Thus, results of the present study do not intend to paint a national picture; rather, they intend to provide specific recommendations for practice and policy.

In terms of practice, this study more fully informs administrators, faculty, and staff about what international students do while they are in college thus informing them about how to intervene in order to improve their experience while studying in the U.S. In order for international students to remain on U.S. campuses, they must continue to express high levels of satisfaction with their educational experience. Thus, a supportive campus environment as it relates to quality of relationships, institutional emphasis, high level of academic challenge, and high level student-faculty interaction are all critical for satisfaction with their educational experience. More attention should be directed to students enrolled in private institutions; students majoring in humanities; students enrolled in BA General institutions, MA I and II institutions, and other institutions; and males as they tend to experience lower satisfaction with the entire educational experience. Specialized workshops, individualized counseling, online tools, and mentoring and pairing programs are among other strategies that should be designed, implemented, and offered for students representing these particular groups.

In order to be successful, international students must also demonstrate academic success. Thus, a supportive campus environment as it relates to quality of relationships, high level of academic challenge, supportive campus environment, institutional emphasis, and high student-faculty interaction are all critical for their academic success. More attention should be directed toward males; younger students; students enrolled in private institutions; students majoring in math and sciences; students enrolled in BA Liberal Arts institutions, MA I and II institutions, and other institutions; and students enrolled in institutions with a lower percentage of international students as they tend to demonstrate

lower academic success. The same strategies could be designed, implemented, and offered as described above to enhance satisfaction with the entire educational experience.

Additionally, findings could be used by international students themselves and their parents to inform them about which effective education practices could improve their student engagement and, consequently, their academic success.

Furthermore, professional organizations such as NAFSA, IIE, and others may want to create interest groups focused on international student engagement, satisfaction, and academic success. They could also offer sessions at regional and national conferences and online workshops and webinars. Due to the specialized profession of international educators and the fact that institutions often have only one or two international educators on staff, the most effective professional growth opportunity (and at times the only one) is sharing experiences with each other through professional networking. It is important, however, to note that these workshops should be based on institutional types as this research found differences between institutional types. As a result, strategies should differ as well depending on institutional types.

Finally, MA and PhD programs in higher education might consider offering specialized course(s) for international educators. Such course(s) could focus on the specifics of international student engagement, satisfaction, and academic success such as level of academic challenge, student-faculty interaction, enriching educational experiences, supportive campus environment/quality of relationships, and supportive campus environment/institutional emphases.

In terms of policy, this study informs institutions how funds and other resources should be allocated toward particular effective educational practices. Level of academic

challenge, study-faculty interaction, enriching educational experiences, supportive campus environment as it relates to quality of relationships, and supportive campus environment as it relates to institutional emphases all proved to be powerful contributors to student learning and personal development. Specific activities and conditions shown in table 4.36 are significant contributors to effective educational practice.

Table 4.36

Activities and Conditions that are Significant Contributors to Effective Educational Practice

Activities and Conditions
Coursework emphasizing synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships
Coursework emphasizing making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions
Coursework emphasizing applying theories or concepts to practical problems or in new situations
Coursework emphasizing analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components
Talking about career plans with a faculty member or advisor
Discussing ideas from student readings or classes with faculty members outside of class
Discussing grades or assignments with an instructor
Working with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)
Receiving prompt written or oral feedback from faculty on student academic performance
Having serious conversations with students of a different race or ethnicity than students' own
Having serious conversation with students who are very different from students in terms of their religious beliefs, political opinions, or personal values
Quality of relationships with faculty members
Quality of relationships with administrative personnel and offices
Quality of relationships with other students
Institutional emphasis on helping students cope with their non-academic responsibilities (work, family, etc.)
Institutional emphasis on providing the support students need to thrive socially

Thus, in current difficult financial times, institutions should continue to emphasize the activities and conditions above.

Another implication for policy is related to sheer numbers of international students on U.S. campuses. As their number continues to grow from 671,616 in 2008-2009 to 690,923 in 2009/2010 to 723,277 in 2010/2011 (Institute of International Education, 2012), policy issues regarding international students continue to evolve. Recent editions of the Chronicle of Higher Education discuss such matters as international students and national security (Brzozowski, 2003; Fischer, 2012), international student recruiting and use of agents (Fischer, 2010; Wheeler, 2012), changing profile of international students (Fischer, 2011; McMurtrie, 2011), and "crowding out" of American students by international students (Wildavsky, 2010), among others; while recent editions of Inside Higher Ed discuss matters of international mobility (Olds, 2011), offering scholarships and fellowships to international students (Jaschik, 2005; Redden, 2011), special services for international students (Lederman, 2010), and increase in numbers of international students (Jaschik, 2011; Smith, 2012) among others. As mentioned in the introduction, the value international students bring to our institutions is undeniable: increased diversity on campuses and communities, exposure of American students to the globalized workforce that they what they are likely to face after graduation, preparing next generation of effective leaders, bringing in different perspectives and believes, in addition to their contribution of nearly $20 billion to the U.S. economy (Institute of International Education, 2011). Thus, it is critical for higher educators and policy makers to unite in their efforts of improving international students' policies and legislation.

Recommendations for Future Research

The present study suggests several recommendations for further research. First, this study examined interrelationships among the variables that measure the five NSSE benchmarks of effective educational practice for international and American students during their senior year. Future studies might look at the difference in this interrelationship between first and senior years, measure this change, and find out what exactly happens during college to affect this change.

Second, this study examined the levels of satisfaction of international and American students with their entire educational experience at this institution during their senior year. Future studies might look at the change in the satisfaction with the entire educational experience between first and senior years, measure this change, and find out what exactly happens during college to affect this change.

Third, this study examined the academic success between international and American students during their first and senior years. Future studies might look at the change in academic success between the first and senior years, measure this change, and find out what exactly happens during college to affect this change.

Fourth, this study looked at evaluation with the entire educational experience at this institution as a measure of satisfaction with the entire educational experience. Future studies might use a combination of several variables to measure satisfaction with the entire educational experience.

Fifth, this study looked at most of the grades up to now at this institution as a measure of academic success. Future studies might use a combination of several variables to measure academic success.

Sixth, in both regression models, this study looked at international and American students together without differentiating by race/ethnicity. Future studies might conduct predictive analysis separately for White, Black, and Asian international and American students (similarly to what Zhao, Kuh, and Carini did in 2005).

Additionally, stronger and more effective collaboration between scholars and practitioners is needed. Professional organizations of international educators in Canada, United Kingdom, Netherlands, and the rest of Europe work closely with specialists in the field, thus assuring real time exchange of findings and observations on the ground. Regrettably, this is not always the case in the U.S. NAFSA, IIE, and other professional organizations should more closely consider what is being said in the academy, and scholars/practitioners, such as the researcher herself, should take every opportunity to present their findings.

Moreover, some of the information on international students collected in the U.S. can be shared with entities in students' home countries such as professional organizations, legitimate recruiting agencies, associations of institutions of higher education, governmental bodies of higher education, and partner institutions. This may result in more effective advising and placing international students in the U.S. before they even arrive. International educators must identify such entities and work more effectively and closely with them to reach their goal of ensuring the success of international students in the U.S.

It is critical to continue to study student engagement of international and American students to ensure their satisfaction and academic success. By doing so, those involved in higher education will be able to serve them more effectively. Although this

study focused primarily on international students, it is essential to note that American students must be educated about international students as well since they are vital part of diversity on campus. As mentioned in Chapter 1, American students must be aware of what is happening in the world around them. Thus, the presence of international students on U.S. campuses exposes domestic students to modern international trends and teaches them how to work effectively with someone different from themselves.

APPENDIX A

NSSE national survey of student engagement

Benchmarks of Effective Educational Practice

The benchmarks are based on 42 key questions from the NSSE survey that capture many vital aspects of the student experience. These student behaviors and institutional features are some of the more powerful contributors to learning and personal development.

LAC

Level of Academic Challenge

Challenging intellectual and creative work is central to student learning and collegiate quality. Colleges and universities promote high levels of student achievement by emphasizing the importance of academic effort and setting high expectations for student performance.

Activities and conditions:

- Time spent preparing for class (studying, reading, writing, rehearsing, and other activities related to your academic program)
- Worked harder than you thought you could to meet an instructor's standards or expectations
- Number of assigned textbooks, books, or book-length packs of course readings
- Number of written papers or reports of 20 pages or more
- Number of written papers or reports between 5 and 19 pages
- Number of written papers or reports fewer than 5 pages
- Coursework emphasizes: Analyzing the basic elements of an idea, experience, or theory
- Coursework emphasizes: Synthesizing and organizing ideas, information, or experiences
- Coursework emphasizes: Making judgments about the value of information, arguments, or methods
- Coursework emphasizes: Applying theories or concepts to practical problems or in new situations
- Campus environment emphasizes spending significant amounts of time studying and on academic work

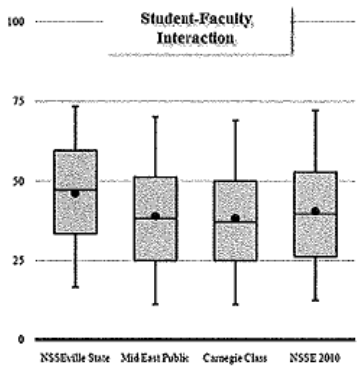
ACL

Active and Collaborative Learning

Students learn more when they are intensely involved in their education and are asked to think about and apply what they are learning in different settings. Collaborating with others in solving problems or mastering difficult material prepares students to deal with the messy, unscripted problems they will encounter daily during and after college.

Activities:

- Asked questions in class or contributed to class discussions
- Made a class presentation
- Worked with other students on projects during class
- Worked with classmates outside of class to prepare class assignments
- Tutored or taught other students
- Participated in a community-based project as part of a regular course
- Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)



SFI

Student-Faculty Interaction

Students see first-hand how experts think about and solve practical problems by interacting with faculty members inside and outside the classroom. As a result, their teachers become role models, mentors, and guides for continuous, life-long learning.

Activities:

- Discussed grades or assignments with an instructor
- Talked about career plans with a faculty member or advisor
- Discussed ideas from your readings or classes with faculty members outside of class
- Worked with faculty members on activities other than coursework (committees, orientation, student-life activities, etc.)
- Received prompt written or oral feedback from faculty on your academic performance
- Worked with a faculty member on a research project

SCE

Supportive Campus Environment

Students perform better and are more satisfied at colleges that are committed to their success and cultivate positive working and social relations among different groups on campus.

Conditions:

- Campus environment provides support you need to help you succeed academically
- Campus environment helps you cope with your non-academic responsibilities (work, family, etc.)
- Campus environment provides the support you need to thrive socially
- Quality of relationships with other students
- Quality of relationships with faculty members
- Quality of relationships with administrative personnel and offices

EEE

Enriching Educational Experiences

Complementary learning opportunities inside and outside the classroom augment the academic program. Experiencing diversity teaches students valuable things about themselves and other cultures. Used appropriately, technology facilitates learning and promotes collaboration between peers and instructors. Internships, community service, and senior capstone courses provide students with opportunities to synthesize, integrate, and apply their knowledge. Such experiences make learning more meaningful and, ultimately, more useful because what students know becomes a part of who they are.

Activities and conditions:

- Talking with students with different religious beliefs, political opinions, or values
- Talking with students of a different race or ethnicity
- An institutional climate that encourages contact among students from different economic, social, and racial or ethnic backgrounds
- Using electronic technology to discuss or complete assignments
- Participating in:
  - Internships or field experiences
  - Community service or volunteer work
  - Foreign language coursework
  - Study abroad
  - Independent study or self-assigned major
  - Culminating senior experience
  - Co-curricular activities
  - Learning communities

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Web: nsse.iub.edu

APPENDIX B

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Resear
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

Date: 8/1/2011

To: Nadia Korobova
28 Gilchrist Hall

CC: Dr. Soko Starobin
N221A Lagomarcino

From: Office for Responsible Research

Title: International Student Engagement in Effective Educational Practices: Examination and Comparison to American Student Engagement

IRB Num: 11-339

Submission Type: New **Exemption Date:** 7/29/2011

The project referenced above has undergone review by the Institutional Review Board (IRB) and has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b). The IRB determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as proposed in the IRB application**, including obtaining and documenting informed consent if you have stated in your application that you will do so or if required by the IRB.
- **Any modification of this research should be submitted to the IRB on a Continuing Review and/or Modification form, prior to making any changes**, to determine if the project still meets the federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Please be sure to **use only the approved study materials** in your research, including the **recruitment materials and informed consent documents that have the IRB approval stamp.**

Please note that you must submit all research involving human participants for review by the IRB. **Only the IRB may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

For IRB Use Only	☐ Not Research Per Federal Regulations	☐ No Human Participants	IRB ID: 11-339
	EXEMPT Per 45 CFR 46.101(b): 4	Minimal Risk ☑	Review Date: 7/29/11

RECEIVED
JUL 27 2011
By IRB

INSTITUTIONAL REVIEW BOARD (IRB)
Exempt Study Review Form

SECTION I: GENERAL INFORMATION

Principal Investigator (PI): Nadia Korobova	Phone: 319-273-7424	Fax: 319-273-2921
Degrees: BA, MPP, PhD (in progress)	Correspondence Address: Gilchrist Hall 28	
Department: Office of International Programs	Email Address: nadia.korobova@uni.edu	
Center/Institute:	College: University of Northern Iowa	
PI Level: ☐ Faculty ☐ Staff ☐ Postdoctoral ☒ Graduate Student ☐ Undergraduate Student		
Alternate Contact Person:	Email Address:	
Correspondence Address:	Phone:	
Title of Project: International Student Engagement in Effective Educational Practices: Examination and Comparison to American Student Engagement		
Project Period (Include Start and End Date): [*mm/dd/yy*][*09/26/11*] to [*mm/dd/yy*][*03/26/12*]		

FOR STUDENT PROJECTS	
Name of Major Professor/Supervising Faculty: Dr. Soko Starobin	Signature of Major Professor/Supervising Faculty:
Phone: 515-294-9121	Campus Address: N225C Lagomarcino
Department: Educational Leadership and Policy Studies	Email Address: starobin@iastate.edu
Type of Project: (check all that apply) ☐ Research ☐ Thesis ☒ Dissertation ☐ Class project ☐ Independent Study (490, 590, Honors project) ☐ Other—Please specify: ____	

KEY PERSONNEL

List all members and relevant experience of the project personnel. This information is intended to inform the committee of the training and background related to the specific procedures that each person will perform on the project.

NAME & DEGREE(S)	SPECIFIC DUTIES ON PROJECT	TRAINING & EXPERIENCE RELATED TO PROCEDURES PERFORMED, DATE OF TRAINING
Nadia Korobova (BA, MPP, PhD in progress)	Writing a quantitative dissertation with working title "International Student Engagement in Effective Educational Practices: Examination and Comparison to American Student Engagement". Data source: National Survey of Student Engagement 2008. Variables: All survey items and certain institutional characteristics (Carnegie classification, control, and percentage of international students). All student and institution identifying information is removed by the	Web-based training course Protecting Human Research Participants 6/3/10

	Indiana University Center for Postsecondary Research. Cases: a 20% random sample of all first-year and senior international students who attend a U.S. institution. In addition, a 20% random sample of all first-year and senior students who are U.S. citizens and attend a U.S. institution.	

If you don't know your training date, contact the Office for Responsible Research for assistance.

✓ Soko Starobin 8-14-03

FUNDING INFORMATION

☐ Internally funded, please provide account number:
☐ Externally funded, please provide funding source and account number:
☐ Funding is pending, please provide OSPA GoldSheet ID:
☐ Title on GoldSheet if different from above:
☒ Other: (*e.g., funding will be applied for later, project not funded, etc.).* Office of International Programs, University of Northern Iowa, purchases NSSE dataset
☐ Student Project—no funding or funding provided by student

SCIENTIFIC REVIEW

☐ Yes ☒ No Has or will this project receive peer review?

Although the assurance committees are not intended to conduct peer review of research proposals, the federal regulations include language such as "consistent with sound research design," "rationale for involving animals or humans," and "scientifically valuable research," which requires that the committees consider in their review the general scientific relevance of a research study. Proposals that do not meet these basic tests are not justifiable and cannot be approved. If an assurance review committee(s) has concerns about the scientific merit of a project and the project was not competitively funded by peer review or was funded by corporate sponsors, the project may be referred to a scientific review committee. The scientific review committee will be an ad hoc and will consist of your ISU peers and outside experts as needed. If this situation arises, the PI will be contacted and given the option of agreeing that a consultant may be contacted or withdrawing the proposal from consideration.

If the answer is "yes," please indicate who did or will conduct the review:

If a review was conducted, please indicate the outcome of the review:

COLLECTION OR RECEIPT OF SAMPLES

Will you be: (Please check all that apply.)

☐ Yes ☒ No Receiving biological samples from outside of ISU? See examples below.
☐ Yes ☒ No Sending biological samples outside of ISU? See examples below.

Examples include: genetically modified organisms, body fluids, tissue samples, blood samples, pathogens.

If you will be receiving samples from or sending samples outside of ISU, please identify the name of the outside organization(s) and the types of samples you will be sending or receiving outside of ISU:

N/A

ASSURANCE

- I certify that the information provided in this application is complete and accurate and consistent with any proposal(s) submitted to external funding agencies.
- I agree to provide proper surveillance of this project to ensure that the rights and welfare of the human subjects or welfare of animal subjects are protected. I will report any problems to the appropriate assurance review committee(s).
- I agree that I will not begin this project until receipt of official approval from all appropriate committee(s).
- I agree that modifications to the originally approved project will not take place without prior review and approval by the appropriate committee(s) and that all activities will be performed in accordance with all applicable federal, state, local, and Iowa State University policies.

CONFLICT OF INTEREST

ISU's Conflict of Interest Policy requires that investigators and key personnel disclose any significant financial interests or relationships that may present an actual or potential conflict of interest. A conflict of interest can be defined as a set of conditions in which an investigator's or key personnel's judgment regarding a project (including human or animal subject welfare, integrity of the research) may be influenced by a secondary interest (e.g., the proposed project and/or a relationship with the sponsor). By signing this form below, you are certifying that all members of the research team, including yourself, have read and understand ISU's Conflict of Interest policy as addressed by the ISU Faculty Handbook and have made all required disclosures.

☐ Yes ☒ No Do you or any member of your research team have an actual or potential conflict of interest?
☐ Yes ☒ No **If yes,** have the appropriate disclosure form(s) been completed?

SIGNATURES

Nadia Kornberg 7/20/11
Signature of Principal Investigator Date

Daniel C. Robinson 7/26/11
Signature of Department Chair Date

FOR IRB USE ONLY:

☑ Project is exempt.
☐ Project is not exempt.
☐ Project is not research according to the federal definition.
☐ Project does not include human subjects as defined by the federal regulations.

Kelly A Spittal
IRB Reviewer's Signature

July 29, 2011
Date

SECTION II: EXEMPTION CATEGORY

The following categories and sub-parts are eligible for exempt status review.
Check all applicable categories and sub-parts below. To select a category box, double-click on the check box.

PLEASE NOTE:

All procedures for all subjects in a project must be exempt in order for the project to be reviewed for exemption (i.e., all of the activities that participants will be asked to participate in must be found in one or more of the following categories).

Exemption does not apply if the targeted populations for the research will involve individuals who are legally incompetent, significantly mentally ill or impaired, or those who are vulnerable to extraordinary institutional coercion, such as prisoners, residents of 24-hour nursing facilities, or anyone who is involuntarily confined.

Investigators whose research projects involve procedures which do not fit within an exempt category will be asked to complete the ISU Application for Approval of Research Involving Humans.

Investigators conducting research that fits into the exempt categories of research are not required to obtain a volunteer's consent to participate using an informed consent document containing all of the elements of consent. However, the IRB requires that the following items be included in an informed consent document or letter of introduction: a statement that the project involves research; a statement that participation is voluntary; a statement that the participant may skip any questions they do not feel comfortable answering in a survey; and the measures that will be used to ensure confidentiality of data collected in the research.

☐ **Education Practices:** Research conducted in established or commonly accepted educational settings involving normal educational practices is exempt when:

- ☐ research is on regular and special education instructional techniques, **or**
- ☒ research is on the effectiveness of, or the comparison among, instructional techniques, curricula, or classroom management methods.

☒ **Educational Tests:** Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement) is exempt if:

- ☒ in the researcher's private data (including field notes), as well as in any published material, information taken from these sources is recorded in such a manner that subjects *cannot* be identified, directly or through identifiers linked to the subjects; **or**
- ☒ the information, if disclosed outside of the research, could *not* reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing, employability, or reputation.

☐ **Surveying or Interviewing:** Research involving, or interview procedures of, adult-aged subjects is exempt if:

- ☒ in the researcher's private data (including field notes), as well as in any published material, *responses are recorded anonymously* and in such a manner that the human subjects *cannot* be identified, directly or through identifiers linked to the subjects: **or**
- ☒ the responses, if disclosed outside of the research, could *not* reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing, employability, or reputation.

This exemption does not apply if the subjects are minor children or other vulnerable participants.

☒ **Public Observations:** Research involving observation of public behavior is exempt if:

- ☒ in the researcher's private data (including field notes), as well as in any published material, information taken from these sources is recorded in such a manner that subjects *cannot* be identified, directly or through identifiers linked to the subjects; **or**
- ☒ the information, if disclosed outside of the research, could *not* reasonably place the subject at risk of criminal or civil liability or be damaging to the subject's financial standing, employability, or reputation.

This exemption applies to research involving minor children only when the investigator does not participate in the activities observed. Workplace meetings and activities, as well as classroom activities, are not considered "public behavior."

☐ **Public Officials:** All research involving educational tests, survey or interview procedures, or public observations is exempt when the respondents are elected or appointed public officials or candidates for public office.

Managers and staff in public agencies are not "public officials" in most cases.

☒ **Existing Data:** Research involving the collection of existing data, documents, records, pathological or diagnostic specimens is exempt if:

- ☒ these sources are publicly available, **or**
- ☒ in both the researcher's private data and in any published material, the information is recorded by the researcher in such a manner that subjects *cannot* be identified, directly or through identifiers (e.g., ID codes, email addresses, etc.) linked to the subjects.

☐ **Taste and Food Quality:** Research on taste and food quality evaluation and consumer acceptance studies is exempt if:

- ☐ wholesome food without additives will be used, **or**
- ☐ the food contains a food ingredient that is at or below the level found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

SECTION III: PROTOCOL INFORMATION

1. Please describe the purpose of the study and how the data will be used.

> The purpose of this study will be to measure the extent to which international students engage in effective educational practices. It will also examine if predictions regarding student engagement, satisfaction, and gains of international students can be made based on various characteristics (such as critical mass, major, etc). First, affect of critical mass on student engagement will be examined. Second, affect of major on student engagement will be examined. Zhao, Kuh, and Carini (2005) compared "the activities of international undergraduate students with American students in selected areas that research shows is related to student learning, personal development, and satisfaction with college, including the degree to which they perceive their campus to be supportive of academic and social needs" (p. 211). In addition, they examined self-reporting gains in personal and social development, general education, and job related skills. This study will replicate some of their study using the latest available data, and examine international student engagement further using different variables, specifically, does critical mass and major affect student engagement, satisfaction, and gains among others.

2. Please outline the study procedures. Include a complete description of how subjects will be involved and all data collection procedures (i.e., what participants will be asked to do). For studies using existing data, please describe the source of the data and whether or not it is available publicly.

   Additionally, please attach a copy of all data collection instruments, such as surveys, interview or focus group questions, etc.

> Through CSR Survey "NSSE annually collects information at hundreds of four-year colleges and universities about student participation in programs and activities that institutions provide for their learning and personal development" (National Survey of Student Engagement, 2011). 763 institutions administered survey in 2008 with average response rate of 37%. 67 administered the paper version, 463 – web version, and 233 – web + version. The survey was administered during the spring semester. First-year and senior students who were enrolled in the previous fall semester are randomly selected. The summary of the data is available publically at http://nsse.iub.edu/_/index.cfm?cid=341.

3. List characteristics of your study population (i.e., ages, student status, gender, ethnicity, etc.) and your rationale for choosing them for the study. (Studies with vulnerable populations such as children, adolescents, prisoners, or other institutionalized individuals are not eligible for exempt review.)

> The study will examine 20% random sample of all first-year and senior international students who attend a U.S. institution, and 20% random sample of all first-year and senior students who are U.S. citizens and attend a U.S. institution. Rationale is examining engagement of international students and comparing it to the engagement of American students.

4. Describe any potential risk and assess its level of likelihood and seriousness. *If you believe there are no risks, please explain why.* Describe the procedures to be used for protecting against or minimizing any potential risk, including any confidentiality measures used to minimize the risks related to disclosure of data. Risks could be physical, psychological, social, or legal and can include minor discomfort and/or embarrassment.

> I believe the are no potential risks because according to the Data Sharing Agreement (attached), all student and institution identifying information is removed by the Indiana University Center for Postsecondary Research.

5. Describe the informed consent process to be used for the study. Attach copies of consent forms, information sheets, and/or letters of introduction that will be used. Also attach any documents that will be used for advertising or recruiting purposes.

Informed consent forms were not collected being that existing data will be used for this study.

6. If the project involves the use of existing data, please describe the extent to which persons could be identified based on information in the data, such as:
   - whether or not any identifiers (names, addresses, email addresses, exact dates of birth, SSN, student IDs, subject ID codes, etc.) will be included with the data you receive;
   - whether or not you have access to any keys or links between ID codes and the identity of the persons (please attach any agreements with the holder of the key/link that it will not be released to you).

According to the Data Sharing Agreement (attached), all student and institution identifying information is removed by the Indiana University Center for Postsecondary Research.

NSSE
national survey of
student engagement

Indiana University Center for Postsecondary Research
Data Sharing Agreement

This Indiana University Center for Postsecondary Research Data Sharing Agreement ("Agreement") defines the parameters for data sharing from the National Survey of Student Engagement ("NSSE") between the Research Institution and its Authorized Researchers named below and the Trustees of Indiana University on behalf of the Indiana University Center for Postsecondary Research ("IUCPR"). The terms below are intended to reflect and comply with the existing agreements between NSSE and the institutions that participate in the survey program. Under these participation agreements, NSSE may:

> *"...make data, in which individual institutions or students cannot be identified, available to researchers interested in studying the undergraduate experience... NSSE results specific to each institution and identified as such will not be made public except by mutual agreement between NSSE and the institution."*

RESEARCHERS

The following researchers ("Authorized Researchers") of **Iowa State University** ("Research Institution") may make use of NSSE data pursuant to the terms of this Agreement:

Nadia Korobova	**Iowa State University**
Dr. Soko Starobin	**Iowa State University**
Dr. Frankie Santos Laanan	**Iowa State University**

DATA DESCRIPTION

Under this Agreement, IUCPR will provide the researchers a data file delimited in the following ways ("NSSE Data File"):

- Data Source: **NSSE 2008**
- Variables: **All survey items and certain institutional characteristics (Carnegie classification, control, and percentage of international students). All student and institution identifying information will be removed.**
- Cases: **A 20% random sample of all first-year and senior international students who attend a U.S. institution. In addition, a 20% random sample of all first-year and senior students who are U.S. citizens and attend a U.S. institution.**

NSSE
national survey of
student engagement

PARAMETERS FOR DATA SHARING:

1. IUCPR will provide a single copy of the NSSE Data File solely for non-commercial research by the Authorized Researchers.

2. The NSSE Data File will exclude the Unit ID code from Integrated Postsecondary Educational Data System (IPEDS), any other unique school or student identifiers, and any variables that IUCPR determines reasonably may permit the identification of a participating school or student.

3. The Authorized Researchers will not make any attempt, privately or publicly, to associate elements of the NSSE Data File with the individual institutions or individual students participating in the NSSE, nor will they share the data with anyone else who might do so.

4. In all publications or presentations of data obtained through this agreement, the Authorized Researchers agree to include the following citation: "NSSE data were used with permission from The Indiana University Center for Postsecondary Research."

5. The Authorized Researchers agree to provide to IUCPR a copy of all reports, presentations, analyses, or other materials in which the data given under this Agreement are presented, discussed, or analyzed.

6. **The data should be encrypted when not in use by the above researcher and should be destroyed once this particular research project (dissertation) has been completed. If the researcher needs the data for any longer period than that which is necessary for completing the dissertation, the researcher is required to ask for an extension. Using the data for other purposes besides completing the designated project (dissertation) must be approved by the Director for the Center for Postsecondary Research at Indiana University at Bloomington.**

7. The IUCPR of Indiana University may, by written notification to the Authorized Researchers and the Research Institution, terminate this Agreement if it determines, in its sole discretion, that either the Authorized Researchers or the Research Institution have breached the terms of this Agreement. In the event that this Agreement is terminated, the Authorized Researchers and Research Institution shall return the originals and all copies of the NSSE Data File to the IUCPR, and securely destroy all NSSE Data File elements contained in any analyses or other materials created or maintained by Authorized Researchers, within ten (10) days of the receipt of the termination notice.

8. IU will not be liable to the Research Institution for any direct, consequential, or other damages, related to the use of the NSSE Data File or any other information delivered by Indiana University or IUCPR in accordance with this Agreement. The Research Institution shall defend, indemnify, and hold harmless The Trustees of Indiana University, their officers, employees, and agents, with respect to any and all claims,

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causes of action, losses, and liabilities, of any kind whatsoever, arising directly or indirectly from the Authorized Researchers' use of the NSSE Data File.

9. **FEES**

In exchange for access to and use of the NSSE Data File, **Nadia Korobova** agrees to pay Indiana University the sum of **$525**, by check upon execution of this Agreement;

SIGNATURES
The undersigned hereby consent to the terms of this Agreement and confirm that they have all necessary authority to enter into this Agreement.

For The Trustees of Indiana University:

Marcia Landen — Date: 7/12/11
Director, Grant Services
Office of the VP for Research Administration
Indiana University

Alexander C. McCormick — Date: 6/24/2011
Director,
National Survey of Student Engagement

For the Research Institution:

Diane K. Ament — Date: 6/21/11
Diane Ament
Director
Office for Responsible Research
Iowa State University

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Acknowledgment of Authorized Researchers:

Nadia Korobova — 6/20/11

Nadia Korobova
Doctoral Student
Iowa State University

Date

Frankie Laanan for Soko Starobin — 06-21-11

Dr. Soko Starobin
Assistant Professor
Educational Leadership and Policy Studies
Iowa State University

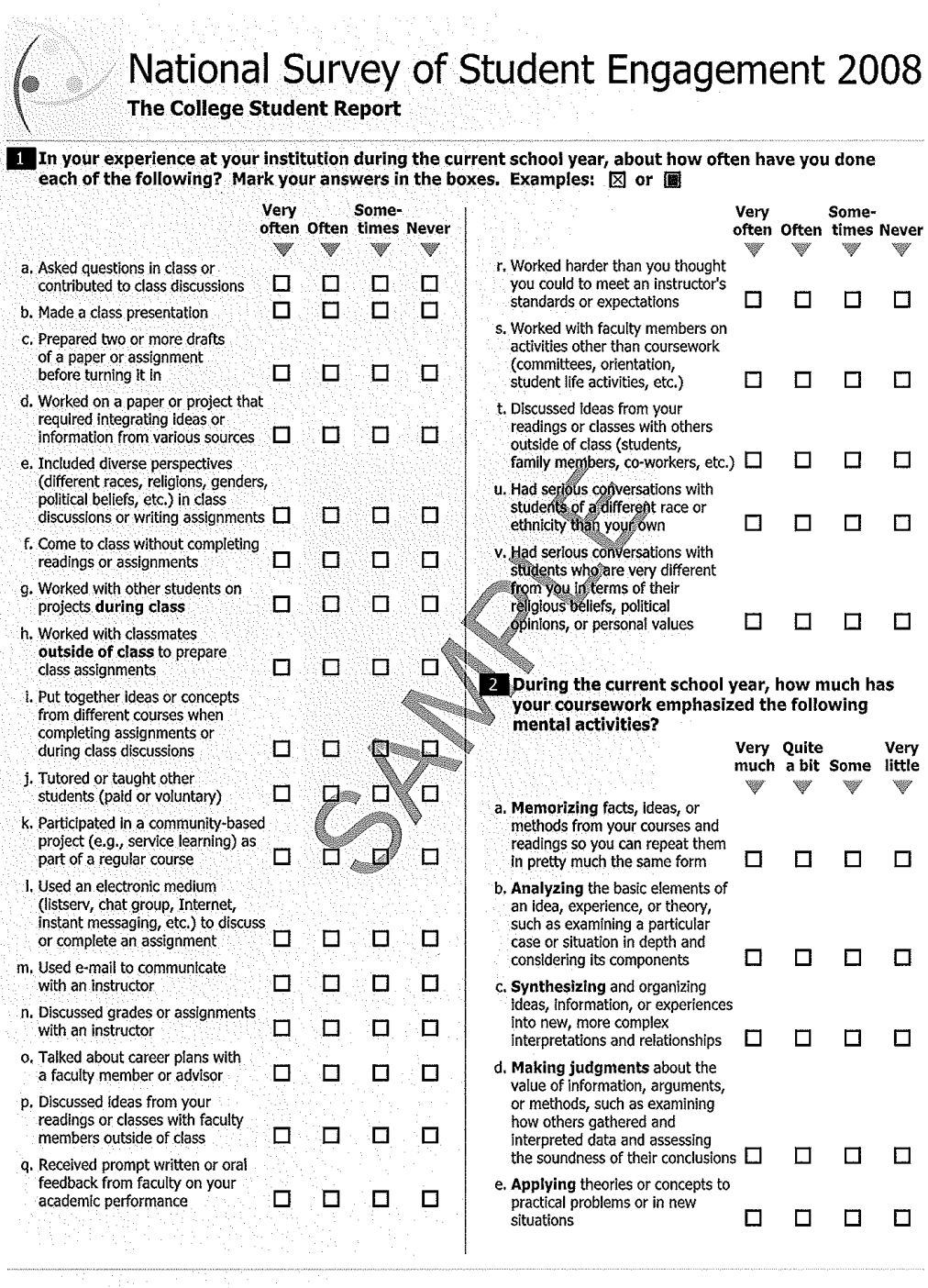
Date

Frankie Laanan — 06-21-11

Dr. Frankie Laanan
Associate Professor
Educational Leadership and Policy Studies
Iowa State University

Date

APPENDIX C



National Survey of Student Engagement 2008

The College Student Report

1 **In your experience at your institution during the current school year, about how often have you done each of the following? Mark your answers in the boxes. Examples: ☒ or ■**

	Very often	Often	Some-times	Never
a. Asked questions in class or contributed to class discussions	☐	☐	☐	☐
b. Made a class presentation	☐	☐	☐	☐
c. Prepared two or more drafts of a paper or assignment before turning it in	☐	☐	☐	☐
d. Worked on a paper or project that required integrating ideas or information from various sources	☐	☐	☐	☐
e. Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments	☐	☐	☐	☐
f. Come to class without completing readings or assignments	☐	☐	☐	☐
g. Worked with other students on projects **during class**	☐	☐	☐	☐
h. Worked with classmates **outside of class** to prepare class assignments	☐	☐	☐	☐
i. Put together ideas or concepts from different courses when completing assignments or during class discussions	☐	☐	☐	☐
j. Tutored or taught other students (paid or voluntary)	☐	☐	☐	☐
k. Participated in a community-based project (e.g., service learning) as part of a regular course	☐	☐	☐	☐
l. Used an electronic medium (listserv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment	☐	☐	☐	☐
m. Used e-mail to communicate with an instructor	☐	☐	☐	☐
n. Discussed grades or assignments with an instructor	☐	☐	☐	☐
o. Talked about career plans with a faculty member or advisor	☐	☐	☐	☐
p. Discussed ideas from your readings or classes with faculty members outside of class	☐	☐	☐	☐
q. Received prompt written or oral feedback from faculty on your academic performance	☐	☐	☐	☐
r. Worked harder than you thought you could to meet an instructor's standards or expectations	☐	☐	☐	☐
s. Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)	☐	☐	☐	☐
t. Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	☐	☐	☐	☐
u. Had serious conversations with students of a different race or ethnicity than your own	☐	☐	☐	☐
v. Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values	☐	☐	☐	☐

2 **During the current school year, how much has your coursework emphasized the following mental activities?**

	Very much	Quite a bit	Some	Very little
a. **Memorizing** facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	☐	☐	☐	☐
b. **Analyzing** the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	☐	☐	☐	☐
c. **Synthesizing** and organizing ideas, information, or experiences into new, more complex interpretations and relationships	☐	☐	☐	☐
d. **Making judgments** about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	☐	☐	☐	☐
e. **Applying** theories or concepts to practical problems or in new situations	☐	☐	☐	☐

SAMPLE

3 **During the current *school year*, about how much reading and writing have you done?**

a. Number of assigned textbooks, books, or book-length packs of course readings

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

b. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

c. Number of written papers or reports of **20 pages or more**

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

d. Number of written papers or reports **between 5 and 19 pages**

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

e. Number of written papers or reports of **fewer than 5 pages**

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

4 **In a *typical week*, how many homework problem sets do you complete?**

	None	1-2	3-4	5-6	More than 6
a. Number of problem sets that take you **more** than an hour to complete	☐	☐	☐	☐	☐
b. Number of problem sets that take you **less** than an hour to complete	☐	☐	☐	☐	☐

5 **Mark the box that best represents the extent to which your examinations during the current school year have challenged you to do your best work.**

Very little ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 Very much

6 **During the current school year, about how often have you done each of the following?**

	Very often	Often	Some-times	Never
a. Attended an art exhibit, play, dance, music, theater, or other performance	☐	☐	☐	☐
b. Exercised or participated in physical fitness activities	☐	☐	☐	☐
c. Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	☐	☐	☐	☐
d. Examined the strengths and weaknesses of your own views on a topic or issue	☐	☐	☐	☐
e. Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	☐	☐	☐	☐
f. Learned something that changed the way you understand an issue or concept	☐	☐	☐	☐

7 **Which of the following have you done or do you plan to do before you graduate from your institution?**

	Done	Plan to do	Do not plan to do	Have not decided
a. Practicum, internship, field experience, co-op experience, or clinical assignment	☐	☐	☐	☐
b. Community service or volunteer work	☐	☐	☐	☐
c. Participate in a learning community or some other formal program where groups of students take two or more classes together	☐	☐	☐	☐
d. Work on a research project with a faculty member outside of course or program requirements	☐	☐	☐	☐
e. Foreign language coursework	☐	☐	☐	☐
f. Study abroad	☐	☐	☐	☐
g. Independent study or self-designed major	☐	☐	☐	☐
h. Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, etc.)	☐	☐	☐	☐

8 **Mark the box that best represents the quality of your relationships with people at your institution.**

a. Relationships with **other students**

Unfriendly, Unsupportive, Sense of alienation ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 Friendly, Supportive, Sense of belonging

b. Relationships with **faculty members**

Unavailable, Unhelpful, Unsympathetic ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 Available, Helpful, Sympathetic

c. Relationships with **administrative personnel and offices**

Unhelpful, Inconsiderate, Rigid ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 Helpful, Considerate, Flexible

9 **About how many hours do you spend in a typical 7-day week doing each of the following?**

a. Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

b. Working for pay **on campus**

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

c. Working for pay **off campus**

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

d. Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

e. Relaxing and socializing (watching TV, partying, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

f. Providing care for dependents living with you (parents, children, spouse, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

g. Commuting to class (driving, walking, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

10 **To what extent does your institution emphasize each of the following?**

	Very much	Quite a bit	Some	Very little
a. Spending significant amounts of time studying and on academic work	☐	☐	☐	☐
b. Providing the support you need to help you succeed academically	☐	☐	☐	☐
c. Encouraging contact among students from different economic, social, and racial or ethnic backgrounds	☐	☐	☐	☐
d. Helping you cope with your non-academic responsibilities (work, family, etc.)	☐	☐	☐	☐
e. Providing the support you need to thrive socially	☐	☐	☐	☐
f. Attending campus events and activities (special speakers, cultural performances, athletic events, etc.)	☐	☐	☐	☐
g. Using computers in academic work	☐	☐	☐	☐

11 **To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?**

	Very much	Quite a bit	Some	Very little
a. Acquiring a broad general education	☐	☐	☐	☐
b. Acquiring job or work-related knowledge and skills	☐	☐	☐	☐
c. Writing clearly and effectively	☐	☐	☐	☐
d. Speaking clearly and effectively	☐	☐	☐	☐
e. Thinking critically and analytically	☐	☐	☐	☐
f. Analyzing quantitative problems	☐	☐	☐	☐
g. Using computing and information technology	☐	☐	☐	☐
h. Working effectively with others	☐	☐	☐	☐
i. Voting in local, state, or national elections	☐	☐	☐	☐
j. Learning effectively on your own	☐	☐	☐	☐
k. Understanding yourself	☐	☐	☐	☐
l. Understanding people of other racial and ethnic backgrounds	☐	☐	☐	☐
m. Solving complex real-world problems	☐	☐	☐	☐
n. Developing a personal code of values and ethics	☐	☐	☐	☐
o. Contributing to the welfare of your community	☐	☐	☐	☐
p. Developing a deepened sense of spirituality	☐	☐	☐	☐

12 **Overall, how would you evaluate the quality of academic advising you have received at your institution?**

☐ Excellent
☐ Good
☐ Fair
☐ Poor

13 **How would you evaluate your entire educational experience at this institution?**

☐ Excellent
☐ Good
☐ Fair
☐ Poor

14 **If you could start over again, would you go to the *same institution* you are now attending?**

☐ Definitely yes
☐ Probably yes
☐ Probably no
☐ Definitely no

15 **Write in your year of birth:** 1 9 _ _

16 **Your sex:**
☐ Male ☐ Female

17 **Are you an international student or foreign national?**
☐ Yes ☐ No

18 **What is your racial or ethnic identification? (Mark only one.)**
☐ American Indian or other Native American
☐ Asian, Asian American, or Pacific Islander
☐ Black or African American
☐ White (non-Hispanic)
☐ Mexican or Mexican American
☐ Puerto Rican
☐ Other Hispanic or Latino
☐ Multiracial
☐ Other
☐ I prefer not to respond

19 **What is your current classification in college?**
☐ Freshman/first-year ☐ Senior
☐ Sophomore ☐ Unclassified
☐ Junior

20 **Did you begin college at your current institution or elsewhere?**
☐ Started here ☐ Started elsewhere

21 **Since graduating from high school, which of the following types of schools have you attended other than the one you are attending now? (Mark all that apply.)**
☐ Vocational or technical school
☐ Community or junior college
☐ 4-year college other than this one
☐ None
☐ Other

22 **Thinking about this current academic term, how would you characterize your enrollment?**
☐ Full-time ☐ Less than full-time

23 **Are you a member of a social fraternity or sorority?**
☐ Yes ☐ No

24 **Are you a student-athlete on a team sponsored by your institution's athletics department?**
☐ Yes ☐ No (Go to question 25.)

On what team(s) are you an athlete (e.g., football, swimming)? Please answer below:

25 **What have most of your grades been up to now at this institution?**
☐ A ☐ B+ ☐ C+
☐ A- ☐ B ☐ C
☐ B- ☐ C- or lower

26 **Which of the following best describes where you are living now while attending college?**
☐ Dormitory or other campus housing (not fraternity/sorority house)
☐ Residence (house, apartment, etc.) within **walking distance** of the institution
☐ Residence (house, apartment, etc.) within **driving distance** of the institution
☐ Fraternity or sorority house

27 **What is the highest level of education that your parent(s) completed? (Mark one box per column.)**

Father	Mother	
☐	☐	Did not finish high school
☐	☐	Graduated from high school
☐	☐	Attended college but did not complete degree
☐	☐	Completed an associate's degree (A.A., A.S., etc.)
☐	☐	Completed a bachelor's degree (B.A., B.S., etc.)
☐	☐	Completed a master's degree (M.A., M.S., etc.)
☐	☐	Completed a doctoral degree (Ph.D., J.D., M.D., etc.)

28 **Please print your major(s) or your expected major(s).**

a. Primary major (Print only one.):

b. If applicable, second major (not minor, concentration, etc.):

THANKS FOR SHARING YOUR RESPONSES!

After completing the survey, please put it in the enclosed postage-paid envelope and deposit it in any U.S. Postal Service mailbox. Questions or comments? Contact the National Survey of Student Engagement, Indiana University, 1900 East Tenth Street, Eigenmann Hall Suite 419, Bloomington IN 47406-7512 or nsse@indiana.edu or www.nsse.iub.edu.

APPENDIX D

National Survey of Student Engagement

The College Student Report

NSSE 2008 Codebook

Please note the following for the NSSE data file and codebook:

1. Invalid responses and non-responses are coded as missing "." in the data file.
2. Changes to the questionnaire and/or data file from the previous year are identified by the following:
   - ~ One asterisk (*) denotes a variable that has been revised slightly from last year.
   - ~ Two asterisks (**) denote a variable that has been revised significantly from last year and given a new name.
   - ~ Three asterisks (***) denote a new variable.
3. Changes made in previous years can be viewed in past codebooks, available on the NSSE Web site at www.nsse.iub.edu/html/institutional_reports.cfm.

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
Question 1. In your experience at your institution during the current school year, about how often have you done each of the following?			
1a.	clquest	Asked questions in class or contributed to class discussions	1 = Never 2 = Sometimes 3 = Often 4 = Very often
1b.	clpresen	Made a class presentation	
1c.	rewropap	Prepared two or more drafts of a paper or assignment before turning it in	
1d.	integrat	Worked on a paper or project that required integrating ideas or information from various sources	
1e.	diverclass	Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments	
1f.	clunprep	Come to class without completing readings or assignments	
1g.	classgrp	Worked with other students on projects **during class**	
1h.	ocegrp	Worked with classmates **outside of class** to prepare class assignments	
1i.	intideas	Put together ideas or concepts from different courses when completing assignments or during class discussions	
1j.	tutor	Tutored or taught other students (paid or voluntary)	
1k.	commproj	Participated in a community-based project (e.g., service learning) as part of a regular course	
1l.	itacadem	Used an electronic medium (listserv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment	
1m.	email	Used e-mail to communicate with an instructor	
1n.	facgrade	Discussed grades or assignments with an instructor	
1o.	facplans	Talked about career plans with a faculty member or advisor	
1p.	facideas	Discussed ideas from your readings or classes with faculty members outside of class	
1q.	facfeed	Received prompt written or oral feedback from faculty on your academic performance	

National Survey of Student Engagement

The College Student Report
NSSE 2008 Codebook

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
1r.	workhard	Worked harder than you thought you could to meet an instructor's standards or expectations	
1s.	facother	Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)	1 = Never 2 = Sometimes 3 = Often 4 = Very often
1t.	oocideas	Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	
1u.	divrstud	Had serious conversations with students of a different race or ethnicity than your own	
1v.	diffstu2	Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values	
Question 2. During the current school year, how much has your coursework emphasized the following mental activities?			
2a.	memorize	**Memorizing** facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	
2b.	analyze	**Analyzing** the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
2c.	synthesz	**Synthesizing** and organizing ideas, information, or experiences into new, more complex interpretations and relationships	
2d.	evaluate	**Making judgments** about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	
2e.	applying	**Applying** theories or concepts to practical problems or in new situations	

National Survey of Student Engagement

The College Student Report
NSSE 2008 Codebook

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
Question 3. During the current *school year*, about how much reading and writing have you done?			
3a.	readasgn	Number of assigned textbooks, books, or book-length packs of course readings	
3b.	readown	Number of books read on your own (not assigned) for personal enjoyment or academic enrichment	1 = None 2 = 1-4 3 = 5-10 4 = 11-20 5 = More than 20
3c.	writemor	Number of written papers or reports of 20 pages or more	
3d.	writemid	Number of written papers or reports between 5 and 19 pages	
3e.	writesml	Number of written papers or reports of fewer than 5 pages	
Question 4. In a *typical week*, how many homework problem sets do you complete?			
4a.	probseta	Number of problem sets that take you more than an hour to complete	1 = None 2 = 1-2 3 = 3-4 4 = 5-6 5 = More than 6
4b.	probsetb	Number of problem sets that take you less than an hour to complete	
5.	exams	Select the circle that best represents the extent to which your examinations during the current school year have challenged you to do your best work.	1 = Very little 7 = Very much

National Survey of Student Engagement

The College Student Report
NSSE 2008 Codebook

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
Question 6. During the current school year, about how often have you done each of the following?			
6a.	aidart07	Attended an art exhibit, play, dance, music, theater, or other performance	1 = Never 2 = Sometimes 3 = Often 4 = Very often
6b.	exercse05	Exercised or participated in physical fitness activities	
6c.	worshp05	Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	
6d.	ownview	Examined the strengths and weaknesses of your own views on a topic or issue	
6e.	othrview	Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	
6f.	chngview	Learned something that changed the way you understand an issue or concept	
Question 7. Which of the following have you done or do you plan to do before you graduate from your institution?			
7a.	intern04	Practicum, internship, field experience, co-op experience, or clinical assignment	1 = Have not decided 2 = Do not plan to do 3 = Plan to do 4 = Done
7b.	volntr04	Community service or volunteer work	
7c.	lrncom04	Participate in a learning community or some other formal program where groups of students take two or more classes together	
7d.	resrch04	Work on a research project with a faculty member outside of course or program requirements	
7e.	forlng04	Foreign language coursework	
7f.	stdabr04	Study abroad	
7g.	indstd04	Independent study or self-designed major	
7h.	senex04	Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, etc.)	

* Slight revision from last year; ** Significant revision from last year so new variable name created; *** New variable

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Item #	*Variable*	*Variable Label*	*Response Values and Labels*
Question 8. Select the circle that best represents the quality of your relationships with people at your institution.			
8a.	envstu	Relationships with other students	1 = Unfriendly, Unsupportive, Sense of alienation 7 = Friendly, Supportive, Sense of belonging
8b.	envfac	Relationships with faculty members	1 = Unavailable, Unhelpful, Unsympathetic 7 = Available, Helpful, Sympathetic
8c.	envadm	Relationships with administrative personnel and offices	1 = Unhelpful, Inconsiderate, Rigid 7 = Helpful, Considerate, Flexible
Question 9. About how many hours do you spend in a typical 7-day week doing each of the following?			
9a.	acadpr01	Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)	1 = 0 2 = 1-5 3 = 6-10 4 = 11-15 5 = 16-20 6 = 21-25 7 = 26-30 8 = More than 30 hours
9b.	workon01	Working for pay on campus	
9c.	workof01	Working for pay off campus	
9d.	cocurr01	Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)	
9e.	social05	Relaxing and socializing (watching TV, partying, etc.)	
9f.	caredep01	Providing care for dependents living with you (parents, children, spouse, etc.)	
9g.	commute	Commuting to class (driving, walking, etc.)	

* Slight revision from last year; ** Significant revision from last year so new variable name created; *** New variable

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
Question 10. To what extent does your institution emphasize each of the following?			
10a.	envschol	Spending significant amounts of time studying and on academic work	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
10b.	envsuprt	Providing the support you need to help you succeed academically	
10c.	envdivrs	Encouraging contact among students from different economic, social, and racial or ethnic backgrounds	
10d.	envnacad	Helping you cope with your non-academic responsibilities (work, family, etc.)	
10e.	envsocal	Providing the support you need to thrive socially	
10f.	envevent	Attending campus events and activities (special speakers, cultural performances, athletic events, etc.)	
10g.	envcompt	Using computers in academic work	
Question 11. To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?			
11a.	gngenled	Acquiring a broad general education	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
11b.	gnwork	Acquiring job or work-related knowledge and skills	
11c.	gnwrite	Writing clearly and effectively	
11d.	gnspeak	Speaking clearly and effectively	
11e.	gnanaly	Thinking critically and analytically	
11f.	gnquant	Analyzing quantitative problems	
11g.	gncompts	Using computing and information technology	
11h.	gnothers	Working effectively with others	
11i.	gncitizn	Voting in local, state, or national elections	
11j.	gninq	Learning effectively on your own	

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
11k.	gnself	Understanding yourself	1 = Very little 2 = Some 3 = Quite a bit 4 = Very much
11l.	gndivers	Understanding people of other racial and ethnic backgrounds	
11m.	gnprobsv	Solving complex real-world problems	
11n.	gnethics	Developing a personal code of values and ethics	
11o.	gncommun	Contributing to the welfare of your community	
11p.	gnspirit	Developing a deepened sense of spirituality	
12.	advise	Overall, how would you evaluate the quality of academic advising you have received at your institution?	1 = Poor 2 = Fair 3 = Good 4 = Excellent
13.	entirexp	How would you evaluate your entire educational experience at this institution?	1 = Poor 2 = Fair 3 = Good 4 = Excellent
14.	samecoll	If you could start over again, would you go to the *same institution* you are now attending?	1 = Definitely no 2 = Probably no 3 = Probably yes 4 = Definitely yes
15.	birthyr	Select your year of birth:	
	agebase	Age (Recoded from variable *birthyr*.)	
	age	Age category	1 = 19 or younger 2 = 20-23 3 = 24-29 4 = 30-39 5 = 40-55 6 = Over 55

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Item #	*Variable*	*Variable Label*	*Response Values and Labels*
16.	sex	Your sex:	1 = Male 2 = Female
17.	internat	Are you an international student or foreign national?	1 = No 2 = Yes
18.	race05	What is your racial or ethnic identification? (Select only one.)	1 = American Indian or other Native American 2 = Asian, Asian American or Pacific Islander 3 = Black or African American 4 = White (non-Hispanic) 5 = Mexican or Mexican American 6 = Puerto Rican 7 = Other Hispanic or Latino 8 = Multiracial 9 = Other 10 = I prefer not to respond
19.	class	What is your current classification in college?	1 = Freshman/first-year 2 = Sophomore 3 = Junior 4 = Senior 5 = Unclassified
20.	enter	Did you begin college at your current institution or elsewhere?	1 = Started here 2 = Started elsewhere

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Item #	*Variable*	*Variable Label*		*Response Values and Labels*
Question 21. Since graduating from high school, which of the following types of schools have you attended other than the one you are attending now? (Select all that apply.) (Note: This question is captured as five separate items to account for 'select all that apply' function .)				
21.	votech05	Vocational or technical school		1 = Checked 2 = Not checked
	comcol05	Community or junior college		
	fouryr05	4-year college other than this one		
	none05	None		
	ocol1_05	Other		
22.	enrlment	Thinking about this current academic term…How would you characterize your enrollment?		1 = Less than full-time 2 = Full-time
	disted	Thinking about this current academic term…Are you taking all courses entirely online? (Note: Item appeared only in the online instrument.)		1 = No 2 = Yes
23.	fratsoro	Are you a member of a social fraternity or sorority?		1 = No 2 = Yes
24a.	athlete	Are you a student-athlete on a team sponsored by your institution's athletics department?		1 = No 2 = Yes
24b.	athteam	On what team(s) sponsored by your institution's athletics department are you an athlete? (Select all that apply.)		
	teamed05	Recoded variable *athteam* into one of 23 sports or to reflect multiple team participation	1 = Baseball 2 = Basketball 3 = Bowling 4 = Cross Country 5 = Fencing 6 = Field Hockey 7 = Football 8 = Golf 9 = Gymnastics 10 = Ice Hockey 11 = Track & Field 12 = Lacrosse	13 = Rifle 14 = Rowing 15 = Skiing 16 = Soccer 17 = Softball 18 = Swimming & Diving 19 = Tennis 20 = Volleyball 21 = Water Polo 22 = Wrestling 23 = Other, specify: 24 = More than one sport

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Item #	*Variable*	*Variable Label*	*Response Values and Labels*
NSSE created unique identifiers for each sport team based on values provided in *athteam*.			
	sp_baseb	Baseball	1 = Team Member 2 = Not a team member
	sp_bball	Basketball	
	sp_bowl	Bowling	
	sp_cc	Cross Country	
	sp_fence	Fencing	
	sp_fhock	Field Hockey	
	sp_footb	Football	
	sp_golf	Golf	
	sp_gym	Gymnastics	
	sp_ihock	Ice Hockey	
	sp_track	Track & Field	
	sp_lacr	Lacrosse	
	sp_rifle	Rifle	
	sp_row	Rowing	
	sp_ski	Skiing	
	sp_socr	Soccer	
	sp_softb	Softball	
	sp_swim	Swimming & Diving	
	sp_tenn	Tennis	
	sp_voll	Volleyball	
	sp_wpolo	Water Polo	
	sp_wrest	Wrestling	
	sp_oth	Other	

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Item #	*Variable*	*Variable Label*	*Response Values and Labels*
25.	grades04	What have most of your grades been up to now at this institution?	1 = C- or lower 2 = C 3 = C+ 4 = B- 5 = B 6 = B+ 7 = A- 8 = A
26.	livenow	Which of the following best describes where you are living now while attending college?	1 = Dormitory or other campus housing (not fraternity/sorority house) 2 = Residence (house, apartment, etc.) within walking distance of the institution 3 = Residence (house, apartment, etc.) within driving distance of the institution 4 = Fraternity or sorority house
27a.	fathredu	What is the highest level of education that your father completed?	1 = Did not finish high school 2 = Graduated from high school 3 = Attended college but did not complete degree 4 = Completed an associate's degree (A.A., A.S., etc.) 5 = Completed a bachelor's degree (B.A., B.S., etc.) 6 = Completed a master's degree (M.A., M.S., etc.) 7 = Completed a doctoral degree (Ph.D., J.D., M.D., etc.)
27b.	mothredu	What is the highest level of education that your mother completed?	
28a.	majrprim	Please enter your major(s) or your expected major(s).	
28b.	majrseed	If applicable, second major (not minor, concentration, etc.):	

Item #	*Variable*	*Variable Label*	*Response Values and Labels*

Note: The variables *majrpcod* and *majrscod* were created by NSSE staff; *majrprim* and *majrsecd* were recoded into one of the 85 majors below. The 2000 Classification of Instructional Programs (CIP) was used to guide recodes.

majrpcod — Primary major code

majrscod — Secondary major code

Arts and Humanities
1 = Art, fine and applied
2 = English (language and literature)
3 = History
4 = Journalism
5 = Language and literature (except English)
6 = Music
7 = Philosophy
8 = Speech
9 = Theater or drama
10 = Theology or religion
11 = Other arts & humanities
Biological Sciences
12 = Biology (general)
13 = Biochemistry or biophysics
14 = Botany
15 = Environmental science
16 = Marine (life) science
17 = Microbiology or bacteriology
18 = Zoology
19 = Other biological science
Business
20 = Accounting
21 = Business administration (general)
22 = Finance
23 = International business
24 = Marketing
25 = Management
26 = Other business
Education
27 = Business education
28 = Elementary/middle school education
29 = Music or art education
30 = Physical education or recreation
31 = Secondary education
32 = Special education
33 = Other education
Engineering
34 = Aeronautical/nautical engineering
35 = Civil engineering
36 = Chemical engineering
37 = Electrical or electronic engineering
38 = Industrial engineering
39 = Materials engineering
40 = Mechanical engineering
41 = General/other engineering

Physical Science
42 = Astronomy
43 = Atmospheric science (including meteorology)
44 = Chemistry
45 = Earth science (including geology)
46 = Mathematics
47 = Physics
48 = Statistics
49 = Other physical science
Professional
50 = Architecture
51 = Urban Planning
52 = Health technology (medical, dental, laboratory)
53 = Law
54 = Library/archival science
55 = Medicine
56 = Dentistry
57 = Veterinarian
58 = Nursing
59 = Pharmacy
60 = Allied health/other medical
61 = Therapy (occupational, physical, speech)
62 = Other professional
Social Science
63 = Anthropology
64 = Economics
65 = Ethnic studies
66 = Geography
67 = Political science (including government, international
68 = Psychology
69 = Social work
70 = Sociology
71 = Gender studies
72 = Other social science
Other
73 = Agriculture
74 = Communications
75 = Computer science
76 = Family Studies
77 = Natural resources and conservation
78 = Kinesiology
79 = Criminal justice
80 = Military science
81 = Parks, recreation, leisure studies, sports management
82 = Public administration
83 = Technical/vocational
84 = Other field
85 = Undecided

* Slight revision from last year; ** Significant revision from last year so new variable name created; *** New variable

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
	majrpcol majrscol	Recoded write-in major variables *majrprim* and *majrsecd* into one of ten major fields listed at right.	1 = Arts and Humanities 2 = Biological Science 3 = Business 4 = Education 5 = Engineering 6 = Physical Science 7 = Professional 8 = Social Science 9 = Other 10 = Undecided
	majrpdbl	Second (double) major provided in *majrprim*.	1 = Not double major 2 = Double major
	majrsdbl	Second (double) major was provided in *majrsecd*.	

* Slight revision from last year; ** Significant revision from last year so new variable name created; *** New variable

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
Data Provided by Your Institution			
	gender	Institution reported: Gender	1 = Male 2 = Female
	ethnicit	Institution reported: Race or ethnicity	1 = African American/Black 2 = American Indian/Alaska Native 3 = Asian/Pacific Islander 4 = Caucasian/White 5 = Hispanic 6 = Other 7 = Foreign 8 = Multi-racial/ethnic 9 = Unknown
	classran	Institution reported: Class rank	1 = Freshman/First-year student 2 = Sophomore 3 = Junior 4 = Senior 5 = Other
	enrollmt	Institution reported: Enrollment status	1 = Part-time 2 = Full-time
	studid	Student ID	
	lastname	First three letters of last name provided by respondent (Note: Item applies to locally administered surveys only.)	
	satt	SAT Total score	
	satm	SAT Math score	
	satv	SAT Verbal score	
	actt	ACT Composite score	
	satr	New SAT Critical Reading score	
	satrm	New SAT Math score	
	satrw	New SAT Writing score	
	satrt	New SAT Total score	

Item #	*Variable*	*Variable Label*	*Response Values and Labels*
Miscellaneous Data			
	smpl05	Sample type	1 = Base random sample 2 = Standard random oversample (first-year students and seniors only) 3 = Requested random oversample (first-year students and seniors only) 4 = Targeted oversample 5 = Locally administered sample or
	inelig	Identifies respondents that did not meet NSSE criteria at time of survey completion (Ex: December graduate, not retained by institution, etc.)	1 = Eligible 2 = Ineligible
	modecomp	Mode of completion of the College Student Report	1 = Paper 2 = Web
	surveyid	Unique survey number assigned by NSSE	
	bsurvid	Identifies respondents who also completed BCSSE	
	unitid	Unique institutional identifier (most often IPEDS number)	
	respmode	Primary contact mode of respondent	1 = Paper mailing & some e-mail contacts 2 = E-mail contacts only 3 = E-mail contacts & some paper mailing 4 = Locally administered paper survey
	group1	First school-provided group identifier	
	group2	Second school-provided group identifier	
	group3	Third school-provided group identifier	
	group4	Fourth school-provided group identifier	
	group5	Fifth school-provided group identifier	
	logdate	Date survey returned (paper) or logged in (web)	
	duration	Length of time spent on web survey	

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Item #	*Variable*	*Variable Label*	*Response Values and Labels*

Weights

NSSE creates weights for randomly selected first-year and senior respondents based on part-time/full-time status and gender. Use weights to replicate NSSE benchmark scores, means, and the frequency column percentages. However, we encourage schools interested in intra-institutional weighting to consider a more sophisticated weighting system that takes into account response rate differences among additional student subpopulations. NSSE's weights are not appropriate for intra-institutional comparisons in most cases as the response rate differences among subgroups may not be the same as the ones that exist institution-wide at your school. Both weights listed below will reproduce your institution's report statistics, but the N's will differ. See NSSE's website for more detailed information about this topic.

WEIGHT1	Replicates the original number of respondents for each institution and is used to produce means, frequency, and benchmark statistics for each institution.
WEIGHT2	Multiplies the number of respondents to match the institution's overall population size.

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Student-Level Benchmark Scores. To facilitate conversations about student engagement and its importance to student learning, collegiate quality, and institutional improvement, NSSE created five institution-level indicators or benchmarks of effective educational practice: (1) Level of Academic Challenge; (2) Active and Collaborative Learning; (3) Student-Faculty Interaction; (4) Enriching Educational Experiences; and (5) Supportive Campus Environment. Student-level benchmark scores, the precursors to these five institution-level benchmarks, are the student's average responses to items within the group, after all items have been placed on a 100-point scale. Student-level benchmark scores are created for randomly sampled first-year and senior students that answered three-fifths or more of the items within the group. Not only can institutions replicate their benchmark scores with this information, but they can also perform intra-institutional comparisons (e.g., department, college, etc.) to dig deeper into their data. The benchmark score for an institution is the *weighted mean* of these student-level scores. For more detailed information about how benchmarks are calculated, visit the NSSE Web site at www.nsse.iub.edu/html/2008_inst_report.htm.

Variable	*Description*	*Component Items*
AC	**Level of Academic Challenge:** Index that measures time spent preparing for class, amount of reading and writing, deep learning, and institutional expectations for academic performance.	readasgn, writemor, writemid, writesml, analyze, synthesz, evaluate, applying, workhard, acadpr01, envschol
ACa	**Level of Academic Challenge (adjusted):** Same as *AC*, but adjusted for part-time enrollment status. This is the version given in your Benchmark Comparisons report. Because part-time students spend less time in classes, they are likely to report lower numbers for several items on the questionnaire (e.g., hours spent preparing for class, number of papers written, number of assigned books read). Using full-time/part-time ratios from the entire U.S. NSSE cohort, we adjust part-time student scores to make them resemble those of full-time students when we create the benchmarks. Thus schools with large populations of part-time students are not negatively impacted by this population.	readasgn, writemor, writemid, writesml, analyze, synthesz, evaluate, applying, workhard, acadpr01, envschol
ACL	**Active and Collaborative Learning:** Index that measures extent of class participation, working collaboratively with other students inside and outside of class, tutoring and involvement with a community-based project.	clquest, clpresen, classgrp, occgrp, tutor, commproj, oocideas
SFI	**Student-Faculty Interaction:** Index that measures extent of talking with faculty members and advisors, discussing ideas from classes with faculty members outside of class, getting prompt feedback on academic performance, and working with faculty on research projects	facgrade, facideas, facplans, facfeed, facother, resrch04
SFc	**Student-Faculty Interaction (comparative):** Same as *SFI*, but excludes the *resrch04* item (*rescaled in 2004*). Use for year-to-year comparisons with 2003, 2002, and 2001 administrations; not needed for comparisons with 2004 or 2005.	facgrade, facideas, facplans, facfeed, facother (Note: Excludes *resrch04*.)

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Variable	*Description*	*Component Items*
EEE	**Enriching Educational Experiences:** Index that measures extent of interaction with students of different racial or ethnic backgrounds or with different political opinions or values, using electronic technology, and participating in activities such as internships, community service, study abroad, co-curricular activities, and culminating senior experience. (Note: Because question 7 was rescaled in 2004, year-to-year comparisons of *EEE* scores with years prior to 2004 are invalid.)	diffstu2, divrstud, envdivrs, cocurr01, itacadem, intern04, volntr04, lrncom04, foring04, stdabr04, indstd04, snsx04
SCE	**Supportive Campus Environment:** Index that measures extent to which students perceive the campus helps them succeed academically and socially, assists them in coping with non-academic responsibilities, and promotes supportive relations among students and their peers, faculty members, and administrative personnel and offices.	envsocal, envsuprt, envacad, envsta, envfac, envadm

APPENDIX E

Variables in the Study

Dependent variables

Variable	Coding/scale
Satisfaction by entire educational experience	4-point scale 1 = Poor 2 = Fair 3 = Good 4 = Excellent
Grades	8-point scale 1 = C- or lower 2 = C 3 = C+ 4 = B- 5 = B 6 = B+ 7 = A- 8 = A

Independent Variables

Variable	Coding/scale
Age	Continuous variable
Gender	Dichotomous variable 1 = Male 2 = Female
Nationality (are you an international student or a foreign national)	Dichotomous variable 1 = No 2 = Yes
Race/Ethnicity	10-point scale 1 = American Indian or other Native American 2 = Asian, Asian American, or Pacific Islander 3 = Black or African American 4 = White (non-Hispanic) 5 = Mexican or Mexican American 6 = Puerto Rican 7 = Other Hispanic or Latino 8 = Multiracial 9 = Other 10 = I prefer not to respond

Variables in the Study (continued)

Variable	Coding/scale
Year in college	5-point scale 1 = Freshman/first-year 2 = Sophomore 3 = Junior 4 = Senior 5 = Unclassified
Institutional type/ Carnegie classification (provided by IUCPR)	10-point scale 1 = Research Universities (very high research activity) 2 = Research Universities (high research activity) 3 = Doctoral/Research Universities 4 = Master's Colleges and Universities (larger programs) 5 = Master's Colleges and Universities (medium programs) 6 = Master's Colleges and Universities (smaller programs) 7 = Baccalaureate Colleges – Arts & Sciences 8 = Baccalaureate Colleges – Diverse Fields 9 = Other Baccalaureate /Associate Colleges 10 = Theological Seminaries, Bible Colleges, and Other Faith-Related 11 = Medical Schools and Other Health Profession Schools 12 = Engineering, Technology, and Business/Management Schools 13 = Schools of Art, Music, and Design 14 = Other
Institutional type/control (provided by IUCPR)	Dichotomous variable 0 = Public 1 = Private
Critical Mass/ percentage of international students (provided by IUCPR)	7-point scale 1 = Less than 0.75% 2 = 0.75% to 1.5% 3 = 1.6% to 3% 4 = 3.1 % to 5 % 5 = 5.1% to 10% 6 = 10.1% to 15 % 7 = 15% or more

Variables in the Study (continued)

Variable	Coding/scale
Level of Academic Challenge (Construct: 11 items)	5-point scale 1 = None 2 = 1 to 4 3 = 5 to 10 4 = 11 to 20 5 = More than 20
Active and Collaborative Learning (Construct: 7 items)	4-point scale 1 = Never 2 = Sometimes 3 = Often 4 = Very often
Student-Faculty Interaction (Construct: 6 items)	4-point scale 1 = Never 2 = Sometimes 3 = Often 4 = Very often
Enriching Educational Experiences (Construct: 12 items)	4-point scale 1 = Never 2 = Sometimes 3 = Often 4 = Very often
Supportive Campus Environment (Construct: 6 items)	6-point scale 1 = Unfriendly, unsupportive, sense of alienation 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = Friendly, supportive, sense of belonging

APPENDIX F

Selective Characteristics of International and American Seniors

(N=34,731, International=1,558, American=33,173)

Selective Characteristics	International		American	
	n	%	*n*	%
Age				
19 or younger	13	0.8	97	0.3
20-23	868	56.1	22,369	67.6
24-29	383	24.8	4,819	14.6
30-39	187	12.1	2,934	8.8
40-45	90	5.8	2,634	8.0
Over 55	5	0.3	242	0.7
Gender				
Males	598	38.5	11,708	35.4
Females	957	61.5	21,367	64.6
Race/Ethnicity				
American Indian or Native American	6	0.4	253	0.8
Asian, Asian American or Pacific Islander	504	35.2	1,327	4.0
Black or African American	208	13.4	2,163	6.5
White (non-Hispanic)	378	24.4	24,264	73.3
Mexican or Mexican American	71	4.6	820	2.5
Puerto Rican	10	0.6	207	0.6
Other Hispanic or Latino	148	9.5	676	2.0
Multiracial	44	2.8	754	2.3
Other	115	7.4	409	1.2
Prefer not to Respond	66	4.3	2,239	6.8
Institutional Classification: Control				
Public	883	56.7	20,531	61.9
Private	675	43.3	12,639	38.1
Total	1,558	100.0	33,174	100.0

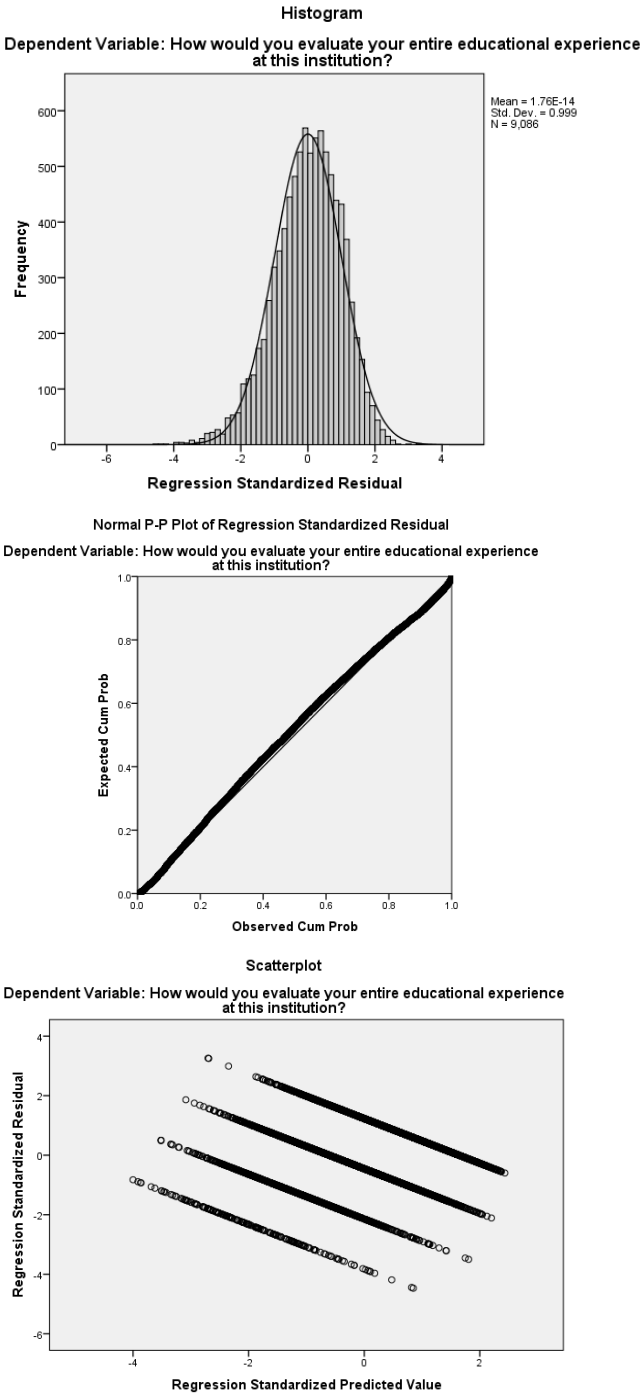
APPENDIX G

Correlations Table for Research Question 10

	Entir Exp	Age	Gen der	Nati onal	Inst Cont	DRU Ext	DRU Int	MA I&II	BA LA	BA Gen	Othe r	%Int Stdt	Soc Sc	Hum aniti	Math &Sci	Pre-prof	Othe r	BM 1	BM 2	BM 3	BM 4	BM 5
Entir Exp	--	.331	.000	.491	.000	.338	.000	.000	.000	.000	.247	.000	.494	.000	.009	.048	.003	.000	.000	.000	.000	.000
Age		--	.002	.007	.000	.001	.247	.000	.000	.005	.009	.003	.014	.425	.070	.071	.366	.001	.000	.050	.435	.000
Gender			--	.002	.000	.369	.195	.090	.106	.047	.085	.002	.301	.000	.000	.000	.000	.092	.013	.050	.240	.000
Nationali				--	.019	.009	.071	.284	.000	.203	.000	.000	.087	.000	.487	.496	.000	.091	.180	.435	.001	.001
Inst Cont					--	.000	.000	.000	.000	.000	.000	.000	.000	.052	.387	.003	.101	.000	.000	.001	.000	.000
DRU Ext						--	.000	.000	.000	.000	.000	.026	.000	.000	.056	.206	.000	.005	.000	.202	.000	.002
DRU Int							--	.000	.000	.000	.000	.340	.213	.367	.038	.000	.190	.004	.001	.059	.000	.272
MA I& II								--	.000	.000	.000	.000	.115	.007	.000	.001	.002	.000	.176	.000	.066	.001
BA LA									--	.000	.000	.000	.066	.000	.002	.000	.000	.000	.000	.000	.000	.000
BA Gen										--	.000	.000	.149	.000	.391	.008	.017	.000	.000	.005	.016	.206
Other											--	.000	.027	.000	.000	.001	.000	.000	.246	.002	.099	.065
%Int Stdt												--	.007	.000	.000	.397	.000	.000	.267	.000	.480	.204
Soc Sc													--	.000	.000	.093	.000	.057	.190	.119	.003	.216
Humaniti														--	.000	.000	.000	.000	.000	.000	.000	.000
Math &Sci															--	.000	.000	.000	.000	.001	.001	.252
Pre-prof																--	.000	.000	.000	.013	.266	.146
Other																	--	.004	.215	.433	.227	.002
BM 1																		--	.000	.000	.000	.000
BM 2																			--	.000	.000	.000
BM 3																				--	.000	.000
BM 4																					--	.000
BM 5																						--

APPENDIX H

Histogram, Normal P-P Plot of Regression Standardized Residual and Scatterplot for Research Question 10



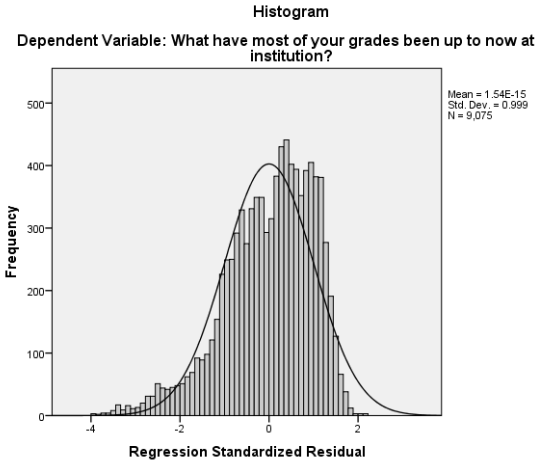
APPENDIX I

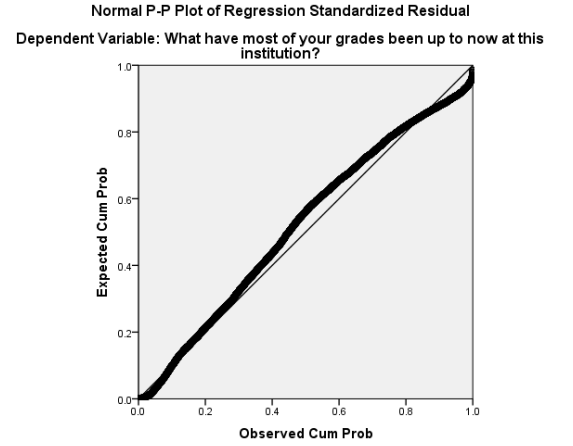
Correlations Table for Research Question 11

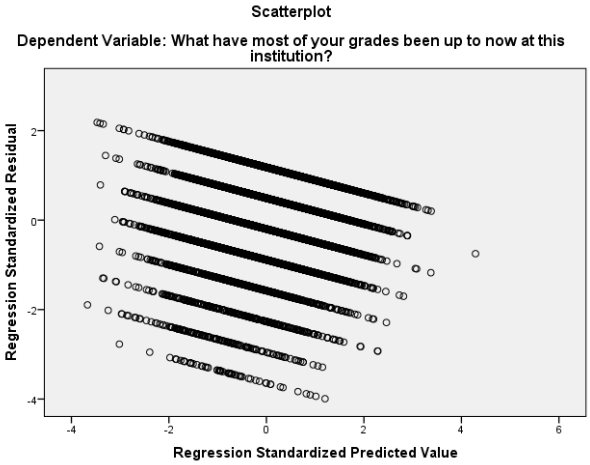
	Grades	Age	Gender	National	Inst Cont	DRU Ext	DRU Int	MA I&II	BA LA	BA Gen	Other	%Int Stdt	Soc Sc	Humaniti	Math &Sci	Pre-prof	Other	BM 1	BM 2	BM 3	BM 4	BM 5
Grades	--	.000	.000	.080	.000	.185	.288	.243	.313	.354	.001	.000	.013	.279	.000	.120	.081	.298	.000	.000	.004	.000	.437
Age		--	.001	.007	.000	.001	.249	.000	.000	.004	.005	.003	.014	.472	.065	.081	.298	.001	.000	.000	.000	.001	.000
Gender			--	.003	.000	.359	.210	.089	.104	.051	.069	.002	.303	.000	.000	.000	.000	.093	.015	.056	.418	.231	.130
National				--	.020	.009	.099	.324	.009	.202	.000	.000	.087	.000	.431	.492	.000	.077	.164	.418	.231	.001	.001
Inst Cont					--	.000	.000	.000	.000	.000	.000	.000	.000	.061	.398	.002	.105	.000	.000	.001	.000	.000	.000
DRU Ext						--	.000	.000	.000	.000	.000	.022	.000	.000	.053	.246	.000	.006	.000	.197	.000	.002	.002
DRU Int							--	.000	.000	.000	.000	.406	.211	.404	.030	.000	.173	.006	.001	.087	.000	.254	.254
MA I& II								--	.000	.000	.000	.000	.116	.006	.000	.001	.001	.000	.201	.000	.054	.001	.001
BA LA									--	.000	.000	.000	.066	.000	.002	.000	.000	.000	.000	.000	.000	.000	.000
BA Gen										--	.000	.000	.149	.000	.398	.005	.018	.000	.000	.004	.012	.202	.202
Other											--	.000	.028	.000	.000	.001	.000	.000	.222	.003	.110	.074	.074
%Int Stdt												--	.007	.000	.000	.371	.000	.000	.271	.000	.468	.183	.183
Soc Sc													--	.000	.000	.094	.000	.055	.188	.120	.003	.217	.217
Humaniti														--	.000	.000	.000	.000	.000	.000	.000	.000	.000
Math &Sci															--	.000	.000	.000	.000	.001	.001	.271	.271
Pre-prof																--	.000	.000	.000	.011	.224	.136	.136
Other																	--	.008	.264	.386	.239	.002	.002
BM 1																		--	.000	.000	.000	.000	.000
BM 2																			--	.000	.000	.000	.000
BM 3																				--	.000	.000	.000
BM 4																					.000	.000	.000
BM 5																						--	--

APPENDIX J

Histogram, Normal P-P Plot of Regression Standardized Residual and Scatterplot for Research Question 11







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