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**Title of Dissertation**

Academic Field Influence on Acquisition of Global Awareness in  
Undergraduate Study Abroad Students

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*Abstract*

Very little comprehensive research has been done thus far examining the effects of academic discipline on study abroad outcomes. This study investigated potential differences between global awareness scores across different academic disciplines for students that participated in study abroad during their undergraduate academic programs. Five hundred and eight-five current and past university students took a short survey modified from a Chieffo & Griffiths 2004 study. Overall global awareness scores, as well as scores for four sub-characteristics: intercultural awareness, personal growth & development, awareness of global interdependence, and functional knowledge of world geography & languages – were compared across student majors and the discipline focus of their study abroad programs. A series of ANOVAs and Tukey-Kramer tests revealed that there were not statistically significant differences between many, but not all, majors and program discipline foci. In general, STEM disciplines (physical & life sciences, math or computer sciences, engineering, health sciences, and agriculture) scored consistently lower than many other disciplines; whereas, the foreign language & international studies major's and program focus's scores ranked consistently higher than many others. Business & management and humanities majors also ranked higher, but not as consistently. A multiple-linear regression analysis comparing all of the factors contributing to global awareness scores shored near significance ( $p= 0.0595$ ); however, only two factors had a statistically significant impact on scores: academic major ( $p= 0.031$ ) and number of countries included in program curricula ( $p= 0.030$ ). This study's results suggest a heretofore unexamined factor – academic discipline – could have an important impact on study abroad outcomes, but, more importantly, universities interested in improving global awareness outcomes for their students should encourage and support all their students to study abroad regardless of major or program focus.

*Introduction*

Racial and ethnicity demographics, percentage of international students, and participation in international educational opportunities are three of the myriad ways college campuses in the United States are changing. These three student populations bring with them increasingly diverse perspectives and beliefs, but could also force university administrators, faculty, and staff to alter curricula and programming to best serve their diverse constituents. Combined with growing pressure from an increasingly interconnected global society to prepare their students with the knowledge, skills, abilities to effectively participate in the modern, globalized economies and communities, universities could find themselves unprepared and unable to rise to the task.

According to the National Center for Education Statistics (McFarland, et al., 2017) and the Institute for International Education (2017), the face of American college campuses have changed in the intervening years between 2004/05 and 2015/16 school year. The total number of minority students enrolled in postsecondary and graduate education increased by 25% - from 32% of all enrollees in the fall of 2005 to 42% in the fall of 2015. The percentage of international students made up 3% of full-time undergraduate or graduate students in the fall of 2004 and increased 45% to roughly 5% by in fall of 2015. These trends do not appear to be slowing down. The institutions to which these students now belong must simultaneously create a welcoming, positive environment, while taking advantage of this rich, multicultural resource they now have. How to best design and implement campus programs, academic curricula, and diversity initiatives continues to remain elusive and a target for the nation's researchers, educators, and policymakers (Chen, 2017).

Increasing domestic student racial and ethnic diversity on college campuses continues to be thoroughly examined using a wide variety of lenses and theories (Wassmer, Moore, &

Shulock, 2004, Cowan, 2005, Negga, 2007). Research into international students on American university campuses is also numerous with similar concerns geared towards integration and inclusion (Banjong, 2015, Siczek, 2015). The conclusions of researchers and their suggestions for universities could have far reaching effects potentially touching upon every aspect of society and culture. Considering this confusion and range of thought, there is one aspect of multiculturalism on campus that can be agreed upon by many: college diversity needs to be viewed as an ongoing process that will require more than a single action to address (Chen, 2017).

Another way college campuses have been getting more diverse is through the number of domestic students participating in international educational experiences. Internal pressures, such as interest, and external pressures, such as acquiring marketable skills, have driven students to explore international educational opportunities in increasing numbers (Isabelli-Garcia, 2006, Chirkov, Vansteenkiste, Tao, & Lynch, 2007, Hernandez, 2010). Between the 2004/05 and 2015/16 school year, the total number of students – both undergraduate and graduate – traveling abroad each year from U.S. higher educational institutions rose from 1.2% of the total enrolled students to 1.6% - an increase of almost 60% (IIE, 2017). This means that not only were more students travelling abroad from college campuses each year, but there were more students on campus bringing newfound global perspectives and ideas acquired while studying abroad.

One way higher education is responding to internal and external pressures is developing more, richer international learning opportunities for their increasingly interested and diverse student bodies. The call is coming from political, economic, and educational spheres leading universities within the United States to play more integral roles in the development of global citizenship, global competency, and global awareness for their students (Stoner et al., 2014).

The Commission on the Abraham Lincoln Study Abroad Fellowship Program (2005) goes so far to say “on the international stage, what nations don’t know can hurt them... Promoting and democratizing undergraduate study abroad is the next step in the evolution of American higher education.”

### *Statement of the Problem*

One glaring issue regarding higher educational institutions increasing the variety and number of study abroad opportunities for their students is that they may not understand how or why these programs promote increased global awareness (Stoner et al, 2014). The benefits of participation in international education are diverse and well documented. They will be discussed in detail in the next chapter; however, it is important to note here that many of the benefits are not tied specifically to one type of program or location and international education experiences are documented to continue to influence alumni for decades after travel (Commission on the Abraham Lincoln Study Abroad Fellowship Program, 2005).

### *Conceptual Framework for the Study*

Experiential Learning Theory (ELT) was originally developed by Kolb in 1971. It synthesizes ideas originally put forward by many well-known educational researchers and academics including, but not limited to, Dewey, Piaget, and Freire. In their work to examine benefits of educational travel, Stone and Petrick (2013) highlight both Dewey and Boydell as being important precursors to Kolb’s ELT stating that knowledge developed in one situation will help them during subsequent experiences and knowledge is gained through personal, perceptual experiences, respectively. ELT has since influenced many of the non-traditional educational innovations found throughout education since the 1970’s. Aspects of ELT can be

seen in the competency-based undergraduate education movement, adult undergraduate education programs, and practices that fall under the umbrellas of service, problem-based, or action learning (Kolb & Kolb, 2017).

At its heart, ELT is a holistic learning theory that states that learning is an active, continuous process made manifest through a four-part cycle of *experience* – a concrete, hands-on event; *reflection* – questioning and conversing about the experience to draw meaning; *conceptualization* – drawing conclusions from what was seen and heard; and *action* – testing and building theories of one’s own (Kaul & Pratt, 2010). Experiential learning states that learning is constantly occurring whether inside a classroom or not, since people are constantly immersed in activity and interactions. All of those experiences make up opportunities to learn and affect not only the individual, but all aspects of a society (Kolb & Kolb, 2017). There are six underlying principles that form the foundation of ELT: (1) learning is a process, not an outcome, (2) learning is a continual practice based in experience, (3) learning requires resolution of opposing worldviews and perspective, (4) learning is a holistic adaption to the world, (5) learning requires interactions between people and their environment, and (6) learning results in the creation of knowledge (Strange & Gibson, 2017).

One common misunderstanding and/or misuse of experiential learning is failure to implement the full learning cycle mentioned above. Oftentimes, ELT is simply defined as “learning from life experiences” while contrasting a more traditional classroom setting; however, in situ experiences are only half of learning process outlined in ELT. This partial definition leaves out the critical integration components of reflection and conceptualization necessary for total effectiveness. Kolb & Kolb (2017) recognize that far too often undergraduate courses that focus on “experiential activities” rather than “classroom academics” fail to

integrate the reflection and analysis reducing the course's overall effectiveness. Due to this, experiential learning courses are often seen as ancillary rather than foundational.

Besides issues associated with incorrect implementation and understanding of ELT, the foundations of Kolb's experiential learning theory have not gone unchallenged and, at least in some interpretations, have not kept pace with emerging knowledge from the fields of biology, philosophy, and education (Schenck & Cruickshank, 2015). ELT's stage-based approach to learning fails to take into account social, cultural, and historical characteristics of the learner, multiple learning styles, and the fact that multiple learning processes could occur simultaneously (Sterling et al. 2017). Kolb's unclear distinction between *learning stages* (the "what" of learning) and *learning modes* (the "how") results in a lack of rigorous support for ELT (Schenck & Cruickshank, 2015).

Sweller, Kirshner, and Clark (2007) take issue with the very foundation of ELT in that not all knowledge can be naturally acquired through a framework put forward by Kolb. Primary knowledge – for example, primary language acquisition and facial recognition – can easily be acquired naturally; whereas, secondary knowledge – commonly taught scientific theories and working in a base 10 number system – requires fundamentally different learning processes and effort. Learning secondary knowledge requires direct, explicit instruction. Further elaborations by Schenck & Cruickshank (2015) with support from modern neurological research state that some learning processes are in fact universal and goes against the singular, compartmentalized cycle presented by ELT.

All that being said, there is strong evidence of positive outcomes from using ELT-influenced programs and curricula such as increases in deep learning, practical competence, civic engagement, and appreciation of diversity (Coker & Porter, 2015). Heinrich et al. (2015) showed that experiential learning techniques can increase students' critical thinking and



engagement. Application of ELT can result in increased levels of student creativity (Kirkendall & Krishen, 2015), self-efficacy, self-confidence, and persistence (Kaul & Pratt, 2010).

Stone and Petrick (2013) claim that Kolb's theory has not been thoroughly analyzed with regards to travel learning; however, there is ample evidence of benefits for all participants of experiential learning within the tourism studies literature. Travelling and being a traveler, without the assistance of a classroom component, can provide transformative learning experiences in-and-of-itself be it in South India (Hangen & Sen, 2016), The Gambia (Novelli & Burns, 2010), the South Pacific (Werry, 2008), or in LaTorre's travels to just about everywhere else (2011). More specific to the focus of this study, transformative learning through experiential learning techniques applied to study abroad courses have reflected higher rates of cultural competency, greater emotional resiliency, and increased perceptions of possible issues and conflicts (Levine & Garland, 2015, Earnest et al., 2016).

### *Purpose of the Study*

This study fills in gaps in the literature creating a more complete picture of study abroad for university students in the United States. Light is shed on two of the factors affecting the benefits of participation in study abroad experiences: academic discipline focus of the program and academic major of the participant. As mentioned above and discussed in more detail in Chapter 2, there are many well documented benefits to study abroad outside of content specific knowledge acquisition and many well documented factors that affect acquisition of those benefits. This study fills in small pieces of the larger puzzle of understanding international education.

By incorporating the results of this study while developing international education programs, program designers may decide to include curricular content and techniques from

specific disciplines in order to improve global awareness outcomes. After all, the need of the global community for people with the skills and abilities to operate successfully within it continues to grow. Resulting interpersonal distantness – both absolute and conceptual – will continue to shrink. Highly effective study abroad participation has been and will continue to be an invaluable resource for meeting those needs.

### *Research Questions*

There are two research questions of this study that are closely related considering they all focus on academic disciplines' potential impacts on global awareness acquisition:

- 1) Are there any statistically significant relationships between academic disciplinary focus of study abroad programs and acquisition of global awareness?
- 2) Are there any statistically significant relationships between specific student academic majors and acquisition of global awareness?

### *Definition of Terms*

The definition of *study abroad* and its understanding have changed significantly over the course of the past century (Hoffa & DePaul, 2010). Modern study abroad programs cover a diverse swath of academic areas of study, visit just about every country on Earth, and range in duration from a week to more than a year. These are just three of the many variables making the modern study abroad experience different from what it has been in the past when study abroad programs were similar in duration, location, and execution (Salisbury, 2011). For the sake of this study, *study abroad* refers to any international educational experiences where university credit is earned. This separates study abroad from experiences such as volunteerism

and some international internships and training which, however beneficial they may be, are not within the scope of this study.

Within study abroad literature, there are many terms describing benefits of the educational experience that fall along a gradient of similar terms describing an individual's knowledge, interest, and concern for global issues. The focus of this study – *global awareness* – in many regards can be considered the most superficial. Global awareness represents a first step along the path towards deeper terminology incorporating greater empathetic concern and thoughtful action for a fairer and more socially just world.

This study defines *global awareness* in accordance to Chieffo and Griffiths (2004): knowledge of global and international issues, awareness of the interdependence between nations and cultures, actual personal growth and development, and a functional understanding of how to navigate through all of it. Global awareness differs from *global citizenship* in that the latter focuses more on an action component and a desire to act as part of the world community (Bellamy & Weinberg, 2006); whereas, global awareness is merely possessing the knowledge and ability to operate within a global frame, and not necessarily the drive to act one way or another. Some other similar – if not completely synonymous – terms in the literature are *global competency* (Shcheglova, Thomson, & Merrill, 2017), *intercultural competence* (Salisbury, 2011), *cultural intelligence* (Banning, 2010, Ott & Michailova, 2018), and *global perspective* (Lambert, 1993, Carano, 2013). Even though definitions are similar and useful in the discussion of global awareness, they are not treated interchangeably in this study.

Below is a summary (table 1) of vocabulary describing the degrees of knowledge, skills, and action associated with study abroad. Literature is not settled regarding many of these words; however, the definitions listed below are the interpretations used for this study.

Table 1

*Summary of Vocabulary Associated with Study Abroad & Their Sources*

Word	Definition	Source
Global Awareness	Knowledge of global and international issues, awareness of the interdependence between nations and cultures, personal growth and development, and a functional understanding of how to navigate the global community	Cheiffo & Griffiths, 2004
Global Citizenship	Possessing the personal, intercultural and language skills necessary to see the world from a different cultural viewpoint and committing to efforts that make the world a better place for all.	Bellamy & Weinberg, 2006
Global-Mindedness	A worldview where the individual sees themselves as connected to the world community and is aware of their responsibility to others.	Kehl & Morris, 2008
Global Competency	Ability to communicate effectively in cross-cultural situations and relate appropriately in a variety of cultural contexts	Shcheglova, Thomson, & Merrill, 2017
Intercultural Competence	Respect for other cultures, openness and ability to withhold judgement, curiosity to discover, cultural self-awareness, deep cultural knowledge, and socio-linguistic awareness.	Salisbury, 2011
Cultural Intelligence	An individual's capability to function and manage effectively in culturally diverse situations and settings.	Ott & Michailova, 2018
Global Perspective	An understanding and respect for individuals, cultures, and world conditions including their interconnections. In addition, there is a focus on action to meet global community needs and awareness of power structures and consequences of human actions.	Carano, 2013
Global Literacy	An overlapping concept encompassing understanding and analysis of social, cultural, political, and historical events; advocacy for human rights and global citizenship responsibility; as well as cultural and linguistic awareness and respect	Dwyer, 2016

### *Procedures*

This study followed the initial procedure laid out in Chieffo & Griffiths (2004) by relying on a similar survey and statistical analyses. Due to the fact that the intention of the research questions are different from Chieffo and Griffiths, the survey was modified slightly to include additional demographic information from the participant regarding their academic focus of their study abroad program and their own major. The list of academic disciplines and majors is taken from the Institute of International Education's *Open Doors Report on International Educational Exchange* (2018) to better align the results with the current reservoir of study abroad data.

A 30 questions survey assessing global awareness was distributed to university students and alumni through university faculty and study abroad offices and students participating in study abroad programs through organizations not directly affiliated with a domestic or international university. Social media was also employed to increase distribution of the online survey. Current and former university students were sampled that both studied abroad and remained on campus. Age cohorts were created roughly associated with current undergraduates, recent alumni, young alumni, and distant from undergraduate. The emphasis of this study was on current undergraduates and recent alumni. This would cover participants that had returned from their study abroad experience no more than 4 years prior to the distribution of the survey. International students could also partake in the global awareness survey; although, they were not purposefully sought out. The survey was distributed via an online link at the end of the Spring semester (2019) and throughout the following summer and fall with the survey link being closed down at the end of October 2019. Data was collected and processed after the survey as shut down in November and December of 2019.

According to Chieffo & Griffiths (2004), the global awareness survey assesses four components of global awareness: (1) intercultural awareness, (2) personal growth and

development, (3) awareness of global interdependence, and (4) functional knowledge of world geography and language. Their survey instrument was inspired by earlier work done by the University of Georgia's Office of International Education and their work investigating study abroad outcomes. This survey tool is not designed to measure actual learning outcomes from the study abroad experience, merely the level of global awareness of the participant.

The study provided no compensation for participation; however, students were free to not participate and their answers were entirely self-reported. For the sake of privacy, surveys were distributed by university study abroad offices, staff of study abroad organizations, and through social media. There was no way for the researcher to monitor or identify who had taken the survey or not.

Of the 30 survey questions – which can be found in Appendix A, only 20 deal with assessing global awareness and the others collect demographic and programmatic data. All 20 global awareness questions were answered on a Likert scale focusing on agreement or disagreement for the first 10. The second set of ten focused on frequency of performing some action. All demographic and programmatic questions were multiple-choice. Intercultural awareness sought to measure the participant's cognizance of similarities and differences between their own culture and the culture of their study abroad country. It was assessed using items 7, 11, 12, 13, 14, 16, 18, and 19 on the survey. Personal growth and development which measures maturity and openness to new experience relied on responses to items 3, 7, 8, 10, and 13. Items 1, 3, 5, 8, 9, 12, 15, 17, and 19 measured functional knowledge reflects the individual's passion for learning new travel information and skills. Lastly, global interdependence addresses a student's awareness of the intertwining relationships of national and international systems. Items 2, 4, 6, and 19 assessed it.

Data was processed using Microsoft Excel and SAS to examine various demographic and programmatic effects on global awareness acquisition, but also each of the four components of global awareness. A series of multivariate ANOVAs sought to explore possible differences among the various recorded factors. Comparisons between the different academic foci of the study abroad programs were also subjected to statistical analyses. The different major categories were also analyzed for statistically significant differences and potential ranking through a Tukey-Kramer analysis of the student scores organized into the various disciplines.

### *Significance of the Study*

As alluded to earlier, this study filled in a gap in the literature regarding the connections between academic disciplines and one benefit of study abroad that is not content dependent. There have been many research projects examining how different aspects of study abroad programs affect participants and many studies looking into general benefits of studying abroad. Other studies looked at specific academic disciplines (i.e. comparing business majors that participated in an international internship program to business majors that did not), but rarely did these studies mention other disciplines besides alluding to the benefits of studying abroad in general regardless of major or academic focus. No study, however, has looked at comparing different disciplines to each other through the lens of global awareness – nor other study abroad benefits such as increased self-confidence, for example. Evidence for the aforementioned studies and others will be discussed in the next chapter

### *Limitations of the Study*

This study was limited in scope by the number and types of participants. Since there was no incentive for students to take this survey, information that creates a more complete picture

of global awareness and academic discipline may still be missing from those students unwilling, unable, or uninterested in taking the survey.

Other ways the data collection process limits the results of this study is that only students that received the survey link could be included. Those that pursued study abroad through only some of the multitude of third-party organizations are represented. Serious efforts were made by the lead researcher to contact and involve as many relevant study abroad organizations as possible, but not all could be reached and not all that were contacted agreed to participate. The results presented here may not be generalizable to all demographic groups if they did not participate in significant enough numbers.

Lastly, the scope of this study merely covers global awareness and not the myriad of other peripheral benefits of studying abroad. One non-university based study abroad leader already stated that their organization does not focus on global awareness in their curricula and; therefore, their students could have scored lower on a global awareness survey, but higher than others on assessments of other benefits. This study is not and should not be considered a ranking of specific study abroad programs offered by one university or organization nor is it a critical analysis of specific faculty and instructors that lead and design study abroad programs. A much more in-depth and widely-focused tool would be required to draw those types of conclusions.

### *Organization of the Study*

This study is divided into five chapters: this introductory chapter and four more. The next chapter is a literature review of past analyses of documented study abroad benefits and basic description of current and past study abroad programs. Chapter three discusses the methodology employed during this study in much more depth than was alluded to above.



Chapter four presents the results of this study including survey results, demographic data, and all of the statistical analyses. And lastly, chapter 5 discusses the significance of the findings and the direction of any future research.

Academic Field Influence on Acquisition of Global Awareness in  
Undergraduate Study Abroad Students  
Chapter 2: Literature Review

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### *Background Context*

Distances between diverse groups of people and cultures are getting smaller with the diffusion of technology – especially communication technology, like mobile phones – and movement of people and ideas. Leaders recognize the social and economic importance of global competence and ability to work effectively with people of diverse backgrounds, beliefs, and customs (Tarrant, Rubin, & Stoner, 2015). Businesses have looked abroad for resources, new markets, and new talent simply to keep up with competition. Conflicts and other intra-country issues are spilling out into neighboring regions and can no longer be ignored simply due to geographical distance. Climate change may be the largest – but certainly not the only – issue threatening all humanity which will require a unified front of cooperating countries to address. The need for the average person to be globally aware of the issues facing the world and the need for global citizens – people with empathy and energy enough for action – are needed more now than any other time (Bellamy & Weinberg, 2006). The first step towards encouraging individuals to become global citizens is to increase people’s knowledge of the world and its cultures; that knowledge is called *global awareness*.

This study defines *global awareness* similarly to Chieffo and Griffiths (2004): knowledge of global and international issues, awareness of the interdependence between nations and cultures, actual personal growth and development, and a functional understanding of how to navigate through all of it. Global awareness differs from global citizenship in that the latter focuses more on an action component and a desire to act as part of the world community; whereas, global awareness is merely possessing the knowledge and ability to operate within a global frame, and not necessarily the drive to act one way or another. Within the literature, *global awareness* is not always the term used and there are many similar terms. Some of the terms within the literature that are similar to global awareness – if not completely synonymous

– are *global competency* (Shcheglova, Thomson, & Merrill, 2017), *intercultural competence* (Salisbury, 2011), *cultural intelligence* (Banning, 2010), and *global perspective* (Lambert, 1993). Even though definitions are similar and useful in the discussion of global awareness, they are not treated interchangeably in this study.

Since the world is becoming increasingly interconnected, universities have responded by trying internationalize their curricula so the students acquire the knowledge and skills required to operate in the modern world (Watson, Siska, & Wolfel, 2013, Shcheglova, Thomson, & Merrill, 2017). Unfortunately, schools find themselves struggling to update instructional material with the latest discoveries, to train staff in ever-changing best practices, to accommodate for society's shifting perspective of educators, to adjust plans for students' strengths and apathy, and to do all of these things with a dwindling budget (Lofthouse, Cole, & Thomas, 2011). Evidence for these failures can be seen in the results of National Geographic and the Council of Foreign Relations' 2016 survey entitled "What College-Aged Students Know about the World." The survey discovered that just 29% of the university-age students "passed" by answering 66% correct or better (National Geographic, 2016).

Lack of personal and university funding – combined with the difficulty in finding quality study abroad programs – are discouraging some students from participating in meaningful international educational opportunities (Bellamy & Weinberg, 2006). In a time of slashing university budgets, study abroad programs have become almost entirely dependent on students paying their own way (Ludlum, Ice, & Sheetz-Nguyen, 2013). In spite of these difficulties, study abroad courses have become almost a necessity for college students in the United States (Greenfield, Davis, & Fedor, 2012) and the number of participants has more than tripled in the decades between 1991 and 2012 (Luo & Jamieson-Drake, 2015). There is a growing trend of students enrolling directly in foreign universities, rather than through their home universities'

faculty-led programs. Unfortunately, these students often fail to show the same growth than students that traveled abroad through home university programs (Brewer, 2011).

### *Benefits of Study Abroad*

Study abroad programs are one of the best ways to address the demands and requirements of a growing global community, while developing individual students for adulthood. In their literature review of educational travel, Stone and Petrick (2013) state that collegiate study abroad has been shown to be one of the most important experiences for undergraduate students. Table 2 (below) contains a partial summary of the benefits of studying abroad found within the literature. Due to the wide range of study abroad experiences and the demographics of participating students, not every student is likely to have the same experience or receive the same benefits to the same degree.

Table 2

*A Partial Review of Study Abroad Benefit Studies Over the Past 40 Years.*

<b>Author</b>	<b>Year</b>	<b>Studying Abroad Improvements</b>
Carlson & Widaman	1988	International political concern, cross-cultural interest, cultural cosmopolitanism, and "positive, yet more critical views of the US."
Dwyer & Peters	2000	Personal growth, intercultural development, and education and career attainment.
Cheiffo & Griffiths	2004	Intercultural awareness, personal growth and development, and functional knowledge.
Hadis	2005	Interest in international affairs, fluency in other languages, knowledge of host country, and personal development (independence, intercultural interactions, and self-confidence).
Anderson, Lawton, Rexeisen, & Hubbard	2006	Intercultural sensitivity.
Levine	2010	Compassion, acceptance of differences, recognition of societal ills, and willingness to take risks.

Stromberger	2010	confidence and intercultural appreciation; however, no effect on multicultural awareness and global awareness
Salisbury	2011	Overall intercultural competence, but only interest in cultural diversity, not cultural appreciation or comfort with diversity.
Batey & Lupi	2012	Self-confidence, adaptability, flexibility, and positive professional outlook.
Mapp	2012	Emotional resilience, flexibility/openness, perceptual acuity, and personal autonomy.
Engberg	2013	Global perspective/intercultural knowledge; sense of self; and cognitive, interpersonal, and interpersonal development.
Kurt, Olitsky, & Geis	2013	General global awareness, functional knowledge, and foreign media exposure.
Luo & Jamieson-Drake	2015	Moral and ethical understanding, communication skills, academic performance, and satisfaction.
Hanson	2017	Engagement with diversity (both racial and religious) and may reduce intergroup prejudice while abroad and at home-campuses.

Besides increases in global awareness – the focus of this study and discussed in more detail below, the benefits of studying abroad are meaningful in a wide array of situations, both within and outside of academia (Franklin, 2010). Benefits that come up time-and-time again in the literature include developing intercultural communication skills; interpersonal and team building skills; an understanding of globalization and cultural knowledge; and “significant, long-term career benefits in terms of compensation, mobility, opportunities, and self-confidence” (Ludlum et al., 2013). Formative and summative assessments of the students returning from abroad showed greater appreciation for the foreign culture, increased critical thinking skills and higher order thinking, and interest in applying learning to real life issues as well as becoming lifelong learners (Xiaoxuan, 2004; Brewer, 2011; Kahl & Ceron, 2014; Cai & Sankaran, 2015).

The length of time students spend studying abroad affects their academic, cultural development and personal growth. Longer stays abroad result in continued language use, increased learning and intercultural development, and better career choices (Dwyer, 2014).

Short-term study tours offer many of the same benefits as the longer-term study abroad experiences, but at a much cheaper price (Ludlum et al., 2013). There are some cases where shorter summer programs had more lasting and meaningful impacts than semester-long programs, which suggests it may be the structure of the study abroad experience that shapes the outcomes more than the length of time (Dwyer, 2014).

Other factors alter the effectiveness of a study abroad experience besides length of study and financial resources. Age of the participant can have an effect on the benefits of studying abroad. Children who are part of an international language immersion program abroad were able to acquire skills at a faster rate than those children who remained in second language acquisition programs at home (Llanes & Munoz, 2013). Faculty members who have received poor training in critical thinking instruction and instruct via the current lecture-centered university structure make it less likely students will receive all of the associated benefits of transformational learning that can occur through cultural-immersive learning (Brewer, 2011).

Cheiffo and Griffiths (2004) set about one of the first quantitative examinations of study abroad learning outcomes of global awareness for undergraduate students with the intent of providing concrete suggestions for action and improvement. Cheiffo and Griffiths conclude students that studied abroad regardless of demographic characteristics are more likely to have greater global awareness which is divided into four categories. Students improved intercultural awareness, intercultural communication skills, and international functional knowledge (like travel skills) provided their study abroad program was at least a month in length. A fourth component of global awareness – knowledge of global interdependence – was not statistically different for those that studied abroad and those that did not.

Kurt et al. (2013), whose survey work furthered the research of Cheiffo and Griffiths, suggest that any work completed at the home campus results in no statistically significant

increases in global awareness – even if that work is part of a preparatory course for studying abroad. Further findings by Kurt et al. support Cheiffo and Griffiths. Specifically, their surveys show students had a significant increase in three of their five global awareness measures: general awareness, functional knowledge, and foreign media exposure. Besides the study abroad experience, they also found socioeconomic status and past experiences abroad were strong predictors of awareness scores – especially functional knowledge scores.

Even though there had been much analysis of study abroad students and programs, Cheiffo and Griffiths claimed in 2004 that international program recruiters and designers “lamented” the lack of useful data to improve study abroad programs (167). A decade’s worth of further analysis later, Edelstein (2014) still comments that there are aspects that affect the quality of a study abroad experience that people simply do not know yet. In order to confidently uncover all of the aspects of a truly effective study abroad program, more analytical research is needed that is thorough, grounded on a “strong theoretical foundation,” and uses common terminology and methodology. In addition, the research must incorporate data across as many disciplines and scales (individual, program, institution, and state/region) as possible.

Not all study abroad programs are made equal and, if universities in the United States are going to continue to prepare students for the modern world, continued analysis and evaluation of successful study abroad programs is necessary. Engberg (2013) points out that the potential benefits of studying abroad in terms of cognitive, intrapersonal, and interpersonal development, as-well-as “global perspective-taking,” are well documented; however, the effects of different pedagogies and contextual factors on the acquisition of these benefits requires further exploration. Siegler (2015) points out a much darker side of study abroad organized through American universities representing what is wrong with study abroad. After pointing out Zermach-Bersin’s assertions that “the deluge of study abroad brochures, posters, and websites



that inundate the typical American college campus” are really just offering up privilege and consumerism to white America, Siegler adds that study abroad programs often provide transitory glimpses of foreign cultures that merely serve to confirm preexisting stereotypes. At best, they are a modern-day “Grand Tour” serving as a rite-of-passage for wealthy Americans if not a function of “colonialism” and “empire” (Siegler, 2015).

### *Global Awareness Studies*

Unlike much of the study abroad research that has been done in the past, this study will determine the strength of the relationship of various academic disciplines to acquisition of global awareness using similar methodology to Cheiffo and Griffiths. This study will report whether or not there is a measurable difference among disciplines and their potential rankings, rather than describing specific discipline or program characteristics which aid or hinder acquisition of awareness. This study is a detailed analysis of global awareness scores grouped by discipline which may reveal which areas of study impact the acquisition of global awareness.

More research is needed to focus on the issue of the impact of a student’s major on acquisition of global awareness; however, Niehaus and Inkelas (2016) have studied the topic of students’ desires to participate in international education. They found that data is inconclusive about the strength of the effect between major and desire to study abroad; however, Mapp, McFarland, and Newell (2007) found that students responding positively to their short-term study abroad experience felt the demands of their major prevents them from longer or additional study abroad experiences. Research has concluded that the benefits of studying abroad are not ubiquitous to all students and that examination of more nuanced aspects of these programs is required to maximize effectiveness. Effective study abroad program design combining curricular and immersion strategies that push students outside of their comfort zones

into their host culture are needed to convey the greatest benefits (Engberg & Jourian, 2015). Because academic disciplines vary in terms of instructional technique and focus on acquisition of specific skills, it could be possible that naturally occurring pedagogical philosophies within an academic discipline convey more benefits than other disciplines in terms of global awareness during study abroad.

Many studies collect data on student major; however, few, if any, use the data for more than demographic reporting. Woyach conducted a study at the Ohio State University published in 1988, students' academic major and grade level were shown to affect global awareness scores since social and behavioral science seniors that studied abroad scored consistently higher than other grades and majors as well as the national average for the survey. Banning (2010) showed that the academic major of students in study abroad programs was one of the strong predictors of *cultural intelligence* – the ability to work effectively in culturally diverse situations. Even though the study did not examine acquired characteristics – using a pre-posttest methodology, for example – it still suggests that there is some underlying aspect of academic disciplines (curricula, instructional techniques, characteristics of the students, etc.) that have differing effects with regards to global awareness. A meta-analysis of study abroad literature by Varela (2017) suggests that student motivation and curriculum design could explain higher levels of attitudinal learning for language and business majors, respectively. For Varela, attitudinal learning is the overarching construct to which global awareness would be included.

**Study abroad by IIE Open Doors disciplines:**

There is a myriad of study abroad programs and international educational experiences (internships, service-learning programs, etc.) that focus on one specific academic discipline. Needless to say, just about any student could find a program that lined up with their academic

major if they searched hard enough. There are also many universities and organizations that offer programs without an academic discipline focus, rather programs are focused around experiencing cultural immersion or developing knowledge not specific to a defined discipline, such as programs that focus on global awareness. Many of these later version of study abroad programs consist of course loads typical to home campuses with multiple disciplines included. For the sake of this study, study abroad programs were groups into the categories used in the IIE Open Doors database with the inclusion of an “interdisciplinary” option for students to self-report when describing their study abroad focus.

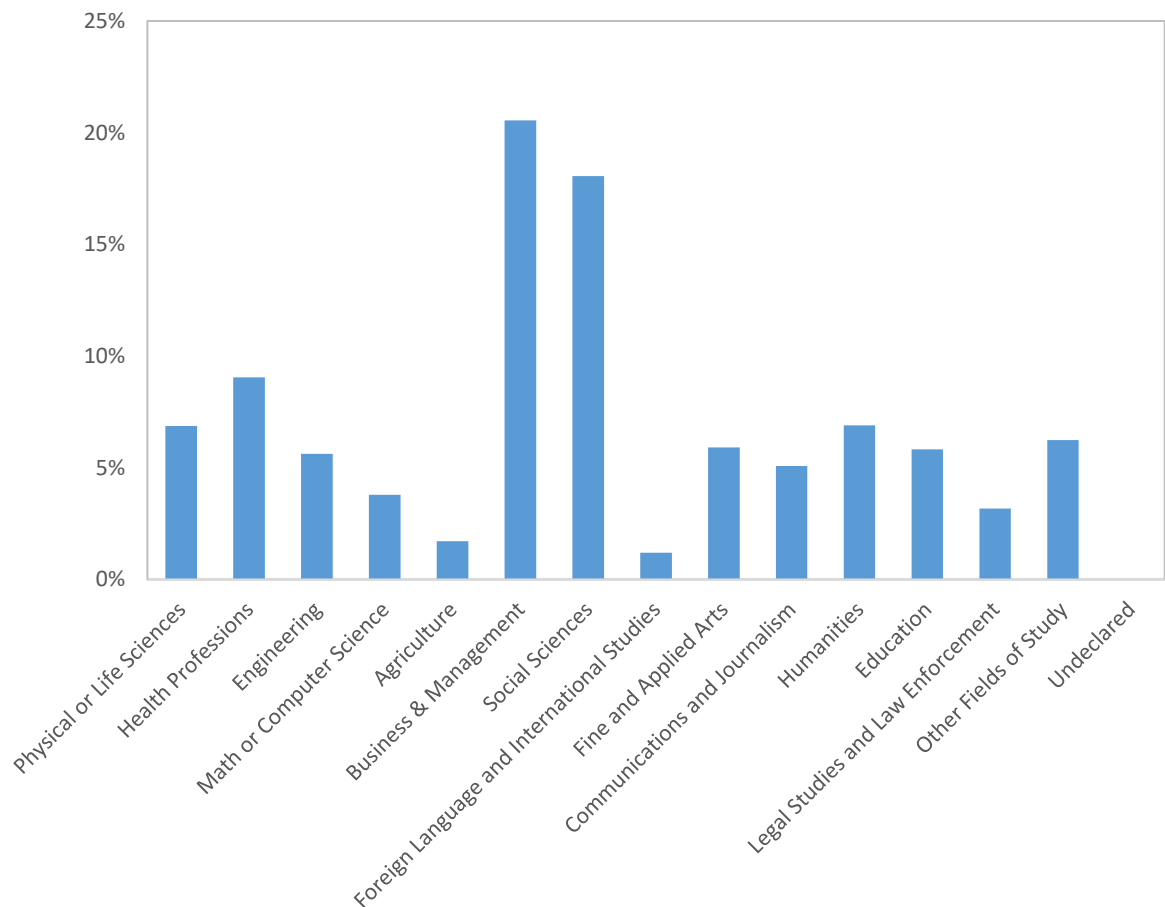
Not all study abroad experiences are equal. There are many ways that an experience can differ from program to program, but also from participant to participant. Program design is an important component when encouraging global awareness. Pedersen’s (2010) study comparing effectiveness of a study abroad program designed around intercultural and diversity training and one that was not suggests that intentional interventions are necessary for effective intercultural mastery. In an analysis of an interdisciplinary study abroad program, Lokkesmoe et al. (2016) saw that students failed to attain higher levels of cross-cultural awareness even though the students reported high levels of satisfaction with the program. They concluded that “simply sending individuals on overseas assignments, no matter how well prepared and supported by the institution, does not guarantee the development of multi-cultural attitudes and cognitive frames of mind.”

Taking into account a disciplinary focus, when designed appropriately, can produce meaningful results for the right student. Bender, Wright, & Lopatto (2009) compared benefits of a content-specific study abroad program (biomedicine), an interdisciplinary study abroad program, and a similar program on the home university campus. They concluded that (1) interdisciplinary programs are best for language acquisition and increasing global awareness, (2)

single-disciplinary focused study abroad programs are best for acquiring content knowledge and skills, and (3) interdisciplinary programs are better for students lacking in travel skills and experience or lack confidence in traveling abroad.

Figure 1

*Average Percent of Degrees Awarded by Academic Field from 2005/06 to 2015/16.*

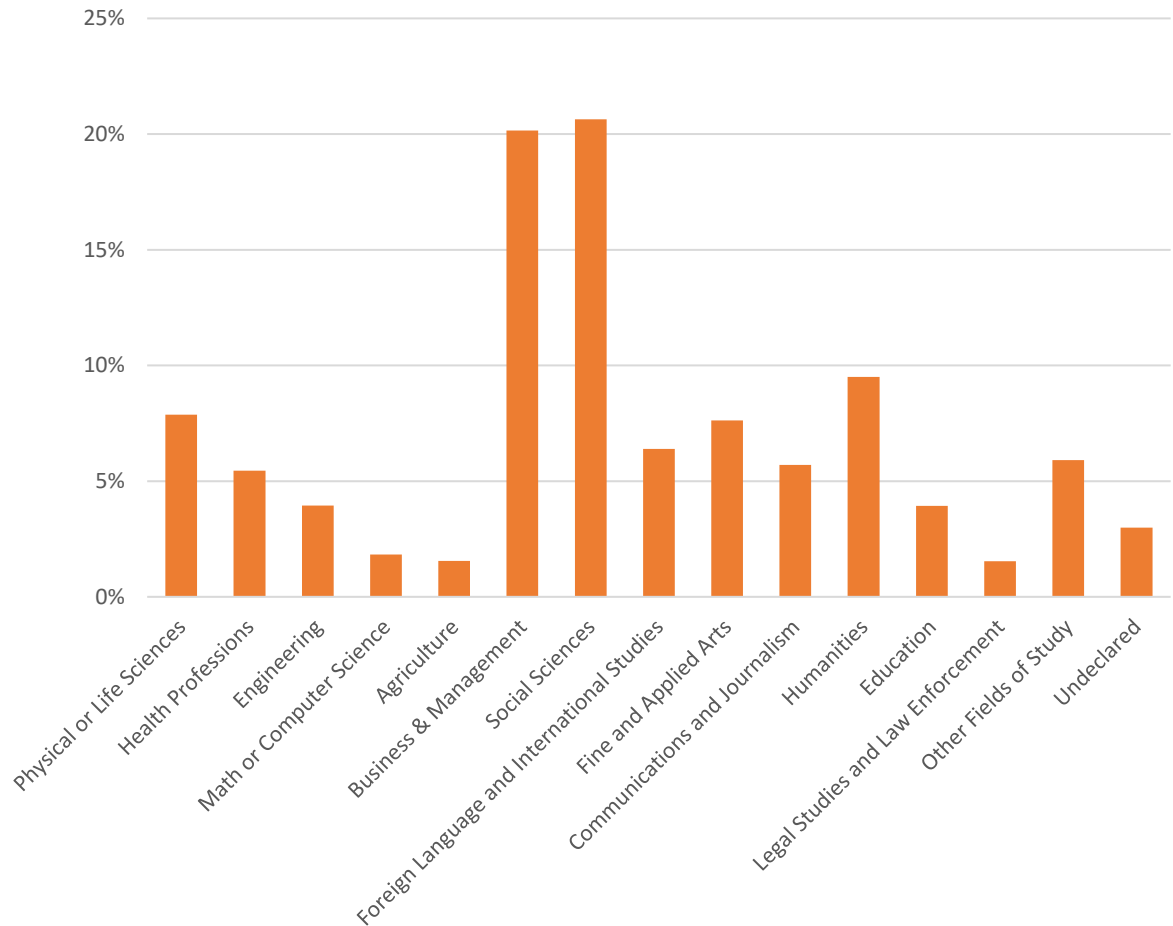


In order to better understand the relationship between academic discipline and study abroad benefits – including, but not limited to global awareness, it is important to see how the disciplines are distributed across degree-granting institutions within the United States. The National Center for Education Statistics (McFarland, et al., 2017) compiled the numbers of

bachelor's degrees conferred by academic discipline going back all the way back to the 1970/71 school year and going up to 2015/16. NCES uses a total of 33 different "fields of study" with one "not classified by field of study" categories. Since the disciplines of this study match the 15 discipline categories of the Institute of International Education, NCES categories were rearranged to better correspond with IIE data. Many categories were one-to-one congruencies (i.e. agriculture, business, and education) or obvious choices (i.e. engineering and engineering technologies becoming engineering). There were three disciplines of note. "Social sciences" consists of NCES categories: "area, ethnic, cultural, gender, and group studies; psychology; public administration and social services;" and "social sciences and history." The "humanities" consists of "English language and literature/letters; liberal arts and sciences, general studies, and humanities; philosophy and religious studies;" and "theology and religious vocations." Lastly, "other fields of study" included the NCES categories of "family and consumer sciences/human sciences; library science; military technologies and applied sciences; multi/interdisciplinary studies; parks, recreation, leisure, and fitness studies; precision production;" and "transportation and materials moving." "Business" and "social sciences" were the two most common bachelor's degrees awarded averaging 21% and 18% for every year between 2005/06 and 2015/16. Besides "undeclared," which only had 377 degrees awarded in the 2007/08 school year, "foreign language and international studies" (1%), "agriculture" (2%), and "legal studies and law enforcement" (3%) were the three fewest degrees awarded over that same time period. The low number of foreign language degrees awarded result from some of the degrees being part of "social sciences" and "humanities" categories.

Figure 2

*Average Study Abroad Participation Rates for Different Disciplines from 2005/06 to 2015/16.*

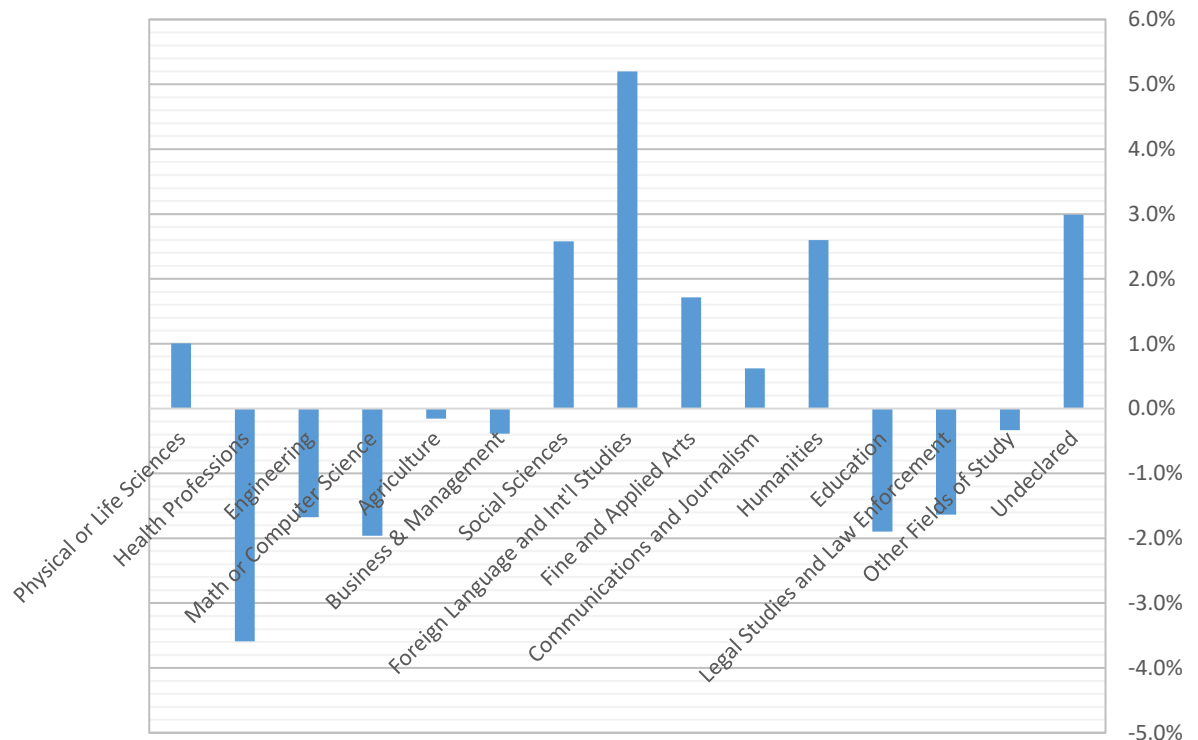


The rates of participation in study abroad for the different academic disciplines are not evenly distributed and, in some notable cases, do not track closely with the degrees awarded (IIE, 2018). Similar to the degrees awarded, “business” and “social sciences” students made up the largest majors represented, on average, for the years 2005/06 to 2015/16 with 20% and 21%, respectively. The three lowest represented majors all made up less than 2% of the study

abroad population each: “legal studies and law enforcement, agriculture,” and “math or computer science.” Unlike degrees awarded, “undeclared” had greater representation reflecting the fact that some students that travel abroad have not yet chosen and field of study to follow. When the five STEM categories are combined, they just about tie “business” and “social science” disciplines for study abroad; however, combined STEM degrees made up roughly 6% more degrees awarded than any other discipline.

Figure 3

*Comparison between Average Degrees Awarded and Study Abroad Participation Rates by Discipline from 2006/06 to 2015/16.*



Data for degrees awarded and participation rates cannot be directly compared to one another due to the fact that study abroad is not restricted to a students’ last semester in

undergraduate studies; however, when averaged, the two data sets shed further light on each disciplines relationship with study abroad as a whole. Figure 3 compares the average degrees awarded over the decade of 2005/06 and 2015/16 school years with the average participation rates. Both data sets are divided into the 15 IIE categories. By finding the difference between the two averages, performance of the discipline can be assessed. Positive percentages represent “over-performance” where the percentage of students of that major travelled abroad compared to all study abroad participants than the percentage of degrees of that major that were awarded. Perhaps unsurprisingly, “foreign language and international studies” is the most over-performing discipline with participation rates over 5% more than degree awarded percentages. Leaving “undeclared” aside, the next two highest over-performers were “humanities” and “social science” majors with 2.6% more participation than degrees awarded. Even though “legal studies” and “other fields” majors appear to be underrepresented in study abroad and “physical and life science” is over performing, STEM majors as a whole are very under-performing. Taken together, the five STEM field degrees are awarded 6.4% more than their students are participating in study abroad.

Each discipline is discussed in detail below with notable trends and documented benefits observed from discipline-focused programs; however, figure 3 serves as an underlying guide where one can glean how well the benefits are being conveyed to students graduating in that field.

#### *STEM Fields: Physical or Life Science*

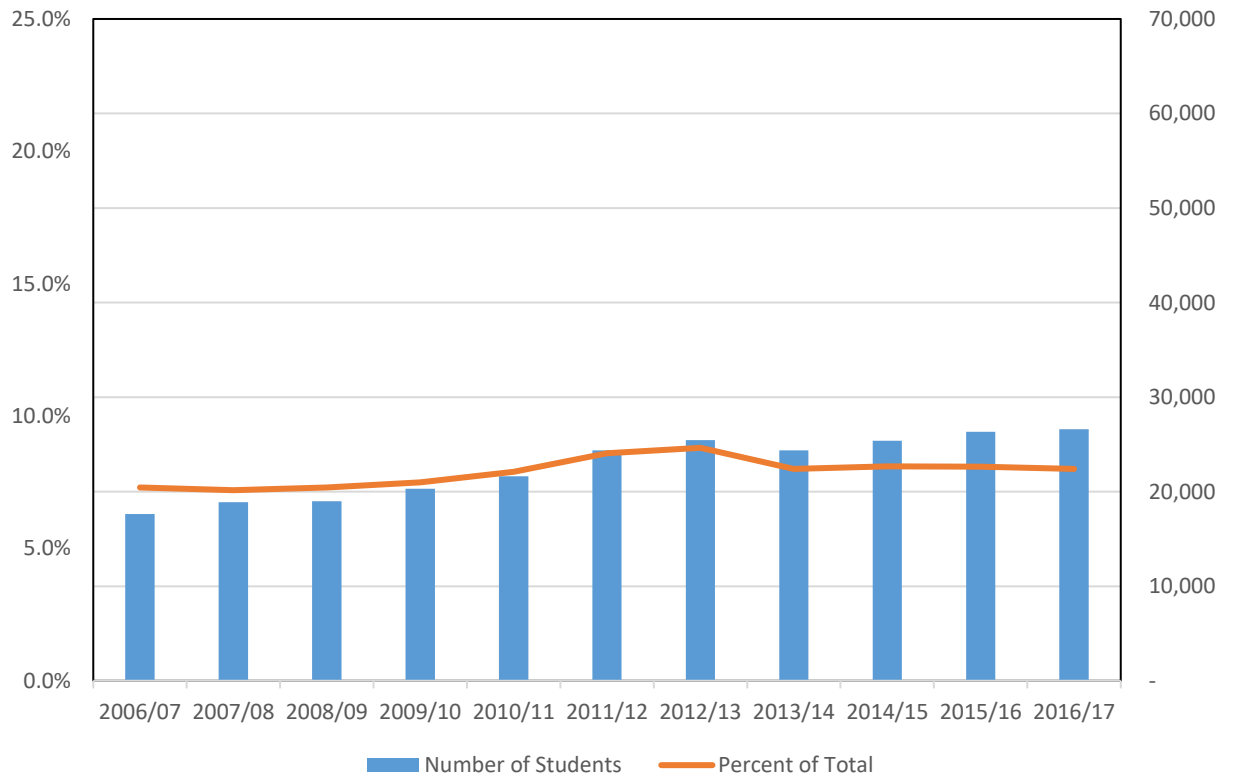
According to the IIE's *Open Doors Report on International Education Exchange* (2018), Just over one-quarter of all study abroad students in the 2016-2017 academic year reported to be majoring in a STEM field. That number has been gradually increasing from around 17.5% in



2006-2007. The IIE breaks the STEM field category down into 5 subcategories: physical and life science, health professions, engineering, math or computer science, and agriculture. Physical and life science majors make up the largest portion of STEM majors participating in study abroad with 8% of all students studying abroad in 2016/17. There was a maximum participation rate of 8.8% in 2012/13 and the rates have been holding steady at existing rates ever since. Even though participation rates remain steady, the overall number of study abroad students continues to rise; therefore, even though the highest participation rate was in 2012/13, the highest number of physical and life science majors studying abroad was 2016/17 (IIE, 2018). In Figure 4, the orange line represents participation rates as they compare to all study abroad students and the blue columns signify the actual number of physical and life science student studying abroad.

Figure 4

*Participation Rates and Student Numbers for Physical and Life Science Majors Studying Abroad from 2006/07 to 2016/17.*



One of the aspects that makes study abroad programs focusing on physical and life sciences different from many of the other disciplines is the drive to develop skills and knowledge that are best conveyed at a specific geographic site or are site-dependent (Mankiewicz, 2005). For example, if a student wanted to learn more about particle accelerators or how a specific ecosystem functions beyond what can be learned in a traditional classroom, they could travel to those actual locations. Europe is a good reflection of this since countries in that region promote higher education study abroad programs, the existence of “high level[s] of scientific and engineering research”, and confers more Ph.D. degrees in science and engineering than the

United States and Asia (Comp, 2010). STEM students are travelling to Europe to acquire knowledge, skills, and experiences unavailable elsewhere.

Study abroad programs that focus on physics, biology, chemistry, and geology can be found quite easily. Benefits from participating in these programs have been found to not only increase content specific knowledge and skills (Mankiewicz, 2005; Bender, Wright, & Lopatto, 2009; Ruscio & Korey, 2012; White, Browning-Keen, & White, 2013), but intercultural and global awareness (Ruscio & Korey, 2012; Kahl & Ceron, 2014; Alexis, Casco, Martin, & Zhang, 2017; Newlon, 2018), motivation and opportunities to pursue a career in STEM (Bender, et al., 2009; Ruscio & Korey, 2012; Kahl & Ceron, 2014), appreciation for interpersonal and interdisciplinary perspectives (White, et al. 2013; Alexis et al. 2017), and intrapersonal development (Bender, et al., 2009; Alexis et al. 2017).

The fact that the science field contains considerable site dependent knowledge and skills, there are many opportunities for students interested in STEM fields to be recruited into international internships and research positions in foreign countries. Oftentimes, this results in mutually beneficial relationships between the student and their host country (Comp, 2010). Experiential education, such as research internships and project-based coursework, has always been an important component of STEM education. One study showed that hands-on, out-of-class coursework (including study abroad programs) provides greater gains for students within STEM disciplines when it is done well, but can have the opposite effect when done poorly (Thiry, Laursen, and Hunter, 2011).

Bender et al. (2009) did a study comparing benefits associated with a science-specific study abroad program, an interdisciplinary study abroad program, and similar content instruction on a home campus. Besides the aforementioned benefits, students participating in science-focused study abroad programs saw the greatest increases in global awareness;

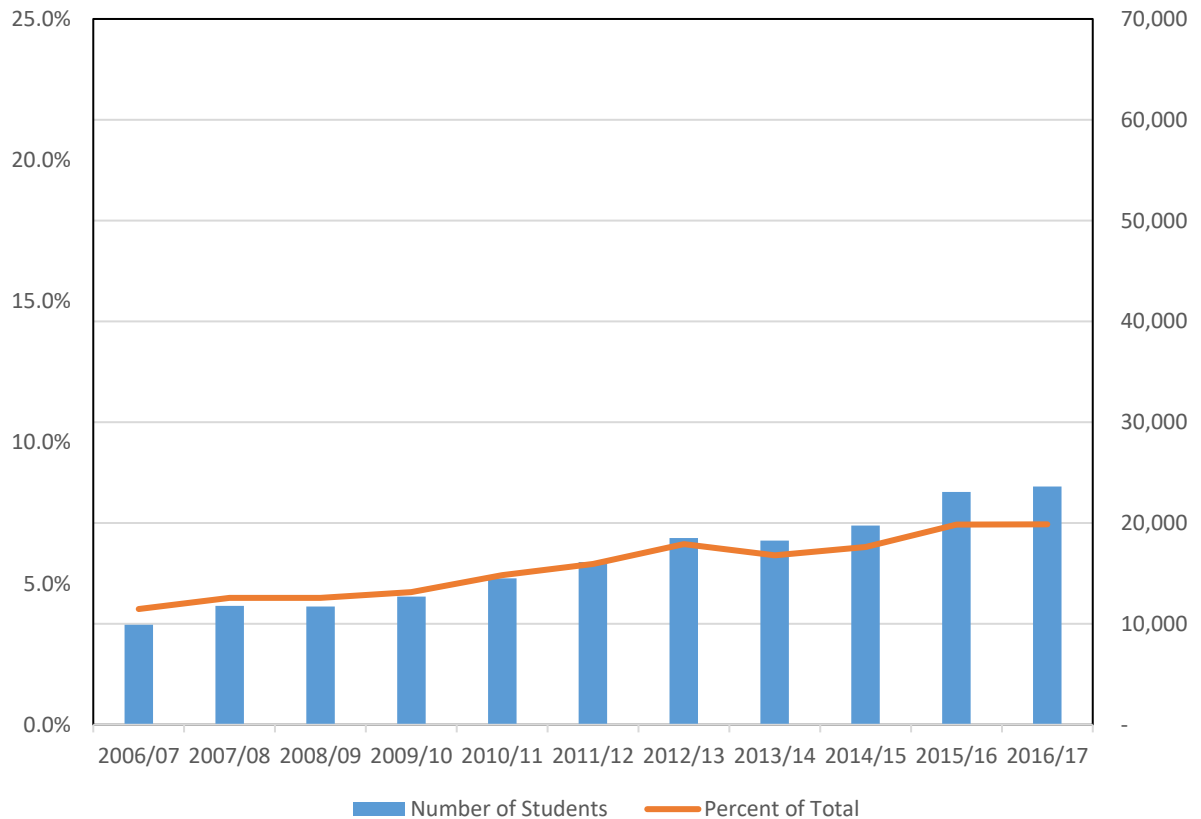
although, the other two programs saw increases as well. Abrahamse et al. (2015), analyzing an undergraduate STEM course between American and Bolivian students, showed that some of these benefits from science-focused study abroad programs can be conferred to undergraduates using virtual classroom instruction. This suggests an international component could positively affect increased content knowledge acquisition in STEM education whether it is a formal study abroad component or not.

#### *STEM Fields: Health Professions*

Since 2006-2007, the participation of health profession majors studying abroad has almost doubled growing from just 4.1% to 7.1% in 2016-2017. Unlike physical and life science majors which has been slowly declining since 2012-2013, health profession majors have shown a steady yearly increase for the past decade. Not surprisingly, the greatest number of health majors studying abroad was in 2016/17 with 23,624 students (IIE, 2018). Figure 5 relates trends for participation rates and student counts for health professions studying abroad from 2006/07 to 2017/17.

Figure 5

*Participation Rates and Student Numbers for Health Professions Majors Studying Abroad from 2006/07 to 2016/17.*



Unlike study abroad programs in physical and life sciences, programs focused on health professions (i.e. social work and nursing), place a greater emphasis on interpersonal and intercultural knowledge and skills than mastery of content knowledge or development of site dependent skills. Through their analysis of a university health department, Hernandez et al. (2009) concluded that in addition to integrating all of the fields within the health department (dentistry, veterinary medicine, pharmacy, etc.) and increasing the number of certification and program tracks, including an international component would increase global awareness and exposure to different perspectives. Perspectives both within the medical world and the broader,

global community. A long-term study of health-related majors by Fennell (2009) suggests that the two longest lasting impacts of health-focused study abroad programs is the drive to pursue a health-related profession and maintaining global perspectives of the world.

Studies into the effects of nursing-focused study abroad programs have shown that students gain benefits associated with other programs (Kelleher, Fitzgerald, & Hegarty, 2016); however, students report having an enhanced professional identity and empowerment (Sealey & Hathorn, 2010; Smith & Curry, 2011; Kelleher, Fitzgerald, & Hegarty, 2016), increased level of intercultural communication and awareness of shared values (Hernandez, et al., 2009; Sealey & Hathorn, 2010; Smith & Curry, 2011; Carpenter & Garcia, 2012), and enhanced capacity to adapt to unfamiliar environments (Edmonds, 2010).

In a similar way to nursing study abroad programs, programs focused on social work are interested in developing skills and knowledge to work in increasingly diverse situations. Fezzey, et al. (2017) claim “global learning is almost as old as the discipline itself.” Efforts lead by the accrediting body Council on Social Work Education have emphasized the importance of global education within social work schools (Fezzey, et al., 2017). Studies have shown that social work students participating in focused study abroad programs have not only increased content knowledge, but greater global awareness and ability to operate in diverse sociocultural situations (Jaoko, 2010, Fisher & Grettenberger, 2015; Berger & Paul, 2017). In a study comparing social work courses at a home-campus and an international course, participating students showed roughly equal gains in their global identity and knowledge of global issues within the field of social work. Study abroad students improved interpersonal and professional skills over those of home-campus students which is thought to be a result of increased contact between the students and members of their host country (Greenfield et al., 2010). Increasing contact between the student and people from diverse backgrounds could be one of the greatest

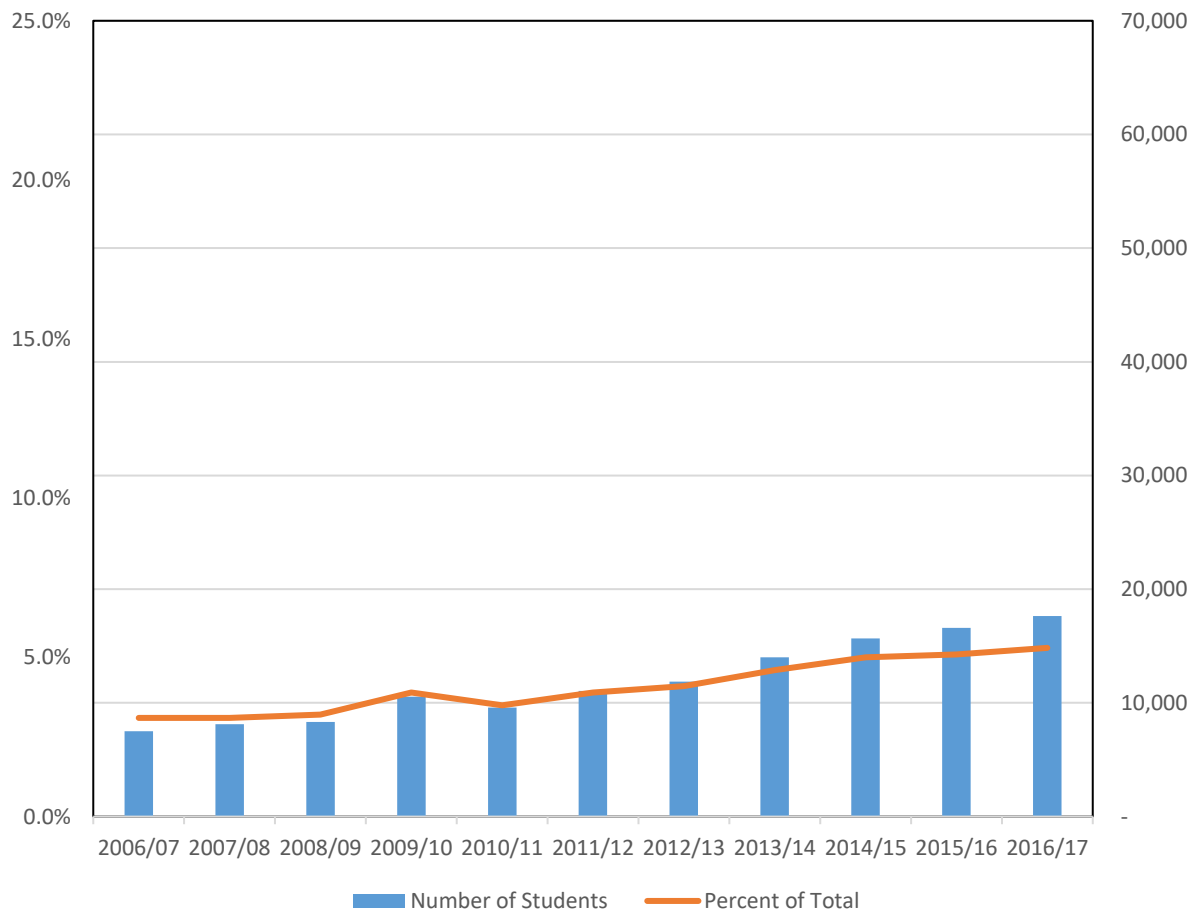
benefits of social work focused study abroad programs. In fact, Fisher and Grettenberger (2015) go so far to say that a community-driven social work study abroad program would be invaluable at addressing some concepts core to the practice of study abroad, like the relationship between power and privilege.

### *STEM Fields: Engineering*

Engineering majors made up 5.3% of all students studying abroad in 2016-2017. Similarly to health professions majors, participation has almost doubles over the preceding decade with steady year-to-year increases. Compared to all of the other academic majors, engineering ranks closer to the bottom with only five disciplines having less participation and seven disciplines having greater participation during the 2016-2017 academic year. This ranking does not include students with “other majors” and those that were “undecided”. With steadily increasing numbers of engineering students participating in study abroad and the overall participation study abroad trends, 2016/17 saw 17,635 engineering majors studying abroad (IIE, 2018).

Figure 6

*Participation Rates and Student Numbers for Engineering Majors Studying Abroad from 2006/07 to 2016/17.*



Engineering, as an academic discipline, involves the creation of tangible objects; therefore, study abroad programs focusing on engineering would be similar to *in situ*, project-based learning and less traditional classroom instruction. There is currently a movement in engineering education to better prepare engineers to work in the global environment (Downey, et al., 2006, Kulturel-Konak & Konak, 2016). Unlike some of the other disciplines in this study, engineers have to not only work effectively with people from a different culture, but with



cultures that may define problems differently. One of the ways to achieve global competency in engineers has been international travel (Downey, et al., 2006). Oftentimes, global perspectives, problem-solving, and concepts like sustainability are woven into engineering students' international experiences that are simply not possible or too difficult to meaningfully include in home-campus coursework (Jesiek, Haller, & Thompson, 2014; Mitchell, 2018).

DiBiasio and Mello (2004) compared projects undertaken by engineering students from Worcester Polytechnic Institute (WPI). WPI is responsible for roughly half of American engineering students travelling abroad. Results of comparing on- and off-campus (abroad) student projects show that the students that were abroad outranked on-campus students in nearly every category. The students, themselves, exceeded their on-campus counterparts scored higher on university accreditation outcomes. These include a deeper understanding of the relationship between engineering and society, engagement with becoming lifelong learners, and comprehension of professional and ethical responsibilities (DiBiasio & Mello, 2004). Seccia (2018) work on developing "global engineers" through study abroad observed not only increases in cultural insights, but also commitment to the profession and comfort working abroad. There could be long-lasting effects for engineers that study abroad. Olson and Lalley's (2012) survey work of engineering undergraduate students years after studying abroad suggest lingering positive influences in teamwork skills, cultural sensitivity and intercultural skills, and interest in international and intercultural experiences. In their study, however, the corresponding business students scored higher than the engineering students.

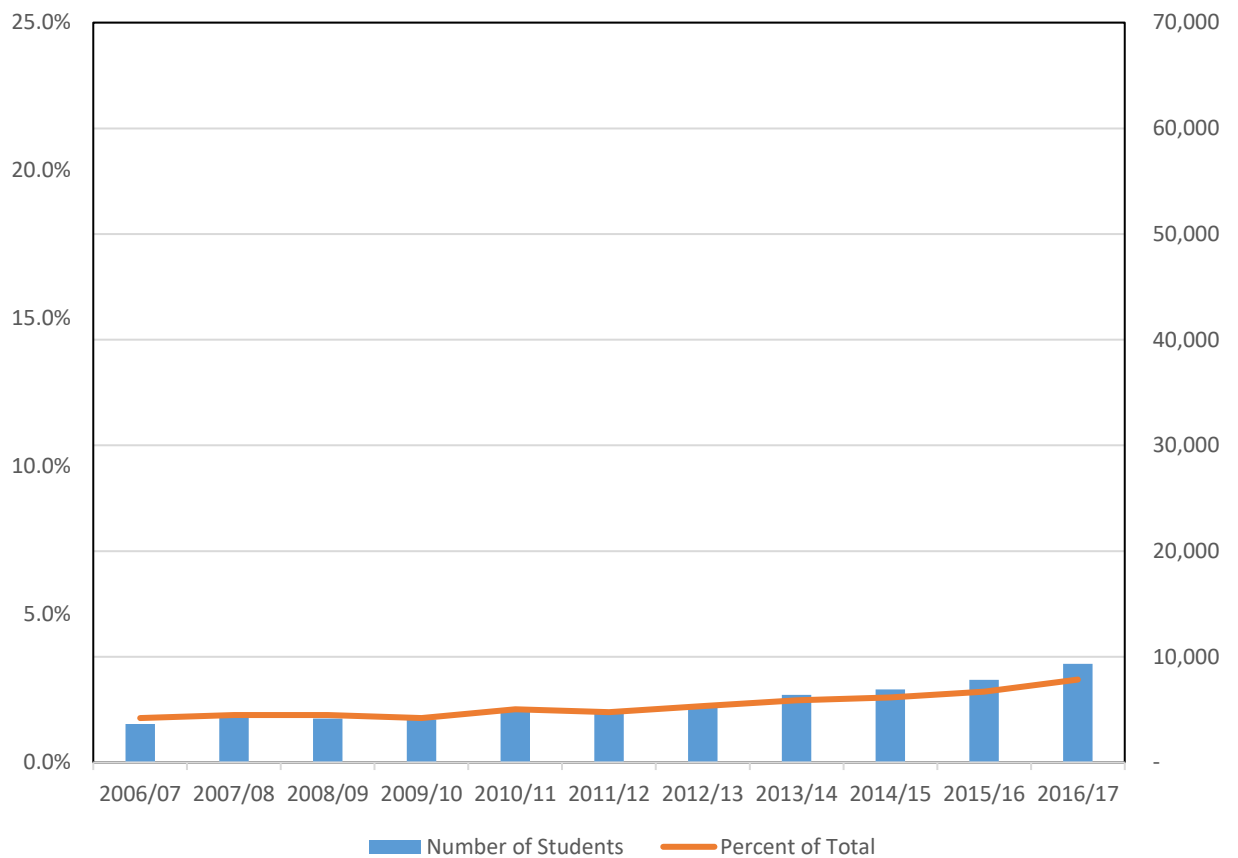
#### *STEM Fields: Math or Computer Science*

One of the smallest majors represented in study abroad programs were math or computer science majors. Even though the percentage of these students has almost doubled

between 2006-2007 and 2016-2017, they only made up 2.8% of all study abroad students in the most recent IIE Open Doors database (2018). The highest number of math and computer science majors studying abroad was 9,316 in 2016/17 (IIE, 2018).

Figure 7

*Participation Rates and Student Numbers for Math or Computer Science Majors Studying Abroad from 2006/07 to 2016/17.*



Addressing the small number of mathematics majors travelling abroad in one of the major issues within this academic discipline. There is a perception that math, by its nature, is already international and some believe that that impedes participation by university undergraduates. This is reflected in the extremely low number of math majors studying abroad,

but not reflect the amount of international collaboration for university mathematics research is one of, if not the highest, levels compared to almost all other disciplines (Fezzey, Fujieda, Goerd, Kahler, & Nikoi, 2017).

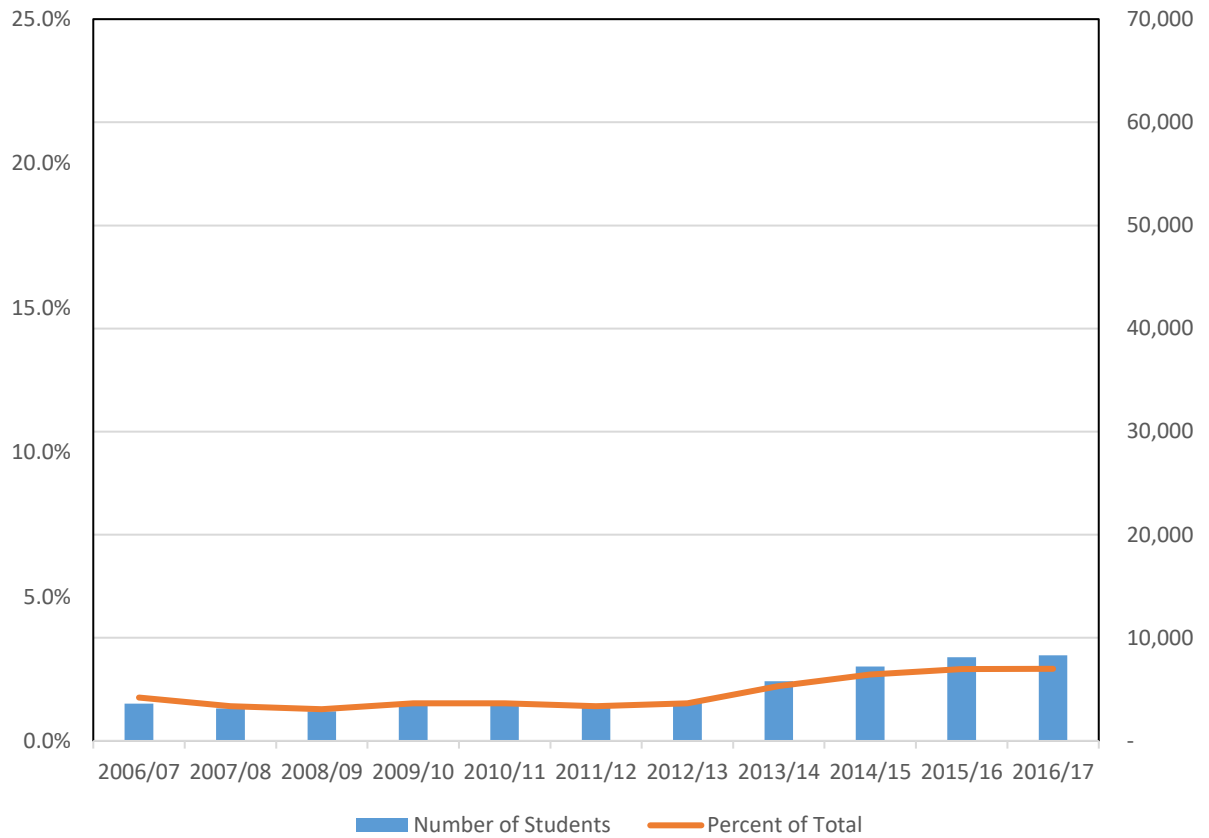
To that end, studies examining the benefits of mathematics-focused study abroad programs are less common than other disciplines. In an effort to internationalize university math departments, Appelbaum et al. (2009) recommend overhauling entire programs in order to shift the discipline's focus more internationally. This would include emphasizing a study abroad component, but including new, on-campus courses addressing the need for non-Western influences on mathematics. One mathematics-focused study abroad course that is along these lines is offered by Georgia College as a one-month capstone course investigating the mathematics of Pre-Columbian cultures in Peru. Results suggest students experience typical benefits common to studying abroad (Brown, 2014).

#### *STEM Fields: Agriculture*

Agricultural majors were the smallest STEM subcategory and the second smallest discipline represented in the 2016-2017 participation data and consistently had one of the smallest representations going back to 2006-2007. Only 2.5% of all study abroad students (or 8,133 students) were agricultural majors in 2016-2017 (IIE, 2018).

Figure 8

*Participation Rates and Student Numbers for Agricultural Majors Studying Abroad from 2006/07 to 2016/17.*



Literature surrounding benefits associated with agricultural study abroad suggest that not all students – and agricultural faculty – benefit as equally from study abroad experiences as some of the other disciplines. Similarly, agricultural majors returning from study abroad reported enhanced cultural awareness and appreciation (Wals & Sriskandarajah, 2010; Unruh-Snyder, Lamm, Brendemuhi, Irani, Roberts, Rodriguez, & Navarro, 2011; Lumkes, Hallett, & Vallade, 2012; Foster, Rice, Foster, & Barrick, 2014; Roberts, Rodriguez, Gouldthorpe, Stedman, Harder, & Hartman, 2016), acquisition of useful professional skills and knowledge (Wals & Sriskandarajah, 2010; Unruh-Snyder, et al., 2011; Foster, et al., 2014), and increased interest in

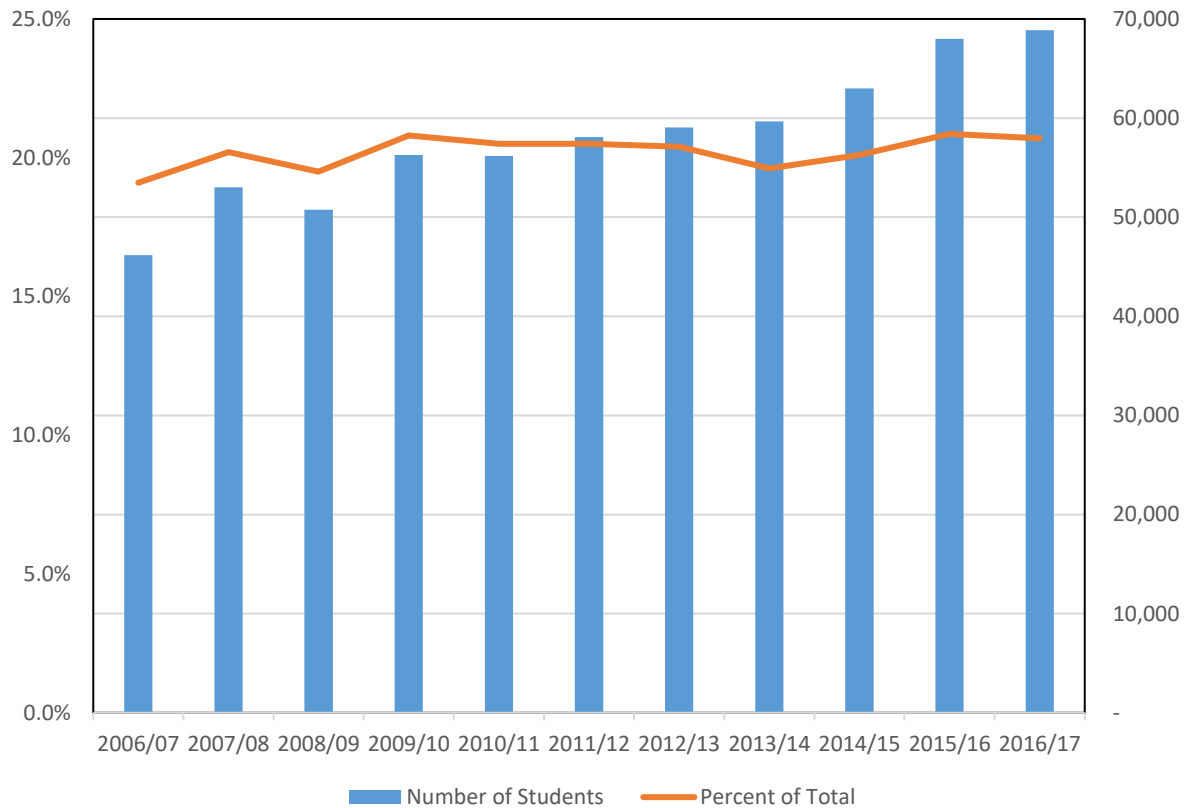
perusing a career in their field (Unruh-Snyder, et al., 2011; Roberts, et al., 2016). Faculty members that participated in a professional development course designed specifically to enrich agricultural faculty reported desire to internationalize their own instruction and content (Roberts, et al., 2016). There were cases where students failed to achieve measurable gains tied to their international experiences ranging from agricultural discipline specifics – global environmental issues and agricultural issues within the host country (Lumkes, et al., 2012) – to cross-cultural awareness (Lokkesmoe, Kuchinke, & Ardichvili, 2016).

### *Business & Management*

Business students are studying abroad at a higher rate than many other disciplines; however, business schools both within the United States and abroad are faced with students who are reluctant to study abroad even though the personal and professional benefits are well documented and disseminated (Gordon et al., 2010). In 2016-2017, business majors made up 20.7% of all students studying abroad ranking second after all combined STEM majors and followed social science majors. Over the decade between 2006-2007 and 2016-2017, participation rates for business majors have remained relatively steady (IIE, 2018). Just like physical and life science majors trends, the steady participation rates hide the overall increase in the numbers of business majors studying abroad in recent years. In 2016/17, 68,874 business students studied abroad – almost 1,000 students more than the year prior and almost 6,000 more than two years prior (IIE, 2018).

Figure 9

*Participation Rates and Student Numbers for Business & Management Majors Studying Abroad from 2006/07 to 2016/17.*



Analysis of business study abroad benefits is much more thorough than other disciplines with some analysts able to ascribe a perceived dollar value of business majors' international experiences (Loh, Steagall, Gallo, Michelman, 2011). Business-focused international experiences are broader in scope than some other disciplines because they can include internships and service-learning experiences that are still affiliated with universities, but lack the traditional classroom instruction common to study abroad programs. Acquisition of global awareness and intercultural skills during business-focused study abroad programs can vary according to many variable including location, degree of cultural immersion, and linking of learning goals to

university objectives (Babb, Womble, De'Armond, 2013). In at least one long-term study, business students that studied abroad reported less content learning than their home-campus counterparts leading the study authors to conclude that business students need to be more careful about selecting international experiences and that perhaps a non-traditional opportunity (i.e. international internships, service-learning) would be more meaningful (Carely, Stuart, & Dailey, 2011). Even in light of the facts that business majors comprise a large percentage of study abroad participants and the existing diversity of programs, there remains a consensus that business-focused program offerings only meet the needs of a small percentage of business majors (Rochford & Borchert, 2014).

In general, there are positive views of study abroad for business majors – and, at a minimum, internationalizing home-campus curricula. Business study abroad programs have been shown to increase global awareness and cultural competency (Carely, et al., 2011; Babb, et al., 2013), professional knowledge and skills (Van Auken, 2013; Dayton, Koster, & Prekert, 2018; Le, Ling, & Yau; 2018; Wu & Martin, 2018), and alter students' approach to business to be more aligned with poverty and social justice issues (Le & Raven, 2015; Dayton, Koster, & Prekert, 2018; Wu & Martin, 2018).

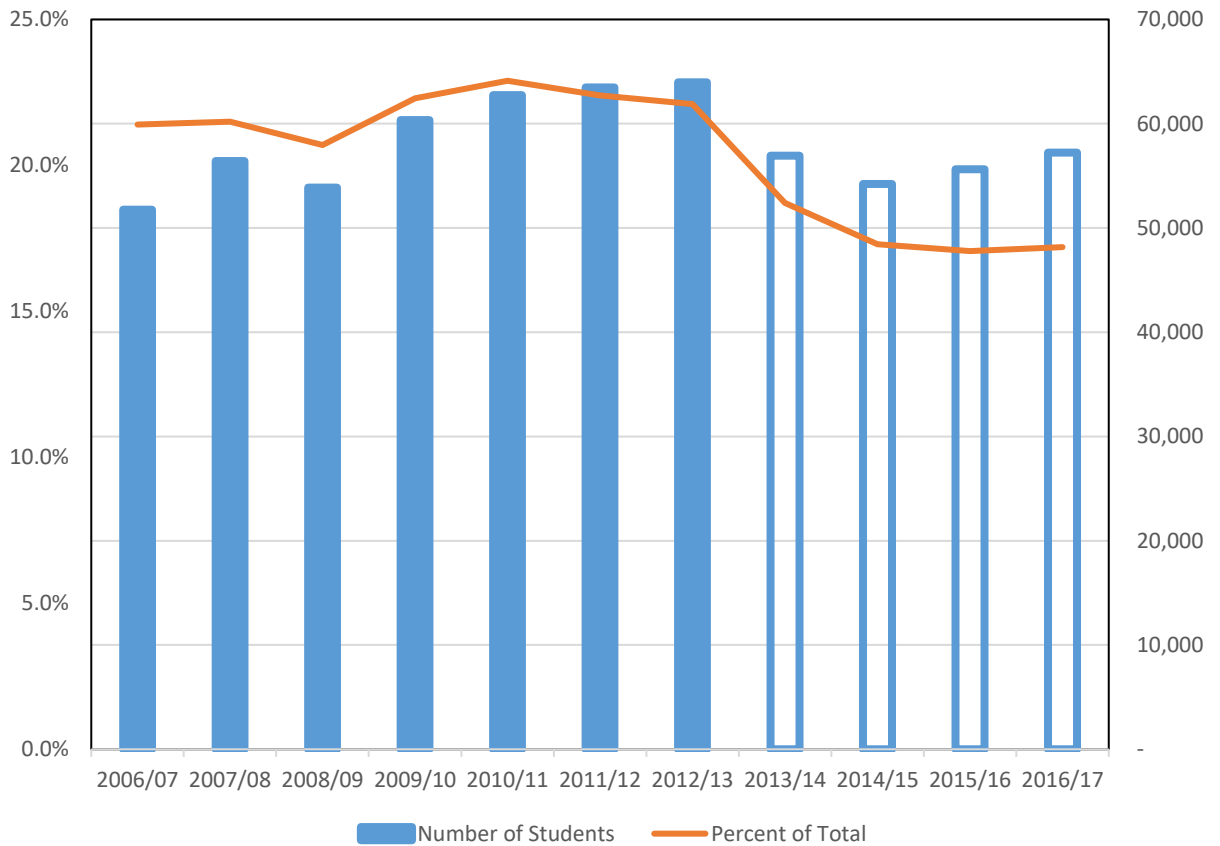
### *Social Sciences*

Unlike the other disciplines discussed so far, social sciences – here for defined as psychology; sociology; economics; political science; area, ethnic, cultural, and gender studies; and history – is perhaps the most muddled. Participation in study abroad by social science majors remains one of the largest. At one time, social science majors were more likely to travel abroad than any other major (Salisbury, Umbach, Paulsen, & Pascarella, 2009); however, since the method of data recording at the IIE changed in 2013, data prior to 2013 cannot as easily be

compared to post-2013 data, making comparisons more difficult. In 2006/07 school year, 21.4% of all study abroad participants (or 51,743 students) reported being social science majors. By the spring of 2013, the participation rate was 22.1% (or 63,959 students). Data starting in 2013 and ending in the spring of 2017 show a slight decline of 18.7% and 17.2%, respectively, but an actual decrease of just 294 students. If STEM fields are divided into their subcategories, social science majors rank second after business majors for study abroad participation (IIE, 2018).

Figure 10

*Participation Rates and Student Numbers for Social Science Majors Studying Abroad from 2006/07 to 2016/17.*



**Note:** Data from 2013/14 to 2016/17 does not contain international studies majors which were combined with foreign languages in 2013.



Given the nature of majors contained within this academic discipline and the number of participatory students, it would seem universities would be marching their students across international borders for high-value, in-situ educational experiences. In 2004, the American Sociological Association's Undergraduate Major Task Force decided that the field need a broader focus and recommended increasing the amount of "multicultural, cross-cultural, and cross-national" curricular content; however, the field remains disjointed as to how these changes should take form (Fezzey, et al., 2017). Similar confusion is affecting the psychology field. Even in the light of evidence that psychology students who study abroad show gains in intercultural knowledge, cultural identity, (Abrams & Ziegler, 2016, Kaowiwattanakul, 2016), perceptual acuity, emotional resilience (Earnest, Rosenbusch, Wallace-Williams, & Keim, 2016), and self-esteem (McLeod, Carter, Nowicki, Tottenham, Wainwright, & Wyner, 2015), psychology staff lack the confidence and knowledge to lead study abroad programs restricting participation rates (Abrams & Ziegler, 2016). Another trend affecting some social science majors – specifically economics, sociology, and political science – is that departments can steer students away from studying abroad. Concerns of students becoming too focused on one region would affect mastery of multi-use, universal content more typical in these fields (Miller-Idriss & Shami, 2012).

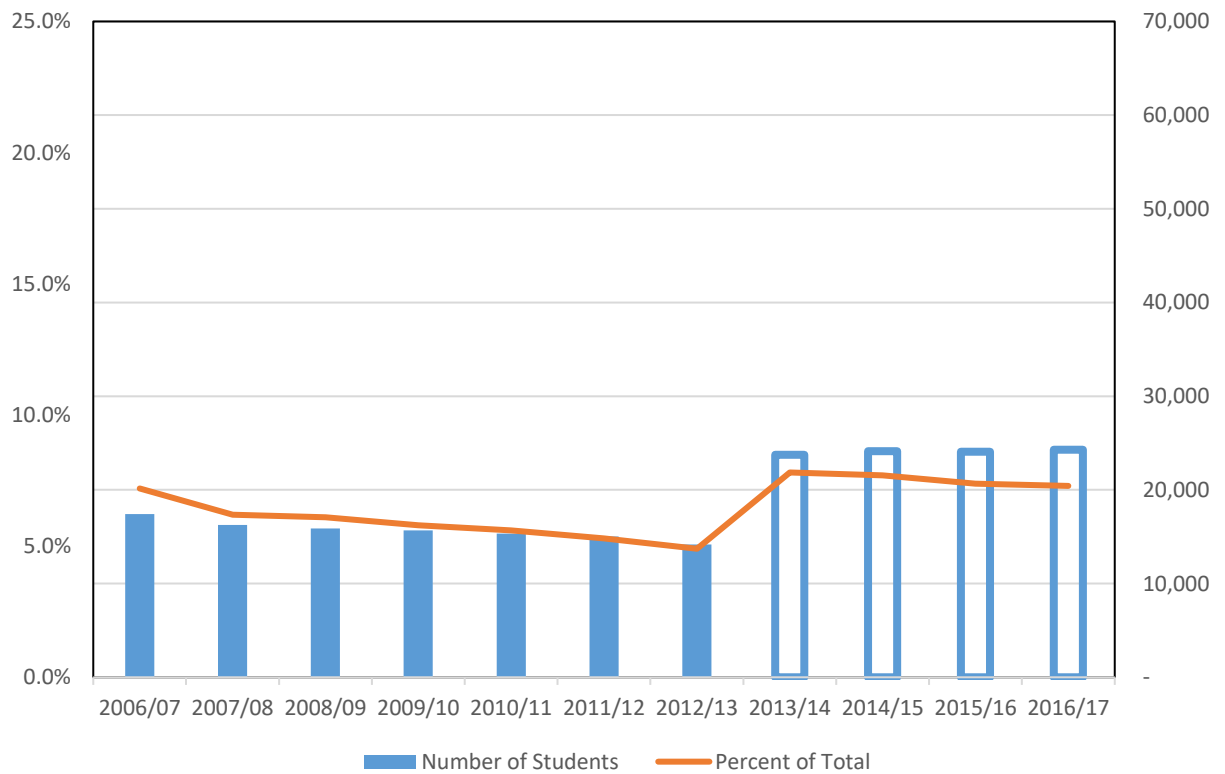
#### *Foreign Language & International Studies*

In 2013, IIE rearranged their data collection methodology combining foreign language within international studies majors. Prior to the fall of 2013, foreign language majors made up their own category where, between 2006/07 and the spring of 2013, foreign language participation in the total number of study abroad students dropped from 7.2% to 4.9% or from 17,409 students down to 14,181 students. After combining the data, foreign language and international studies majors continued the trend decreasing from 7.8% to 7.3% during the

2016/17 school year. Overall increases in total students studying abroad meant that even as participation rates fell, foreign language and international studies students studying abroad actually increased by over 500 students from 23,748 to 24,289 for 2013/14 and 2016/17, respectively (IIE, 2018). It would seem that efforts by the community of researchers, educators, and policymakers working to bring attention to language education and overseas study (Watson, Siska, Wolfel, 2013, Davidson, 117) are not very fruitful.

Figure 11

*Participation Rates and Student Numbers for Foreign Language and International Studies Majors Studying Abroad from 2006/07 to 2016/17.*



*Note:* Data from 2013/14 to 2016/17 includes international studies majors which were previously part of social science and humanities in IIE record keeping.

Studies of undergraduates showed studying abroad was a strong predictor of language proficiency for second language learners (Brito, 2017, Heidrich & Kraemer, 2018). Mastery of a second language is closely linked to cross-cultural adaptability (Allen, 2010, Watson, Siska, Wolfel, 2013, Davidson, 117), identity construction, enhanced cognitive functioning, and critical thinking skills (Watson, Siska, Wolfel, 2013, Davidson, 117). Studying abroad also increased mastery of the language (Allen, 2010, Siegel & Broadbridge, 2018) and intercultural knowledge (Allen, 2010). In chapter 2 of *Students, Staff and Academic Mobility in Higher Education*, Byram mentions that foreign language students that are studying abroad change their focus from language mastery to focusing on personal development and overcoming obstacles (Byram, 35). Knowledge and use of the foreign language during and after the various programs reduced negative factors (anxiety, depression, etc.) and increased their approval of their home culture (Savicki, 2011).

Accrued benefits from foreign language study abroad programs vary widely compared to other disciplines. One differing factor is that how “different” the second language is from English correlates to increases in intercultural competence – specifically, languages more different from English are more strongly correlated to intercultural gains than more similar languages (Watson & Wolfel, 2015). Allen (2010) suggests that the degree of interaction with native speakers influences language learning outcomes which contradicts a widely held assumption that simply studying abroad results in language learning. In fact, high degrees of interaction can make-up for shortcomings of the study abroad program such as program length. Typically, long-term study abroad programs have higher language learning outcomes than their short-term counterparts; however, similar outcomes are possible through high degrees of socialization with native speakers (Schneider, 30; Hernández, 2016). “Difference” of host country language, degree of interaction with locals, and even geography can all affect

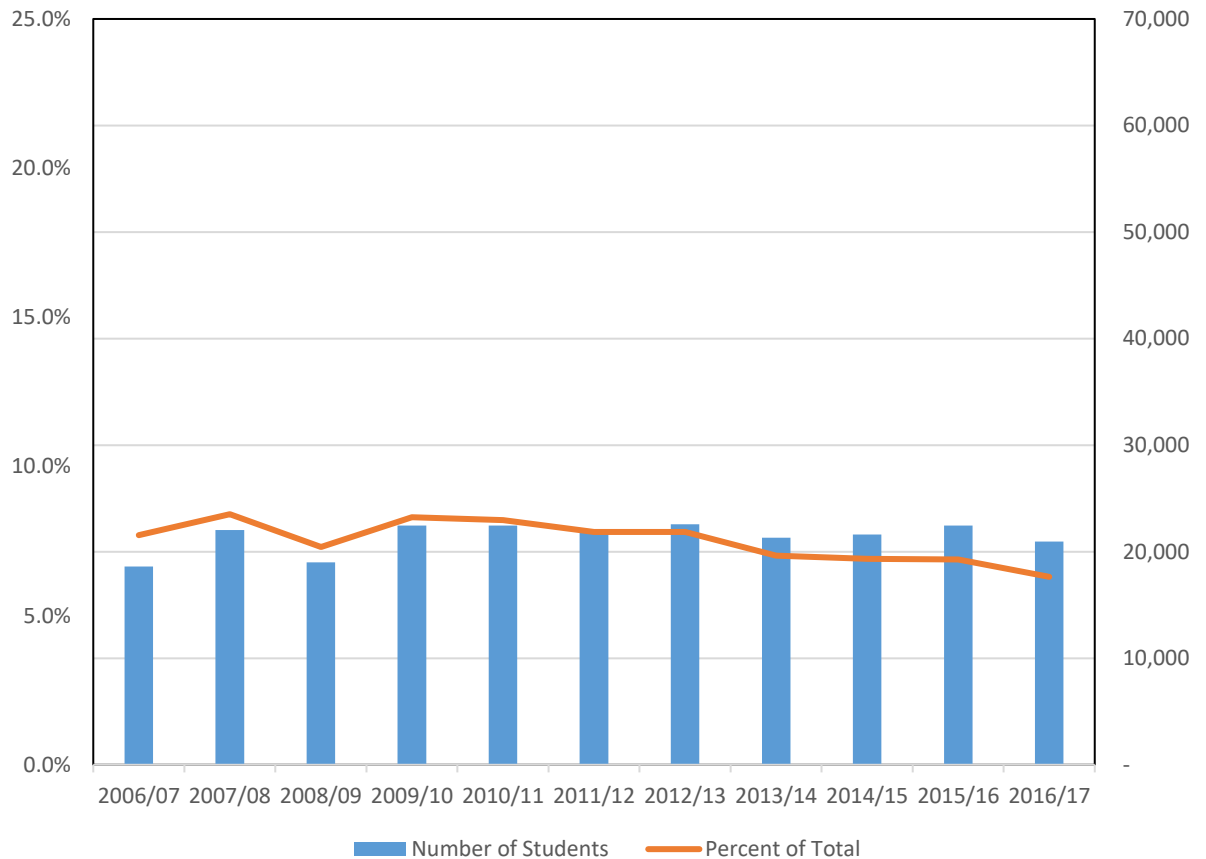
motivation for second language acquisition creating a wide range learning outcomes for participating students (Kinging, 2013, Watson & Wolfel, 2015 Cigliana, 2016, Taguchi, Xiao, & Li, 2016).

### *Fine and Applied Arts*

The Institute of International Education defines fine and applied arts as all visual and performing arts including music, architecture, and related services. Participation rates for fine and applied arts is one of the smaller fields of study. In 2006/07 school year, 7.7% of all study abroad students were fine and applied arts majors. Over the course of the next decade, participation increased to as high as 8.4% and as low as the 2016/17 rate of 6.3%. Since a relatively high mark of 8.3% in 2009/10, there has been a slow decrease in participation rates. In terms of total students travelling abroad, even though 2016/17 school year marks the lowest participation rates for the decade, 20,962 art students studied abroad which is more than 2,000 more than 2006/07 when participation rates were 1.4% higher (IIE, 2018). As participation rates of American students wanes, participation from all over the world is increasing. Not only that, but data suggests an uneven flow of students into international arts programs with between 20% to 40% of study abroad art students travelling to art schools in Europe with dance and music schools having as high as a 60% share (Booth, Ophuysen, & Koleva, 2004).

Figure 12

*Participation Rates and Student Numbers for Fine and Applied Arts Majors Studying Abroad from 2006/07 to 2016/17.*



Many performing arts programs in liberal arts schools have been striving to improve intellectual and lifelong career skill instruction through experiential learning. One manifestation of these efforts is a greater emphasis on study abroad participation (Kindelan, 2010). Performing arts programs offer opportunities for exploration, exchange, and learning unavailable to other disciplines and some programs – like music – are able to accomplish this without even a common spoken language (Grant, 2018). For example, a musical immersion program in Bali reduced borders separating visitors and residents providing opportunities for both groups that otherwise would have remained aloof (Clendinning, 2016). Some universities in the United

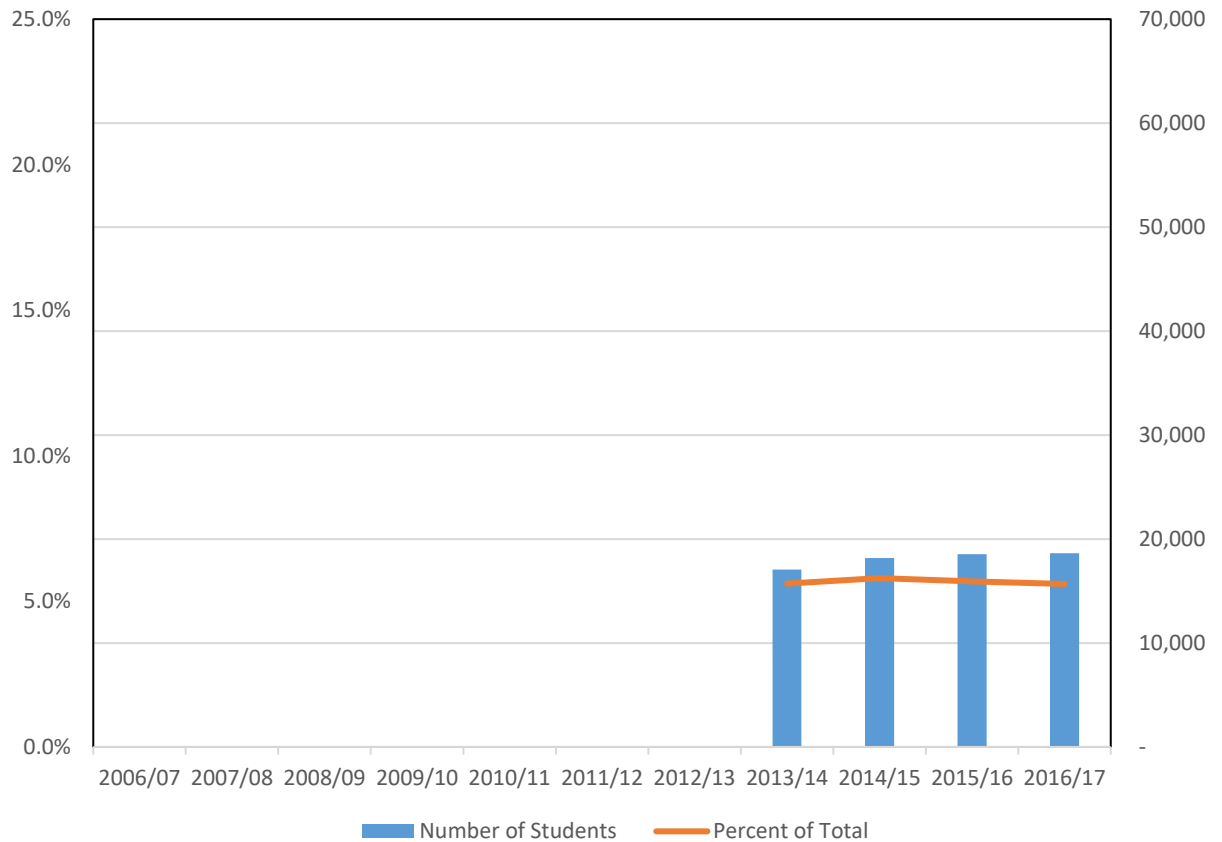
States and Canada are enriching performing arts programs by not only increasing the visiting artists and professors from Africa, but by creating study abroad exchange with Ghanaian universities (Amegago, 2009). Similar to immersion-based foreign language study, participation in these and other performing arts immersion program accelerated artistic mastery and professional skills (Booth, Ophuysen, & Koleva, 2004, Amegago, 2009, Clendinning, 2016); however, participants also experience increased host cultural understanding, self-confidence, cultural awareness (Amegago, 2009, Clendinning, 2016), intercultural skills (Grant, 2018), and greater interest in learning more about the language and culture of their host countries (Dekaney, 2008).

#### *Communications and Journalism*

Journalism, as an educational discipline, is uniquely equipped to advance global awareness concerns both directly through education of journalism students and indirectly through journalism's relationship with the public at large (Gerodimos, 2012). Due partially to the aforementioned pressure, professional journalists and communication practitioners are increasingly expected and required to work across countries and cultures. Universities are working to internationalize their programs to meet those workplace expectations and demands (Gerodimos, 2012, Alaimo, 2016). University efforts to increase study abroad participation do not appear to be very successful. IIE began recording communication and journalism majors independently in the 2013-2014 survey; however, in the four years of data, there does not appear to be a significant change in participation rates of between 5.6% and 5.8% even though the raw number of journalism and communications students travelling abroad during that time increased by 1,500 from 17,050 to 18,633 students (IIE, 2018).

Figure 13

*Participation Rates and Student Numbers for Communications and Journalism Majors Studying Abroad from 2006/07 to 2016/17.*



*Note:* The IIE did not start recording information on this category until 2013; so, data prior to that date is unavailable or distributed across other discipline categories.

Research into the internationalization of communications suggest that there has historically been significant efforts within the field, but there is continued pressure to further expand the global focus within educational programs. Instruction methodology and content material has shifted focus to cultural competence, enhance students' cross-cultural understanding, and abilities to manage intercultural experiences. Participation in study abroad is one way communication programs have been addressing these concerns (Fezzey, Fujieda, Goerd, Kahler, & Nikoi, 2017). Even though research specifically regarding the effects of study

abroad on journalism majors is scant, Gerodimos (2012) argues that journalism and journalism education must understand global awareness not as an individual responsibility, but rather a responsibility of the discipline as a whole especially in light of today's myriad distractions and variety of media. If journalism and communications students experience benefits similar to the other disciplines (not to mention the benefits associated with study abroad, in general), participation in study abroad would be invaluable in meeting Gerodimos' goals.

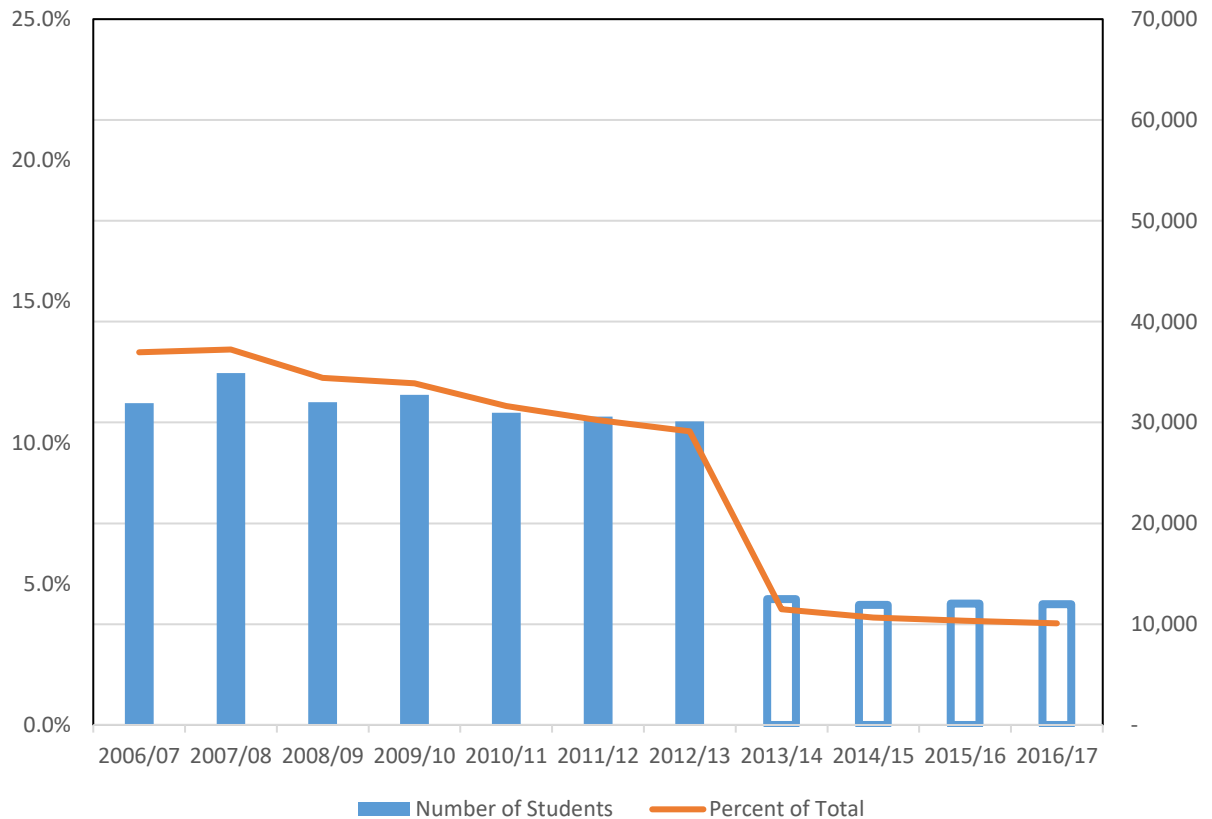
### *Humanities*

The IIE defines humanities as foreign languages and literature, English language and literature, theology and religious vocations, and philosophy. Data for aspects of humanities associated with foreign cultures is collected into its own category (IIE, 2018). The rise of cultural studies in American universities have resulted in changes to program content and offerings – especially literature programs – that have historically been narrowly focused on Western themes and perspectives. Besides becoming more interdisciplinary, many humanities programs have expanded to include a broad range of cultural perspectives (Fezzey, Fujieda, Goerdt, Kahler, & Nikoi, 2017). Efforts within this discipline have not translated into increased study abroad participation by humanities majors. Students have been slowly declining from 2013 to 2017 from just over 4% to 3.6% or from 12,483 to 11,978 students. IIE changed their data collection methods in 2013, but data going back to 2006-2007 shows continued decline in participation even if it is not directly comparable to post-2013 data. Actual students studying abroad declined by almost 2,000 over than time period from 31,916 in 2006/07 to 30,098 in 2016/17 (IIE, 2018).



Figure 14

*Participation Rates and Student Numbers for Humanities Majors Studying Abroad from 2006/07 to 2016/17.*



*Note:* Data from 2013/14 to 2016/17 does not contain international studies majors which were considered part of humanities by the IIE until 2013.

Global seminars, which are short-term study abroad programs led by home institution faculty that also have home campus component are common within the humanities discipline and are not restricted to historical and anthropological fields. They provide an exceptional opportunity for hands-on experience in those disciplines. These short courses share many of the same benefits common to longer study abroad programs (Herbst, 2011). Arguably, experiential learning instruction both during study abroad and at home-campuses has altered theological programs. Over the preceding decade, Seigler (2015) wrote that religious studies programs have taken a “cultural turn” which involves viewing content more through historical and cultural

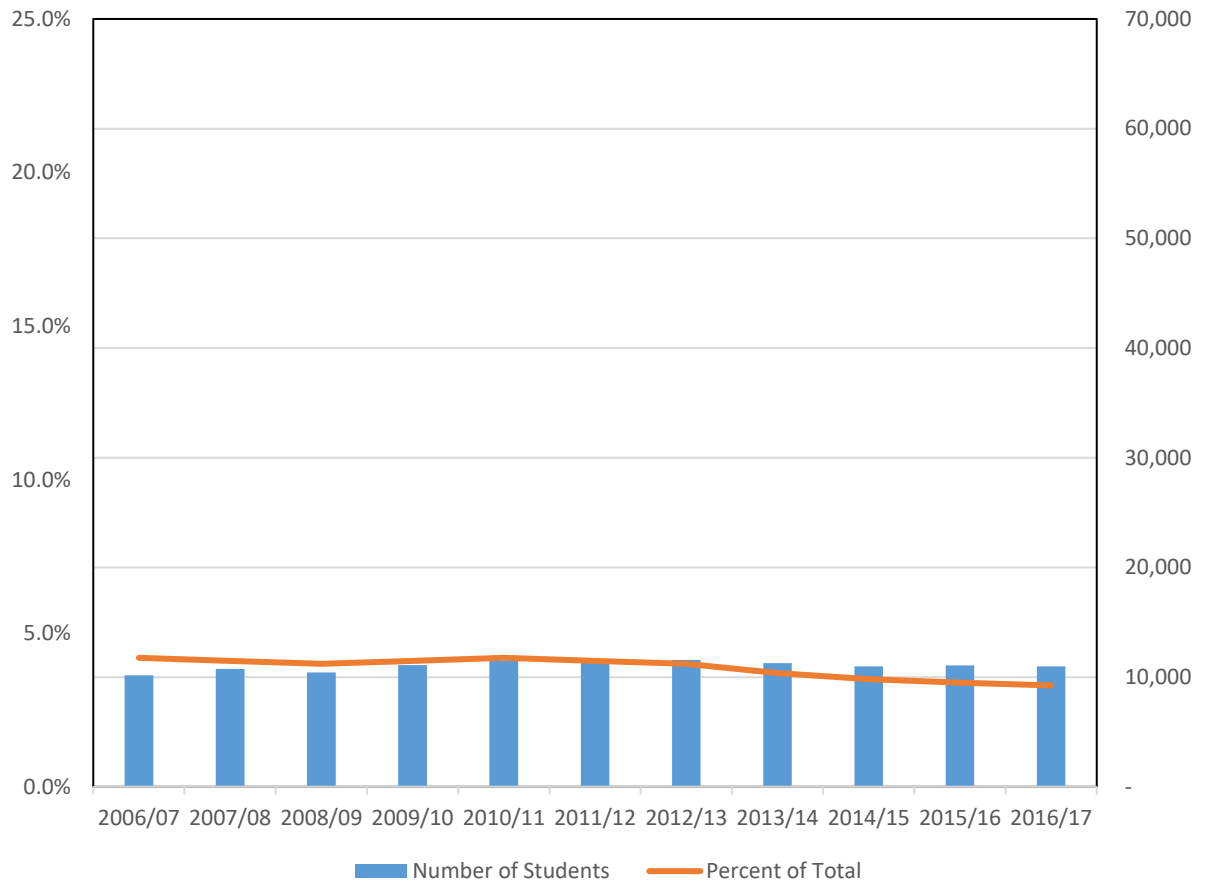
lenses. During a year-long, theological study abroad program, Mitchell (2015) describes benefits from the experiential learning common to study abroad programs. Benefits to humanities students that study abroad include: cultural awareness and knowledge (Knight & Madden, 2010, Herbst, 2011, Mitchell, 2015, Kaowiwattanakul, 2016), cultural understanding (Kaowiwattanakul, 2016), self-awareness (Mitchell, 2015, Seigler, 2015), awareness of global issues (Knight & Madden, 2010), critical thinking (Herbst, 2011), and professional skills (Kaowiwattanakul, 2016).

### *Education*

Myers (1997) states that teachers bring personal background experiences with them into their classrooms and, with the study abroad preservice teachers that took part in his study, the teachers' classrooms would become more enlightened and enriched through richer, more diverse background experiences. Since American classrooms continue to increase in diversity, study abroad should become an increasingly integral part of teacher preparation programs. Teacher education is included in the definition of this discipline by the IIE, but educational administration and student counseling fields are as well. Participation rates for education majors hovered around 4% until 2012/13 when it began to gradually decline to 3.3% in 2016/17. Actual numbers of education majors studying abroad has remained relatively steady with only 1,500 students separating the greatest and least participation years (10,155 students in 2007/07 and 11,617 students in 2011/12) (IIE, 2018).

Figure 15

*Participation Rates and Student Numbers for Education Majors Studying Abroad from 2006/07 to 2016/17.*



International experiences for pre-service teachers and education majors are diverse and touch on many of the other disciplines mentioned in this study. One of the most important types of education majors that participate in study abroad are the aspiring foreign language teachers. Tedick (2009) states problems arise within foreign language and ESL teacher preparation due to a divide between foreign language and education departments’ philosophies and pedagogies. Besides the observed benefits to education majors mentioned below, participation in study abroad – more specifically immersion within and participation with native

language speakers – improves language mastery in as little as one semester (Tedick, 2009, Tulgar, 2018). There are consistent benefits to students in the education discipline from traveling abroad in a formal setting. These include increased intercultural competence (Phillion, Malewshi, Sharma, Wang, 2009, Matthews & Lawley, 2011, Wong, 2016, Kasmer & Billings, 2017, Tulgar, 2018, Byker, 2019), cultural awareness (Myers, 1997, Phillion, Malewshi, Sharma, Wang, 2009, Tulgar, 2018, Byker, 2019), professional skills (Myers, 1997, Tulgar, 2018), teacher confidence (Wong, 2016, Tulgar, 2018), and personal and professional satisfaction (Matthews & Lawley, 2011). In a six-year study of pre-service teachers studying abroad in Honduras, Phillion, et al. (2009) analyzed achievement of cross-cultural goals finding study abroad aided in intercultural awareness and skills; however, they also found that the primarily white, female pre-service teachers were better prepared for the ethnic, racial, socioeconomic, and gender diversity within United States' classrooms.

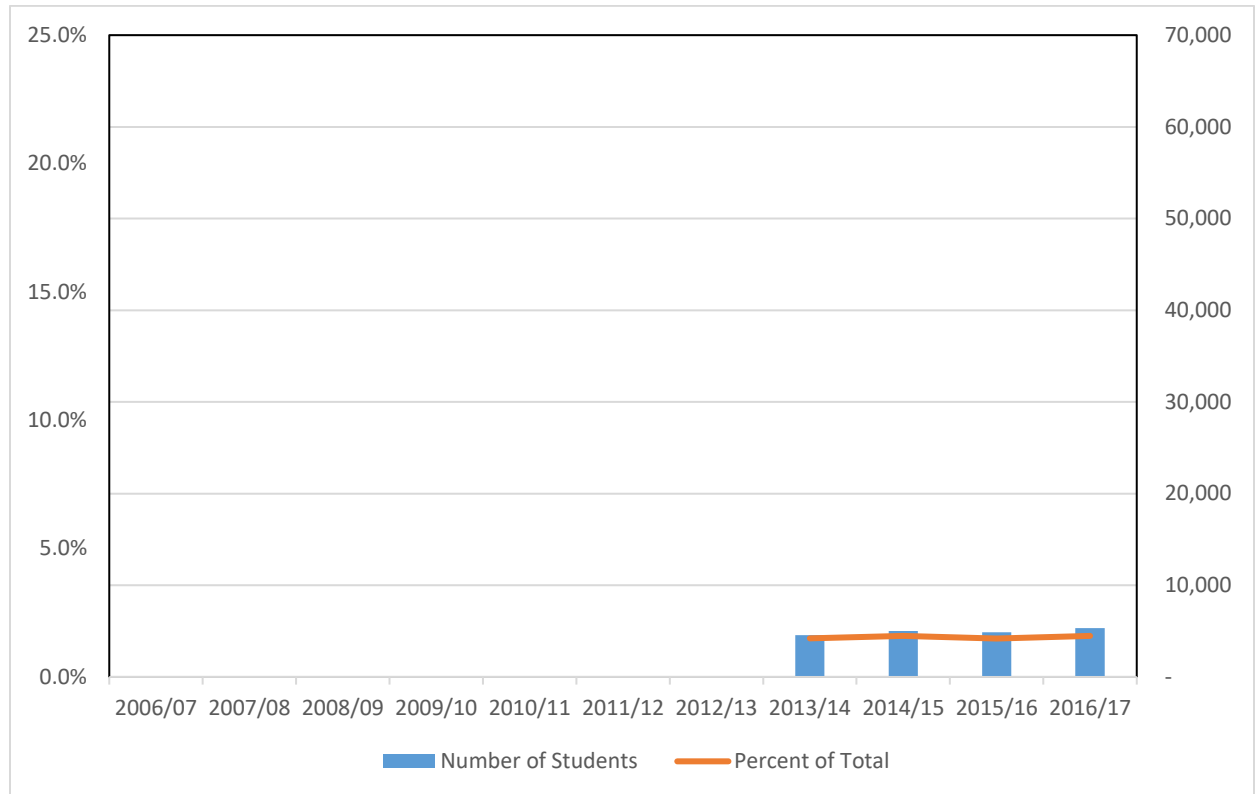
#### *Legal Studies and Law Enforcement*

Similar to communication and journalism majors, the IIE did not record legal studies and law enforcement data as their own category until 2013/14. Since they were provided their own category, legal studies and law enforcement majors have comprised the smallest study abroad discipline. In the four years contained in the IIE *Open Doors records* (2017), legal studies makes up between 1.5% (4,567) and 1.6% (5,324) of study abroad students. The greatest number of participants on record occurred during the 2016/17 school year.

Figure 16

*Participation Rates and Student Numbers for Legal Studies and Law Enforcement Majors*

*Studying Abroad from 2013/14 to 2016/17.*



*Note:* The IIE did not start recording information on this category until 2013; so, data prior to that date is unavailable or distributed across other discipline categories.

Analyses that deal directly with study abroad programs and international student experiences with legal studies and business law are relatively rare within the literature even though global experiences on universities continues to grow and diversify (Dove & Bryant, 2016). Dove and Bryant (2016) point out that, unlike other disciplines, legal courses pose unique challenges to international students, but the diversity within those classrooms offer “invaluable opportunities” for global awareness instruction. The need for cultural competency and global awareness is great for practicing lawyers in the United States as the clientele they serve get increasing diverse (Ward & Miller, 2010). In light of these demands, study abroad participation

rates for legal studies majors remains tempered by lukewarm interest and lack of experience and knowledge from legal studies faculty (O'Sullivan & McNamara, 2015).

Law schools and governments have been actively engaged in developing legal clinical programs within their home countries and abroad. The increased capacity to work across cultures or internationally is one common benefit gained through study abroad; however, one of the biggest hurdles to successfully working across cultures and political boundaries is navigating the myriad legal and regulatory frameworks (O'Sullivan & McNamara, 2015). Law school and large law firms have been "internationalizing" to meet this demand. Clinical legal educational exchange between countries has grown and matured into a vital aspect of law education. Study abroad law experiences can promote cultural sensitivity, self-reflection, confidence, critical thinking (Berman, 2014), and a greater understanding of international law (O'Sullivan & McNamara, 2015)

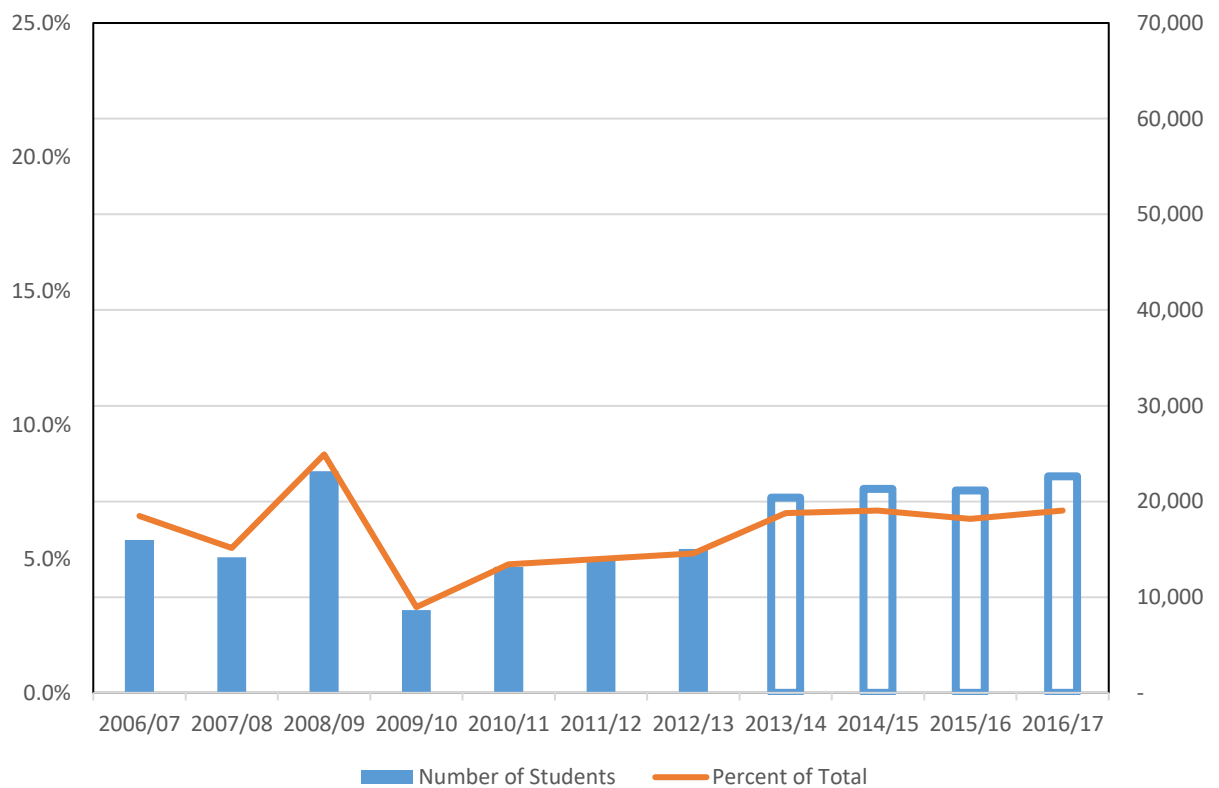
#### *Interdisciplinary & Other Fields of Study*

Fields of study that do not fit into the IIE's other discipline categories are grouped into "other fields of study." According to the IIE's glossary of terms and definitions, this category includes: liberal arts and sciences and general studies; communication, journalism, and related programs (prior to 2013/14); legal professions and studies (prior to 2013/14); multi/interdisciplinary studies; family and consumer sciences/human sciences/communication technologies/technicians and support services; library sciences; and residency programs. With disciplines being pulled out from this category in 2013/14, the numbers are a bit erratic with no participation rate higher than 8.9% (23,169 students) in 2008/09 and no lower than 3.2% (8,659 students) just one year later. Since 2013/14, this category's participation rates have remained

steady (from 6.5% to 6.8%), but the actual number of students continues to climb from 20,399 in 2013/14 to 22,625 in 2016/17 (IIE, 2018).

Figure 17

*Participation Rates and Student Numbers for Other Fields of Study Majors Studying Abroad from 2006/07 to 2016/17.*



*Note:* Several disciplines within this category were given their own categories by IIE in 2013/14 and are not part of the data from then on.

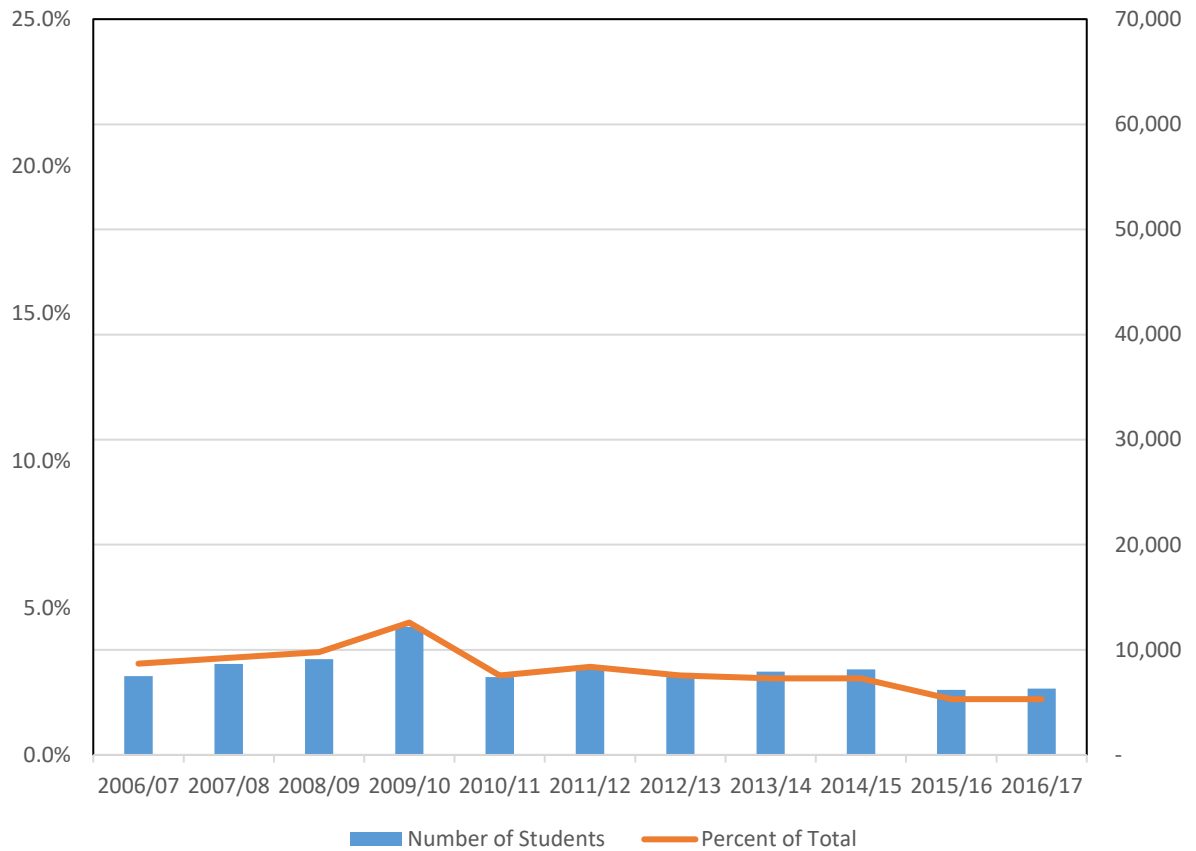
Cai and Sankaran (2015) stated that some of the most meaningful study abroad programs promoted critical thinking through an interdisciplinary curricula with multicultural perspectives. Perhaps, a majority of study abroad programs could best be described as interdisciplinary in focus drawing on content and experiences from multiple perspectives. One such international program combines art with anatomy for medical school students. Students

who participated in this short program increased art and anatomy skills, but also improved their ability to “work effectively with students across different disciplines and different cultures” (Speed, Kleiner, and Macaulay, 2015). The Interdisciplinary Ghana Study Abroad Program at UGA draws upon students, faculty, and content from a wide range of disciplines. Using pre- and posttest methodology, participating students showed gains in cultural and global awareness (Smith & Yang, 2017). Another interdisciplinary program, entitled “Nature’s Business” through Rider University, exposed arts and science majors and business undergraduate and graduate students to a study abroad program incorporating global studies, corporate social responsibility, environmental law, and science topics including geology and biodiversity. Participants response suggest that – aside from hotel and food complaints – the program was successful at improving cultural awareness, intercultural skills, self-confidence, and awareness of the interdisciplinary relationship between disciplines – in this case, business and science (Denbo, 2008).



Figure 18

*Participation Rates and Student Numbers for Undeclared Majors Studying Abroad from 2006/07 to 2016/17.*



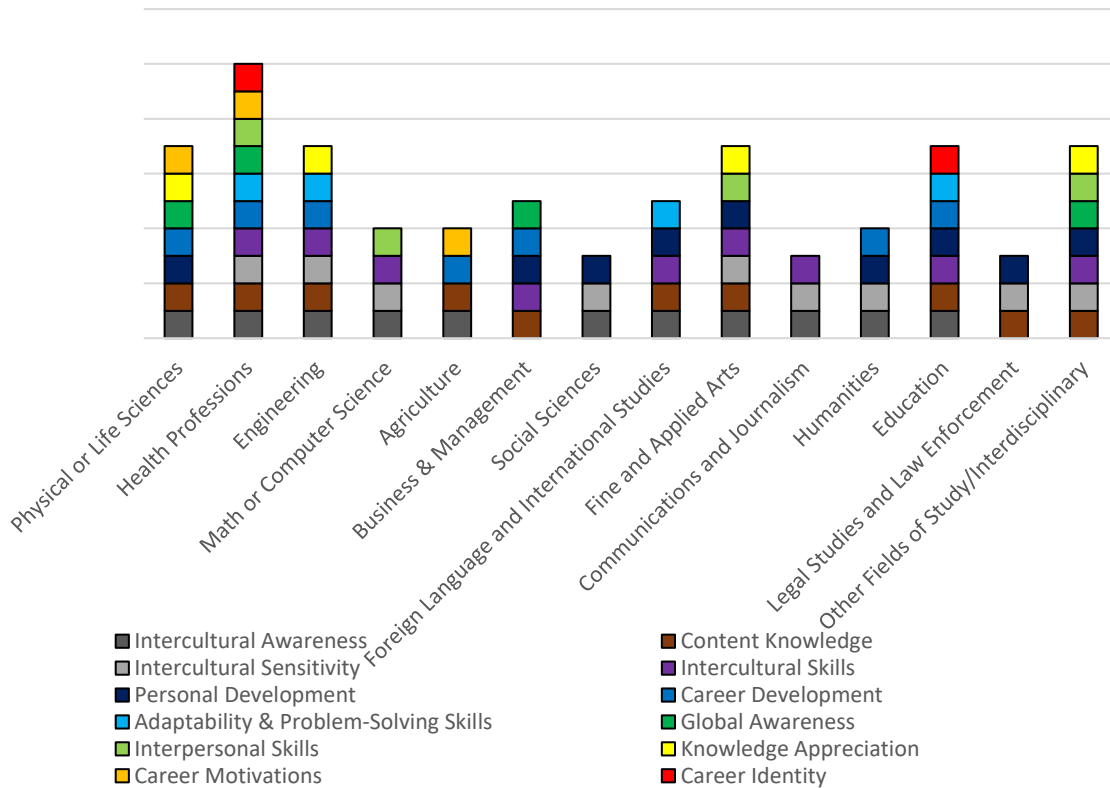
The last category the IIE collects study abroad data on are “undeclared” students. These students make up a small percentage of the study abroad picture; however, their numbers are more than some disciplines. Undeclared participation and actual student count reached a high mark of 4.5% (12,177 students) in 2009/10 and the rate has been steadily decreasing since to just 1.9% (6,322 students) in 2016/17. The prior year had 140 fewer students and was the lowest of the years in the database (IIE, 2018).

*Summary of Documented Study Abroad Benefits*

Figure 19, below, summarized all of the explicitly stated benefits found within the literature that can be ascribed to specific disciplines at least once. Benefits could have been to participating students of a specific major or from programs focused on one particular content. Evidence is merely of positive identification and not identifying inability. The graph does not state, for example, that feelings of career identity for physical or life science majors will not be increased by studying abroad, merely that there is no evidence within the literature currently supporting it.

Figure 19

*Summary of Documented Benefits of Studying Abroad by Academic Discipline*



There are twelve benefits found in the literature discussed earlier in chapter 2 displayed in Figure 19. The most commonly documented benefit was intercultural awareness, which Baker (2011) defines as the understanding of the role culture plays in communication and the ability to practice cross-cultural communication. Intercultural awareness (dark gray) was documented in 11 out of the 14 disciplines/categories with noted exceptions: business & management, legal studies & law enforcement, and other fields of study. Ten-out-of-fourteen disciplines showed gains in content knowledge (brown) which is defined by students increasing mastery of content tied to their major.

The next three benefits were all documented in 9 of the 14 disciplines. Intercultural sensitivity (light gray) is defined as “the ability to develop a positive emotion towards understanding and appreciating cultural differences” (Zhao, 2018). Physical or life science, agriculture, business & management, foreign language & international studies, and education all lacked documentation for intercultural sensitivity. Intercultural skills (purple) is defined according to Mak and Kennedy’s (2012) definition: the knowledge, skills, and ability to successfully act in the culturally and ethnically diverse global marketplace. The 5 disciplines without documentation of this benefit are: physical or life science, agriculture, social sciences, humanities, and legal studies & law enforcement. Personal development (dark blue) corresponds to any mention of improved self-esteem, self-confidence, critical thinking skills, or anything else where the benefits are entirely within the participating student. The 5 disciplines that did not document gains in personal development are: health professions, engineering, math or computer science, agriculture, and communications & journalism. It should be noted that 4-out-of-5 of the STEM fields did not show gains in personal development.

Career development (blue) was documented in half of the disciplines. Career development corresponds to any gains where students either acquired skills or made personal

connections that are believed to be a professional advantage in the marketplace. There are many factors that affect a candidates' attractiveness to employers – many of those factors are included in other benefit categories here. For example, mastery of a foreign language is a positive for someone aspiring to teach that foreign language. Benefits such as this would most likely have been recorded by researchers as “increased content knowledge” with the assumption that it is also marketable skill. Studying abroad has not been shown to provide marketable benefits to math or computer science majors, social science majors, foreign language and international studies majors, fine and applied art majors, communication & journalism majors, legal studies & law enforcement majors, or “other fields of study”.

The remaining six categories are documented in the minority of disciplines. Adaptability & problem-solving skills (light blue) refers to a student's newfound ability to successfully operate in and navigate through uncommon situations and novel scenarios. The four disciplines documenting this benefit are all fields of study where the student works closely with host country residents – even engineering which Downey, et al. (2006) and Kulturel-Konak & Konak (2016) both describe as commonly consisting of *in situ* projects working with the local community. The other three disciplines are health professions, foreign language & international studies, and education. Global awareness – as defined by Chieffo & Griffiths (2004) – is colored green and is documented in four disciplines: physical or life sciences, health professions, business & management, and “other fields of study.” Interpersonal skills (light green), as defined by Skinner, Hyde, McPherson, and Simpson (2016), revolve around effective communication, empathy, and active listening with a high degree of cultural knowledge and professionalism. Improved interpersonal skills are documented in health professions, math or computer science, fine and applied arts, and “other fields of study.” The last benefit documented in four different disciplines was knowledge appreciation (yellow) which encompasses lifelong learning, stated

appreciation for content material outside of the student's field of study, and remarks of increased regard for interdisciplinary programs and/or relationships. Physical or life sciences, engineering, fine & applied arts, and "other fields of study" are all documented for increasing participants' appreciation for information outside of their chosen content area.

Career motivations (orange) and career identity (red) are the benefits least documented in the literature. Outside of career development which is literally the acquiring of new, potentially marketable skills, these two categories are internal manifestations of drive and character that a person places on their profession. Increased career motivations were recorded in the literature when a student returning from a study abroad program felt an increased desire or confidence to be part of their future career. This was observed in physical or life sciences, health professions, and agriculture. Sealey & Hathorn (2010), Smith & Curry(2011), and Kelleher, Fitzgerald, & Hegarty (2016) all mention that nurses that returned from an international nursing program felt more strongly about their choice to pursue nursing as a career. Ngoma & Dithan Ntale (2016) state that career identity is "the way people define themselves in the career context" including knowledge of desired career outcomes and ability to achieve career goals. Participation in study abroad aids in increasing career identity for two disciplines: health professions and education.

Figure 19 does allow for some basic comparisons between different disciplines and observed benefits to participating students, but it is not possible given the information collected in the chapter to determine a ranking of disciplines (whether program focus, participating students' majors, or both) with regard to acquisition of any specific benefit – especially, global awareness, the focus of this study. Some disciplines, like health professions, appear to excel at conveying a wide range of benefits to student studying abroad while other, like social sciences, appear to lack behind. It is possible that research into benefits specific to social science

programs and/or majors is lacking; however, it is also possible that study abroad program designers and faculty in the health professions field are doing something to convey benefits to students at a higher rate than other disciplines. This study seeks to address this underlying question by comparing rates of global awareness acquisition between disciplines to better explore this potential gap in studying abroad.

Academic Field Influence on Acquisition of Global Awareness in  
Undergraduate Study Abroad Students  
Chapter 3: Methodology

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### *Introduction*

Of the myriad benefits of study abroad participation that could be quantitatively studied (see *Chapter 2*), global awareness, in many ways, is ideal. First-and-foremost, the focus of global awareness is broad enough to make comparisons between academically disciplines relevant and the conclusions applicable to study abroad in general rather than specific aspects of international education. If this study examined increased mastery of discipline specific concepts ascribed to studying abroad, generalizations regarding the benefits of studying abroad would be less likely to have strong support due to the diversity of academic disciplines and variety of study abroad experiences. By focusing on global awareness, this study was able to keep the analytical perspective wide and compare student scores regardless of program focus, academic major of study, or whether or not survey respondents entered either.

Secondly, in many ways global awareness is the first step towards the creation of more active and concerned global citizens; however, it does not encompass the drive for social justice and desire to act for the betterment of the world community – using Bellamy & Weinberg's (2006) definition of global citizen. Referring back to Chieffo & Griffiths' (2004) definition of global awareness, this study gauged undergraduate students' knowledge of global and international issues, relations between nations and cultures, and skills to navigate within a global arena. Developing global citizens may be a noble endeavor that many study abroad programs strive towards and this study may be helpful for global citizenship instruction, but measuring global citizenship is beyond the scope of this study.

Lastly, by relying on Chieffo & Griffiths' global awareness survey for this study, more data was collected than through other means of research methodology. The global awareness survey consisted of 30 questions. One-third of the survey consisted of demographic questions of the students and descriptive questions of study abroad experiences. The remaining two-thirds



were Likert scale questions asking participants to rank their opinions and frequencies on various prompts. All-in-all, this short survey had more potential to illicit participation from a wide range of people being that it would require minimal time to complete and they would only have to take the survey once. Unlike qualitative methodology involving personal narratives or pre/posttest methodology which requires more commitment from both the researcher and the student participants, this survey could be easily disseminated through many digital media and the resulting data could be easily processed. By maximizing the ease of participation, chances of collecting the broadest data pool possible – and therefore the most meaningful – was also maximized.

### *Research Design*

This study followed the initial procedure laid out in Chieffo & Griffiths (2004) by relying on the same survey and similar statistical analyses. Since publication, Chieffo & Griffiths' *Large-Scale Assessment of Student Attitudes after a Short-Term Study Abroad Program* has been cited over 380 times. Due to differing research questions from Chieffo and Griffiths, the survey was modified slightly to include additional demographic information from participants regarding the academic focus of their study abroad program and their major. The list of academic disciplines and majors is taken from the Institute of International Education's *Open Doors Report on International Educational Exchange* (2018) to better align the results with the current reservoir of study abroad data.

A 30 questions survey assessing global awareness was distributed to U.S. university students and alumni through faculty and staff from three universities in the Midwestern United States and contacts at study abroad organizations not directly affiliated with a domestic or international university. In addition, the survey was distributed through social media netting

participants from other domestic and international universities, as well as other study abroad organization. Due to the nature of the survey distribution methodology, survey participants could have studied abroad or remained on campus – both were included in the analyses. International students were also not excluded from participating in this study. The survey was distributed at the end of the spring semester (May 2019) and over the following summer into the fall. Data was collected and processed until the end of October 2019.

According to Cheiffo & Griffiths (2004), the global awareness survey assesses four components of global awareness: (1) intercultural awareness, (2) personal growth and development, (3) awareness of global interdependence, and (4) functional knowledge of world geography and language. Their survey instrument was inspired by earlier work done by the University of Georgia's Office of International Education and their work investigating study abroad outcomes. This survey tool is not designed to measure actual learning outcomes from the study abroad experience, merely the level of global awareness of the respondents.

The study provided no compensation for participation; however, students were free to not participate and their answers were entirely self-reported. For the sake of privacy, surveys were distributed by university study abroad offices, staff of study abroad organizations, or anonymously through social media. Surveys that had more than 1 missing Likert scale questions response and/or significantly missing demographic data was removed from the data pool and was not included in this study.

The focus of the data analysis was comparing global awareness scores between academic majors, but global awareness scores were compared to the other demographic factors, as well. In addition, comparisons were made between demographic factors (academic majors included) and each of the four components of global awareness. Comparisons between the different academic foci of the study abroad programs were also subjected to statistical

analyses. For specific information on demographic factors and which statistical test were employed, see below.

### *Research Questions and Hypotheses*

There are two research questions of this study that investigate potential relationships between academic disciplines and global awareness acquisition:

- 1) Are there any statistically significant relationships between academic disciplinary focus of study abroad programs and acquisition of global awareness?
- 2) Are there any statistically significant relationships between specific student academic majors and acquisition of global awareness?

### *Population and Sample*

The surveys were made available online for ease of distribution through study abroad offices at several Midwestern universities and international educational organizations not affiliated with participating universities and through social media. Students that remained on home campuses that never participated in study abroad were also allowed to take the survey forming a baseline global awareness score for each academic major.

The population of this study consisted of university-aged students (18 years old and older) and graduates with no other restrictions based upon academic major, standing, socioeconomic status, race or ethnicity, or geography. International students at American campuses and on international campuses were not purposefully sought out; however, their participation within the survey was not restricted or discarded. International student responses were included in the analyses and discussion.

For a detailed analysis of study participant demographics, please see Chapter 4.

### *Instrumentation*

This study followed the procedure laid out by Cheiffo & Griffiths (2004) with only slight modifications to their initial survey. One free-response question was omitted from the original survey and demographic questions were added in order to collect data on the academic focus of their study abroad program and the participants' academic majors. As alluded to in Chapter 2 of this manuscript, options for the academic disciplines were taken from the Institute of International Education's *Open Doors Report on International Education* (2018), a repository of information regarding study abroad.

Of the 30 survey questions – which can be found in Appendix A, only 20 deal with assessing global awareness and the other questions collecting demographic and programmatic data. All 20 global awareness questions were answered on a Likert scale. The first 10 focus on self-assessed agreement or disagreement with a statement of comfort level or skill with Likert rankings of “strongly disagree” to “strongly agree.” The second set of ten focused on frequency of performing a given action. Likert responses to the second set of questions range from “never” to “a lot (more than 10 times a week)”.

All questions collecting demographic data and descriptions of the study abroad program are multiple-choice. Surveys collected self-reported demographic information on gender identity, university grade level (including “other” encompassing graduate, part-time, and community college students), academic major (corresponding to IIE's *Open Doors* categories), GPA, race/ethnic identity, and home country (using the 195 countries and entities recognized by the United Nations).

Survey questions that collected information about the study abroad program asked students to self-report the academic focus of their study abroad trip (using IIE *Open Doors* categories with “undeclared” replaced with “cross-disciplinary or multidisciplinary”), location of

study abroad program (one of the 195 United Nations recognized entities, “multiple countries within” one of the regions of the world, “worldwide,” and “other”), and duration of study abroad (using IIE *Open Doors* categories). Students that have not participated in study abroad skipped over these questions to the final question assessing prior international travel experience – whether study abroad or not. This final question was multiple-choice and the same as Chieffo & Griffiths 2004 survey.

Intercultural awareness sought to measure the participant’s cognizance of similarities and differences between their own culture and the culture of their study abroad country. It was assessed using items 7, 11, 12, 13, 14, 16, 18, and 19 on the survey. Personal growth and development which measures maturity and openness to new experience relied on responses to items 3, 7, 8, 10, and 13. Items 1, 3, 5, 8, 9, 12, 15, 17, and 19 measured functional knowledge reflects the individual’s passion for learning new travel information and skills. Lastly, global interdependence addresses a student’s awareness of the intertwining relationships of national and international systems. Items 2, 4, 6, and 19 assessed it.

Each qualified survey respondent was given a global awareness score which consisted of the sum of each of the four global awareness measures. Each measure, in turn, was calculated by averaging the coded responses (0 to 4) for the corresponding questions. Therefore, each individual measure could have a score between 0 and 4 and the overall global awareness score could range from 0 to 12.

### *Data Collection*

Online survey links surveys were distributed through study abroad offices & faculty, study abroad organization contacts, and participating home campus faculty members from the beginning of May 2019 until the end of October 2019. Instructions provided to participating

faculty and staff from all universities and organizations was they should distribute survey links surveys without any concerns for student and alumni demographic factors. Survey links were made available through social media during that same period.

### *Data Analysis*

Detailed descriptions and results of the statistical analyses employed in this study are found in the following chapter. What follows in this section is a brief explanation and justification of some aspects of the data analysis of this study – in particular, why some demographic comparisons were made and how some of the variables were collated.

The statistical analyses can be generally broken into two sections: (1) examinations of global awareness trends across a variety of demographic variables and (2) a comparison of global awareness and four the four characteristics' scores between academic majors for participants that have studied abroad.

### *Demographic Analysis*

The first analyses compare survey scores and demographic factors for all survey respondents and for only those that studied abroad. Other statistical analyses were completed looking at relationships between different demographic factor levels. The intention of these tests were to show statistically significantly different relationships within the study group. Referring back to Chapter 2, there is ample evidence within the literature to suggest that, on average, students that study abroad would have higher global awareness scores than those that did not (Chieffo & Griffiths, 2004; Strombeger, 2010; Engberg, 2013; Kurt, Olitsky, & Geis, 2013) and there is evidence not included in this study corresponding to relationships of study abroad outcomes for the other demographic factors tested.

Included in this first set of analyses was a comparison of international students' scores with domestic students' scores. For the sake of simplicity, survey participants are asked to self-report "home country" and "study abroad location(s)". Responses where "home country" is reported as "United States of America" will be considered "domestic" and all other responses will be grouped "international". Due to the limitations of the survey, it was possible that some students from other countries could have spent a considerable amount of time within the United States – and the country's schools, but are recorded as "international" due to their survey responses.

Gender, racial/ethnic identity, grade level, and GPA are all commonly included variables in study abroad research. These were included in this study not to compare with Chieffo & Griffiths 2004 study, but to include terminology commonly employed by universities and study abroad data from the Institute of International Education. In this fashion, the degree to which study results can be applied to the broader study abroad community can be determined.

Demographic variables that were analyzed for only the study abroad survey respondents correspond to deeper aspects of the study abroad experience. The first – duration of study abroad – was the main focus of Chieffo & Griffiths' 2004 study. There is scant research done into the effects of participating in multi-country study abroad programs. This study would only look into potential differences in the resulting global awareness acquisition for students participating in single versus multi-country study abroad experiences. Students had the opportunity to report studying in multiple countries within specific regions or even worldwide. In this way, this study brings some additional clarity to a subject with ample opportunity for exploration.

The final two demographic variables that are part of the first set of statistical analyses are estimates of cultural and language differences between home and host countries. Unlike

some of the other variables discussed above, analyzing cultural differences between countries is more difficult and also comes with caveats of generalizing cultural experiences and assumptions of similar study abroad and life experiences to at least a certain degree. Due to the limitations of the short survey tool employed, assumptions were made for these two variables. Where it is not necessarily true that a student from the United States studying abroad in Canada will have less culture shock than another student from the United States studying abroad in China, databases pertaining to the “exoticness” of these two experiences provides general comparative data useful for an “average” study abroad experience. The two variables that address “exoticness” compare the culture of countries and the language relatedness of the two countries.

Hofstede’s cultural dimensions model has been used widely to make “quantified comparisons of cultures of different nations” and is considered “the benchmark for discussions of national cultures and values” (Cheah, Diong, & Yee, 2018). Although there is criticism of Hofstede’s work and, since its inception in 1980, has fallen out of favor with some, it is still a useful tool for making broad comparisons between cultures. In short, there are six cultural dimensions within Hofstede’s model: (1) uncertainty avoidance – a society’s tolerance of the unpredictable, (2) power distance – a society’s acceptance of unequal distribution of power, (3) individualism – the extent to which the interests of the individual prevail over the interests of the group, (4) masculinity – the relative strength of masculine vs. feminine values in a society, (5) long-term orientation – a measure of balance between links with the past and dealing with the challenges of the present and future, and (6) indulgence – a measure of a society’s willingness to enjoy life and have fun (Eckhardt, 2002). For the sake of this study, each dimension was not dealt with individually; however, a composite cultural “exoticness” score was generated by summing the differences for each score available for each country. For survey responses of study abroad locations in multiple countries, averages of all countries in the



selected regions was used. Not all dimensions are recorded for all countries in the Hofstede index. For some countries, some dimensions were missing and, for other countries, there is no data at all.

In order to determine the “exoticness” of host country languages, a comparative language database from eLinguistics.net was employed that was created by using the same software techniques that show genetic relatedness for groups of living organisms (Beaufils, 2015). The database itself represents an evolutionary tree of language based on lexical comparison of words partially corresponding to the Dolgopolsky and Swadesh-Yakhontov lists. The relatedness scores, which ranks from 0 (most related) to 100 (least related) are meant to reflect the general experiences between the language experiences of study abroad students. After all, a student from the United States studying abroad in Canada would most likely have an easier time interfacing with the language there than a similar student would in China. The values are recorded as between 1 and 30: highly related; between 30 and 50: related; between 50 and 70: remotely related; between 70 and 78: very remotely related; and between 78 and 100: no recognizable relationship.

To create a language “exoticness” value for this study, official languages of the host and home countries were compared using the database. In countries with multiple official languages, the most commonly spoken language was used so that each country had only required one calculation. There were some cases where the official language was not found within this database; therefore, those calculations were not included in the analyses. For survey respondents that stated their study abroad program consisted of multiple countries in a region, averages of all available country information corresponding to that region was used in analyses. For more detail concerning methodology of language relatedness used in this study, see the website [eLinguistics.net/Compare\\_Languages.aspx](http://eLinguistics.net/Compare_Languages.aspx).

*Academic Disciplinary Analysis*

According to Cheiffo & Griffiths' 2004 definition of global awareness, there are four sub-characteristics: intercultural awareness, personal growth and development, awareness of global interdependence; and functional knowledge of world geography and language. Scores for each of the four components were added together to create an overall global awareness score. Using SAS, two N-Way ANOVAs were completed using demographic factors for all participants and using all of the previous demographic factors plus additional study abroad program descriptive factors. A third ANOVA compared global awareness scores of study abroad student majors with matching program focuses with student scores with differing program foci. Additional ANOVAs compared similar factors with potential differences for each of the four global awareness components.

The academic majors and program discipline focuses were self-reported by the survey respondents. The major and discipline foci correspond with information collected by the Institute of International Education. All of the academic major options in the IIE survey were included in this study's survey. The survey questions regarding academic discipline focus of each study abroad program removed the "undeclared" option and replaced it with a "cross-disciplinary or multidisciplinary" choice. Besides these alterations, the discipline foci in the survey questions remain the same as the IIE.

*Conclusion*

The survey employed in this study was modified from a earlier 2004 study exploring global awareness acquisition for short-term study abroad students. The intention of that previous study was to compare short-term programs with semester-long study abroad experiences. Since this study used similar methodology to the 2004 study with the only

deviations being the addition of some demographic and study abroad program descriptive questions to the survey and a modified statistical analyses that better suits the research questions of this study.

Chapter 4 will present the results of the survey including the demographics of the study participants, both the study abroad and non-study abroad populations. It will also present the mean scores and standard deviations for global awareness and the four sub-characteristics. Within that chapter, all of the statistical analyses exploring the different relationships between student majors and program focus disciplines will also be discussed.

Academic Field Influence on Acquisition of Global Awareness in  
Undergraduate Study Abroad Students  
Chapter 4: Results

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*Order of Chapter:*

This chapter is divided into several sections presenting the results of the global awareness survey. The survey's main focus was to determine the effect – if any – of academic disciplines on global awareness acquisition for students that participate in study abroad. The hope of this study is to explore the role of herby unexplored, inherent factors of different academic disciplines on this one study abroad program outcome. This study sheds some light on this largely unexplored topic. Analyses of disciplines and their relationships to other acquisition factors could improve quality and effectiveness of study abroad regardless of the instructional focus by highlighting disciplines with better outcomes; however, those relationships are not part of this investigation due to the relative ignorance of potential relationships between the disciplines and global awareness. Disciplines where students' global awareness scores were statistically significantly better than others would warrant further exploration to discover what aspects of those programs could be responsible. If, in fact, one or multiple academic disciplines are not statistically significantly different in terms of imparting global awareness, then this study would still support the idea that all students – regardless of major – would benefit equally from international education opportunities, not just students from one major or another or those participating in a program with a singular disciplinary focus.

Prior to any of the findings of this study, a summary of data and analyses from the Cheiffo & Griffiths 2004 study is presented since that study forms the inspiration for this study. The second section of this chapter will describe the statistical tests employed.

The next section will relate various demographic and descriptive statistics of this study's population. This will be followed by statistical analyses sections. The first statistical analysis section will compare demographic aspects influence between survey respondents that studied abroad versus those that have not. The second analysis section will examine the relationships between global awareness scores and academic disciplines of both study abroad student majors and study abroad program foci. This section will also examine potential relationships between disciplines and each of the four components of global awareness as defined by Chieffo and Griffiths (2004). The last section of this chapter will be a brief summary of findings; however, a robust and detailed discussion of consequences and significance of the findings is found in chapter 5.

#### *Review of Chieffo & Griffiths' 2004 Global Awareness Study*

Titled *Large-Scale Assessment of Student Attitudes after a Short-Term Study Abroad Program*, Chieffo & Griffiths "embarked on [the University of Delaware]'s first-ever study abroad assessment initiative" in order to assess the impact of short-term study abroad. Surveying over 2,300 UD students over the span of two years – 2003 & 2004, the research team's efforts resulted in generalizable information of the short-term study abroad experience on UD's campus. It is important to note that the researchers purposefully excluded measurements of actual learning outcomes and changes in behavior of study abroad participants in order to "generate a large quantity of generalizable data" which could highlight "common outcomes that could then be

assessed for programs sponsored by other institutions, or assessed in more depth for discipline-specific programs". As a result, the research team developed a survey that analyzed global awareness as defined by four previously mentioned components: intercultural awareness, personal growth and development, awareness of global interdependence; and functional knowledge of world geography and language. This current study employs the same design and examines perceived outcomes rather than actual outcomes with the intent of generating a large data set where outcomes can be ascribed to specific disciplines.

A total of 2,336 University of Delaware students participated in this study with 1,509 studying abroad and 827 students enrolled in similar courses on the home campus. There were demographic differences between study abroad versus home campus groups. The study abroad group had more females (71.8% vs. 57.1%) and students with a 3.5 - 4.0 GPA (31.7% vs. 19.6%) when compared to the home campus group. Regarding conclusions from the four components of global awareness, there were statistically significant differences in the responses between study abroad and home campus groups for most of the survey questions associated with intercultural awareness (6-out-of-the-7 questions), personal growth and development (4-of-5), and functional knowledge of world geography and language (8-of-9). Only 1 out of the 4 global interdependence questions was statistically significant.

In conclusion, Cheiffo & Griffiths state "short-term study abroad programs are worthwhile educational endeavors that have significant self-perceived impacts on students' intellectual and personal lives". There were no analyses or conclusions

presented within the study on the other demographic variables that could have affected global awareness acquisition. The authors state several times in their writing that this initial study should lead to more in-depth analyses of subgroups for students. This study responds to that request and aims to build upon not only this work, but the several authors that have worked to understand the variables affecting positive study abroad outcomes.

## ***Results***

### *Descriptive Statistics*

Over the course of this study, 585 completed surveys were collected and incorporated into the analysis. A total of 871 surveys were collected; however, 286 had to be discarded due to lack of completion. All the data contained within the survey was self-reported. Table 3, below, relates the breakdown of demographic variables within each of the main study populations: respondents that studied abroad (SA) versus those that remained on their home campuses (Non-SA). Percentages of each demographic characteristics for each population is presented along with percentages of the total population that studied abroad.



Table 3

*Demographic Characteristics of Study Participants.*

Demographic Variable	Study Abroad		Non-Study Abroad		% of Total That Studied Abroad
	Population	%	Population	%	
Gender					
Female	308	84.8%	152	69.4%	67.0%
Male	55	15.2%	67	30.6%	45.1%
Age					
18-22	207	56.9%	110	49.5%	65.3%
23-26	88	24.2%	57	25.7%	60.7%
27-30	21	5.8%	10	4.5%	67.7%
30+	48	13.2%	45	20.3%	51.6%
Grade Level					
Freshman	2	0.5%	18	8.1%	10.0%
Sophomore	7	1.9%	43	19.4%	14.0%
Junior	44	12.1%	23	10.4%	65.7%
Senior	111	30.5%	26	11.7%	81.0%
College Graduate	193	53.0%	104	46.8%	65.0%
Other	7	1.9%	8	3.6%	46.7%
GPA					
2.0-2.49	1	0.3%	3	1.4%	25.0%
2.5-2.99	20	5.9%	23	10.8%	46.5%
3.0-3.49	96	28.3%	78	36.8%	55.2%
3.5-4	222	65.5%	108	50.9%	67.3%
Race/Ethnic Identity					
Black, Afro-Caribbean, or African American	14	4.2%	7	3.4%	66.7%
East Asian or Asian American	10	3.0%	5	2.4%	66.7%
Latino or Hispanic American	18	5.4%	5	2.4%	78.3%
Middle Eastern, North African, or Arab American	2	0.6%	0	0%	100.0%
Multiracial	16	4.8%	7	3.4%	69.6%
Native American or Alaskan Native	2	0.6%	1	0.5%	66.7%
Non-Hispanic White or Euro-American	259	77.1%	176	84.6%	59.5%
South Asian or Indian American	7	2.1%	3	1.4%	70.0%
Prefer Not to Answer	2	0.6%	1	0.5%	66.7%
Other	6	1.8%	3	1.4%	66.7%
Type of Student					
Domestic	341	90%	208	93.7%	62.1%
International	21	10%	14	6.7%	58.3%
Travel Experience					
Not at All	3	0.8%	78	33%	3.9%
1-2 Times	3	1%	74	33%	63.6%
3-5 Times	112	31%	64	29%	72.5%
6-8 Times	100	28%	38	17%	83.9%
More than 8 Times	52	14%	10	5%	72.1%

Due to survey distribution through third party individuals and social media, respondents were demographically diverse, residents of both the United States and 25 other countries, and included a wide range of study abroad and international travel experience. With only a few exceptions, there was well representation by almost every demographic subpopulation within the collective study abroad participation group. Some of the exceptions may not be all that surprising: the number of underclassmen participating in study abroad being a much smaller percentage compared to other grade level groups; the number of students with lower GPAs (less than 3.0) participating less than their more academically achieving counterparts; and the number of study abroad participants that claimed to have never traveled internationally. All of these exceptions could be rationally explained by saying: younger students may not have had as many opportunities to study abroad or plan on participating later in their academic program; students that are struggling academically may not have the time or resources required to or see the value in participating in study abroad; and the potential correlation between international travel experience and desire for studying abroad.

One surprising exception is the ratio of male participants that studied abroad being less than half of the total number of male respondents to the survey. The percentage of male participants in study abroad differ by almost half compared to IIE's *Open Door* (2019) study abroad database for 2016/17. According to the IIE, 32.7% of all students studying abroad in the 2016-17 school year were male. Only 15.2% of the survey respondents that studied abroad were male. It is important to note that even within the much more exhaustive IIE database, males travelling abroad still make up only half as

many females participating and the male rate continues to fall. Oddly enough, there are 3 students who simultaneously claimed to have studied abroad and to have never travelled internationally. These three respondents make up less than 1% of all survey respondents that studied abroad.

Even though survey participants that identified as white dominate the entire study population (80% of all survey respondents), the white population participated in study abroad less than any other racial/ethnic identity groups (59.5%). Over 60% of all other identity groups participated in study abroad. IIE's *Open Door* (2019) participation rates for racial/ethnic identity in 2016/17 differed from survey respondent rates. For example, white participants for IIE's database were 70.8% of all study abroad students compared to 77.1% for this study; Hispanic or Latino(a) rates were 10.2% compared to 5.4% for this study; and Asian, Native Hawaiian or Other Pacific Islander rates were 8.2% compared to just 3.0%.

Table 4

*Academic Majors of Survey Participants*

Major	Study Abroad		Non-Study Abroad		% of Total That Studied Abroad
	Population	%	Population	%	
AGR	5	1.4%	1	0%	83.3%
BUS	53	15.2%	31	15%	63.1%
COM	28	8.0%	8	4%	77.8%
EDU	20	5.7%	31	15%	39.2%
ENG	7	2.0%	7	3%	50.0%
ART	11	3.2%	7	3%	61.1%
FOR	33	9.5%	2	1%	94.3%
HTH	37	10.6%	39	18%	48.7%
HUM	29	8.3%	8	4%	78.4%
LAW	7	2.0%	5	2%	58.3%
MTH	5	1.4%	6	3%	45.5%
SCI	55	15.8%	43	20%	56.1%
SOC	49	14.1%	16	8%	75.4%
UND	3	0.9%	5	2%	37.5%
OTH	6	1.7%	4	2%	60.0%

Table 4 relates academic disciplines of all responding participants. All majors save three (education, health science, and undeclared) had a greater participation rate for studying abroad. Since study abroad programs were targeted for inclusion in this study, this should not be surprising and should not be understood that the majority of students enrolled in these majors study abroad. Of all of the majors, business & management, health science, and foreign language & international studies majors numbered the most; whereas, undeclared, math or computer science, and agriculture were least represented. Unlike racial/ethnic identity rate comparisons between this study and IIE's *Open Door* database, academic majors much more consistent with each other. Participation rates that were most aligned were legal studies and law enforcement (1.6% IIE versus 2.0% of survey respondents), agriculture (2.5% versus 1.4%), undeclared (1.9% versus 0.9%), and math or computer science (2.8% versus

1.4%). The three majors with the greatest discrepancy were physical or life science (8% versus 15.8%), business & management (20.7% versus 15.2%), and other (6.8% versus 1.7%). The difference in study abroad participation rates for all remaining majors was less than 5%.

Table 5

*Participant Study Abroad Specific Traits*

Study Abroad Variable	Study Abroad	
	Population	%
<b>Program Focus</b>		
AGR	5	1.3%
BUS	42	10.9%
COM	9	2.3%
CRS	34	8.8%
EDU	11	2.8%
ENG	6	1.6%
ART	19	4.9%
FOR	96	24.9%
HTH	33	8.5%
HUM	35	9.1%
LAW	4	1.0%
MTH	2	0.5%
SCI	61	15.8%
SER	2	0.5%
SOC	27	7.0%
<b>Location</b>		
Courses contained within a SINGLE country	261	75.0%
Multiple Countries in Africa	4	1.1%
Multiple Countries in Asia	8	2.3%
Multiple Countries in Europe	41	11.8%
Multiple Countries in Latin America	5	1.4%
Multiple Countries in North America	1	0.3%
Multiple Countries in Oceania/South Pacific	1	0.3%
Multiple Countries Worldwide	21	6.0%
<b>Duration</b>		
Less than 2 Weeks	42	11.6%
Between 2 and 8 Weeks	128	35.5%
Between 8 Weeks and 1 Semester	167	46.3%
More than 1 Semester	24	6.6%

The three factors describing study abroad program experiences are reported in Table 5. The first was the academic focus of the study abroad program itself. The three most common program foci were foreign language & international studies (24.9%), physical or life science (15.8%), and business & management (10.9%). These total just over half of all respondents. The three least common program foci were each 1% or less of the total number of responses: legal studies & law enforcement (1.0%), math or computer science (0.5%), and service (0.5%). Options for “Cross-disciplinary or Multidisciplinary” and “Service” were included to account for increased diversity of study abroad experiences. This study did not directly seek out organizations or institutions that lead service trips because it falls outside the definition of academic disciplines according to IIE’s databases; however, survey respondents included it in their responses so it was added to the study.

The second and third study abroad program traits focused on duration – how long the program lasted – and location – the number of countries officially part of program curricula. The vast majority of respondents (75%) reported their study abroad program was completely contained within one country. This does not, however, mean that those students did not venture into other countries, just that the official academic aspects of their programs did not involve crossing additional international boundaries. Of the other responses, 11.8% reported covering multiple countries in Europe and 6% reported multiple countries around the world. There were several respondents that reported travelling to multiple countries in multiple regions. Those people were grouped in with the “worldwide” total. Regarding program duration, the most common

program responses were “between 8 weeks and 1 semester” (46.3%) and “between 2 and 8 weeks” (35.5%). A few went on programs shorter than 2 weeks (11.6%) and fewer still studied for more than 1 semester (6.6%). These results should not be surprising since so many study abroad experiences are structured around university academic calendars and short-term study abroad is becoming increasingly popular and viable for undergraduate students – see Chapter 2.

### *Statistical Analyses*

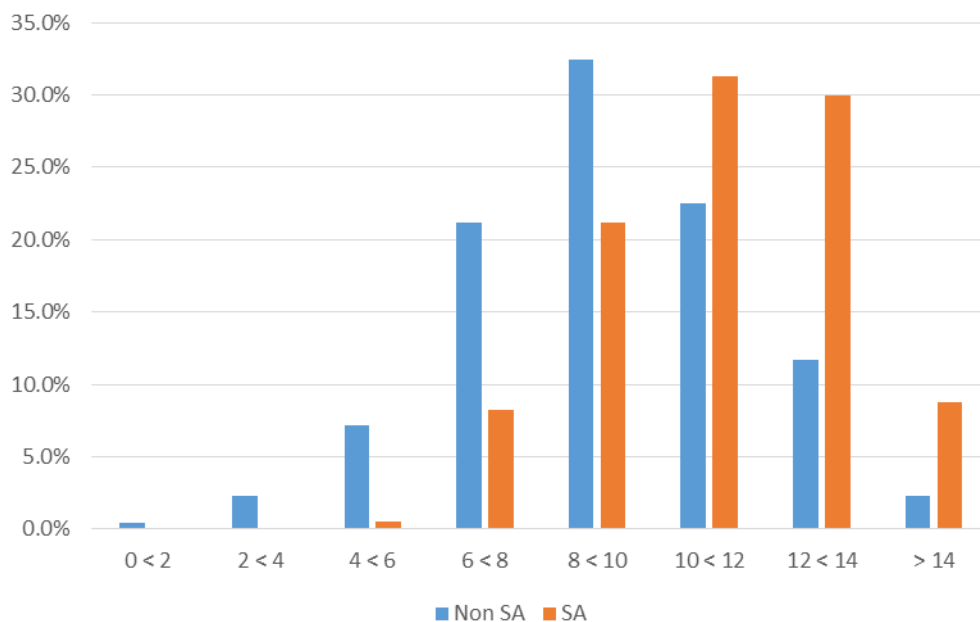
#### *Home Campus versus Study Abroad Populations:*

As presented above, with only a few exceptions, diversity within both the study abroad and home campus populations were similar. As a baseline for the rest of the statistical analyses, this section will explore whether or not there are any statistically significant differences in global awareness scores between these two populations. This informs whether or not there is any global awareness benefit to studying abroad. Included in this section is not only an analysis of global awareness scores, but also the four sub-characteristics of global awareness.

This study sought to address two questions regarding global awareness: (1) “is there a statistically significant relationship between academic major of study abroad students and global awareness acquisition?” and (2) “is there a statistically significant relationship between academic disciplinary focus of a study abroad program and global awareness acquisition by participating students?” In order to accurately address these questions, we must know whether or not the study abroad population is different from the home campus population.

The first statistical tests do not address the research questions directly; however, it establishes underlying conditions of the entire study population and is crucial for further analyses. Unlike the other statistical analyses, this first analysis compares global awareness scores between study abroad and home campus populations – the other analyses focus entirely on the study abroad population only. These tests go beyond the aforementioned descriptive statistics since the intention was to show that the study abroad population was different from the home campus group.

*Figure 20: Comparison of Global Awareness Scores between Study Abroad (SA) and Home Campus (Non SA) Populations.*



Comparing global awareness scores between the home campus and study abroad populations shows a clear distinction in the distribution of scores (figure 20). In general, the greatest percentage of home campus scores were between 8 and 10

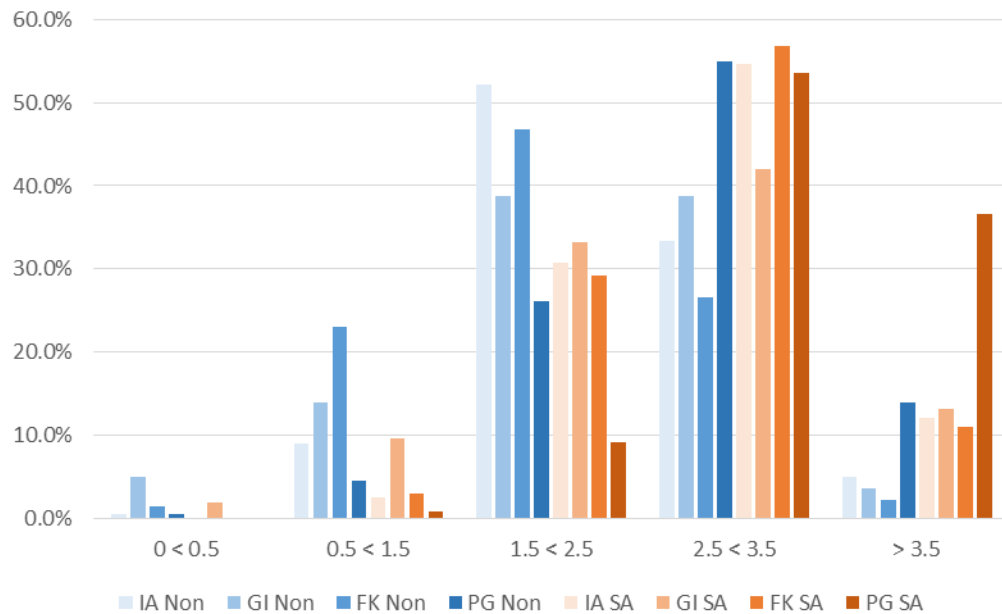


gradually rising and falling from this maximum; however, the greatest percentage of study abroad population scores was higher – between 10 and 12 – with almost as many in the next higher range – 12 to 14. Fewer study abroad students scored in the lower ranges compared to the home campus scores and the reciprocal is true for scores in the higher ranges. When comparing averages in scores, study abroad students scored almost two points higher than home campus students (11.14 compared to 9.18), 17% higher on intercultural awareness (2.70 to 2.25), 25% higher on functional knowledge (2.77 to 2.08), 13% higher on global interdependence (2.43 to 2.10), and 15% higher on personal growth (3.24 to 2.75).

Statistical analysis using an ANOVA shows that there was a significant effect on global awareness by studying abroad at the  $p < 0.05$  level [F (1,584) = 103.74,  $p = 1.55E-22$ ]. Each of the four sub-characteristics also showed statistically significant differences between the two populations: intercultural awareness (IA) [F (1,584) = 64.39,  $p = 5.63E-15$ ], personal growth (PG) [F (1,584) = 92.26,  $p = 2.21E-20$ ], functional knowledge (FG) [F (1,584) = 146.00,  $p = 3.7E-30$ ], and global interdependence (GI) [F(1,584) = 21.31,  $p = 4.81E-06$ ]. Figure 21 (below) is a histogram comparing the distribution of the two populations' scores for each sub-characteristic. The distribution looks similar to the global awareness histogram (figure 20) with study abroad population scores trending higher than home campus scores.

Figure 21

*Comparison of Global Awareness Sub-characteristic Scores between Study Abroad (oranges) and Home Campus (blues) Populations.*



The results from these first analyses suggests that there is an impact of studying abroad on global awareness acquisition, in general, and its four sub-characteristics. Due to methodological limitations of this study, there was no pre-/posttest data for individual respondents to inform the degree of impact on global awareness; however, there is clearly a difference between these two populations.

To delve deeper into study abroad impacts on global awareness for each major, two-tailed TTests for the global awareness and sub-characteristics scores for all students within each major were completed to see whether studying abroad had any impact compared to remaining on home campuses. Some majors could not be tested due to limitations from amount of data making some TTests inappropriate. For example, there

was only 1 agricultural major in the data set that did not study abroad. To alleviate some of these concerns of insufficient data for both agriculture and engineering majors, all stem majors were also analyzed together.

In short, with the exception of majors that could not be tested, all major groups showed statistically significantly higher scores for at least one sub-characteristic. This suggests that there is at least some benefit for global awareness acquisition (or a sub-characteristic) by studying abroad. It should be restated that this analysis was not the focus of this study and further examination into this question should be done in the future with a more robust non-study abroad data set.

Table 6, below, summarizes which academic major average scores for global awareness were statistically significantly higher for study abroad participants than those that remained on home campuses. This comparison only examines scores between those students of each major that did study abroad and those that did not. No analysis comparing scores between majors was done here. One takeaway from table 6 is that studying abroad may not be an effective means of improving awareness of global interdependence since social science majors was the only discipline where studying abroad statistically improved scores.

Table 6

*Comparison of Statistically Significantly Higher Scores for Global Awareness for Study Abroad Students*

Major	GA	IA	FK	GI	PG
STEM	√	√	√		√
AGR	--	--	--	--	--
ENG	--	--	--	--	--
HTH	√	√	√		√
MTH	--	--	--	--	--
SCI	√		√		√
BUS	√	√	√		√
COM			√		
EDU	√	√	√		√
ART		√	√		
FOR	--	--	--	--	--
HUM	√		√		√
LAW	--	--	--	--	--
OTH	√	√	√		√
SOC	√		√	√	
UND	--	--	--	--	--

#### *Academic Majors of Participating Students*

An analysis comparing global awareness scores and the sub-characteristics organized by academic majors of the students shed light on possible relationships between academic disciplines and global awareness acquisition. It is important to remember two things: (1) only scores from the study abroad population was used for these analyses and (2) no exploration into discipline-specific instructional techniques or academic content is included in this study. If one discipline is shown to be statistically significantly better at imparting global awareness than other disciplines, this study's methodology was not equipped to highlight specific aspects of that discipline most likely responsible for the higher scores. Perhaps investigation of global awareness scores for

all survey respondents (both home campus and study abroad) would better inform how specific academic disciplines affect global awareness, but that is beyond the scope of this study. This study sought to focus on the presence or absence of differences between disciplines, only.

There are sixteen different academic major categories and one additional collection of majors in this study. Two categories – other (OTH) and undeclared (UND) – are not well defined, but the other 13 have clear definitions of which majors should be included within each according to the IIE. To make this data correspond to IIE's design, five STEM majors – agriculture, engineering, health science, math or computer science, and physical & life science – are dealt with both independently and combined. For the sake of simplicity, all 16 categories will be referred to as majors.

Out of a possible maximum score of 16, four majors had average global awareness score below 10: undeclared (9.54), engineering (9.60), agriculture (9.83), and math (9.92). Three majors had global awareness mean above 12: humanities (12.21), legal studies & law enforcement (12.57), and – the highest averaging major – foreign language & international studies (12.79). Similar rank order were seen for intercultural awareness (IA), global interdependence (GI), and personal growth (PG) mean scores. Functional knowledge mean scores diverged the most from this trend; however, only in that there were two majors that ranked lower: fine & applied arts and health science. Table 7 summarizes all of global awareness and sub-characteristic score results.

Table 7

*Means and Standard Deviations for Global Awareness and Sub-characteristic Scores by Student Major*

Major	N	GA		IA		FK		GI		PG	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
STEM	126	10.36	2.21	2.51	0.64	2.60	0.63	2.14	0.79	3.11	0.61
AGR	5	9.83	1.76	2.28	0.58	2.49	0.58	2.35	0.52	2.72	0.46
ENG	7	9.60	1.38	2.23	0.43	2.59	0.45	1.75	0.41	3.03	0.42
HTH	37	10.24	2.27	2.46	0.71	2.56	0.61	2.04	0.89	3.18	0.61
MTH	5	9.92	2.03	2.40	0.32	2.44	0.58	2.20	0.65	2.88	0.58
SCI	55	10.52	2.06	2.59	0.61	2.62	0.66	2.18	0.78	3.14	0.52
BUS	53	11.10	1.98	2.59	0.63	2.73	0.54	2.60	0.80	3.18	0.49
COM	28	11.23	1.99	2.82	0.66	2.81	0.65	2.39	0.77	3.21	0.41
EDU	20	10.79	2.01	2.71	0.63	2.60	0.67	2.20	0.71	3.28	0.46
ART	11	10.80	2.08	2.89	0.63	2.73	0.54	2.00	0.80	3.18	0.39
FOR	33	12.79	1.57	3.10	0.47	3.31	0.46	2.85	0.77	3.53	0.39
HUM	29	12.21	1.72	3.00	0.56	2.84	0.55	2.91	0.76	3.46	0.42
LAW	7	12.57	1.86	3.02	0.57	3.06	0.49	3.14	0.43	3.34	0.63
OTH	6	11.67	1.83	2.79	0.70	3.17	0.34	2.21	0.87	3.50	0.45
SOC	49	11.12	2.35	2.66	0.63	2.73	0.70	2.53	0.94	3.20	0.62
UND	3	9.54	0.83	2.17	0.26	2.41	0.53	2.17	0.29	2.80	0.20

Figures 22 & 24 show standard deviation ranges around the mean scores for all 16 majors. In Figure 22, mean scores and standard deviations for each major are presented. In terms of global awareness scores, the differences between score ranking becomes a bit clearer. Of the three highest ranking majors identified above, the standard deviation for foreign language & international studies' scores was a bit smaller compared to the other two top ranking majors. Regarding the four lowest ranking majors, distribution of scores show that undeclared majors – and engineering majors to some degree – represent the lowest scoring majors on average even though scores from other majors had students that scored lower. It should be noted that there is considerable overlap in scores for many of the middle range majors. For example, the scores for both business & marketing majors and communication & journalism majors appear almost completely congruent. STEM major mean scores were bolstered by

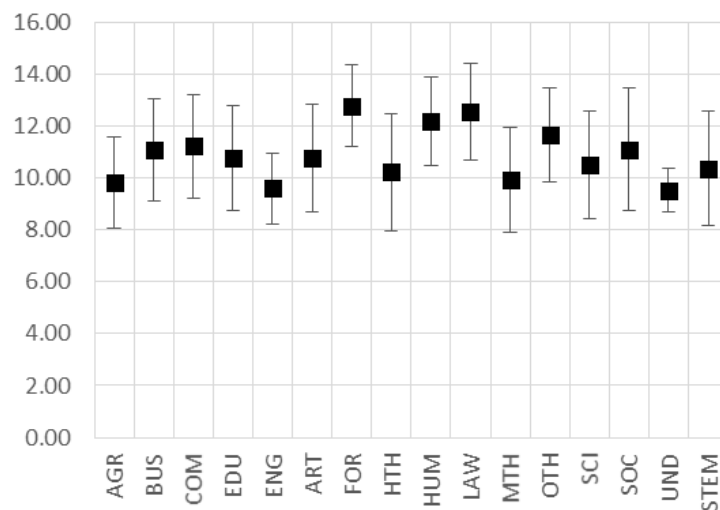
physical & life science scores; however, as a group, they rank towards the bottom of the majors since the four other STEM majors were some of the lowest performers.

Exploration of the sub-characteristic scores may identify other differences not observable through examination of global awareness scores.

Figure 22

*Global Awareness Score Means and Standard Deviations by Major for Study Abroad*

*Population*

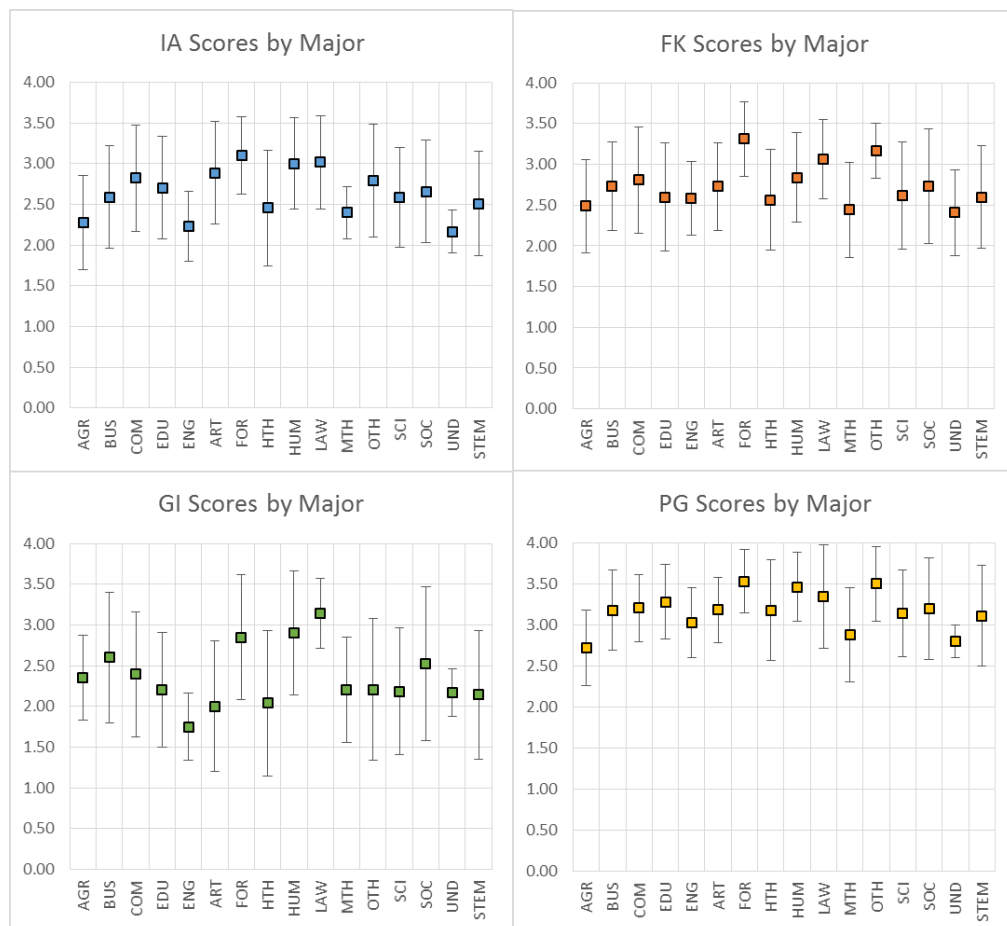


A deeper examination of these scores can reveal a more nuanced view of each major's global awareness score. In Figure 23, all four sub-characteristic mean scores and standard deviations for each sub-characteristic are presented. In general, personal growth & development (yellow) scores were highest and knowledge of global interdependence (green) was lowest across the board, but there is considerable variance and overlap within and between majors. Intercultural awareness (blue) and

functional knowledge (orange) score mainly in the middle. When variability within the scores of each major are taken into account, it becomes evident that some majors – especially foreign language & international studies – scored consistently higher than most, if not all, others majors and others – namely undeclared – typically rank lower. STEM major scores – as a combined group – do not stand out as much as the total global awareness scores seen in figure 3 with average or slightly below average means for all four sub-characteristics. Many of the scores and, especially, their standard deviations overlap considerably.

Figure 23

*Sub-characteristic Score Standard Deviations by Major for Study abroad Population.*





ANOVAs were done to explore potential relationships between academic disciplines with global awareness scores and each sub-characteristics. Analysis via an ANOVA resulted in supporting some of the earlier observations. The collection of STEM majors was left out of this analysis (although was included in more detailed statistics below). There were statistically significant differences between academic majors for global awareness scores for one or more academic majors [ $F(15,348) = 3.94, p < 0.0001$ ] and all four sub-characteristics: intercultural awareness [ $F(15,348) = 3.02, p = 0.0001$ ], global interdependence [ $F(15, 348) = 3.57, p < 0.0001$ ], functional knowledge [ $F(15, 348) = 3.37, p < 0.0001$ ], and personal growth [ $F(15,348) = 2.35, p = 0.0032$ ].

The ANOVA results strongly suggest significant differences between one or more majors in potentially multiple ways; however, it does not provide any insight into which majors are different. A Tukey-Kramer test (table 8) was employed to better identify the statistically significant different relationships between majors. In this case, a Tukey-Kramer test further unveiled potential statistically significant differences between majors.

Table 8

*Tukey-Kramer Test Results for Global Awareness by Academic Major*

Major	Major													
	UND	SOC	SCI	OTH	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	COM	BUS
AGR	1.00	0.99	1.00	0.98	1.00	0.61	0.52	1.00	0.15	1.00	1.00	1.00	0.99	0.99
BUS	1.00	1.00	0.98	1.00	1.00	0.91	0.56	0.82	<b>0.02</b>	1.00	0.89	1.00	1.00	
COM	0.99	1.00	0.98	1.00	0.99	0.97	0.90	0.84	0.17	1.00	0.86	1.00		
EDU	1.00	1.00	1.00	1.00	1.00	0.81	0.52	1.00	<b>0.04</b>	1.00	0.99			
ENG	1.00	0.89	1.00	0.90	1.00	0.29	0.14	1.00	<b>0.01</b>	1.00				
ART	1.00	1.00	1.00	1.00	1.00	0.91	0.83	1.00	0.25					
FOR	0.35	<b>0.02</b>	<b>&lt;.0001</b>	1.00	0.19	1.00	1.00	<b>&lt;.0001</b>						
HTH	1.00	0.82	1.00	0.96	1.00	0.27	<b>0.01</b>							
HUM	0.70	0.61	<b>0.03</b>	1.00	0.59	1.00								
LAW	0.71	0.92	0.45	1.00	0.66									
MTH	1.00	1.00	1.00	0.99										
OTH	0.98	1.00	0.99											
SCI	1.00	0.98												
SOC	1.00													
STEM	1.00	0.35	--	1.00	--	0.05	<b>0.00</b>	--	<b>&lt;.0001</b>	0.98	--	1.00	0.72	0.34

Tukey-Kramer results suggest that there was no significant differences in global awareness scores between many of the 16 majors. Besides the six other majors' scores that were statistically significantly different to foreign language & international studies' scores, only two other statistically significant differences: (1) physical & life science and humanities ( $p = 0.026$ ) and (2) humanities and health sciences ( $p = 0.009$ ). In both of these cases, the mean global awareness score for humanities (12.21) is greater than physical & life science and health science mean scores (10.52 and 10.24, respectively) suggesting that humanities students studying abroad were more globally aware than students from the other two majors. Foreign language & international study majors scored statistically significantly higher ( $M = 12.79$ ) than social science ( $p = 0.023$ ,  $M = 11.12$ ), physical & life science ( $p < 0.0001$ ,  $M = 10.52$ ), health science ( $p < 0.0001$ ,  $M =$

10.24), engineering ( $p= 0.015$ ,  $M= 9.60$ ), education ( $p= 0.041$ ,  $M= 10.79$ ), and business & marketing ( $p= 0.017$ ,  $M= 11.10$ ). The collective STEM majors ( $M=10.36$ ) were statistically significantly lower than humanities ( $p= 0.002$ ,  $M= 12.21$ ) and foreign language & international studies ( $p< 0.0001$ ,  $M= 12.79$ ).

Table 9

*Tukey-Kramer Test Results for Functional Knowledge by Academic Major*

Major	Major													
	UND	SOC	SCI	OTH	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	COM	BUS
AGR	1.00	1.00	1.00	0.88	1.00	0.96	1.00	1.00	0.23	1.00	1.00	1.00	1.00	1.00
BUS	1.00	1.00	1.00	0.95	1.00	0.99	1.00	0.99	<b>0.00</b>	1.00	1.00	1.00	1.00	
COM	1.00	1.00	0.99	0.99	1.00	1.00	1.00	0.96	0.08	1.00	1.00	1.00		
EDU	1.00	1.00	1.00	0.80	1.00	0.92	0.99	1.00	<b>0.00</b>	1.00	1.00			
ENG	1.00	1.00	1.00	0.93	1.00	0.98	1.00	1.00	0.20	1.00				
ART	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.26					
FOR	0.45	<b>0.00</b>	<b>&lt;.0001</b>	1.00	0.16	1.00	0.12	<b>&lt;.0001</b>						
HTH	1.00	1.00	1.00	0.62	1.00	0.80	0.89							
HUM	1.00	1.00	0.96	1.00	0.99	1.00								
LAW	0.97	0.99	0.89	1.00	0.92									
MTH	1.00	1.00	1.00	0.82										
OTH	0.91	0.95	0.73											
SCI	1.00	1.00												
SOC	1.00													
STEM	1.00	0.93	--	0.89	--	0.38	0.63	--	<b>&lt;.0001</b>	0.93	--	1.00	0.76	0.83

Less majors' functional knowledge scores were statistically significantly different compared to overall global awareness results (table 9). All five of these scores were associated with foreign language & international studies. Physical & life science ( $p< 0.001$ ,  $M= 2.62$ ), social science ( $p= 0.002$ ,  $M= 2.73$ ), health science ( $p< 0.001$ ,  $M= 2.56$ ), education ( $p = 0.003$ ,  $M= 2.60$ ), and business & management ( $p= 0.002$ ,  $M= 2.73$ ) all had mean scores less than foreign language & international studies ( $M= 3.31$ ) suggesting

that students with those majors had lower functional knowledge than foreign language majors. The same is true for the collective STEM major scoring worse than foreign language & international studies ( $p < 0.0001$ ,  $M = 2.60$ ). These results suggest that aside from foreign language & international studies majors, there really is little to no statistically significant differences between these different majors with regard to functional knowledge of the world, its people, and its cultures.

Table 10

*Tukey-Kramer Test Results for Global Interdependence by Academic Major*

Major	Major													
	UND	SOC	SCI	OTH	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	COM	BUS
AGR	1.00	1.00	1.00	1.00	1.00	0.95	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00
BUS	1.00	1.00	0.32	1.00	1.00	0.95	0.96	0.09	0.99	0.65	0.37	0.87	1.00	
COM	1.00	1.00	1.00	1.00	1.00	0.68	0.53	0.93	0.68	0.99	0.87	1.00		
EDU	1.00	0.98	1.00	1.00	1.00	0.34	0.16	1.00	0.24	1.00	1.00			
ENG	1.00	0.54	0.99	1.00	1.00	0.09	0.05	1.00	0.08	1.00				
ART	1.00	0.84	1.00	1.00	1.00	0.19	0.10	1.00	0.15					
FOR	0.99	0.92	<b>0.02</b>	0.91	0.95	1.00	1.00	<b>0.00</b>						
HTH	1.00	0.28	1.00	1.00	1.00	0.07	<b>0.00</b>							
HUM	0.98	0.81	<b>0.01</b>	0.85	0.91	1.00								
LAW	0.92	0.87	0.17	0.76	0.81									
MTH	1.00	1.00	1.00	1.00										
OTH	1.00	1.00	1.00											
SCI	1.00	0.70												
SOC	1.00													
STEM	1.00	0.08	--	1.00	--	<b>0.02</b>	<b>0.00</b>	--	<b>&lt;.0001</b>	1.00	--	1.00	0.96	<b>0.01</b>

There were only four statistically significant differences between majors for global interdependence sub-characteristic scores (table 10) besides the ones attributed to the collective STEM category. Three-of-the-four statistically significant differences were associated with foreign language & international studies: physical & life science

( $p= 0.016$ ), humanities ( $p= 0.009$ ), and health sciences ( $p= 0.003$ ). The fourth statistically significant difference was between health sciences and humanities ( $p= 0.002$ ). The mean score for foreign language & international studies majors ( $M= 2.85$ ) was greater than two of the other majors – physical & life science ( $M= 2.18$ ) and health science ( $M= 2.04$ ) – while being slightly less than the humanity majors' mean score ( $M= 2.91$ ). Humanities majors' mean score was greater than health science's mean score ( $M=2.04$ ). Collective STEM majors ( $M= 2.14$ ) scored significantly less than legal & law enforcement ( $p= 0.018$ ,  $M= 3.14$ ), business & management ( $p= 0.006$ ,  $M= 2.60$ ), and foreign language & international studies ( $p< 0.0001$ ). This suggests that foreign language & international studies majors performed statistically significantly better than several majors, but, unlike results observed thus far, not better than humanities – which also scored higher than health science. All other majors do not appear statistically significantly different.

Table 11

*Tukey-Kramer Test Results for Personal Growth by Academic Major*

Major	Major													
	UND	SOC	SCI	OTH	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	COM	BUS
AGR	1.00	0.82	0.92	0.44	1.00	0.76	0.16	0.87	0.07	0.95	1.00	0.68	0.83	0.86
BUS	1.00	1.00	1.00	0.98	1.00	1.00	0.52	1.00	0.13	1.00	1.00	1.00	1.00	
COM	0.99	1.00	1.00	1.00	0.99	1.00	0.87	1.00	0.50	1.00	1.00	1.00		
EDU	0.98	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.94	1.00	1.00			
ENG	1.00	1.00	1.00	0.95	1.00	1.00	0.80	1.00	0.57	1.00				
ART	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	0.84					
FOR	0.56	0.21	<b>0.04</b>	1.00	0.35	1.00	1.00	0.23						
HTH	1.00	1.00	1.00	0.99	1.00	1.00	0.65							
HUM	0.72	0.66	0.28	1.00	0.56	1.00								
LAW	0.97	1.00	1.00	1.00	0.97									
MTH	1.00	0.99	1.00	0.81										
OTH	0.85	0.99	0.95											
SCI	1.00	1.00												
SOC	1.00													
STEM	1.00	0.95	--	0.99	--	0.90	<b>0.05</b>	--	<b>0.01</b>	1.00	--	1.00	1.00	1.00

There were almost no statistically significant differences between majors for personal growth (table 11). Only foreign language & international studies and physical & life science majors were statistically significant ( $p= 0.043$ ) and since means scores were 3.53 and 3.14, respectively, the results suggest that foreign language & international studies majors had better personal growth results than physical & life science majors. Collective STEM majors, with a plurality of physical & life science majors – scored significantly lower ( $M= 3.11$ ) than foreign language & international studies majors ( $p= 0.005$ ), but also statistically lower than humanities ( $p= 0.049$ ,  $M= 3.46$ ). No other majors were statistically significantly different from each other.

Table 12

*Tukey-Kramer Test Results for Intercultural Awareness by Academic Major*

Major	Major													
	UND	SOC	SCI	OTH	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	COM	BUS
AGR	1.00	0.99	1.00	0.99	1.00	0.77	0.50	1.00	0.26	0.89	1.00	0.99	0.90	1.00
BUS	1.00	1.00	1.00	1.00	1.00	0.93	0.22	1.00	<b>0.02</b>	0.99	0.99	1.00	0.97	
COM	0.93	1.00	0.95	1.00	0.99	1.00	1.00	0.55	0.93	1.00	0.63	1.00		
EDU	0.99	1.00	1.00	1.00	1.00	1.00	0.96	0.98	0.64	1.00	0.92			
ENG	1.00	0.93	0.99	0.96	1.00	0.54	0.18	1.00	0.06	0.68				
ART	0.91	1.00	0.98	1.00	0.98	1.00	1.00	0.79	1.00					
FOR	0.45	0.11	<b>0.01</b>	1.00	0.56	1.00	1.00	<b>0.00</b>						
HTH	1.00	0.98	1.00	1.00	1.00	0.67	<b>0.03</b>							
HUM	0.66	0.57	0.19	1.00	0.80	1.00								
LAW	0.81	0.99	0.93	1.00	0.94									
MTH	1.00	1.00	1.00	1.00										
OTH	0.99	1.00	1.00											
SCI	1.00	1.00												
SOC	0.99													
STEM	1.00	0.87	--	1.00	--	0.24	<b>0.01</b>	--	<b>&lt;.0001</b>	0.38	--	1.00	0.44	1.00

Similarly to the global interdependence results, only four comparisons were statistically significantly different for intercultural awareness (table 12). Foreign language & international studies majors (M= 3.10) scored better than physical & life science (p= 0.015, M= 2.59), health science (p= 0.002, M= 2.46), and business & management majors (p= 0.019, M=2.59). Humanities majors (M= 3.00) also scored better than health science majors (p= 0.031). Both foreign language & international studies and humanities majors scored significantly higher than collective STEM majors (p< 0.0001 and p= 0.011, respectively). No other majors were statistically significantly different from one another.

*Study Abroad Program Foci*

Besides looking at the effect student major had on global awareness acquisition by studying abroad, the potential influence of study abroad program focus on global awareness and the sub-characteristics was also explored. The tables below explore the scores of students organized by their claims of the academic discipline focus of their study abroad experiences. Two additional categories were added – cross-/multidisciplinary (CRS) and service (SER) – and one category was removed – undeclared (UND) – from the previous results section. In addition, the collective STEM major was also included.

Out of a maximum score of 16, the highest mean score were students that participated in a study abroad program focusing on foreign language & international studies (12.18) followed by four disciplines with mean scores in the 11's: service (11.72), business & management (11.61), fine & applied arts (11.17), and humanities (11.08). The lowest mean score belonged to the two survey respondents that participated in a program focused on math or computer science (6.04). This is followed by agricultural program students (8.57) and engineering (9.17). All other disciplines had a mean score over 10. Program focus mean scores and standard deviations are found in table 13.

Referring to table 13, mean scores for the four sub-characteristics could have a maximum score of 4. Service and foreign language & International studies had the highest intercultural awareness (IA) scores (3.06 and 2.89, respectively) with fine & applied arts and business & management coming in a close 3<sup>rd</sup> and 4<sup>th</sup> (2.80 and 2.77, respectively). Similarly to the results for global awareness means, math or computer



science, agriculture, and engineering had the lowest mean IA scores (1.56, 2.05 and 2.15, respectively). Foreign language & international studies was the only program focus with a functional knowledge (FK) mean score over three (3.18) followed by communication & journalism (2.91), business & marketing (2.85). Math or computer science, again, had the lowest mean score (1.78) with agriculture (2.02), education (2.33), and legal studies and law enforcement (2.39) ranking next lowest. Study abroad programs focusing on business & marketing had the highest mean score (2.78) for global interdependence (GI), but both legal studies & law enforcement and service programs having nearly the same scores (2.69 and 2.75, respectively). Math or computer science (1.00) and engineering (1.58) were the only discipline with mean GI scores below 2. In the personal growth category, math or computer science remains the lowest ranking program focus and the only one with a mean score below 2. Agriculture – the next lowest – had a mean score of 2.60. Along with social science-focused programs (2.99), these were the only disciplines with mean scores below 3. Foreign language & international studies mean personal growth scores were highest at 3.50 followed by fine & applied arts (3.33) and humanities (3.31). Collective STEM focused programs scored near the bottom, but never last, for all five of these measurements when compared to all non-STEM program foci.

Table 13

*Means and Standard Deviations for Global Awareness and Sub-characteristic Scores  
by Study Abroad Program Academic Focus*

Program Focus	N	GA		IA		FK		GI		PG	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
STEM	101	10.21	2.35	2.53	0.68	2.49	0.66	2.16	0.87	3.03	0.62
AGR	5	8.57	0.96	2.05	0.36	2.02	0.32	2.05	0.48	2.44	0.48
ENG	6	9.17	1.03	2.15	0.40	2.41	0.30	1.58	0.26	3.03	0.53
HTH	33	10.39	2.34	2.48	0.72	2.54	0.65	2.20	0.88	3.16	0.58
MTH	2	6.04	6.10	1.56	1.15	1.78	1.41	1.00	1.41	1.70	2.12
SCI	61	10.38	2.19	2.62	0.64	2.52	0.66	2.18	0.87	3.06	0.52
BUS	42	11.61	1.80	2.77	0.64	2.85	0.47	2.78	0.63	3.20	0.49
COM	9	10.83	1.98	2.68	0.63	2.91	0.65	2.06	0.67	3.18	0.42
CRS	34	11.05	2.04	2.69	0.60	2.74	0.60	2.37	0.87	3.25	0.51
EDU	11	10.17	2.26	2.43	0.61	2.33	0.72	2.32	0.88	3.09	0.47
ART	19	11.17	2.49	2.80	0.79	2.75	0.65	2.29	0.88	3.33	0.50
FOR	96	12.18	1.83	2.89	0.54	3.18	0.48	2.61	0.84	3.50	0.38
HUM	35	11.08	2.08	2.61	0.64	2.63	0.50	2.54	0.88	3.31	0.50
LAW	4	10.48	1.11	2.41	0.12	2.39	0.41	2.69	0.38	3.00	0.43
SER	2	11.72	3.79	3.06	1.33	2.61	1.34	2.75	0.71	3.30	0.42
SOC	27	11.07	2.55	2.75	0.72	2.69	0.72	2.65	0.86	2.99	0.76

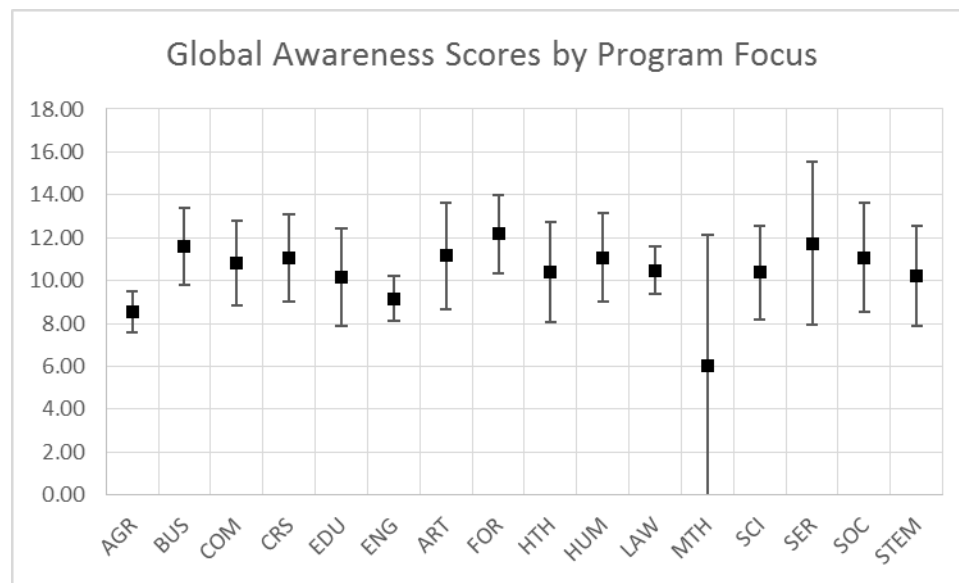
Figure 24 represents the mean global awareness scores and standard deviations for study abroad program discipline foci. It becomes clearer the differences between the higher and lower ranking disciplines. The lowest ranking discipline's (MTH) standard deviation covers a considerable range; whereas, the next two lowest ranking disciplines' (AGR & ENG) standard deviation ranges overlap with roughly the lower half of many other disciplines' ranges and not at all with the highest ranking discipline, foreign language & international studies. Overall there is considerable overlap in score standard deviations for many of the other disciplines. The results of a Tukey-Kramer test are below

(table 14) which further explore potential differences between academic disciplines' global awareness scores.

Figure 24

*Global Awareness Score Means and Standard Deviations by Study Abroad Program*

*Academic Focus*

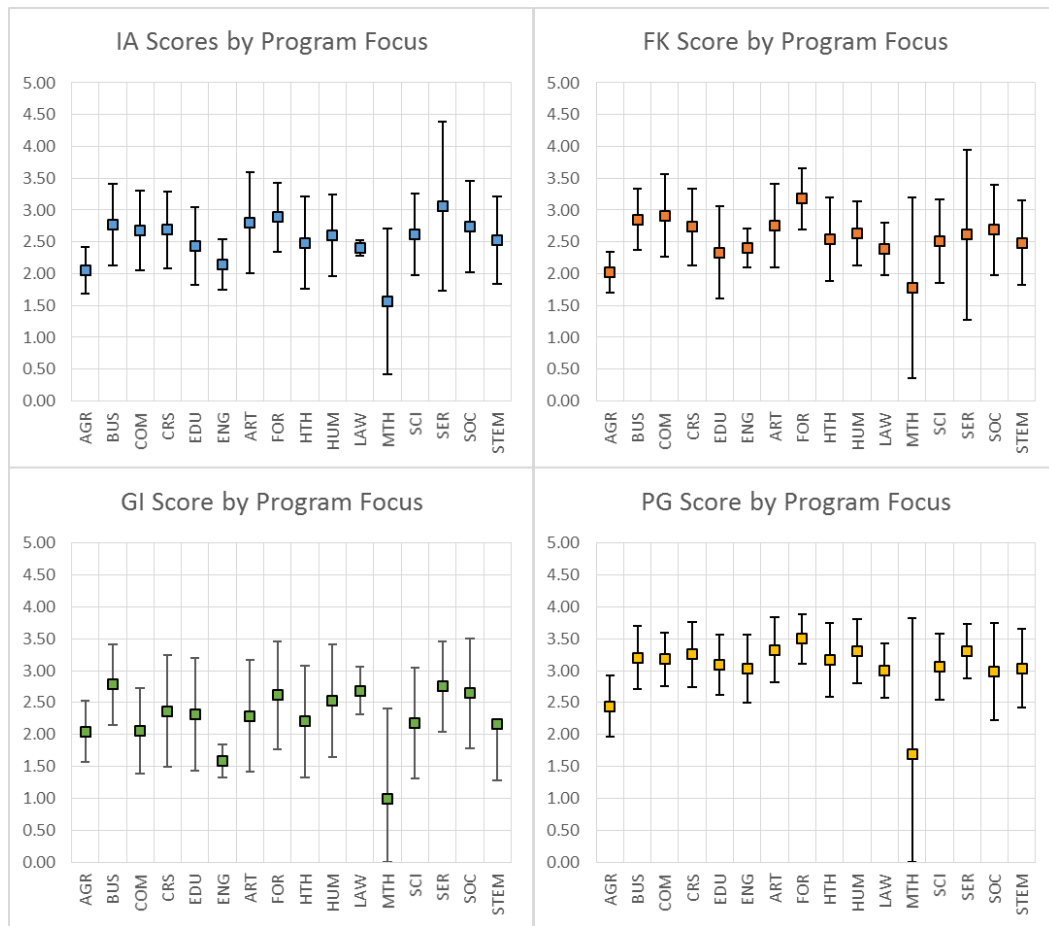


Mean scores and standard deviations for the four sub-characteristics can be seen in figure 25. Perhaps, the most notable aspect of these four graphs are the consistently low ranking math or computer science, agriculture, and engineering mean scores and standard deviations. With a few exceptions, these three program discipline foci rank the lowest of all other foci. Similar to global awareness results, there is a considerable amount of overlap in standard deviation ranges. In addition to the math or computer science standard deviation, service focused programs had broad standard deviation ranges. Another important observation is that personal growth mean scores and

standard deviations are the least variable and highest value compared to the other 3 sub-characteristics. Contrarily, global interdependence scores were the lowest and standard deviations had the greatest variability. Potential statistical significant differences are revealed with Tukey-Kramer tests below.

Figure 25

*Sub-characteristic Score Standard Deviations by Study Abroad Program Academic Focus*



The Tukey-Kramer test reveals several significant differences between global awareness scores for study abroad program foci (table 14). Six-of-the-eight statistically

significant differences involved programs focused on foreign language & international studies and all five STEM disciplines, including the collective STEM mean score: physical & life sciences ( $p < 0.0001$ ,  $M = 10.38$ ), math or computer science ( $p = 0.004$ ,  $M = 6.04$ ), health science ( $p = 0.003$ ,  $M = 10.39$ ), engineering ( $p = 0.050$ ,  $M = 9.17$ ), agriculture ( $p = 0.016$ ,  $M = 8.57$ ), and collective STEM ( $p < 0.0001$ ,  $M = 10.21$ ). With a mean score of 12.18, foreign language & international studies program was significantly better than all of the STEM disciplines. Mean scores from business & management focused programs ( $M = 11.61$ ) scored significantly better than both math or computer science programs ( $p = 0.021$ ) and collective STEM ( $p = 0.017$ ) mean scores. All other comparisons between programs foci were statistically insignificant suggesting that there was no meaningful difference in those programs' ability to convey global awareness.

Table 14

*Tukey-Kramer Test Results for Global Awareness by Study Abroad Program Discipline Focus*

	Program Focus													
	SOC	SER	SCI	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	CRS	COM	BUS
AGR	0.48	0.90	0.87	0.98	0.99	0.43	0.89	<b>0.02</b>	0.46	1.00	0.98	0.46	0.83	0.13
BUS	1.00	1.00	0.18	<b>0.02</b>	1.00	1.00	0.44	0.98	1.00	0.32	0.78	1.00	1.00	
COM	1.00	1.00	1.00	0.19	1.00	1.00	1.00	0.88	1.00	0.98	1.00	1.00		
CRS	1.00	1.00	0.98	0.07	1.00	1.00	0.99	0.31	1.00	0.78	1.00			
EDU	1.00	1.00	1.00	0.39	1.00	1.00	1.00	0.16	1.00	1.00				
ENG	0.79	0.98	0.99	0.88	1.00	0.76	0.99	<b>0.05</b>	0.77					
ART	1.00	1.00	0.98	0.07	1.00	1.00	0.99	0.85						
FOR	0.49	1.00	<b>&lt;.0001</b>	<b>0.00</b>	0.96	0.34	<b>0.00</b>							
HTH	1.00	1.00	1.00	0.22	1.00	0.99								
HUM	1.00	1.00	0.96	0.07	1.00									
LAW	1.00	1.00	1.00	0.48										
MTH	0.07	0.30	0.21											
SCI	0.98	1.00												
SER	1.00													
STEM	0.77	1.00	--	--	1.00	0.62	--	<b>&lt;.0001</b>	0.80	--	1.00	0.69	1.00	<b>0.02</b>

Table 15 relates the statistically significant differences for mean functional knowledge scores. Similarly to the global awareness Tukey-Kramer results, differences between foreign language & international studies and seven other disciplines (and the collective STEM) appear significant. Unlike global awareness results, only results that included foreign language & international studies programs were significant. The mean score for foreign language & international studies (3.19) was significantly higher than: agriculture ( $p= 0.002$ ,  $M= 2.02$ ), cross-/multidisciplinary ( $p= 0.015$ ,  $M= 2.74$ ), education ( $p= 0.001$ ,  $M= 2.33$ ), health sciences ( $p< 0.0001$ ,  $M= 2.54$ ), humanities ( $p= 0.0003$ ,  $M= 2.63$ ), physical & life science ( $p< 0.0001$ ,  $M= 2.52$ ), social sciences ( $p= 0.012$ ,  $M= 2.69$ ), and collective STEM ( $p< 0.0001$ ,  $M= 2.49$ ).

Table 15

*Tukey-Kramer Test Results for Functional Knowledge**by Study Abroad Program Discipline Focus*

	Program Focus													
	SOC	SER	SCI	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	CRS	COM	BUS
AGR	0.56	1.00	0.89	1.00	1.00	0.68	0.87	<b>0.00</b>	0.45	1.00	1.00	0.41	0.29	0.15
BUS	1.00	1.00	0.20	0.41	0.97	0.93	0.59	0.17	1.00	0.91	0.35	1.00	1.00	
COM	1.00	1.00	0.85	0.45	0.98	0.99	0.93	0.99	1.00	0.95	0.66	1.00		
CRS	1.00	1.00	0.91	0.62	1.00	1.00	0.99	<b>0.01</b>	1.00	1.00	0.81			
EDU	0.93	1.00	1.00	1.00	1.00	0.98	1.00	<b>0.00</b>	0.85	1.00				
ENG	1.00	1.00	1.00	0.99	1.00	1.00	1.00	0.11	1.00					
ART	1.00	1.00	0.97	0.63	1.00	1.00	1.00	0.21						
FOR	<b>0.01</b>	0.99	<b>&lt;.0001</b>	0.06	0.34	<b>0.00</b>	<b>&lt;.0001</b>							
HTH	1.00	1.00	1.00	0.90	1.00	1.00								
HUM	1.00	1.00	1.00	0.79	1.00									
LAW	1.00	1.00	1.00	1.00										
MTH	0.72	0.98	0.91											
SCI	0.99	1.00												
SER	1.00													
STEM	0.91	1.00	--	--	1.00	0.99	--	<b>&lt;.0001</b>	0.80	--	1.00	0.59	0.62	<b>0.03</b>

Table 16, which explores statistically significant differences for personal growth, reveal math or computer science as being significantly different lower than all but four other program foci – and one of those four (social science) was almost significant with a p-value of 0.051. The math or computer science program mean personal growth score (1.70) was based on only two survey respondents; so, results should be read with caution. Foreign language & international studies programs – a focus that has up to this point stood out the most – was significantly different from four other foci (including math or computer science). Mean scores for foreign language & international studies programs (3.50) were better than social science (p= 0.001, M= 2.99), physical & life science (p< 0.0001, M= 3.06), math or computer science (p= 0.0002, M= 1.70),

agriculture ( $p= 0.001$ ,  $M= 2.44$ ), and collective STEM ( $p< 0.0001$ ,  $M= 3.03$ ). In addition to foreign language & international studies, agriculture-focused programs' scored significantly less than both humanities ( $p=0.035$ ,  $M= 3.31$ ) and fine & applied arts ( $p= 0.048$ ,  $M= 3.33$ ) program mean scores.

Table 16

*Tukey-Kramer Test Results for Personal Growth**by Study Abroad Program Discipline Focus*

	Program Focus													
	SOC	SER	SCI	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	CRS	COM	BUS
AGR	0.68	0.80	0.39	0.93	0.95	<b>0.03</b>	0.19	<b>0.00</b>	<b>0.05</b>	0.85	0.56	0.07	0.39	0.11
BUS	0.92	1.00	0.98	<b>0.01</b>	1.00	1.00	1.00	0.13	1.00	1.00	1.00	1.00	1.00	
COM	1.00	1.00	1.00	<b>0.02</b>	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00		
CRS	0.79	1.00	0.90	<b>0.00</b>	1.00	1.00	1.00	0.53	1.00	1.00	1.00			
EDU	1.00	1.00	1.00	<b>0.04</b>	1.00	1.00	1.00	0.45	1.00	1.00				
ENG	1.00	1.00	1.00	0.10	1.00	1.00	1.00	0.70	1.00					
ART	0.66	1.00	0.80	<b>0.00</b>	1.00	1.00	1.00	0.99						
FOR	<b>0.00</b>	1.00	<b>&lt;.0001</b>	<b>0.00</b>	0.85	0.87	0.09							
HTH	0.99	1.00	1.00	<b>0.01</b>	1.00	1.00								
HUM	0.48	1.00	0.58	<b>0.00</b>	1.00									
LAW	1.00	1.00	1.00	0.19										
MTH	0.05	0.12	<b>0.02</b>											
SCI	1.00	1.00												
SER	1.00													
STEM	1.00	1.00	--	--	1.00	0.25	--	<b>&lt;.0001</b>	0.54	--	1.00	0.63	1.00	0.84

Of the four sub-characteristics, knowledge of global interdependence (table 17) and intercultural awareness (table 18) had the fewest significant differences. Global interdependence had three significant differences and intercultural awareness had only one. Programs focusing on business & management ( $M= 2.78$ ) scored significantly higher on global interdependence than both physical & life science ( $p= 0.024$ ,  $M= 2.18$ )



and the collective STEM ( $p= 0.003$ ,  $M= 2.16$ ). The only other significant result was between foreign language & international studies ( $M= 2.61$ ) and collective STEM ( $p= 0.007$ ). For intercultural awareness, only foreign language & international studies scored better than collective STEM ( $p= 0.006$ ,  $M= 2.89$  and  $2.53$ , respectively). With very few exceptions, almost all study abroad programs – regardless of disciplinary focus – have the same capability of impacting intercultural awareness and knowledge of global interdependence for participating students.

Table 17

*Tukey-Kramer Test Results for Global Interdependence**by Study Abroad Program Discipline Focus*

	Program Focus													
	SOC	SER	SCI	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	CRS	COM	BUS
AGR	0.98	1.00	1.00	0.97	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.86
BUS	1.00	1.00	<b>0.02</b>	0.16	1.00	0.99	0.15	1.00	0.69	0.06	0.94	0.68	0.52	
COM	0.87	1.00	1.00	0.95	0.99	0.97	1.00	0.83	1.00	1.00	1.00	1.00		
CRS	0.99	1.00	1.00	0.61	1.00	1.00	1.00	0.98	1.00	0.70	1.00			
EDU	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.91				
ENG	0.22	0.92	0.94	1.00	0.75	0.37	0.93	0.17	0.89					
ART	0.98	1.00	1.00	0.73	1.00	1.00	1.00	0.96						
FOR	1.00	1.00	0.09	0.29	1.00	1.00	0.47							
HTH	0.75	1.00	1.00	0.80	1.00	0.95								
HUM	1.00	1.00	0.78	0.40	1.00									
LAW	1.00	1.00	1.00	0.55										
MTH	0.30	0.72	0.80											
SCI	0.48	1.00												
SER	1.00													
STEM	0.22	1.00	--	--	0.98	0.46	--	<b>0.01</b>	1.00	--	1.00	0.98	1.00	<b>0.00</b>

Table 18

*Tukey-Kramer Test Results for Intercultural Awareness**by Study Abroad Program Discipline Focus*

	Program Focus													
	SOC	SER	SCI	MTH	LAW	HUM	HTH	FOR	ART	ENG	EDU	CRS	COM	BUS
AGR	0.63	0.85	0.83	1.00	1.00	0.88	0.99	0.21	0.55	1.00	1.00	0.73	0.91	0.52
BUS	1.00	1.00	1.00	0.35	1.00	1.00	0.83	1.00	1.00	0.62	0.96	1.00	1.00	
COM	1.00	1.00	1.00	0.62	1.00	1.00	1.00	1.00	1.00	0.96	1.00	1.00		
CRS	1.00	1.00	1.00	0.48	1.00	1.00	0.99	0.97	1.00	0.83	1.00			
EDU	0.99	0.99	1.00	0.90	1.00	1.00	1.00	0.62	0.97	1.00				
ENG	0.73	0.91	0.91	1.00	1.00	0.95	1.00	0.26	0.65					
ART	1.00	1.00	1.00	0.35	1.00	1.00	0.91	1.00						
FOR	1.00	1.00	0.42	0.19	0.98	0.64	0.10							
HTH	0.96	1.00	1.00	0.80	1.00	1.00								
HUM	1.00	1.00	1.00	0.61	1.00									
LAW	1.00	1.00	1.00	0.97										
MTH	0.40	0.54	0.56											
SCI	1.00	1.00												
SER	1.00													
STEM	0.92	0.99	--	--	1.00	1.00	--	<b>0.01</b>	0.86	--	1.00	0.98	1.00	0.66

*Summary:*

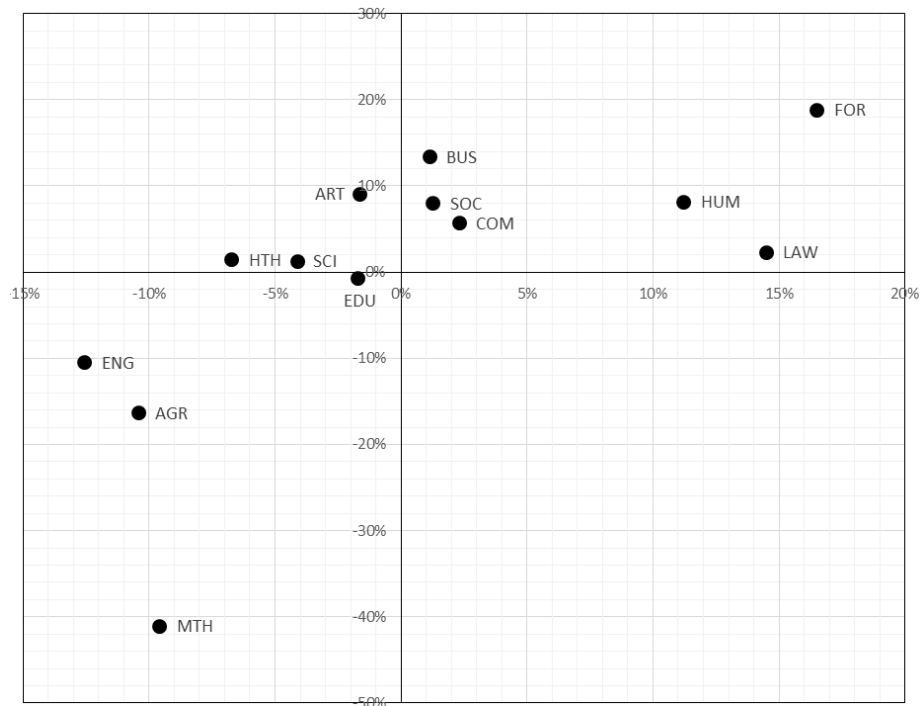
As the data suggests, there are not a lot of differences between many of the student majors and study abroad program foci. There are some disciplines that somewhat consistently rank higher or lower for many of the analyses, but it would be safe to conclude that most of the academic disciplines are somewhere in the middle and not significantly different from each other. The one discipline that stands out as consistently and significantly scoring higher than many others was foreign language & international studies. On the other hand, the five STEM disciplines (and the collective

STEM discipline) typically ranked at or towards the bottom of the scores; however, those results were not always statistically significant.

Figure 26 is an x-y scatter plot presenting the percent difference from the average student major (x-axis) and program focus (y-axis) scores for the 13 disciplines that were part of both analyses. Two student majors (other and undeclared) and two program foci (cross-/multidisciplinary and service) were removed. In addition, the collective STEM major was removed since all five of the disciplines are included individually. Values for the remaining disciplines were calculated by finding the percent difference from the average scores for each of the two factors. All mean scores were included even those that failed to have any statistical significance in the analyses above.

Figure 26

*Percent Difference of 13 Academic Disciplines' Mean Student Major and Program Foci.*



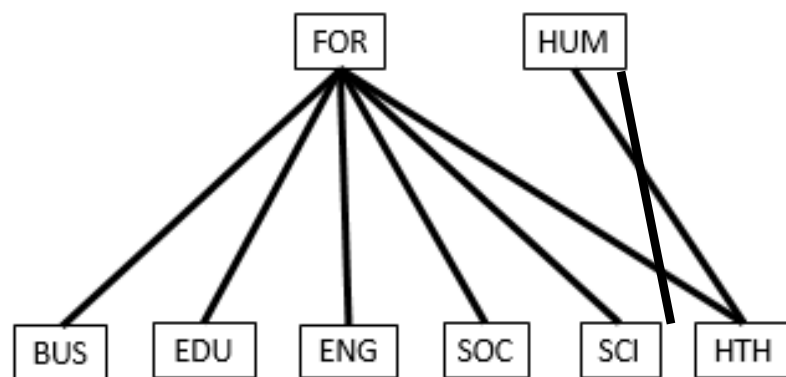
Even though not all of the differences between disciplines were statistically significant, figure 7 elucidates general results and comparisons in the data. The analyses within this chapter certainly make clear the strength of foreign language & international studies students and study abroad programs in conveying global awareness 16% and 18% better than the average scores, respectively. Additionally, the poor performance of math or computer science majors and programs was also clear with scores 10% and 41% below average for student major and program foci. These two and the remaining 11 disciplines that were more difficult to tease apart could be roughly organized into three groups: one group of high scorers for both major and program focus, another group with poor scorers, and a final group where differences from the average (if any) were relatively insignificant. Foreign language & international studies, legal studies & law enforcement, and humanities majors and programs all appear to perform significantly above average – more so for majors' scores than programs'. Math or computer science, agriculture, and engineering could all be grouped in the lowest scorers group. The remaining seven disciplines – though varied in their results – are huddled together in the middle. One important observation is that, with the exception of the education discipline, the lowest scorers for both student major and program foci were the five STEM disciplines.

Looking at the mean scores to determine ranking and relationships is not sufficient without incorporating statistical significance. The figures below indicate statistically significant relationships between the student majors (figure 27) and program foci (figure 28). It effectively summarizes all of the various analyses presented

earlier. The thick lines connecting the various academic discipline represent statistically significant differences for global awareness scores; whereas, thin lines signify differences in one or more of the sub-characteristics. The relative position of each discipline is based upon the mean scores and reflects the effectiveness for conveying global awareness and the sub-characteristics to each other. It is important to note that not all disciplines are present and/or connected to all of the others because these figures only present statistically significant relationships. If one discipline is statistically significantly different for both global awareness and one of the sub-characteristics, only the thick line of global awareness was presented.

Figure 27

*The Relative Statistically Significant Relationships between Student Majors' Global Awareness and Sub-characteristic Scores.*



In figure 8, there were no statistically significant sub-characteristic relationships between academic majors that were not superseded by significant global awareness scores. Of the seven statistically significant differences, they can be organized into

upper and lower tiers using mean scores. Since there were no clear differences in disciplines found within either tier, potential differences between the six disciplines in the lower tier, for example, remain unclear. The top tier disciplines – the two that resulted in significantly better global awareness scores – were foreign language & international studies and humanities. Whereas, foreign language majors scored better than six other disciplines (business & management, education, engineering, social science, physical & life science, and health science), humanities majors scored significantly better than just one: health sciences. In short, perhaps to no surprise, foreign language & international studies majors that studied abroad are more globally aware than students of those other majors that also participated in study abroad. The same is true for humanities majors that studied abroad, but only over health science majors.

It is important to note here that if the academic discipline is not displayed in figure 8, then those disciplines are not significantly different from any other disciplines. For example, results suggest that legal studies & law enforcement students that studied abroad acquire just as much global awareness (and the four sub-characteristics) as any other major since none of the statistical analyses showed significant differences. Also, significance is lacking within each tier of disciplines, it is impossible to definitely state that, for example, business & management majors that studied abroad are better at acquiring global awareness than physical & life science majors.

Figure 28 presents the significant relationships between the scores for study abroad program foci. Not only are more disciplines represented than in figure 8, but the

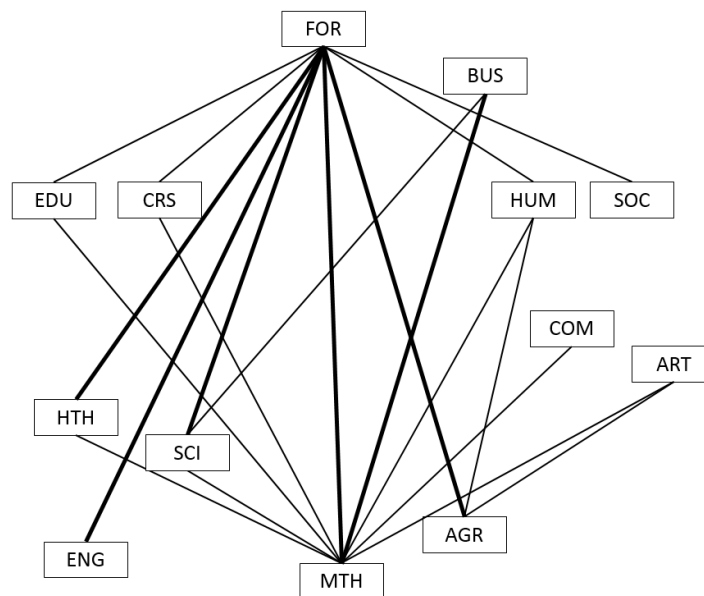
relationships between them are quite a bit more complicated. The disciplines can be organized into roughly four different tiers: a top tier that has no other disciplines significantly better; a middle-high tier that are only significantly worse than other disciplines in one or more sub-characteristics scores and not global awareness; a middle-low tier which have global awareness scores that are significantly worse than other disciplines, but are still better than other disciplines; and, lastly, the bottom tier, which consist of program foci that have global awareness scores that are significantly worse than other disciplines while being no better than any other ones, also.

Similarly to student majors, foreign language & international studies programs scored within the top tier being better at conveying global awareness to five other disciplines and better at conveying at least one of the sub-characteristics to four more. Business & management programs are significantly better at conveying global awareness than math or computer science programs and better at conveying at least one sub-characteristic than physical & life science. Second tier disciplines include education, cross-/multidisciplinary, humanities, and social science focused study abroad programs. Two of the third tier disciplines (communications & journalism and fine & applied arts) were better than math or computer science and agriculture study abroad programs in at least one sub-characteristics, but were not directly shown to be worse than any other discipline. The remaining two third-tier disciplines (health science and physical & life science) were significantly better than math or computer science in at least one sub-characteristic. The bottom tier is made up of the remaining three STEM disciplines. Math or computer science could be considered the worst performer of all

the disciplines since so many other disciplines were significantly better. Engineering and agriculture round out the bottom tier.

Figure 28

*The Relative Statistically Significant Relationships between Program Foci's Global Awareness and Sub-characteristic Scores.*



### *Conclusion*

In conclusion, it would appear that choice of academic discipline – whether in the form of student major or study abroad program focus – has the potential to influence global awareness acquisition for students participating in study abroad. This impact is not entirely widespread and pervasive across all disciplines. Scores associated with the foreign language & international studies discipline appear to dominate the upper reaches of the results; although, not against every discipline and not in every way.



If one were to assume that course work for foreign language majors is almost a primer for maximizing their study abroad experience, this should not be all that shocking. On the other hand, it would appear that STEM disciplines consistently underperform at conveying global awareness skills and knowledge. Again, this is not true when compared to every other discipline and every situation; however, the persistent presence in the lower range of scores must be acknowledged.

Chapter 5 will venture into some of the ramifications of the findings of this study and will establish some future avenues of research that would help generate a better understanding of these results.

Academic Field Influence on Acquisition of Global Awareness in  
Undergraduate Study Abroad Students  
Chapter 5: Discussion

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### *Introduction*

Chapter 5 is divided into four sections: summary of findings – which presents a short summary of the findings from Chapter 4; implications for practice – which will put those findings into context for the study abroad university stakeholders and community; recommendations for research – which will present directions for and justification of future research into expanding understanding of global awareness acquisition for university students; and, lastly, a short conclusion section conveying main points and caveats from the entirety of this project.

### *Summary of Findings*

This study sought to explore the influence of academic disciplines on global awareness acquisition for students that studied abroad while enrolled at university. More specifically, does academic major and academic program focus have an impact on global awareness acquisition when studying abroad? Data was collected from surveys distributed in 2019 through university study abroad program contacts, third-party organizations that lead university-level study abroad programs, and social media. The survey collected self-reported demographic information, responses for a series of global awareness assessment questions, and information describing study abroad programs, wherever applicable.

A diverse pool of 585 useable surveys including respondents that had and had not studied abroad were incorporated into the analyses. Data was collected and included in all analyses wherever applicable; however, there was not enough “exoticness” data for either cultural or language scores to be meaningful. All fifteen academic major categories and fifteen study abroad program foci had representation within the data. Participation rates for many of the academic majors and demographic factors for the study abroad population were comparable to national study abroad rates reported by the Institute for International

Education's 2015/16 *Open Doors* report (2019). Some academic majors' and discipline foci for study abroad programs' rates differed from expectations. Representation for each discipline was also an issue and could have affected statistical analyses and results – those instances will be discussed in the conclusion section of this chapter.

Statistical analyses support significantly higher scores for global awareness (GA) and four sub-characteristics (global interdependence (GI), intercultural awareness (IA), personal growth & development (PG), and functional global knowledge (FK)) for the study abroad population compared to the survey respondents that remained on their home campuses. This shows that the study abroad population for this study is more globally aware than those students that remained on their home campuses. Even though other demographic data was collected, no other statistical testing was done comparing different subpopulations. For example, no tests were done comparing different race/ethnic identities or age groups. There exists sources of comparison along these demographic lines within the literature, but those analyses were beyond the purview of this study and therefore not completed.

Analyses comparing global awareness and sub-characteristic scores between academic majors and program focus disciplines revealed that there were some statistically significant differences between many of them – but certainly not all. In general, foreign language & international studies (both majors and program focus) ranked statistically significantly higher than many STEM majors which, in turn, typically ranked at the bottom. Humanities and business & management disciplines scored higher than some STEM disciplines, but not as consistently as foreign language & international studies. It is important to point out that even with some disciplines were consistently at the top or bottom of the rankings, most of the disciplines were not statistically significantly different from one-another. This suggests that studying abroad

provides at least some benefits for acquiring global awareness for university students regardless of major or program discipline focus.

Foreign language & international studies' high ranking performances should not entirely be surprising when taking the body of research into account. Perhaps even the consistently low ranking STEM majors should not be a surprise either. What was somewhat unexpected by the investigator of this study is the inability to distinguish many of the disciplines from one-another – especially cross-/multidisciplinary. According to the analyses, the cross-/multidisciplinary discipline was only statistically significantly different from one discipline for two different sub-characteristics: scoring less than foreign language & international studies for functional knowledge ( $p= 0.015$ ) and scoring higher than math or computer science for personal growth ( $p= 0.004$ ). Since cross-/multidisciplinary study abroad programs are, by definition, less focused on specific discipline content, this study expected scores to be much higher for this discipline as participating students could have had more freedom, flexibility, and guidance to delve into their host country's culture, people, and place in the world.

### *Implications for Practice*

Chapter 2 describes many of the identified benefits of studying abroad that can be ascribed to specific academic disciplines currently published in the literature. Some of the studies cited in that chapter dealt directly with global awareness; however, no other study thus far has taken a comprehensive look at academic disciplines' effects on global awareness acquisition. In addition, this study supports the general consensus within the literature that that studying abroad increases global awareness (and the sub-characteristics) at a higher level than students that remain on campus.

The fact that it has taken this long for a comprehensive analysis of academic discipline impacts on global awareness reflects a wide gap in the understanding of highly effective study abroad programs. A follow-up multiple linear regression was done using data from this study to see which of the eight demographic and study abroad program variables had the greatest influence on global awareness acquisition. The test itself was almost statistically significant ( $p=0.0595$ ) with six-out-of-eight variables not being a significant predictor of global awareness; however, two variables were statistically significant predictors: academic major ( $p=0.031$ ) and number of countries included in the study abroad program curricula ( $p=0.030$ ). This suggests that academic major is one of the most important factors for affecting global awareness outcomes when compared to the other variables: age, grade-level, GPA, study abroad program focus, program duration, and overall experience as an international traveler. This study should help convince university leadership, faculty, and their various stakeholders of the importance of study abroad participation in the acquisition of global awareness for all students. Not only that, but this study sheds light into how academic disciplines are one of the factors affecting outcomes of study abroad programs which is often overlooked.

According to the IIE (2019), STEM majors' participation rates are often in the top three compared to the other majors. The other two being business & management and social science majors. Basically, in the 2017/18 school year, about one-quarter of all study abroad students from the United States were from a STEM major. Combine that with the fact that STEM majors consistently scored lowest for global awareness and the sub-characteristics, the conclusion is that almost one-quarter of all study abroad students are not receiving equal benefits as other academic disciplines. Universities could address this issue with increased awareness and action. Universities must add student major and program focus to the other variables they use when developing, implementing, and tracking their international programming and participation.

Universities will continue to support study abroad because the international community demands these institutions prepare their students for the 21<sup>st</sup> century world. To meet these multicultural requirements from the broader global community, universities need to be asking themselves five questions when it comes to improving all aspects of their study abroad programs:

1. Who from our institution is studying abroad and why?
2. How can we encourage our students to participate more and make studying abroad a more viable option?
3. What types of programs should we offer that have the best results for our students?
4. What types of resources and tools are we providing for students to best prepare them for departure and to support them while abroad?
5. How can universities best execute programs for transitioning back to campus to maximize acquired benefits from their study abroad experiences?

This study does not answer these questions directly. It not only offers important insights for universities and organizations on how to answer these questions, but also a baseline from which they can compare their own students with other study abroad participants in order to identify areas most in need of attention. This, of course, would establish a starting point for a more robust analysis and exploration of solutions for campus and curricular globalization.

This study enriches the understanding of everything associated with university study abroad programs from outreach to design to preparation to implementation. If students from one of the lower ranking majors wished to participate in study abroad, faculty and staff should be aware those students would benefit more from additional resources thus potentially maximizing the impact of their study abroad experience. For example, math or computer science majors scored at or near the bottom for many of the analyses in chapter 4. Some aspect inherent to math academic programs and/or the low level of participation by these students

could be responsible for these results. Regardless, both issues could be addressed by increasing awareness within university faculty and staff of these observed lower outcomes for math majors studying abroad, providing better preparation and support for those students, and also encouraging increased participation. Since foreign language & international studies discipline ranked high for many of the analyses – but there certainly were others, examining those major programs within the university would be a natural place to start.

### *Recommendations for Research*

The supporting body of research for the benefits of studying abroad is diverse and plentiful. Even though there is a growing collection of literature involving intrinsic motivating factors for participating students, the remaining study abroad variables and interactions do not currently support implementation of a mandatory or wide-reaching study abroad programs to address the demand for better global awareness instruction. The problem of improving global awareness remains. Two of the largest remaining questions for understanding study abroad outcomes are: “how do aspects of study abroad programs and settings affect global awareness gains?” (Doppen & An, 2014) and “how to overcome socioeconomic, cultural, and behavioral barriers for participation” (Walker, Bukenya, & Thomas, 2011; Lewis, 2016).

Most importantly, this study sheds light on the disciplines that are doing something right when it comes to design and implementation of both home campus curricula and study abroad programs. It also singles out disciplines that are most in need of attention for imparting global awareness to university students. This study did not explore specific aspects of each discipline that may aid or hinder global awareness acquisition. This study also did not seek to look at the disciplines as a whole – no analyses were done between entire student majors groups containing study abroad and home campus students. Future research could take a more



careful approach to comparing instruction and curricular aspects of foreign language & international studies and math or computer science courses (both home and abroad) since those were the disciplines consistently ranking highest and lowest, respectively. A simple exploration of global awareness of disciplines on college campuses including students that studied abroad, those that have not, and international students that have travelled to the United States from abroad would further shed light on specific aspects within each discipline that affect global awareness acquisition.

This study focused on students that crossed international boundaries as part of their university educational programs; however, if some aspects of global awareness acquisition merely involve imbedding oneself in a different culture, one could expect that some similar benefits could be imparted through cultural exchange programs within one's own country. Using the United States as an example, this country is not racially/ethnically, culturally, or historically homogenous – different regions of the country have different compositions of people with different stories to tell. Perhaps a similar study to this one could explore the effects of student travel programs within the United States. A university student identifying as white that grew up in a rural area attending a university consisting of students of similar backgrounds may be unable to commit the time and resources required to study abroad. It remains unknown whether or not that student could still acquire some degree of global awareness from a short-term, academic program at an institution with different demographics, such as a majority-minority, urban university, for example. This would be a much more feasible option for this student that could have potentially equal results as actually studying abroad.

Conversely, research into development and expansion of minority student-focused domestic distance educational opportunities could have wide-ranging and long-lasting impacts on students not limited to – currently unknown – increases in global awareness. For example,

Hispanic and Latino(a) students attending universities in the United States have almost doubled study abroad participation rates between 2005 and 2016 (IIE, 2019); however, they still lag behind participation rates for other racial/ethnic identity groups. Hispanic and Latino(a) university students report that economic problems and family issues are the most common reasons they forgo study abroad opportunities (Chang, 2017, McClure, Szelényi, Niehaus, Anderson, & Reed, 2010). Since a sense of community and identity is key for academic success and completion rates at universities for minority students (Yosso, Smith, Ceja & Solórzano, 2009), a more detailed comparison of the impacts of international versus domestic distance educational courses on global awareness could further support minority undergraduate programs by adding an additional dimension to the discussion. In addition, expansion of these types of programs would continue many universities commitment to diversifying their educational experiences for their students.

There are many factors affecting students' ability to participate in even short-term study abroad programs; however, programs like this could impart some of study abroad benefits without the committal to international travel. Global awareness gains were observed for students that stayed on their home-campuses, but followed a curriculum similar to study abroad students. They were smaller gains compared to the content-focused, study abroad group, but roughly equal to the interdisciplinary study abroad students (Bender et al. 2009). Programs like these focusing on travel to another domestic university (or even remaining at their own universities) are not unheard of and the effects of such programs are not entirely a mystery, but further research into those benefits would help university faculty, staff, and leadership improve their own educational outcomes when it comes to increasing global awareness instruction.

*Conclusion*

As described earlier, universities are continuously pushed to meet the increasing demands of preparing their students to succeed in the global community. Developing multiculturalism on university campuses needs to be viewed as an ongoing process that will require more than a single action to address (Chen, 2017). Even as universities have been responding by internationalizing their collegiate experiences to better meet the demands of the modern world (Watson, Siska, & Wolfel, 2013; Shcheglova, Thomson, & Merrill, 2017), past performance does not bode well for American universities. Historically, education in the United States has failed to prioritize the skills required to function in a globally connected world (Doppen & An, 2014). Information that addresses some heretofore unexplored aspect of increasing global awareness on college campuses should be welcomed and examined for insight that could assist each university's' goals.

There is a difference in global awareness acquisition for some academic disciplines. As students from universities in the United States continue to study abroad at increasing rates, those same universities and third-party study abroad organizations owe it to their students to provide the most effective and rewarding experiences possible. Some disciplines perform much better at conveying global awareness, while others – especially the STEM fields – perform much worse. Moving forward, institutions should adjust their management of study abroad offices taking into account these additional factors just like they would anything else like gender identity, racial/ethnic identity, potential health concerns, etc.

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## Appendix A:

Survey tool used for this study (modified from Cheiffo & Griffiths (2004))

This short survey measures the level of global awareness for university-level students. All of these questions are self-reported and should be addressed to the best of your knowledge. No personal or contact information outside of the limits of the questions on this survey will be collected and you should feel free to opt out at any time if you do not wish your information to become part of this study. Partially completed surveys will not be part of this study and any data from partially completed surveys will be deleted and/or destroyed.

Thank you in advance for taking this survey.

Use the following scale to address items 1-10:

A= Strongly Disagree      B= Disagree      C= Indifferent      D= Agree      E= Strongly Agree

1. I know how to make a phone call to someone in a different country.
2. I understand how foreign manufacturing affects the price of consumer good in the U.S.
3. During my most recent course term, I have become more interested in attaining fluency in another language.
4. I can explain some aspect of U.S. foreign policy to someone from another country.
5. I know the currency conversion rate for the U.S. dollar to at least one foreign currency.
6. I feel comfortable in my understanding of U.S. trade relations with at least one foreign country.
7. I am patient with people in the U.S. who don't speak English well.
8. I am comfortable in my ability to communicate with members of at least one foreign culture in their native language.
9. I am interested in learning more about world geography.
10. During this course term, I have developed a greater appreciation for the arts (in the form of buildings, paintings, literary works, etc.).

Use the following scale to address items 11-20:

A= Never      B= Rarely      C= Occasionally  
(about once a week)      D= Frequently  
(couple times a week)      E= A lot  
(more than 10 times a week)

11. I read an article, watched a TV show, or spoke to someone about how Americans are viewed by people from other countries.
12. I watched a non-American TV station, news broadcast, or television show.
13. I have consciously withheld judgement on a controversial international event until I learned more facts.

14. I thought about the differences between myself and people from other countries.
15. I looked up something on a map of another country.
16. I thought about the similarities between myself and people from other countries.
  
17. I looked up a non-English word in a dictionary
18. I thought about a current issue that's important to the people of a developing country.
19. I thought about why other countries may have a different perspective than the U.S. on global issues such as agricultural production, trade, or the environment.
  
20. I listened to music sung in a language other than English.

Select the following which best describe yourself and your study abroad experience.

21. I am a: (A) male, (B) female.
  
22. I am a: (A) freshman, (B) sophomore, (C.) junior, (D) senior, or (E) other.

23. My major is best characterized under the following heading:

- A = Physical or Life Sciences
- B = Health Professions
- C = Engineering
- D = Math or Computer Science
- E = Agriculture
- F= Business & Management
- G= Social Sciences
- H= Foreign Language & International Studies
- I= Fine and Applied Arts
- J= Communications & Journalism
- K= Humanities
- L= Education
- M= Legal Studies & Law Enforcement
- N= Other Fields of Study
- O= Undeclared

24. To the best of my knowledge, my GPA fits within the following range:

- A = 3.5-4      B = 3.0-3.49      C = 2.5-2.99      D = 2.0-2.49      E = below 2.0

25. Which best describes your home country?

- 1 through 195 = [List of U.N. Recognized Countries & Political Zones]  
196 = Other

26. I have participated in a study abroad program for university credit in the past 4 years?

A = True      B = False

If answer to the previous question was (B), please skip to question 30.

27. The academic focus of my most recent study abroad program is best described as:

A = Physical or Life Sciences

B = Health Professions

C = Engineering

D = Math or Computer Science

E = Agriculture

F = Business & Management

G = Social Sciences

H = Foreign Language & International Studies

I = Fine and Applied Arts

J = Communications & Journalism

K = Humanities

L = Education

M = Legal Studies & Law Enforcement

N = Other Fields of Study

O = Cross-disciplinary or Multidisciplinary

28. The location of my most recent study abroad location is best described as:

1 through 195 = [List of U.N. Recognized Countries & Political Zones]

196 = Multiple Countries in Europe

197 = Multiple Countries in Latin America

198 = Multiple Countries in Africa

199 = Multiple Countries in Asia

200 = Multiple Countries in Oceania/South Pacific

201 = Multiple Countries in North America

202 = Multiple Countries Worldwide

203 = Other

29. The duration of my most recent study abroad program is best described as:

A = Summer Term: more than 8 weeks

B = Summer Term: 2-8 weeks

C = Summer Term: Fewer than 2 weeks

D = One Semester

E = 2 to 8 Weeks

F = Less than 2 Weeks

G = January Term

H = Academic Year

I= One Quarter  
J= Two Quarters  
K= Calendar Year

30. How many times have you studied or travelled abroad?

A= Not at All  
B= 1-2 Times  
C= 3-5 Times  
D= 6-8 Times  
E= More than 8 Times