

Spring 2019

Elements of Successful Education Abroad Programs for STEM and Vocational Students: Lessons from the University of Wisconsin – Stout, Polytechnic

Amy Kelley
SIT Graduate Institute

Follow this and additional works at: <https://digitalcollections.sit.edu/capstones>

Part of the [Academic Advising Commons](#), [Higher Education Commons](#), [International and Comparative Education Commons](#), [Science and Mathematics Education Commons](#), and the [Vocational Education Commons](#)

Recommended Citation

Kelley, Amy, "Elements of Successful Education Abroad Programs for STEM and Vocational Students: Lessons from the University of Wisconsin – Stout, Polytechnic" (2019). *Capstone Collection*. 3171.
<https://digitalcollections.sit.edu/capstones/3171>

This Thesis (Open Access) is brought to you for free and open access by the SIT Graduate Institute at SIT Digital Collections. It has been accepted for inclusion in Capstone Collection by an authorized administrator of SIT Digital Collections. For more information, please contact digitalcollections@sit.edu.

Elements of Successful Education Abroad Programs for STEM and Vocational Students:

Lessons from the University of Wisconsin – Stout, Polytechnic

Amy N Kelley

A Capstone Paper,

submitted in partial fulfillment of the requirements for a

Master of Arts in International Education at

SIT Graduate Institute in Brattleboro, Vermont, USA.

Seminar start date: May 6, 2019

Advisor: Lynée Connelly

Consent to Use of Capstone

I hereby grant permission for World Learning to publish my capstone on its websites and in any of its digital collections, and to reproduce and transmit my capstone digitally. I understand that World Learning's websites and digital collections are publicly available via the Internet. I agree that World Learning is NOT responsible for any unauthorized use of my capstone by any third party who might access it on the Internet or otherwise.

Student Name: Amy N Kelley

Date: April 5th, 2019

Abstract

In a globalized economy, wherein manufacturing and knowledge trade are international, STEM – science, technology, engineering, math – and vocational degrees lead to international career paths. International experience through education abroad is relevant, therefore, to preparing STEM and vocational students preparing for these international paths. The University of Wisconsin – Stout, Polytechnic (Stout) serves as a case-study for the question: “What elements or structures of an education abroad program should be emphasized to build programs which best serve STEM and vocational students’ unique needs, creating an optimal environment for learning and growth, while preparing them for global careers?” Data collection to address this question includes interviews with the staff of Stout’s Office of International Education (OIE), drawing on all digitally available student records, surveying Stout study abroad student alumni, and follow-up interviews with a number of those students. Findings from each step of this process are analyzed against each other, seeking over-arching trends. Data analysis of program trends match to reported student experiences, and student responses reveal six elements key to programmatic success: academic fit, preparation in academics and mindset, structures which promote growth, location relevance to their field, having a balanced and enjoyable experience, and reflection connecting that experience to their future. These elements suggest application across all education abroad programs of the OIE as well as similar institutions. Beyond these findings, mismatches between researcher expectations and quantitative and qualitative findings also reveal many opportunities for further investigation into the research question.

Table of Contents

Abstract	2
Table of Contents	3
Introduction and Statement of Research Question	1
Literature Review and Authority for Study	3
Introduction to Literature	3
Limitations of the Literature	3
Importance of Education Abroad for STEM and Vocational Students	5
Research from international educators.	5
Concerns and needs of industries and corporations.....	6
Limitations faced by U.S. institutions.	7
Case Studies: Models and Programs of US Institutions	8
Traditional models: exchange partners and faculty-led programs.....	9
Non-traditional models: building in time through projects, internships, and dual-degrees. .	10
Non-traditional models: increasing opportunities through added campuses and unique institutional partnerships.....	13
Moving Beyond the Literature	15
Research Design and Methodology	16
Institutional Context	16
Data Collection Methods	19
OIE staff interviews.....	19
Database records.....	19
Student surveys.....	20
Student interviews.	21
Data Analysis Methods	21
Garnering context through OIE staff interviews.	22
Understanding program trends through database analysis.	22
Seeking rationale through student surveys and interviews.....	23
Refining questions and re-coding responses for greater understanding.....	24
Research Findings	25

Two General Perspectives of OIE Staff	25
Heritage staff.	25
Newer staff.	28
Unexpected Trends in Program Utilization	32
Top student majors studying abroad.....	32
Top programs by popularity.	33
Attendance by program length.	34
Continued relevance of investigation of the student experience.	35
Six Elements of Successful Programming Drawn from Student Responses	36
Academic fit.	37
Preparation in academics and mindset.....	40
Location relevance to the field.	42
Structures which foster growth.....	45
Balanced and enjoyable experience.....	47
Reflection and connecting experience to future.	48
Six elements synergized.	50
Dream programs further highlighting these six elements.....	51
Discussion	54
Connecting OIE Perspectives, Data, and Student Experiences.....	54
Connecting Findings to Literature and Case Studies	56
Narrowing the Gap of Understanding	57
Application of Findings to future Education Abroad Program Decisions	58
Recommendations for Further Research	60
Conclusion	60
References	63
Appendixes	68
Appendix A: OIE Staff Interview Script.....	68
Appendix B: Student Survey with Consent Preamble	70
Appendix C: Student Interview Script	73
Appendix D: Graph: Programs Divided by Major	75

Appendix E: Graph: Majors Divided by Programs 75
Appendix F: Chart: Top Sending Majors 76
Appendix G: Chart: Top Receiving Programs 76
Appendix H: List: Significant Major to Program Correlations 77

Introduction and Statement of Research Question

Education abroad has historically been seen as a finishing touch to round out students' soft skills. To many people, education abroad brings to mind the concepts of culture, language, and personal growth. Less often is education abroad conceptually connected with markets, materials, and flow of human capital, or as pertaining to hard skills, to science and technology, or to vocations. In the academic sphere, education abroad is most often conceptually associated with liberal arts or language degrees, not STEM degrees – science, technology, engineering, and math – or with vocational training. Yet STEM fields are global, and STEM vocations and careers are global. Up and coming STEM and vocational students need to be trained to work internationally, with cross cultural competence, just as much as liberal arts majors do, perhaps more so as global trade continues to expand. Industries and companies are demanding a cross-culturally competent workforce, and education abroad develops the very skills they are asking for. International education professionals have gradually come to recognize this conceptual gap in education abroad and the historically correlating dearth of STEM degree student participation.

At the University of Wisconsin – Stout, Polytechnic (Stout), the international education professionals of the Office of International Education (OIE) recognize this need and are continuously working to grow international programs which will serve Stout's predominantly STEM and vocational students. Stout is a career-focused institution, with a mission to “serve global society, in part through “the pursuit of innovation, technology, and sustainability” and solving “real world problems” (“Mission and Values,” n.d.). Stout's Office of International Education (OIE), in keeping with this mission, strives “to prepare students for the global workforce and society” (“About Us,” n.d.). In following with this mission, then, Stout and the

OIE should be invested in providing the best possible education abroad programming for Stout's STEM and vocational student body.

This capstone investigates the question: **“What elements or structures of an education abroad program should be emphasized to build programs which best serve STEM and vocational students’ unique needs, creating an optimal environment for learning and growth, while preparing them for global careers?”**

First, the capstone looks to the literature, to existing models and efforts of other U.S. institutions working to get STEM and vocational students abroad. It then seeks out OIE staff perspectives, data, and student experiences, in an effort to understand what is working, for which students, and why. From the findings of trends revealed in the 1,656 study abroad student records in the OIE Terra Dotta database, the survey responses of 78 students, and follow-up interviews with 10 respondents, six key elements of effective education abroad programming for Stout's STEM and vocational students are revealed. These findings are then set alongside the extant case-study models to identify commonalities, make suggestions for future programmatic choices, and identify areas of needed further research.

Every step of the research process in this capstone uncovers gaps in understanding and attempts to bridge those gaps. Out-dated information and misconceptions are discovered in the literature on this subject, in the perception of those interviewed, in the researcher's own perception, and in the current overall direction of international educators' discussions on the need to send STEM students abroad. Despite these gaps, the research question is followed through, arriving at recommendations for action and for future research.

Literature Review and Authority for Study

Introduction to Literature

There are two main focuses to the extant literature. First, there is an emphasis on the importance of education abroad for STEM and vocational students. This emphasis includes research by international educators, as well as a good deal of concern being voiced by corporations and industry professionals. Second, there are investigations into programmatic models being tried at a variety of U.S. institutions, including polytechnics, technical schools, and universities with substantial engineering or technology departments. Of these, the most extensively discussed is Worcester Polytechnic Institute (WPI). WPI is the only school in the literature which has been put through similar qualitative analysis to what this capstone attempts.

Limitations of the Literature

As stated in the introduction to this capstone, literature on the subject of STEM or vocational education abroad is outdated. The vocal concern for drawing greater numbers of STEM and vocational students abroad does not match to the most recent Open Doors data demonstrating that this category of students has overtaken all others in education abroad. At the time much of the following literature was written, international educators would have been referencing the 2006 report on the 2004-2005 academic year. In the 2004-2005 academic year, Engineering had seen a drop of 4.8% in study abroad participation from the previous year, while physical and life sciences had seen a growth of 1.4%, and computer sciences had seen a drop of 10.3% (Institute, 2006). It is understandable then, that international educators at this time were concerned about STEM students not going abroad.

The significant jump of STEM students going abroad appears to have occurred in the 2012-2013 academic year. In this year, Engineering student numbers grew 16.3% over the previous year, physical and life sciences grew 12.8%, while math and computer sciences dropped 1.4%, representing an overall growth of STEM participation numbers of 27.7%, and 14.4% of total U.S. students studying abroad (Institute, 2014). In the following year, Open Doors combined these categories, and STEM topped the list for study abroad participation at 22.6% of U.S. students studying abroad (Institute, 2015). STEM has remained at the top of the list since that time (Institute, 2015; 2016; 2017; 2018).

In the United States, vocational and technical training are carried out in a variety of institutions, including technological universities, vocational training schools, liberal arts universities with large engineering departments, polytechnics such as Stout, and others. Due to this variation, programs and programmatic concerns of study abroad offices vary as widely as the institutions in which they are housed.

While this capstone investigates STEM and vocational students, as these terms best describe nearly all majors at Stout, each case-study described in the literature has drawn lines around investigated student groups differently. For example, the Michigan Technological University allows for students from all majors to complete capstone projects abroad, yet research is focused on the projects of engineering students; similarly, Georgia Tech's campus in France is open to all its students, while research is focused on technology degree seekers (Parkinson, 2007). Likewise, students on WPI's programs include "engineering, physical and life sciences, computer science, and other degrees," a variety similar to the degrees of Stout ("Majors and Degrees," 2007). Looking to the Classification of Instructional Programs (CIP) codes which

define what majors are or are not STEM yields such surprises as finding that graphic design or game design are not considered STEM, not considered technology degrees, but rather categorized under entertainment (“STEM List,” 2016). Due to the narrow definitions of STEM at the government level and the broad descriptivism of researchers cited, STEM, vocational, technical, and engineering students have been rolled together under a broad umbrella in the literary case studies.

Importance of Education Abroad for STEM and Vocational Students

Research from international educators. International educators have long touted the importance of education abroad for developing cross-cultural competence, and several have linked the importance of cross-cultural competence to students in STEM fields. Education abroad “is empirically linked to desired college outcomes, namely, global and intercultural competencies” needed by students approaching work in a globally connected world (Kuh, 2009 in Stebleton et al., 2013). Intercultural competence is becoming recognized as one of those key skills needed for engineering and other technological majors (Klahr, 2000; Marijaun and Sanz, 2018). Additionally, education abroad can equip STEM students with new skills, professional connections, and a better understanding of different cultural approaches to work, greatly improving their adaptability and marketability in the global economy (Marijaun and Sanz, 2018). Furthermore, education abroad can give students the opportunity to work in culturally diverse teams. When studying culturally diverse work teams, looking at fully 73 project work groups, Moon (2013) found that cross-cultural skills, which he termed cultural quotient, was directly related to higher levels of group work performance over time, outpacing mono-cultural peer groups. On the opposite side, limited exposure to differing cultural contexts can reinforce

stereotypes, prejudices, and biases, maintaining a negative “experience of fit and visibility” (Ho, 2007). The creation of diverse work teams has become the norm in many working contexts, and employers in STEM and technical industries are highly aware of this need, and actively seek employees with appropriate cross-cultural skills.

Concerns and needs of industries and corporations. Demand for international competence and soft skills are on the rise as companies make their major decisions internationally, seeking to access new knowledge and expertise, emerging research, and to tap growing markets. Industries are expressing concern for lack of cross-cultural understanding, awareness, or communication skills among incoming employees (Downey, 2006). Even the manufacture of a simple t-shirt begins with cotton collection in the United States, processing the cotton into thread in Indonesia, weaving sheets of fabric in Bangladesh, cutting and sewing in Columbia, and finally image printing and distribution in the country of the purchaser (Planet Money, 2013). Each step moves from country to country, and each step requires workers with both cultural competence and specific technical skills – in maintenance, manufacturing, management, and more. Carlson puts this pragmatic concern succinctly, saying, “American manufacturing has largely moved overseas. Those manufacturing sites are also the homes of future customers.... [American] engineers need to understand those cultures before designing products for them.” (Carlson, 2007).

STEM and vocational students can additionally gain technical skills through study abroad, as differing ways of thinking can lead to both differing ways of *defining* and *solving* engineering, scientific, and technical problems (Downey et al., 2006, author’s emphasis). For example, in France, engineering students are taught to approach problems by first applying

mathematical principles, while students in the United Kingdom approached problems first with practical knowledge, and German students hold the view that precision of work was of utmost importance (Downey et al. 2006). Another difference may be in the goals cited for an engineering or technological project. While American students are primarily focused on cost and performance, German students are more concerned with environmental impact and sustainability (Carlson, 2007). Working across these differing perspectives and synergizing values and viewpoints will only become increasingly important for those entering STEM fields.

In order to address these growing needs, Downey et al. (2006) propose three sets of skills required by globally competent engineers. These skills are applicable to any STEM or vocational worker in a multicultural setting or international corporation, and they are all part of what Moon (2013) calls an individual's cultural quotient. First, they should first have an understanding of cultural differences. Second, they should be able to analyze how differing cultural and life experiences affect what they value as important in engineering work, and, third, they should have respect for the differing cultures and the perspectives others may bring (Downey et al., 2006). Similarly, describing the necessary competencies of the modern engineer, the National Association of Engineering says "team, communication, ethical reasoning, and societal and global contextual analysis skills as well as understand[ing] work strategies" are needed (NAE, 2007 in Miller, 2007). All of these skills can all be gained through education abroad.

Limitations faced by U.S. institutions. Industry demand is clear, but students and institutions of vocational and STEM higher education face limitations which are two-fold: First, there is a lack of systemic unification across vocational and technical schools, paired, ill-fittingly, with tight regulations on certain degrees. Second, this lack of unification creates great

difficulty in unifying international mobilization efforts. Vocational and STEM education in the United States is carried out in a variety of institutions, from community colleges, to technical schools, to four-year polytechnics, all of which are built on different rules and even educational values. Within these schools, STEM degrees are often particularly limited by regulations and standards put in place by the Accreditation Board for Engineering and Technology (ABET), which keep student timelines tight (Klahr, 2000). These regulations allow little flexibility for students to go abroad. Historically, most programs have not even considered it relevant to the degree (Carlson 2007; Grandin, 2005 in Dessoff, 2006). While the European Union has long had the European Community Action Scheme for the Mobility of University Students (ERASMUS), promoting study abroad for engineering students and monitoring their numbers for decades, the United States has no similar organization or government initiative, meaning efforts to mobilized students are “highly decentralized” (Klahr, 2000). Indeed, such a unified system may be hard to conceive among such varied technical and vocational U.S. institutions.

Case Studies: Models and Programs of US Institutions

Despite the lack of capacity for unified efforts, many institutions of higher education are trying new approaches to incorporating education abroad in their STEM and vocational programs. “Education Abroad” covers a wide array of differing styles and lengths of programs. In order to discuss models of different institutions collectively, shared definitions are needed. Parkinson, in his 2007 article *Engineering Study Abroad Programs: Formats, Challenges, and Best Practices*, defines nine different program types useful to this discussion, and applicable to the analysis of other authors. This article by Parkinson was the only such attempt at a collective analysis of institutions and programs which the researcher was able to find. Additional

investigations have been done on Michigan Technological University and the University of Rhode Island (Carlson, 2007; Mihelric, et al., 2007). Regrettably, the researcher could find no qualitative or quantitative analysis that has been done to update these studies since 2007.

Summarizing these various case studies (Carlson, 2007; Mihelric et al., 2007; Parkinson, 2007), those program models may be divided into: traditional program models, non-traditional models which add or build time into student academic timelines, and non-traditional models which increase student opportunities through extension campuses or unique institution-industry partnerships.

Traditional models: exchange partners and faculty-led programs. These are the most common education abroad program models and the models utilized at the University of Wisconsin- Stout. Of the 24 institutions Parkinson investigates, 46 institutions have exchange partners, 4 have partner sub-contract relationships, 4 offer mentored travel, and 3 offer extended field trips (Parkinson, 2007). Exchange partners are defined as institutions sending and receiving students in equivalent numbers, while partner sub-contracts also allow for students to be exchanged, but without concern for balancing of numbers (Parkinson, 2007). Similarly, Stout offers direct enrollment, in which a student technically transfers out to an institution abroad for a semester, and then transfers back to Stout.

Direct Enroll, like partner sub-contracts, does not require equal trade of students between institutions. Exchange partners, partner sub-contracts, and direct enrollment all allow students the opportunity to become a student of another university. Through these programs, students can take courses in general education or in their degree focus, depending on the partner institution they choose to attend. Program lengths can vary from a summer or winter break term, to a

semester or a year. Institutions offering education abroad programs through these partner program types include: The University of Arizona, Boston University, California Polytechnic, University of Dayton, Iowa State, MIT, Milwaukee School of Engineering, Mississippi State, Perdue University, Stanford University, and all 37 member institutions of the Global Engineering Education Exchange (Parkinson, 2007).

Parkinson's mentored travel and extended field trips are both called faculty-led programs at Stout. Mentored travel is defined by Parkinson as students traveling with a guiding faculty member for four weeks or more, while he refers to shorter journeys of this style as extended field trips (Parkinson, 2007). Through these programs, students may be able to supplement classroom coursework through time abroad at a location relevant to the subject matter, or they may take a fully-inclusive course, which includes reading or work to be completed before, during, or after their time traveling abroad with the course leader. Institutions offering faculty-led education abroad programs include: Brown University, Bingham Young University, University of Dayton, MIT, Mississippi State, University of Nebraska, and the University of Pittsburgh (Parkinson, 2007).

Non-traditional models: building in time through projects, internships, and dual-degrees. A number of institutions effectively build extra time into student timelines through service-learning projects, international internships, and dual-degree options. Project-based service learning places the project at the center of the education abroad experience, and international internships are similarly self-explanatory. Dual degrees may be two degrees received from the same university, or one degree received from the home university alongside one degree from the international host (Parkinson, 2007). Parkinson identifies 3 institutions with

project-based service learning, 7 with international internships, and 5 with dual-degree options, including 4 at the undergraduate level and 3 at the graduate level (Parkinson, 2007).

Of these, the most researched and qualitatively investigated program is that of Worcester Polytechnic Institute (WPI). Worcester Polytechnic Institute may very well be the lead polytechnic sending their STEM degree students abroad. Currently WPI boasts that 65% of Worcester Polytechnic Institute (WPI) students complete service-learning projects abroad up from roughly 50% in 2007, and 30% in 1997, marking steady progress toward their goal of 100% participation in The WPI Plan, linking subject learning to real-world career application (“The WPI Plan,” 2018; Carlson, 2007; Haddad, 1997). Student groups, under faculty supervision, conduct projects relevant to the needs of the host culture, as chosen by a local organization, in countries ranging from Thailand to Costa Rica (Parkinson, 2007). WPI now has residential project centers more than ten countries (Haddad, 1997; “The WPI Plan,” 2018).

Local project sponsors include small business, large corporations, non-profits, and government agencies. These provide all needed support for the project team. Local sponsorship allows students to address local needs, such as garbage collection in Bangkok or preservation of historic treasures in Venice (Haddad, 1997). Students generally take courses and prepare for their projects with necessary research for one or two quarters preceding the trip (Carlson, 2007). WPI claims the three keys to the success of their program are: curricular fit within the academic timeline (academic quarters), institutional commitment from the highest level, and buy-in from all departments and faculty (Carlson, 2007). It is worth noting that all of these keys to effectiveness call for broad institutional support.

The other institutions focused on project-based service learning which Parkinson identifies are the University of Dayton and Duke University (Parkinson, 2007). Through Dayton's Engineers in Technical, Humanitarian, Opportunities of Service-learning (ETHOS) program, students carry out technology-development projects in Latin America and Africa. Duke's Engineering World Health service-learning program similarly has Duke students installing and repairing medical equipment in a handful of Central American countries (Parkinson, 2007).

Dual-degree programs are offered by the University of Rhode Island, the University of Cincinnati, Purdue, the University of Connecticut, the Milwaukee School of Engineering, and Virginia Tech (Carlson, 2007; Dessoiff, 2006; Parkinson, 2007). The University of Rhode Island allows students to opt for a five-year academic plan, in which one year is spent abroad in Germany, Spain, or China, and which grants the student a dual degree in both their technical discipline and language of their host country (Carlson, 2007; Dessoiff, 2006). Rhode Island students take courses in German, Spanish, or Chinese for the first three years of their academic career, gaining fluency, and then, in their fourth year, spend a semester at one of their exchange partner schools, for instance the Technical University of Braunschweig, in Germany, or the University of Cantabria, in Spain. That semester is followed by taking a six-month internship in the host country (Carlson, 2007).

The University of Cincinnati runs a similar five-year program, but without the exchange semester, and adding required culture and history courses prior to the student's six-month international co-op (Parkinson, 2007). Purdue University manages to avoid adding a fifth year with their global engineering program by having students take just twelve credits of language in

their first three years, enough to get by, and then taking a three month internship abroad over the summer, followed by one semester at an exchange partner offering courses in English, and, finally, following these up with a project they build and test on the home campus, inspired by their international experiences (Carlson, 2007; Parkinson, 2007).

The University of Connecticut partners with the German state of Baden-Württemberg to create their EuroTech program, through which students intern at a German company domestically for one semester, followed studying abroad in Germany for a semester, and completing a six-month internship there. Students of this program are awarded a BA in German and BS in Engineering (“Eurotech,” n.d.; Parkinson, 2007,). The Milwaukee School of Engineering (MSOE) awards a MSOE bachelor’s degree alongside a degree from the Lubeck University of Applied Sciences (Lubeck) to engineering or business students who spend their junior year at Lubeck studying German language and culture (Parkinson, 2007).

Finally, Virginia Tech students take six semesters of German language and spend their senior year abroad taking courses in their degree to obtain a dual-degree in their major and German. Graduate students at Virginia tech can split their two-year degree between locations for a dual MS (Parkinson, 2007). In many of these cases, these schools have created agreements with major internationally-located companies such as Siemens, General Motors, or Cummins for their students to intern (Carlson, 2007; Parkinson 2007). Each of these institutions award dual degrees for a combination of language learning, international study, and internships.

Non-traditional models: increasing opportunities through added campuses and unique institutional partnerships. Some institutions have found ways to increase student opportunities through extension campuses and unique partnerships. Parkinson’s extension

campuses are also termed satellite campuses by other professionals. These distant bases may vary in size and complexity, as well as staffing permanence (Parkinson, 2007).

Parkinson finds three institutions that have opted to increase student opportunities through building extension campuses: Georgia Tech, Stanford University, and MIT. Georgia Tech has set up a campus in France with courses in English fitting to any Georgia Tech student's major. Georgia Tech students are all encouraged to study there for a semester or two and to consider getting a dual Master of Science through one of their French Exchange partners (Parkinson, 2007). Georgia Tech additionally offers a Dual-MS in Engineering or Computer Science to graduate students who spend three or four semesters taking courses at their French campus. Stanford University has extension campuses across 12 countries (5 at the time of Parkinson's writing), allowing students to take courses in general education or their degree focus in major cities such as Paris, Beijing, or Cape Town ("Bing Overseas," n.d; Parkinson, 2007). Their website boasts that fully 44% of Stanford students take this opportunity ("Overseas and Off-Campus," n.d.). The Massachusetts Institute of Technology, better known as MIT, also has study centers across several countries (Parkinson, 2007).

Institutions which have created unique industry partnerships include Michigan Tech and Iowa State University (Mihelcic et al., 2007; Parkinson, 2007). Michigan Tech allows their students to do their senior capstone projects abroad, while encouraging them to consider getting a certificate in International Sustainable Development Engineering with additional language, culture, and history coursework. Michigan Tech has also set up a mutually beneficial partnership with the engineering branch of the Peace Corps, allowing students to obtain a Master of Science with their Peace Corps work as practicum (Mihelcic et al., 2007). Iowa state has set up

triangular-exchange relationships with university and industry partners, making use of the international branches of several major companies. John Deere, for example, has headquarters in both Iowa and Germany. In conjunction with their exchange partner, Hochschule Mannerheim, Iowa State is able to provide both U.S. and German students internships in both locations (Parkinson, 2007). Unique industry partner relationships such as these take a lot of work and determination to arrange and maintain, but may prove out many mutual benefits for students, institutions, and industry alike. With some effort, they could be valuable to many institutions with industry affiliations.

Moving Beyond the Literature

It is unfortunate that these case studies have not seen updated investigation in the twelve years since these reports were written. The concern of international educators regarding STEM students not going abroad and the above initial case studies are outdated according to current Open Doors data (Institute, 2018). Additionally, these case studies all investigate what students *may do* abroad. The case studies look to different options or opportunities institutions have made available to their students. No collective assessment of their success has been attempted. The next step is to ask what elements or structures may make learning on these programs effective, offering STEM and vocational students the best opportunities for learning and growth, and preparing them for global careers. Finding these elements would answer the concerns of academic researchers eager to send STEM students abroad, such as Stebleton et al., as well as those investigating industry needs, such as Carlson or Downey et al. The search for these elements is the focus of this capstone. By digging into the data and surveying the student of the University of Wisconsin – Stout, Polytechnic, the following research demystifies *what* programs

are serving *which* students and *why*. Doing so should provide insight into the rise of STEM majors participating in study abroad and give ideas for further direction and expansion of education abroad programming for STEM and vocational students. Good analysis

Research Design and Methodology

Institutional Context

The University of Wisconsin – Stout is a polytechnic. As a polytechnic, the bulk of the degrees offered are technically focused. In other words, the degrees are majority STEM by lay definition. Of the 52 undergraduate degrees on offer at Stout, 16 fall under federal STEM designation, including majors such as applied biochemical science and mechanical engineering. Additional majors in graphic design and interactive media or food science and technology account for another 15 majors which can be considered STEM by lay definition. The remaining degrees, including apparel design and development or golf enterprise management, are vocational degrees. The majors in exception to this definition would be the handful of education degrees, and business administration or management. These total 7 degrees, while another 3 degrees in science and technical education fall in a grey zone between STEM and vocational. Graduate degrees offered are a more even mix between education and technology, but so few graduate students participate in study abroad, they do not bear statistical representation. (Graduate students accounted for only 1.8% of the study abroad attendees on record from 2011 to 2018)

The University of Wisconsin – Stout is a fairly young university and has always been career and technology focused. Stout was founded as The Stout Institute in 1893, with a mission to help its students “become efficient industrial, social, and economic units within their

environment” (“Our Rich History,” n.d.). It offered technical training courses as well as what was then called “home economics,” predecessor to Stout’s modern apparel design degree. In 1911, it became Stout State, and, in 1955 Stout joined the University of Wisconsin system (“Our Rich History,” n.d.). The degrees and courses on offer at Stout have steadily expanded and modernized, but the mission of the university has changed little. The current vision statement reads:

“We prepare lifelong learners, ethical leaders and responsible citizens through collaborative programs that integrate applied learning, theory and research with business, education, industry, arts and government.” (“Mission and Values,” n.d.)

The Office of International Education (OIE), similarly, is a young department. Formerly called the Office of International Programs (OIP), it was founded in 1981 as a way to bring together international programming efforts being made in departments such as Art and Home Economics (Now Apparel Design and Development) (Moher, 1983; Personal communication with OIE staff, March 18, 2019). In 1981, Stout’s art department sought an exchange with Hildenstein University, and Home Economics sought an exchange with the American Intercontinental University of London (now called Regents University) (Personal conversation with OIE staff, March 18, 2019). These initial programs, as well as the beginning of an exchange with the Northeast Wales Institute, a rehabilitation and physiotherapy school, convinced the administration that a collective international programs department was needed (Moher, 1983; Personal communication with OIE staff, March 18, 2019). The OIP/OIE brought together under one roof international student services, formerly housed in Administration, study abroad, and the English as a Second Language Institute (ESLI).

The Office of International Education offers study abroad through exchange partners, direct enrollment options, faculty led programs, and a couple of unique programs run by other University of Wisconsin system institutions. Currently, the OIE has roughly a dozen exchange partner agreements, including a collective agreement with 13 schools in the German state of Hessen. The OIE's exchange partners and direct enrollment options are heavily Western European, but also include long-standing relationships in Australia, and new agreements in Korea. Each year, roughly ten faculty-led programs are run by the OIE in the summer or winter breaks (known as Win-Term). Among these faculty led programs are a few long-established programs, including Wine and Food in France and Spain, Natural History of the Neotropics in Belize, and Multicultural and Global Impacts on Education in Guatemala.

Largely, the faculty led programs see a lot of change from year to year as faculty and their interests come and go, or as faculty alter programs they've run in the past. Through the UW system, students can also join the Experience China program, a faculty led semester, or study through the Wisconsin in Scotland program. Wisconsin in Scotland is essentially a satellite campus, with UW courses taught by a rotating array of UW system professors. Recently, the OIE is intent on adding exchange partners in new regions, particularly Asia and Central or South America, and contracting with a growing number of corporate providers.

Due to the relative youth of the OIE department, and due to the revolutions of institutional record keeping represented by the rise computer databases, accessible OIE records are relatively limited. Paper records have been kept since the beginning of the department, but digital files have only been collectively maintained since 2005. In 2011, the OIE purchased Terra Dotta, the industry standard Client Relations Management (CRM) tool of study abroad offices

nationally. Therefore, the office has eight years of readily accessible, coded data. For the purpose of this capstone, these are the records referenced. Excellent introduction of the university

Data Collection Methods

To answer the research question of this capstone: **“What elements or structures of an education abroad program should be emphasized to build programs which best serve STEM and vocational students’ unique needs, creating an optimal environment for learning and growth, while preparing them for global careers?”** a multi-pronged approach was required.

OIE staff interviews. First, the four OIE staff who handle study abroad matters were interviewed. The positions of these staff members include the current director of the OIE, the retired director of the OIE, the director of study abroad, and the office manager and financial specialist. OIE staff were asked to describe the education abroad programs on offer, to name popular programs and identify reasons for their popularity, and to give their opinions on whether these programs are serving Stout student needs. They were also asked to give rationale for selection of partner universities, provider company partners, and faculty led programs (See Appendix A for the full interview script). Finally, they were asked if they had any dream locations, institutions, or partners they would like to send Stout students to. All of these questions had the shared goal of understanding staff perspectives on program trends and selection. The intention of these questions was effectively to draw out staff answers to the research question without asking it directly.

Database records. Second, the student record database was interrogated to suss out statistical evidence of program trends and program utilization. The full record database was

queried to pull all student records keyed to all destinations with the exception of the United States. At the time of the data-pull, February 28th, 2019, this yielded 1,656 student records from Spring 2011 to Spring 2019. From this data export, all identifying names, IDs, emails and addresses were removed, as well as information irrelevant to this capstone, including year in school and grade point averages. Removing this data left only the students majors, minors, programs of attendance, terms and years.

Student surveys. Third, study abroad alumni and students currently abroad were surveyed. In order to reach a number large enough to create a representative sample, students who studied abroad in the calendar years of 2017 and 2018 were contacted via email with a link to the survey and full consent pre-amble explaining researcher positionality and survey purposes. As the opportunity arose for the researcher to speak to at the Spring 2019 study abroad orientation, those students were also contacted. From a total of 645 students emailed, 84 survey responses were received. Six of these responses were from students on domestic programs and had to be dropped from the data, bringing the number of respondents to 78. In the survey, students were asked about their majors, the programs they attended, and type of courses taken abroad. Then they were asked to reflect on how their program choice connected to their academic career and future hopes. They were also asked about any person impact they felt they'd gotten from study abroad, and for reasons why they would or wouldn't recommend the program they attended to other Stout students (See Appendix B for survey questions). These questions had they collective goal of understanding what was working for whom and why, in order to build on the database analysis.

Student interviews. Follow-up interviews were conducted with a limited number of surveyed students as the fourth step in this capstone's data gathering. With a limited time window of just one week to complete these interviews, follow-up candidates were chosen based on availability and matching schedules. Doing so resulted in follow-up interviews with 10 Stout study abroad alumni. These interviews asked students to further explain their survey answers. Of particular focus was clarification of the survey question: Thinking about your personal interests in life, academics, or career, how would you say this study abroad experience matches to what you want in your life or future? Students were also asked if they would have changed anything about the program they attended and to describe their dream study abroad program (See Appendix C for survey interview script). The student interviews were intended primarily to clarify the student surveys.

Data Analysis Methods

The qualitative data gathered through staff and student interviews as well as student surveys were approached through Grounded Theory, as developed by Corbin and Strauss. Grounded theory involves the system gathering and analysis of data, with a "continuous interplay between analysis and data collection," seeking identifications of patterns to generate concepts and arrive at an overall theory (Corbin & Strauss, 1990; Strauss & Corbin 1994). Every step of the research process built on understanding from the previous step (Strauss & Corbin, 1994). For this capstone, questions and queries were pre-determined and stated in the research proposal, but the staff and student interviews offered opportunity to seek clarification and create interpretive focus. Because of the open-ended, qualitative nature of the interview and survey questions, direct

data analysis of most components was not possible. Only analysis of the student records on the database could be done through generation of sums and percentages. Well situated

Garnering context through OIE staff interviews. Staff interviews were used in this research endeavor to determine a basis of understanding for further queries. As such, responses were not intensely interrogated within the interview, but analyzed against one another to bring to light OIE perspectives as they pertain to Stout programs and the research question, finding patterns, as well as areas of agreement and disagreement. What study abroad programs Stout is running and why, as well as which programs are popular and why were drawn out from OIE staff interview answers.

Understanding program trends through database analysis. The data drawn from the Terra Dotta database, totaling 1,656 student records from Spring 2011 to Spring 2019, had all identifying and extraneous data removed, leaving only student majors and education abroad programs attended. The purpose of this data draw was to ask which students, by major, have been joining which education abroad programs. First, using Excel pivot tables and sum formulas, the total number of students of each major on each program was found. This was done for all 53 programs in the records, divided by all 52 undergraduate degrees, and the 7 graduate degrees represented. These numbers were then input into a fully-inclusive table, with student majors on the Y axis and education abroad programs on the X axis. This is the table from which all database statistics were generated.

From this table, answers were sought regarding which majors were going abroad and on which programs they were going. Along the way, inconsistencies of program naming and naming of majors were addressed. For example, the faculty-led program Multicultural and

Colonial Impacts on Education was called by a few longer and shorter variations of the name. Certain majors were also inconsistently named, such as Rehabilitation Services sometimes being called Vocational Rehab. In order to determine accurate and consistent naming, the researcher utilized the Terra Dotta internal program search feature, as well as an official list of majors from Stout's admissions department.

Graphs were rendered both the look at majors divided by program (See Appendix D), and programs divided by major (See Appendix E), revealing trends of program utilization and program popularity. This was done in Google Sheets due to the ease switching the x and y axis in graph and chart generation. These graphs of majors to programs were clarified and made more representative by then removing the one statistical outlier set discovered. Adding sum formulas to the end of each column and row to find the total number of students who have studied abroad from each major and the total number of students who have attended each program, charts were also rendered showing top sending majors (See Appendix F) and top receiving programs (See Appendix G). All of this data-generation is the original work of the researcher.

Seeking rationale through student surveys and interviews. Analysis of student survey responses was done through Open Coding, per Grounded Theory. Open coding is an “interpretive process” in which data events are compared and contrasted in search of patterns, creating “generative questions,” and applying conceptual labels (Corbin & Strauss, 1990). Student survey responses were read and re-read in search of patterns and anything repeatedly expressed. Unfortunately, the initial run of codings proved unfruitful, as students did not answer questions as they were intended. Sometimes, the answer mis-matches appeared due to lack of understanding they question's purpose or, perhaps, being caught in the exact wording of the

question. By and large, however, mis-match was often the result of a seeming eagerness of students to express personal growth achieved through study abroad. For example, to the question: “Thinking about your personal interests in life, academics, or career, how would you say this study abroad experience matches to what you want in your life or future?” students gave answers such as : “it matched to my love of travel,” and “it helped me gain a more global perspective” or “it was a life-changing experience” (Survey, February 2019). While these statements have their space for appreciation, they do not answer to the purpose of the research. For this reason, it was important to get greater clarification through student interviews in order to better analyze survey responses.

Refining questions and re-coding responses for greater understanding. Student interviews focused on clarifying responses which they gave in the surveys. The previously mentioned question was again asked to all interviewees, as well as questions further clarifying program fit to major or academic plan, follow-up on anything they mentioned about program choice, and suggestions for program changes or future dream programs. With these newly clarified answers, open coding was again used to draw out elements of the study abroad programs which served the students’ needs, created an optimal environment for the growth they all spoke of, and gave them a more global understanding of their academic field or connection to their careers. Six themes were identified, spanning the flow of the education abroad timeline: academic fit, preparation in academics and mindset, structures which foster growth, locations relevant to their major, a balanced and enjoyable experience, and reflection, or connecting the experience to their future or career. Interesting themes

With these freshly-discovered thematic categories, the short-answer survey responses were revisited, and each was re-coded by these categories. Re-coding allowed statements about structural elements students appreciated, for example, to be drawn out from statements about overall program enjoyment or personal growth.

Research Findings

Two General Perspectives of OIE Staff

Between the four OIE staff interviewed, two staff are heritage, having worked at the OIE for 15 and 34 years, respectively, and two staff are relative newcomers, having worked at the OIE between one and five years. The heritage staff expressed similar views to each other. Newer staff also expressed agreeing views. However, perspectives of the heritage staff and newer staff hardly overlapped.

Heritage staff. *Programs on offer.* Heritage staff took a historical, long view when describing the programs of the OIE. They spoke of long-established programs and partnerships, such as with Southern Cross University in Australia and the Wisconsin in Scotland program, and then the heavy shift to faculty-led programming.

In the earlier days of the OIE, they said, most students went abroad for a semester exchange, and many exchange partners came about through the connections of Stout faculty. One heritage staff member described it this way:

Our exchange programs – They were mostly started by a professor that was going abroad, and it seemed like it fit in their degree here at Stout, and so that’s how some of the exchange programs got started, by the faculty visiting there, and “Oh, hey, I think this would be great!” But then sometimes the faculty would leave, and there wouldn’t be another faculty

interested in the program; that's what happened with Hildesheim. (Interview, March 18, 2019)

The popularity of these programs, they said, was driven by the charisma and popularity of the faculty. This phenomenon led to a few long-running programs, such as Wine and Food in France and Spain programs, but to many programs which ended once faculty moved on. Word of mouth from faculty and alumni students was the top driver of program popularity in their view. A program they spoke of as having been historically more popular was Wisconsin in Scotland.

Popular programs and why. The Wisconsin in Scotland program was created by the UW system following the purchase of the Dalkeith Palace, in Midlothian, Scotland ("Wisconsin in Scotland," n.d.). At this satellite campus, UW system professors lecture UW system students on a quarters-based system, with extensive field trips in the region. From the beginning, heritage staff said, "the whole concept was wonderful in that it got faculty abroad, and got students abroad, and for the courses to transfer back to Stout because they were taking general education courses" (Interview, March 18th, 2019). The promotion of the professors was key, they said. "The faculty, they were teaching there for four months, and they had such a great experience, they would constantly be recruiting... Everybody knew the Wisconsin in Scotland program" (Interview, March 18th, 2019).

What changed, they said, was partly the shift to faculty led programs in the mid-1990s, and partially the general expansion in the number of programs OIE offered. Faculty were now recruiting for their own programs rather than semester long exchanges, but also, "We thought that maybe getting involved in faculty led programs – it would stir the interests of students to go abroad for a semester, but that didn't necessarily happen.... They were maybe more interested in

going on another faculty-led” (Interview, March 18, 2019). Both spoke of the advantage of being better able to market programs to students when the OIE had fewer and staff knew each program through first-hand site visits.

Maybe we have so many programs now we’re managing, and you have one [student] go here, and one go there, and, I don’t know – Can you get too many programs? You know, it’s all so overwhelming now, whereas [in the past] we really knew in and out what those programs were, so we could really advise. (Interview, March 18, 2019)

Heritage staff were unsure whether this alone could account for the decline in historically popular programs, or whether it was due to students lacking awareness of their study abroad options or changing interests and generational culture.

Selection of partners and programs. A key point of decision in choosing exchange partners, heritage staff said, was whether the other institution could offer enough courses taught in English. Again, they said many partnerships had historically been formed through faculty connections. Both heritage staff members felt unsure whether OIE programs were adequately meeting student needs. They expressed concern for changes in students’ need to work during the school year, and the potentially prohibitive financial and time costs of programs. One asked: “are students interested in studying abroad, or just getting out and paying out their debt?” (Interview, March 18th, 2019)

Future interests. Heritage staff were concerned with low study abroad utilization numbers. They wondered aloud why the rise in variety of programs on offer did not correspond with a rise in the overall numbers or percentage of students studying abroad through the OIE from year to year. Both heritage staff were interested in growing exchange partnerships, but they

were concerned for the OIE's ability to market and balance these, saying, for example "if you can't get students from here interested to go to Sweden for a semester, you know, how long can you accept Swedish students to come here?" (Interview, March 18th, 2019). They questioned current students' interests, saying "are they sparked in interest of... I don't know, architecture?" (Interview, March 18th, 2019). Learning more about contemporary Stout students' needs and interests was a big concern of heritage staff.

In regards to future ideas for programs or partners, heritage staff expressed the need to understand destinations that are popular with contemporary students and locations which may be good to recruit international students from. These would be ideal for exchange partnerships. They wanted students to be able to "go on programs that they can afford to go on and have some spending money while they are there" (Interview, March 18th, 2019). They also stated that offering other second languages in addition to Spanish at Stout would open new fields of program possibilities at the OIE.

Newer staff. *Programs on offer.* Newer OIE staff gave a contemporary overview of the various types of programs offered, though they verbally divided them into different categories. One categorized programs by comparative travel lengths and budgets, while the other described the division between partner exchanges or affiliates, and "home grown [programs], meaning the faculty design and implement the courses," i.e. faculty-led (Interview, March 8, 2019). Even in these differing divisions, differing programmatic concerns can be heard, i.e.: budget, time span, and program design control. Both agreed that partners for exchange or potential direct enrollments are chosen based on a combination of having comparable majors and being able to offer that coursework in English. Faculty-led programs, they indicated, were they prevue of the

Stout faculty, and they are always seeking to get more faculty interested in leading programs or supporting programs as secondary leaders (Interview, March 8, 2019; Personal Communications with OIE staff, various dates, Spring 2019).

Popular programs and why.

Newer staff were agreed that faculty led programs far outstripped semester long exchanges in popularity and gave similar reasons why. One said “Faculty-led programs offer short-term programs which students are seeking. Many of our students have never been abroad before and they feel more comfortable traveling abroad with a professor” (Interview, March 4th, 2019). The other agreed, saying

It’s often hard to take a step and go overseas when you’ve never done it, you know. There’s a lot of fear of the unknown... Faculty led actually gives that extra layer of support.... So there’s a lot of comfort from the student, [and] there’s probably a lot more comfort from the student’s parents. (Interview, March 8th, 2019)

Listing the OIE’s most popular programs, newer OIE staff gave differing answers. They did not name any over-lapping programs, but together listed: Wisconsin in Scotland, Southern Cross University, the Hessen-Wisconsin Exchange, Lorenzo de Medici, the London College of Fashion, CEA Communications and Tourism in Sevilla, Spain, and the faculty led programs of Trends in Europe, and Natural History of the Neotropics. They agreed, “our programs in Europe tend to do very well” (Interview, March 8th, 2019). However, many of these programs do not turn out to be the highest popularity according to the data, so it is the interpretation of the researcher that the programs staff named as most popular correspond more with the staff member’s own interests or their beliefs about what *should* be popular, given close matches to

student majors. For instance, the Hessen- Wisconsin exchange is a partnership with 13 schools in the German state of Hessen, a mix of institutions focused on business administration, technology, and computer science and graphic arts. The high degree of match to Stout courses would indicate that it should be quite popular, but only one or two students go to Hessen each academic year. One staff member explained the difficulty of understanding program popularity, saying “there [are] a lot of different factors in what makes a program successful, so it’s really hard to pinpoint whether it’s destination, whether its content, or whether it’s just availability for students or the potential pool of applicants that could take part” (Interview, March 8th, 2019).

Selection of Partners and Programs.

Newer staff spoke of how exchange partners are arranged now through communication between institution’s international departments, unlike the faculty-driven means described by heritage staff. The institutions, one said, “explor[e], at a superficial level, what majors are in common, if there is interest – if the school is actively engaged in sending and receiving students, and if that model is a win-win for both institutions from a financial perspective” (Interview, March 8th, 2019). The other staff member explained that impetus for this outreach sometimes comes from the requests of students. For example,

Students were asking for program option in Korea and more affordable options in Asia in general. I had heard about Chung-Ang through a colleague at Winona State whom I met on an educational tour to Spain. I contacted Chung-Ang with an inquiry to partner and we negotiated from there. (Interview, March 4^h, 2019)

As to other reasons the OIE may choose a program, both newer staff were highly focused on costs for students. One of the newer staff explained, “Our typical model [of faculty led] might by

\$3,000, but if we can cut that in half... the reach that we would potentially have to impact so many more of our students would be significant (Interview, March 8th, 2019). Finally, that same staff member stated that their overarching concern for beginning any study abroad program, before cost, would be “how [it is] going to impact a student on his or her academic career and lifelong learning” (Interview, March 8th, 2019).

Future interests.

Newer OIE staff were both interested in creating more inexpensive program options for students. One did not have a specific opinion on ideal locations, so long as they could “send large numbers of students to a particular destination where they’re going to have an immersive experience at a really affordable cost” (Interview, March 8th, 2019). The other newer staff member hoped for “more exchange or budget-friendly direct partnerships in Central America, South America and Asia perhaps in Japan, Vietnam and Thailand,” adding “we need to expand our program options geographically with affordable options” (Interview, March 4th, 2019). They were also concerned about getting more students from the UK into Wisconsin to balance those exchange relationships. Other assorted concerns mentioned were safety, a welcoming environment, and a temperate climate. Additionally, they said they were glad to continue to add affiliate partners, as students have been requesting to join programs with more affiliates.

Beyond these basic considerations, it was the opinion of one newer staff member that the OIE needs greater active consultation with students in making program choices. They said

We should be meeting with students in different programs to determine what kind of programs would be most attractive and what kind of regions of the world they would like to explore.... To some extent we should be working with students to develop programs...

not only departmental organizations, like within hospitality, or within business, but we can also look at meeting with groups of underrepresented populations and try to get programs in place that would serve them better. (Interview, March 8th, 2019)

This reasoning is the very rationale of this capstone paper.

Unexpected Trends in Program Utilization

OIE staff perspectives on program popularity were in many ways disproven by statistical analysis of the student records from Terra Dotta. The researcher's own perspective based on daily application form handling were also somewhat disproven. Both researcher and staff fell to the fallacy of guessing what is popular by what in their judgment *should* be popular, by their own interests and efforts to promote study abroad programs to the student body. All of the following percentages and numbers are the original findings of the researcher of this capstone, as explained in the data collection and data analysis sections earlier in this paper.

One program to major pairing proved a statistical outlier so substantial, it has been removed from the following analysis. The Wine and Food in France and Spain programs have been attended by 164 Hotel, Restaurant, and Tourism Management students from 2011 to 2019, with this pairing accounting single-handedly for fully 9.7% of all Stout students studying abroad over the last eight years. This outlier set had to be removed for clear data analysis of all other programs to major pairings.

Top student majors studying abroad. Even with the hospitality students who attended the wine and food programs removed from the data, hotel, restaurant, and tourism management students still account for 23.7% of Stout students studying abroad. The second most represented major is business administration, accounting for 21.1% of Stout students abroad. Students from

each of these groups join a wide array of programs and locations. Following these leads, strong turn out comes from early childhood education at 10.5%, while art education, human development and family studies, graphic communications, and golf enterprise management each account for 5.3% of Stout students abroad. On the whole, education or human development majors are well represented due to OIE's long-running faculty-led programs of Global Perspectives in Education and Multicultural and Colonial Impacts in Education. Together, the majors of early childhood education, art education, psychology, human development and family studies, and family and consumer science account for 26.3% of Stout students abroad. It must be noted here, again in opposition to the researcher's expectations, top Stout majors studying abroad are not STEM, but business and hospitality.

Top programs by popularity. The most popular programs, however, paint a surprisingly different story. The two top programs of attendance are Regents University of London, at 26.7% of students abroad, and the London College of Fashion, at 25% of students abroad. These two exchange partners both attract Apparel Design and Development students and Retail Merchandising and Management students in large numbers (meaning 20-30 students each), as well as students from majors such as business administration or art. The next most popular programs are the faculty led program Trends in Europe, at 10%, and the university of Lorenzo de Medici, at 8.3%. Standing at 3.3% are also the faculty led programs of London and Paris Summer, Art History and Photography in Italy, and Color Studio in France. Between all of these, there is a strong representation of students in apparel design, retail merchandising, art, and art education. In short, all of the art and fashion students are strongly drawn to London, Paris, and Italy, with *artistic* Western European partners and faculty led programs accounting 87.9% of

OIE study abroad participation. China also has somewhat strong representation, with 5% of students attending the semester-long UW – River Falls program, Experience China, and 3.3% of students attending the faculty led program, Operations Management in China.

The reason these two different measures paint a very different picture is because some programs attract specific majors, like Natural History of the Neotropics attracting applied science students, while others attract a broad range, like Regents University. Similarly, some majors, like early childhood education, join only one or two programs, but do so in high numbers, while other majors, like business administration, attend a broad array in small numbers (For a list of significant major to program correlations, see Appendix H).

Again, it should be noted, contrary to researcher expectations and OIE staff perspectives, study abroad programs and partners closely related to the Polytechnic focus - to Science, Technology, Engineering, and Mathematics - did not show the strongest student turn out, although the OIE has many exchange partners with technological focuses. Instead, programs serving students on the vocational tracks of apparel design, retail merchandising, and hospitality were best represented. This capstone is not able to provide rationale for that non-representation, as representation of majors has not been an institutionally recognized issue, nor an investigation of the present research question.

Attendance by program length. Within the student records from 2011 to 2019, the majority of students studied abroad through short, faculty led programs, at a rate of 70.8%, while students on semester long or academic year programs accounted for 29.2%.

Majors predominantly represented in short-term faculty led programs were hospitality, art, and early childhood education. Hotel, restaurant and tourism management students at 17.4%

of faculty led attendance, entirely accounted for by their attendance of the Wine and Food in France and Spain programs. Art students, at 9.3% of faculty led attendance, primarily having joined Art History and Photography in Italy, Basel to Venice, and various sketching and photography programs. Early childhood education represented 7.1%, having joined primarily Global Perspectives in Education and secondarily Multicultural and Colonial Impacts on Education as well as Autism: Service Learning in Sub-Saharan Africa.

Majors predominantly represented in longer semester or academic year programs retail merchandising, hospitality, apparel design, business administration, and art. Retail merchandising and management attendance stood at 14.7%, predominantly having attended Regents University, and then divided between the London College of Fashion, Wisconsin in Scotland, and Experience China. Hotel, restaurant, and tourism management participation stood at 12.2%, spread in significant numbers across Southern Cross University, the American University of Greece, Wisconsin in Scotland, University of Hertfordshire, Westminster, and several other places in smaller numbers.

Apparel Design and Development represented 9.4% at Regents University, the London College of Fashion, and Lorenzo de Medici, with almost no representation elsewhere. Business Administration accounted for 9.2% at Westminster university, Southern Cross University, and a wide array of other locations in small numbers. Art then stood at 5.5%, predominantly at Lorenzo de Medici, then various locations across the England, Italy, and Greece.

Continued relevance of investigation of the student experience. Although analysis of the collected student records has revealed that Stout's STEM students are, in fact, under-represented in Stout's study abroad numbers, and vocational students are heavily represented by

only a couple of majors, analysis of student surveys and interviews is still purposeful. The student survey respondents were fairly representative of learned OIE data trends. They represented the same general mix of majors and programs of attendance, with the same common correlations. Significantly, student feedback did not differ by their majors, but rather by the programs they attended. Only half of responding students actively made a connection between their study abroad program choice and academic studies or career future. In other words, half of the respondents do not appear to be concerned with the correlation of their study abroad program to the broader picture of their degree and career. Yet, elements of successful study abroad programming, elements which meet student needs, serve students in learning, growth, and global career preparation, can be derived from their responses. Finally, elements of these programs which serve Stout students may be able to serve students of other polytechnic or technical institutions.

Six Elements of Successful Programming Drawn from Student Responses

While the database statistics begin to answer the question of which Stout education abroad programs are serving which students, statistics alone cannot provide a broader picture of elements and structures serving students without asking the students themselves through surveys and interviews. The 78 student survey respondents match fairly well to the above trends in majors by program. They include hospitality ¹students who joined Wine and Food in France and Spain, environmental science students who attended Natural History of the Neotropics, and apparel students who attended Regents University, etc.

¹ All student names have been changed to protect privacy.

Among the 78 survey respondents, 13 were STEM majors by federal definition, including environmental science, applied science, engineering, and packaging students. Another 18 were STEM majors by lay definition, including graphic design, game design, entertainment design, and professional communication and emerging media. 21 students were in vocational degrees, including real estate management, golf enterprise management, retail merchandising, industrial design, rehabilitation services, and hotel, restaurant, and tourism management (hospitality) majors. The remaining 26 students included primarily education and business administration majors.

Student survey responses were openly coded through the elements discovered in their interviews. The six elements of education abroad programs which students indicated supported their needs, created an optimal environment for learning and growth, and gave them a global perspective on their subject matter were: academic fit, preparation in academics and mindset, structures which fostered growth, location relevance to their field, a balanced and enjoyable experience, and reflection connecting their education abroad experience to their future or career. Together, these form a roadmap for successful programming to be built over the education abroad timeline, from decision, to participation on-program, to reflection following.

Academic fit. Academic fit was the top element students were concerned with in the surveys and interviews. In the surveys, 55% of students commented on academic fit of their programs. Students spoke of the experience helping, or sometimes hurting, their academic timelines, and rationale of why it did. Students also spoke of the study abroad programs being a good academic fit because, through the programs, they gained a broader or deeper understanding of their topic of study, be it their major or minor. Rationale for this side of good academic fit had

to do with structured program activities, locations, and people they learned from. These elements are further explored in the appropriate sections.

A stand-alone question on the survey asked students if they had needed to add time to their academic timeline due to study abroad. To this multiple-choice question, 80% said they did not need to add time, 13% said they did, and 7% were not yet sure whether they would need to add time (Survey, February 2019).

Positive fit. On the survey, in fact, numerous students spoke of the study abroad experience as having accelerated their academic timelines. Fredrick,² an applied science major, said of the in-major summer faculty-led program he attended:

It was a four-credit class, and with having to have a certain amount of credits of classes above the 200-level, this really helped me obtain a closer graduation date without taking a piece of time from the academic semester. (Survey, February 2019)

Other students echoed this sentiment. Alexandra, who participated in three faculty-led summer and winter programs, noted that “all three supported either my minor or my major in some way,” helping her to “reduce” her time at Stout (Survey, February 2019). An entertainment design student who did a Win-Term faculty led program in his senior year said it allowed him to more time to focus on his senior project that spring semester. According to a couple students, this time reduction was due to good planning on their part. Dania, a student who spent a semester in Greece, said she “worked with [her] advisor beforehand to get scheduling figured out so it wouldn't push back [her] academics” (Survey, February 2019). Oskar, who spent a semester in

Germany, explained that he “chose to study abroad as early as possible” in order to not affect his tight degree timeline, and to “finish the rest of my college back home with a different perspective” (Survey, February 2019). A couple students similarly spoke of study abroad adding to their degrees. Lena, an art major, said that the faculty led program she attended “broadened” her “horizons and skills as an artist” through learning “about different ideas of design and function” and inspired her to take region-specific coursework when she returned. Another student, Jessie, who went on a semester long program as well as a short faculty-led, stated:

Because of study abroad I have added much more to my degree than I ever thought I would, by adding minors and just overall gaining experiences I would have never been able to do at UW-Stout. (Survey, February 2019)

Neutral fit. Some students indicated study abroad had a neutral impact on their academic timelines. For some, they experienced a neutral impact because study abroad offered a one-to-one relationship with matching credits and timelines back home, but they felt study abroad offered the chance to gain a “global perspective” on the subject, or to “finish school and see the world” (Survey, February 2019). Some various reasons students gave for a neutral impact were that the course took place in the summer, so it had “no graduation impact,” or that the program was “not directly related” to their major, or that the credits only counted for “requirements that were already filled” (Survey, February 2019).

Negative fit. A handful of students did say study abroad impacted their academic timelines negatively, but only one survey respondent gave a direct explanation as to why. An engineering student who spent an academic year abroad stated, “It has kind of forced me to take 18-20 credits my senior year and out me out of order as far as prerequisites and class scheduling

goes” (Survey, February 2019). For others, it seemed their program choice led to them repeating general education courses they didn’t need, and one student mentioned their GPA being brought down while abroad because they were more interested in their weekend travels across Europe. A third student mentioned GPA drop due to taking courses “entirely in Italian” (Survey, February 2019). These negative impacts were much less frequently cited than positive academic fit.

Preparation in academics and mindset. Preparation was a second key element students spoke of in the success of their study abroad programs, with 32% of respondents mentioning something on the matter. “Preparation” for them fell into two broad categories: academic preparation or mental preparation.

Academic preparation. Students felt academically prepared either by the coursework they had done prior to the program abroad, or by independently connecting their anticipated experience to their degree field. Two students explained how the readings and work assigned prior to their faculty-led experiences allowed them to get deeper learning from the in-country experiences. Brittany, who attended the faculty led “Parliament of the World’s Religions,” said she “was able to not only learn online about different religions, but then actually talk to different people of those religions at the Parliament” and that this access enabled her to apply concepts she “learned in the classroom to the real world” (Survey, February 2019). Leon, a business administration student who went on the Operations Management trip through China, said:

I learned a lot in the few days in China from all the manufacturing process, theories and procedures... [It] help[ed] me to grasp all the knowledge in the books and assignments so that I had every corner covered when it comes to how I would use my experience in my career field. (Survey, February 2019)

Other students made the connection between their academic field and something they hoped to academically gain abroad. Melissa, an engineering student, wanted “to travel and see how other countries do things and view technology” (Survey, February 2019). Kenny, an apparel design student who spent a semester on the Experience China program, wanted to know about Chinese culture and perspectives on the US, in part as he “felt it would be beneficial in helping me understand the culture [he] would one day have to work and communicate with,” considering China’s role in manufacturing and rising customer base (Survey, February 2019). Another student, Abe, in golf enterprise management, recognized the importance of practicing “interacting with a new culture and new people” as he will be “going down a line of sales” (Survey, February 2019).

Mental preparation. A prepared academic mindset was part of a larger concern students expressed for entering their study abroad experience with the right mental frame. Students frequently referenced moving out of their “comfort zone,” or wanting to “challenge” themselves through situations such as “meeting people for the first time, in a place [they’ve] never been before” (Survey, February 2019). Answering the question of whether they would recommend their study abroad experience to fellow students, a number said they would encourage their classmates to think of these ways they would grow. Pete, a computer science major summarized these statements, saying:

Studying abroad can really show how far you are willing to be pushed outside of your comfort zone. I think that a person has to be very open minded to study abroad as well as have a positive outlook on things. (Survey, February 2019)

Location relevance to the field. Location was an element important to 22% of student survey respondents. Likely, more students would have spoken of locations if directly asked, given the large number of apparel design, retail merchandizing, and art students who have gravitated to OIE programs in London, Paris, and Italy according to the database records. Of the students who mentioned this element independently, the bulk of them described the location's relevance or resources in their field, while a small number simply spoke of getting "out there," wherever they may have gone, as expanding their subject matter perspective.

Specific locations. Many students advocated the importance of going to locations relevant to their field. Apparel design student, Ginny, speaking for many in the afore mentioned group, explained that it was important for her to go to go on the faculty-led summer program Trends in Europe, because "Europe is always one season ahead" of the United States, and Europe's pre-eminence is important in making fashion predictions and retail choices (Interview, March 1st, 2019). Yu-jin, another apparel student, gave the same rationale for joining a CEA traveling seminar around France and the Mediterranean (Survey, February 2019). Two packaging students, Alex and Connor, who attended the faculty led course Technology in Germany, said it expanded their views on the industry, the industry's "geographical differences," and gave them "an understanding of the advancement in technology that is out there (Survey, February 2019). Fredrick, an applied science student who went on Natural History of the Neotropics, the faculty led course in Belize, appreciated "learning about history and different flora and fauna never seen before in [his] personal experience," while Lexi, a hospitality management student, spoke of the hospitality customs she learned in Spain, particularly when to kiss someone on the cheek or shake their hand. A surprising connection one student made was

the importance of traveling to Scotland as a golf enterprise management student. Scotland, he said, is the “home of golf” (Survey, February 2019).

Non-specific locations. To other students “getting out there” was enough to grow their academic understanding of their field, regardless of the destination. Andres, a computer science major, said Greece gave him “a more worldly view” of his academics, while Bradley, in digital marketing, said Belize gave him a “different perspective” on his classes and helped him “see outside the box” (Survey, February 2019). Neither of these students went on study abroad programs directly connected to their major, but they gained perspective on their majors any way. Jackson, a game design student, rationalized that “travel is unique in that it really forces immersion in the way that new things in the same place can’t” (Survey, February 2019). A student currently abroad for the spring semester, Pete, said he was looking forward to his intercultural communication class for a similar reason, that he would be studying the subject while “being immersed in a new culture” and that immersion would be “beneficial” to the experience (Survey, February 2019).

People. Related to location, many students spoke of the significance of the individuals and people groups they had access to and were able to learn from in their locations of study. A total of 41% of survey respondents spoke of the people they were able to meet and speak to as key to the success of their experience. Some of these people were professionals, but students also valued lay people they were able to connect to or learn from, including their classmates.

Professional people. Professionals whom students spoke of learning from included people already working in their field, professors, and industry leaders. Hospitality student, Maria, said she took the opportunity while on Wisconsin in Scotland for a semester to interview

people in her field, which helped her find out she wants “want to go down the culinary side of the industry” (Survey, February 2019). Hanson, also in hospitality, similarly mentioned learning from “professors in the industry” while spending a semester at the University of Westminster (Survey, February 2019). An art education student, Dania, said her “really great art professors” at the American College of Greece “reminded” her of her passion for teaching. Students also spoke of “networking” generally as something they believed would help them down the road (Survey, February 2019). Professional communications and emerging media student Kylee said that her semester at Lorenzo de Medici gave her the chance “to network with a local game incubator as well as meet many other game design students from around the world” (Survey, February 2019).

Non-professional people. Like Kylee, several students found their classmates and local non-professionals equally inspiring in their academic experience. Rose, who spent a semester at Regents University, said she “really enjoyed being the only kid from the United States in a classroom” because she could “hear and learn and understand more about the world” (Survey, February 2019). Even on the Wisconsin in Scotland program, surrounded by other students from back home, James, a golf enterprise management student, felt he grew “people skills” interacting daily “with people who come from a different country” (Survey, February 2019). Alexandra, a student previously mentioned who has been on three faculty led summer and winter programs, said each one gave her “the opportunity to experience different cultures, and amazing opportunities to engage with new people” (Interview, March 1st, 2019; Survey, February 2019). A psychology student hoping to become a therapist, Brittany, said that learning from different people about their religions on the faculty-led Parliament of the World’s Religions program was

“very impactful” considering she may one day “have patients who are not of the same religious background” (Survey, February 2019).

Structures which foster growth. The structure of programs which students attended was another element they said was key to their satisfaction and sense of academic and personal gains, with 29% of students commenting on structures fostering growth. For some, a structure which fostered growth meant a highly supportive structure. Others felt that the open, independent structure of a semester abroad on exchange or direct enroll offered the greatest opportunity for learning.

Supported vs. independent. The difference in this structural preference may be partially explained by which students have or have not had prior international experience. Although the surveys did not ask students about previous international experience, 5 of the 10 students interviewed in follow-up mentioned that some previous experience gave them greater confidence to study abroad. These experiences ranged from family trips, to traveling with their high school band, to a high school study abroad trip (Interviews, February 28th – March 1st, 2019). Of the 5 students who mentioned prior international experience, 3 went on to attend a faculty led program, while 2 did a semester abroad. Students did seem cognizant of this motivation. Jackson, a game design student, for example, said he chose to do two short faculty-led trips because he had never been abroad before, and wished to “stave off homesickness” that a longer program could cause (Interview, February 25th, 2019). Another interviewed student also mentioned choosing a faculty led program due to nervousness going out of the country for the first time.

Supportive adults. Students appreciated supportive adults on their programs. An entertainment design student, Dan, who went on the faculty-led Comics in Iceland trip said that it

was his first time on a plane or boat, but that afterward, he felt he was “more comfortable with long-form travel” (Survey, February 2019). Three students, when asked about whether they’d recommend their programs to a classmate, specifically noted appreciating the extra supports CEA offered, such as having someone pick them up at the airport (Survey, February 2019). A hospitality student, Lexi, on a CEA program in Spain for a semester also spoke appreciatively of being in a homestay and having a host mother, explaining:

I am staying in a home-stay which I love. My host mom tells my roommate and I how to get places, what she recommends and where not to go. I love having a mom figure around so If I have any problems, I go to them. It’s making me a better person and knowing my surroundings. Also, I have been trying new foods that I didn't like. (Survey, February 2019)

Students spoke of gaining confidence and independence abroad even while on faculty led programs, as long as they had some free time to explore and manage on their own. A student on the Entrepreneurship and Gamification faculty-led program, for example, spoke of learning to communicate with the locals of Sweden while not speaking Swedish herself. In total, 35% of survey respondents spoke of gaining skills from their study abroad, including in independence, self-confidence, responsibility, and more specific things like navigation and time management.

Independence to grow. Unlike students on faculty led programs, students who went on solo semester-long programs felt they had gained these personal skills from the independent nature of their experiences, rather than from having a high level of support. Pete, a computer science student who spent a semester at the University of Skovde, said that the experience showed him he is “capable of living far away from home and succeed[ing] at it” and also “get[ting] to know a new culture and finding [his] way in a new city” (Survey, February 2019).

Other students, including Yu-jin in apparel design, Kendra in applied science, and Kelly in hospitality echoed these sentiments almost exactly, speaking of their semesters in France or Spain. Abe, a golf enterprise management student who spent a semester in Australia, said it “changed [him] as a person that doesn’t look at life and say that “I can’t do it” and more of “I can do it” (Survey, February 2019). Summarizing many of these ideas, Hanson, a hospitality management student who spent a semester at the University of Westminster, said:

I feel like I am a whole new person. I was in London for 6 months, I did not live on school campus and I did not know anyone prior to arrival. This is the experience that I believe is the most beneficial for students. I really did live in London rather than a guided trip that other experiences are like. (Survey, February 2019)

Balanced and enjoyable experience. Related to structure, a balance of activities was also an element key to students’ sense of learning and growth. A total of 26% of survey respondents said something about balance. Most students appreciated a balance of activities between learning and free-time.

Academic components. Students appreciated the hands-on, academic outings and professional tours offered primarily by faculty-led programs. On the faculty-led Natural History of the Neotropics program, Genevieve, an environmental science student appreciated spending time directly “learning about the ecosystem surrounding the ocean and water systems attached,” while Stephan, another environmental science student was grateful for the visit to the Smithsonian Research Center, the sort of institution he hopes to work at some day (Survey, February 2019). On the Experience China semester long program, Kenny, an apparel design student said he appreciated touring a textiles factory and it gave him “into how culture can affect

fashion trends” (Survey, February 2019). Jason, a student who joined the faculty-led Entrepreneurship and Gamification program, was glad to “engage in an unfamiliar environment with the goal of completing [a] project” and to “explore business structures and ideas with individuals that have different values” (Survey, February 2019).

Non-academic components. Time for socializing, making friends, and exploring independently was also important to the students. Hanson, a hospitality student who spent a semester at the University of Westminster, appreciated having weekends to travel throughout Europe. Kurt, who spent a semester on an ISEP program in Italy, said the same thing, though admitted it may have brought down his grades. Olivia, who went on the faculty-led Multicultural and Colonial Impacts on Education program, liked the balance of “traveling, challenging [her]self, and learning about things that interest [her], particularly why people are the way they are,” while Cyan, who went on the faculty-led trip Comics in Iceland, found balance from having gone “out of [her] comfort zone, traveled, and had a wonderful time drawing on the go” (Survey, February 2019). Making lasting friendships was another oft-cited bonus for many students. Oskar, a technology education student who spent a semester in Germany summarized many of these sentiments, saying, “I am so happy with the how much I have been influenced with friendships, education and connections and international travel that will stick with me for life” (Survey, February 2019).

Reflection and connecting experience to future. Reflection on their study abroad experiences was the final element which made programs successful for Stout’s STEM and vocational students and made them feel more ready for a global career. Fully 55% of survey respondents made the link between their study abroad experience and options or ideas for their

future, the highest percentage of students recognizing a shared element, yet still little more than half of the total respondents. Students generally connected their study abroad experience with their hopes for their careers and future post-graduation, but a few students made immediate connection and application to their academic lives.

Distant career connections. Students saw connections to their future careers which helped them make decisions about those careers, gave them new ideas, and even retirement inspiration. Genevieve, an environmental science major, said that the faculty-led Natural History of the Neotropics program helped her “figure out” her career path. Hospitality student Maria was a little more specific, saying:

Since the hospitality industry has a lot of travel opportunities, my study abroad experience helped me confirm my passion for my major by interacting and sharing ideas with people from a different culture. (Survey, February 2019)

Several education, human development, and family studies majors went on the faculty led trips of Global Perspectives in Education, Multicultural and Colonial Impacts on Education, and Autism: Service Learning in Sub-Saharan Africa. These students all said of their programs that the experiences helped them understand “diversity” and prepared them to better work with diverse populations in their future classrooms and counseling (Survey, February 2019). Fully three students referenced interest in joining the Peace Corps even prior to study abroad, and one alumnus stated that they *will* be serving in the Peace Corps in Lesotho, Africa, motivated by their study abroad experience (Survey, February 2019). Finally, one student, Jackson, said the Wine and Food in France program inspired him to open a winery when he retires. Asked further about this bold claim in interview, he admitted he’d written it as a joke but that it seemed a more and

more interesting idea as he considered it (Survey, February 2019; Interview, February 25th, 2019).

Immediate connection and application. Some students were also able to reflect and connect their study abroad experience to their immediate future and academics. Golf enterprise student, Abe, felt motivated “to really focus on school” when he returned from a semester in Australia. Human development student Olivia said similar following her faculty-led trip, as did golf enterprise student James, following a semester with Wisconsin in Scotland (Survey, February 2019). They were all motivated by greater appreciation for Stout’s quality of education and refreshed by experiencing differences in education systems abroad. Beyond the classroom, Jason, who joined the faculty led program Entrepreneurship and Gamification program, felt it grew the strength of his relationship with Stout faculty, and compelled him to “engage in other clubs and activities around campus” (Survey, February 2019). Liam, a hospitality student who went on Wine and food in Spain, became the leading professors teaching assistant for a year following the trip. Connor, a packaging student, said attending the Technology in Germany faculty led program gave him “a step-up when sourcing machinery for class projects” (Survey, February 2019). A few students noted they already felt the experience made them appear stronger future job candidates.

Six elements synergized. These six key elements of study abroad programs which support Stout’s STEM and vocational students operate interdependently along the study abroad timeline. They begin at the decision-making process, to experiences on-program, to reflection and connecting it to their global careers. Olivia, a human development and family studies major

who joined the faculty led program Multicultural and Colonial Impacts on Education, summarized her experience of many of these key elements succinctly, stating:

This study abroad experience helped me to graduate a year early, complete meaningful courses in a real-world environment, and become a more competent citizen. It also helped me expand my understanding of a variety of topics and disprove certain myths or assumptions we have of other places. (Survey, February 2019)

Dream programs further highlighting these six elements. Students' dream programs they spoke of in their interviews further highlight the importance of each of these six elements for effective learning and growth. By and large, the programs which interviewed students described were built on the programs they had experienced. Building on experience makes sense, as half of the interviewed students had no other international experience, and only two interviewed students went on more than one program, enabling them to have a base for comparison.

Four students described modifications of the programs they had been on or heard of which would be a strong academic fit to their particular major. Maxwell, a food science and technology student who joined Wine and Food in France, imagined a similar program, but on chocolatiering rather than wine. He imagined it as a faculty led trip in the winter or summer traveling and studying across Germany, Poland, and Belgium, and ending in making a product for a panel of judges. This chocolatiering program would be particularly attractive to other food science majors, and provide hands-on experience, he said (Interview, February 28th, 2019). Maddie, a hospitality student who spent a semester on Wisconsin in Scotland, was also in favor of a program similar to the Wine and Food in France and Spain programs, but focused on

regional cuisines, and studying in local culinary schools alongside local students. This cuisine program would be attractive to hospitality students going into restaurant careers, she said (Interview, March 1st, 2019).

Ginny, an apparel design student who joined Trends in Europe, enjoyed the program and felt she learned a lot from it, but would like to see a similar program centered on the *business* side of fashion, on the “back-end” of how companies operate and deal with international laws and the flow of trade (student’s emphasis). This faculty-led program would include factory tours and company site-visits (Interview, March 1st, 2019). Jane, an environmental science major who traveled to Belize on Natural History of the Neotropics, greatly enjoyed that program, and wanted to incorporate scuba-diving into the environmental studies, for a better combination of exploration above and below the water. She also felt the program was crucially in need of a lab component, in order to better meet the requirements of her major. Incorporating a lab would also take advantage of having access to different water systems than those near Stout. For Jane, a balance and enjoyable experience and strong academic fit were both important (Interview, February 28th, 2019)

Two students dreamt of faculty led programs with great academic preparation and depth of learning through connection to a semester-long course. Jackson, a computer science major who joined Honors Greek Mythology, an international spring break experience embedded in a semester long course (the only OIE program of this style to date), appreciated this structure and advocated for more semester-long courses with connected international experiences, either over spring break, or for a longer period of travel in the summer. Jackson imagined such courses could be developed for a variety of degrees and could be pitched to incoming Freshmen

(Interview, February 25th, 2019). Lindy, an applied science major who attended the faculty led program Physiology of Disabilities in Nicaragua, had a similar idea to Jackson. She believed this faculty led program should be preceded by a semester-long anatomy and physiology course and include cultural training prior to travel. Lindy was particularly concerned with students' need to recognize and understand their privilege in the context of this type of service learning (Interview, February 26th, 2019).

Another two students longed for deeper academic learning through intensive regional studies, while imaging academic fit across majors through fulfilling general education requirements. Helen, who spent a semester in Germany through the Hessen-Wisconsin exchange, imagined an all-inclusive program on German language, culture and history, open to students of all majors. It would run for a semester at a satellite campus or through a local provider, with excursions and weekend trips throughout Germany. It could cover a number of general education requirements, including history and multicultural perspectives. Helen felt that, on her exchange semester, she did not learn as much about the context of the country around her as she would have liked, and this program idea is a response to that. (Interview, February 27th, 2019).

Alexandra, who went on three different faculty led programs, echoed these concerns and interests, but was in favor of going to a "less touristy" location, perhaps in China or Africa. She, too, wanted a "deep dive" into a location's culture, history, food, traditions, and education system, with the aim of arriving at an integrated understanding of how culture informs daily life. Incorporating journaling, and reflection pieces, rather than standard "homework," was important to Alexandra's concept. She imagined this as a faculty led program, the structure she was familiar with.

A final student favored a program that was balanced and enjoyable, combining “adventure” with general education coursework. Lila, a dietics student who spent a semester at Massey University in New Zealand through ISEP, imagined a three-week faculty-ed adventure travel program, complete with hiking, and centered on geography, animal biology, or environmental science. Students could even learn, she said “the math of the mountains” (Interview, February 29th, 2019). For Lila, a balanced and enjoyable experience was most important.

Discussion

Connecting OIE Perspectives, Data, and Student Experiences

Common threads can be found in following the path of OIE staff perspectives, to uncovered database trends, to student experiences. Misconceptions and counterpoints are also made visible. The differing perspectives of OIE heritage staff and newer staff offer useful frames of understanding.

Heritage staff of the OIE spoke of program popularity being driven by faculty enthusiasm. This impetus has proven true for the Wine and Food in France and Spain programs, accounting as they are for over 10% of Stout students who have studied abroad in the last eight years. The push of faculty popularity has also been proven true for the long-running Trends in Europe faculty led program, so popular among apparel and retail merchandising students, and of Natural History in the Neotropics. Other programs do not offer a clear correlation between faculty outreach and popularity.

Other concerns which heritage staff expressed were whether programs offered by the OIE are meeting Stout student needs, and why an expansion of the number and variety of programs

offered has not resulted in growth of overall study abroad student numbers. The data and student feedback demonstrate that certain Stout student majors are being served very well, and specific programs are serving these specific majors. Apparel students are well served by a variety of programs and partners in London, Paris, and Italy; business administration students are well served by Westminster University and Southern Cross University, and applied science students are well served by Natural History of the Neotropics. There are numerous Stout majors, however, greatly underrepresented in the participation numbers. As to the lack of growth in study abroad participation, this capstone can provide no definitive answer. One factor may be the common themes present in faculty led programs, the OIE program type showing greatest growth. The majority of faculty led programs offered, historically or on-going, can be categorized as related to education or art. Two past faculty led programs, Technology in Germany, and Injection Molding Technologies, were thematic outliers, and both attracted high numbers of packaging and plastics engineering students. It is possible greater numbers of Stout students would study abroad if they saw their degrees represented in OIE program offerings.

Newer OIE staff named a few programs they believed to be popular which proved out in the data, and in the representation of students surveyed. Exchange partners Lorenzo de Medici and the London College of Fashion, as well as the faculty led programs Trends in Europe and Natural History of the Neotropics all proved popular. Other programs which newer staff named did not. Why certain programs have not been popular is a point for further investigation.

Newer OIE staff were of the perspective that Stout students are concerned with program length, cost, academic fit, and supportive structures. Students in surveys and interviews did express appreciation for compressing semester-long courses into the summer or winter breaks,

but they did not particularly express concern for what they would have missed in joining a longer study abroad program. Students only mentioned program cost in reflection, when asked whether they would recommend their program to others. Six students said something along the lines of “study abroad may not be for everyone” due to costs. Only two expressed concern for their own finances following studying abroad. Budget may be more of a hook for students considering going abroad, and less of a concern for students who have made a decision. Academic fit, students on the whole agreed, was crucial to their satisfaction with their program choices. Newer OIE staff were proved correct in that matter. Regarding the supportive structures of faculty led programs which newer OIE staff stressed, students were divided. Some strongly appreciated having a more guided experience, while a few were assured that the open, independent nature of their programs abroad was crucial for personal growth and a satisfying experience.

Connecting Findings to Literature and Case Studies

As mentioned previously in this capstone, the extant literature on education abroad programming for STEM and vocational students is outdated. The literature is focused on *why* STEM majors *should* go abroad, and case studies of models being tried. The literature has not caught up with current data demonstrating that STEM students now outpace their peers in study abroad, nor has it made the necessary step to ask why certain programs may serve STEM and vocational students better than others. The literature has not asked what elements of education abroad programming should be emphasized to build programs which best serve STEM and vocational students’ unique needs, creating an optimal environment for learning and growth, while preparing them for global careers. To fill that gap in understanding, this capstone has

studied that very question through investigating programs and trends at Stout and questioning student alumni of those programs.

Although the findings in this capstone can illuminate only key elements of the traditional program models offered at Stout, and not the non-traditional models offered at institutions such as Worcester Polytechnic Institute or the University of Rhode Island, these findings may be relevant and useful to all institutions seeking to send greater numbers of their STEM and vocational students abroad. Elements such as academic preparation and structure which foster growth and learning are relevant to internships and service-learning projects just as much as to faculty led programs and exchanges.

Narrowing the Gap of Understanding

Many of the six key elements of successful education abroad programming revealed by these student surveys and interviews can be applied to a variety of program types in a variety of fields. If the students from the case study programs in the literature were similarly surveyed and interviewed, they may give similar responses. Recent quotes from Worcester Polytechnic Institute students do reveal some similar patterns of experience.

Morgan, a management engineering student said

WPI's project work is really rewarding and it really sets us apart. We learn how to work with people and how to communicate, and we're prepared for the real world because we're already used to facilitating our own pace of work and working on cross-functional teams.
(“The WPI Plan,” 2018)

Similarly, Anna, who worked on a project addressing water contamination in Malewa, Kenya, said

The GPS [Great Problems Seminar] really lit a spark in me and I knew I wanted to do more.

I was so passionate about the project that I just didn't want it to end. Going to Malewa gave me a whole new perspective on thinking about global issues. ("The WPI Plan," 2018)

From these quotes, echoes can be heard of the need for academic fit, academic preparation, and structures which support growth and learning in students' education abroad programming.

Similar interviewing or qualitative analysis has not been conducted elsewhere in the literature to provide basis for analysis. Without more qualitative analysis of case study programs, it is not possible to find cross-institutional shared key elements of education abroad programming for STEM and vocational students.

Application of Findings to future Education Abroad Program Decisions

There are several ideas to be garnered from this capstone's findings and applied to programmatic choices. Each key element uncovered in student survey responses and interviews offers possible avenues of action.

Academic fit. In regard to academic fit, numerous Stout majors are underrepresented in study abroad. The OIE should create or better promote programs which serve a wider range of Stout majors. When encouraging students to choose a well-fitting program, not only majors and minors, but academic timeline and GPA support must be considered, as these were also concerns students voiced.

Preparation. Students gained more academically from programs they had prepared for with readings and assignments prior to the trip, while they gained less when bogged down by assignments during the program. Faculty leading programs should be encouraged to consider front-loading their courses prior to travel. Additionally, students gained more who entered their

study abroad phase with a prepared mindset. Activities can be added to OIE study abroad orientations having students visualize themselves on their program and discuss what they intend to learn and how they will go about it.

Structures. In terms of structure, some students feel the need for greater support of program staff and faculty to feel free to focus on learning. Other students find the greatest growth in independence; these students are often those who have been abroad before. When advising student on program choice, they should be encouraged to consider which structure best suits them.

Location. The OIE already has significant programs in locations relevant to Stout majors. However, many of these are under-utilized. The relevance of Germany to Engineering degrees, for example, could be more emphasized. It is likely that students do not understand the significance and quality of the technical university exchange partners Stout has in the Hessen-Wisconsin exchange. Students do seem driven to go to locations of relevance to their field when they know of them, as all the apparel students know of London, Paris, and Italy.

Balance. Students again and again spoke of needing a balance of structured academic time, site visits, and free time to explore and travel on their own. Such balance should be encouraged in OIE faculty leader trainings alongside student gains from academic preparation.

Reflection. While the University of Wisconsin – Stout is highly concerned with students' future careers, the surveys and interviews of this capstone reveal that only half of Stout students are actively making this connection between study abroad and their future paths. OIE information session PowerPoints currently emphasize how valuable study abroad looks to employers, but students need to be encouraged to connect their education abroad experience to

their own paths and to their own industries. Guiding such reflection may be possible to incorporate into info sessions, the bi-annual study abroad fair, or study abroad orientations.

Recommendations for Further Research

Further research should be done both to better understand study abroad program utilization trends by STEM and vocational students and to understand these trends in the world of study abroad as a whole. Locally, the OIE should investigate why so many STEM majors are not represented or under-represented in Stout study abroad programs through further discussion with students of those majors. In the larger picture, the literature as a whole needs to be updated. The question of why STEM students should go abroad can shift to what STEM students are gaining in their programs abroad. The concern of industries and employers in need of cross-culturally competent employees can shift to more specific investigation of skills sought and ways education abroad programs can grow those skills. Likewise, Open Doors data should be able to reveal the top STEM -sending institutions. The programs of these institutions could be investigated similarly to how Parkinson evaluated engineering abroad programs in 2007. Doing so would go a long way to explaining why more STEM students are going abroad, and what program models are best serving them. Further investigation of program models which build time into tight STEM degree timelines could suggest options for other majors with tight timelines, like nursing and law degrees.

Conclusion

There has been a good deal of vocal concern for getting STEM students abroad, and a quieter cry for internationalizing vocational and technical education. Industry professionals and

corporations recognize the need for an internationally-experienced and culturally competent workforce, and international education professionals speak of the need to find solutions. These concerns have been voiced for over a decade. Yet, current data does not match the current conversation. While STEM students lagged behind business and liberal arts degree-seekers in the mid-2000s, when much of the literature referenced in this paper was written, STEM students now surpass all other categories of students studying abroad. An investigation of the literature found no qualitative or quantitative research seeking to understand the cause of this reversal – to ask why STEM students are going abroad, or what is working for them now. This capstone began at the point of those mid-2000s literary discussions on why STEM and vocational students should go abroad, as well as case studies of models being tried, and sought to understand what is working for STEM and vocational students by looking to the program utilization trends of the University of Wisconsin – Stout, Polytechnic (Stout), asking questions of Stout students.

Processing the available OIE study abroad student record of the last eight years uncovered many surprising statistics, including a mis-match between institution-wide balances of STEM, vocational, and other degrees, and representation of those degrees among Stout students studying abroad. Further research will need to be done in order to understand why study abroad student numbers at Stout show this mis-match. Students surveyed and interviewed in this capstone, then, less strongly represent STEM than anticipated. Yet the balance and variety of student majors surveyed and interviewed does remain consistent with overall Stout OIE program utilization trends. Furthermore, this variety and assortment of majors is similar to those of the institutional case studies found in the literature, and the study abroad program types offered at Stout are the most common program types offered by technical institutions, as investigated in the

literature. Therefore, understanding elements key to the successful education abroad experiences of Stout students has value in application to STEM and vocational students at large.

The findings of this capstone offer a beginning answer to the research question: “What elements or structures of an education abroad program should be emphasized to build programs which best serve STEM and vocational students’ unique needs, creating an optimal environment for learning and growth, while preparing them for global careers?” Responses from Stout’s STEM and vocational student body demonstrated six elements key to programmatic effectiveness: academic fit, preparation in academics and mindset, structures which promote growth, location relevance to their field, having a balanced and enjoyable experience, and reflection connecting that experience to their future. Each of these elements suggests program choices and efforts the OIE and similar study abroad offices can build on going forward. Beyond a beginning answer, this capstone illuminates a field ripe for research into program trend utilization at other technical institutions in United States and the experiences of their students. Only with broader efforts across institutions will international educators be able to find commonalities in elements STEM and vocational students found key to their international experiences. It is the hope of this capstone to inspire further investigation into this question.

References

- About Us (n.d.). UW Stout Education Abroad and National Student Exchange. Retrieved from <https://uwstout.studioabroad.com/>
- Bing Overseas Study Program (n.d.). Stanford University. Retrieved from <https://undergrad.stanford.edu/programs/bosp>
- Carlson, S. (2007). A Global Approach to Engineering. *Chronicle of Higher Education*, 53(39).
- Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology*, 13(1), 3-21.
- Dessoff, A. (2006). Who's not going abroad?. *International Educator*, 15(2), 20.
- DiBiasio, D., & Mello, N. A. (2004). Multi-level assessment of program outcomes: Assessing a nontraditional study abroad program in the engineering disciplines. *Frontiers: The Interdisciplinary Journal of Study Abroad*, 10, 237-252.
- Downey, G. L., Lucena, J. C., Moskal, B. M., Parkhurst, R., Bigley, T., Hays, C., ... & Lehr, J. L. (2006). The globally competent engineer: Working effectively with people who define problems differently. *Journal of Engineering Education*, 95(2), 107-122.
- EuroTech: Our German Engineering Program (n.d.). University of Connecticut. Retrieved from <http://internationalengineering.uconn.edu/german/>
- Haddad, M. R. (1997). Engineering students abroad. *Journal of Chemical Education*, 74(7), 757.
- Ho, C. (2007). A Framework of the Foundation Theories Underlying the Relationship Between Individuals Within a Diverse Workforce. *Research & Practice in Human Resource Management*, 15(2).

Institute of International Education (2005). Open Doors 2005 Fast Facts. Retrieved from

<https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts>

Institute of International Education (2014). Open Doors 2005 Fast Facts. Retrieved from

<https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts>

Institute of International Education (2015). Open Doors 2005 Fast Facts. Retrieved from

<https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts>

Institute of International Education (2016). Open Doors 2005 Fast Facts. Retrieved from

<https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts>

Institute of International Education (2017). Open Doors 2005 Fast Facts. Retrieved from

<https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts>

Institute of International Education (2018). Open Doors 2005 Fast Facts. Retrieved from

<https://www.iie.org/Research-and-Insights/Open-Doors/Fact-Sheets-and-Infographics/Fast-Facts>

Klahr, S. C., & Ratti, U. (2000). Increasing Engineering Student Participation in Study Abroad: A Study of US and European Programs. *Journal of Studies in International Education*, 4(1), 79-102.

Lohmann, J. R., Rollins, H. A., & Hoey, J. (2006). Defining, developing and assessing global competence in engineers. *European journal of engineering education*, 31(1), 119-131.

Majors and Degrees (n.d.). University of Wisconsin – Stout. Retrieved from:

<https://www.uwstout.edu/academics/majors-degrees>

Marijuan, S., & Sanz, C. (2018). Expanding boundaries: Current and new directions in study abroad research and practice. *Foreign Language Annals*, 51(1), 185-204.

Miller, R., & Way, O. (2007). Beyond study abroad: Preparing engineers for the new global economy. *Unpublished paper, Olin College of Engineering, Needham, MA.*

Mihelcic, J. R., Paterson, K. G., Phillips, L. D., Zhang, Q., Watkins, D. W., Barkdoll, B. D. & Hokanson, D. R. (2008). Educating engineers in the sustainable futures model with a global perspective. *Civil Engineering and Environmental Systems*, 25(4), 255-263.

Mission and Values: The Mission, Vision, and Values of UW-Stout (n.d.). University of Wisconsin – Stout. Retrieved from <https://www.uwstout.edu/about-us/mission-values>

Moher, M. (February 10, 1983). Committed to International Activities. *Stoutonia* 72(3).

Retrieved from

<https://archive.org/details/StoutoniaVolume73/page/n357?q=office+of+international+programs>

Moon, T. (2013). The effects of cultural intelligence on performance in multicultural teams.

Journal of Applied Social Psychology, 43(12), 2414-2425.

Our Rich History (n.d.). University of Wisconsin – Stout. Retrieved from

<https://www.uwstout.edu/about-us/mission-values/our-rich-history>

Overseas and Off-campus (n.d.). Stanford University. Retrieved from

<https://undergrad.stanford.edu/opportunities-research/overseas-campus>

Paige, R. M., Fry, G. W., Stallman, E. M., Josić, J., & Jon, J. E. (2009). Study abroad for global engagement: the long - term impact of mobility experiences. *Intercultural Education*, 20(sup1), S29-S44.

Parkinson, A. (2007). Engineering study abroad programs: formats, challenges, best practices. *Online Journal for Global Engineering Education*, 2(2), 2.

Planet Money's T-Shirt Project. (December 2018). National Public Radio: Planet Money Podcast. Retrieved from: <https://www.npr.org/series/248799434/planet-moneys-t-shirt-project>

Salisbury, M. H., Umbach, P. D., Paulsen, M. B., & Pascarella, E. T. (2009). Going global: Understanding the choice process of the intent to study abroad. *Research in higher education*, 50(2), 119-143.

STEM Designated Degree Program List (2016). US Immigrations and Customs Enforcement. Retrieved from <https://www.ice.gov/sites/default/files/documents/Document/2016/stem-list.pdf>

Strauss, A., & Corbin, J. (1994). Grounded theory methodology. *Handbook of qualitative research*, 17, 273-85.

Strauss, L. C., & Terenzini, P. T. (2007). The effects of students' in-and out-of-class experiences on their analytical and group skills: A study of engineering education. *Research in Higher Education*, 48(8), 967-992.

Stebbleton, M., Soria, K., & Cherney, B. (2013). The high impact of education abroad: College students' engagement in international experiences and the development of intercultural competencies.

The WPI Plan (Accessed Dec. 8, 2018). Retrieved from: <https://www.wpi.edu/project-based-learning/wpi-plan>

UNESCO. (2016). Education for people and planet: Creating a sustainable future for all. Global Education and Monitoring Report. *UNESCO Publishing*. Retrieved from <http://unesdoc.unesco.org/images/0024/002457/245752e.pdf>

UNEVOC. (2013). Tackling Youth Unemployment through TVET: Report of the UNESCO-UNEVOC online conference. *UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training*. Retrieved from http://www.unevoc.unesco.org/fileadmin/up/2013eforum_virtual_conference_report_youth_unemployment.pdf

Wisconsin in Scotland (n.d.). University of Wisconsin River Falls. Retrieved from <https://www.uwrf.edu/WisconsinInScotland/>

Appendixes

Appendix A: OIE Staff Interview Script

OIE Staff Interview

Hello _____,

Thank you for making the time to speak with me today and help me with my graduate research. First of all, I need to get your consent to be interviewed.

Do you understand the purpose of this research?

Yes

No

Do you consent to be interviewed, having this conversation recorded and transcribed?

Yes

No

Do you consent to be directly quoted from this interview? You may choose to consent to be quoted with your given name, anonymously, or not to be quoted, but just have your answers reported generally.

I consent to be quoted with my given name

I consent to be quoted anonymously

I do not consent to be quoted. Please just generalize my answers.

If you consent to be quoted with your given name, please state it now.

Thank you. Now to my questions.

Establish Context

How would you describe the selection of programs we have on offer here at UW-Stout?

Gain Insight

Over the time you have worked here, which programs would you say have been most popular? Why do you believe that is?

Do you feel that the programs we have on offer are meeting UW-Stout student needs well? Why or why not?

Tell me a little bit about some of our institutional partners. How were they chosen? When and why were those relationships formed?

Tell me about some of our direct exchange university partners. We've made a few new partners recently - how were those relationships formed?

Expanding STEM, New Ideas

What would you say are the most important things to consider when deciding to run a program or to choose an institutional partner that would serve UW-Stout student needs?

Do you have any daydream locations, institutions, or partners you would like to be able to send UW-Stout students to? What do you find attractive about this future possibility?

Appendix B: Student Survey with Consent Preamble

Survey Consent Preamble

You are invited to participate in research regarding expanding education abroad opportunities for Science, Technology, Engineering, and Mathematics (STEM) education programs. You have received this invitation and link to the following survey because you have been, or are currently on, a study abroad program through the University of Wisconsin, Stout, Polytechnic. The following survey will ask you about your education abroad experience, how it fit within your academic plan, and your reflections on the experience. This research is being conducted by Amy Kelley, Education Abroad Specialist in the Office of International Education, for the purposes of her International Education M.A. through SIT Graduate Institute. This research is not being conducted by the Office of International Education, nor any other UW-Stout entity, and you do not need to feel compelled to participate. Amy's goal, in her research, is to investigate education abroad opportunities at UW-Stout and gain insights useful to the broader field of education abroad.

Participation in this research and the following survey is voluntary. By continuing on to the linked survey, you are giving your consent to participate, and to have your responses recorded and measured alongside that of your peers. Consent to be directly quoted can be given at the end of the survey. The survey will take approximately 20-30 minutes.

Following the collection of surveys, some participants will be selected to be interviewed. Consenting to the survey is not taken as automatic consent to be interviewed. Students selected for interviews will be contacted separately, a few weeks later. Interest in being interviewed can be indicated at the end of the survey. The interviews will take 45-60 minutes and can be arranged either in-person or via Skype.

Survey and interview responses will be kept anonymous unless you consent to be quoted directly by your given name.

Responses and data gathered from the surveys and interviews will be stored on a password protected account and not shared with any other individual or entity. All data will be erased following completion of project and finalization of Amy's capstone project.

You may contact Amy Kelley with any questions you have about her research or your participation at:

amy.kelley@uwstout.edu

Or call her at the Office of International Education (715-232-1693) during office hours, 8:00AM to 4:30PM weekdays, excepting school holidays.

You may also contact Amy Kelley's SIT Graduate School Capstone Advisor, Lynee Connelly at: lynee.connelly@sit.edu.

Continuing on to the linked survey indicates that:

You have read and understood all the above.

You are a UW-Stout current or alumni study abroad student.

You consent to participate and have your answers recorded for the purpose of the described research.

If any of the above is incorrect, or you do not consent, please do not continue.

Survey Questions

Individual Context

Are you currently on Study abroad, or are you a study abroad alumni?

- Currently studying abroad
- Alumni of study abroad

Which study abroad program(s) have you been on?

How long was the program?

Is this a program created by the University of Wisconsin, a direct exchange to another university, a program through a third party (like CEA or ISEP), or a faculty-led program?

- UW system program
- Direct Enroll or Exchange
- Third-party provider
- Faculty-led
- Other/ I'm not sure

Academic Context

What is your major?

If you are taking a minor, or have a particular focus within your degree, what is it?

Did you need to allot extra time to your degree plan in order to complete this program?

- Yes
- No
- I'm not sure

What sort of classes did you take while abroad?

Did the credit for these classes count as "general education," or were they degree-specific?

- General education
- Related to my major/minor

Please list the names of your classes, to the best of your memory:

Did you work on an internship, research project, or other non-curricular activity abroad? What was it?

Personal Reflections:

Thinking about your personal interests in life, academics, or career, how would you say this study abroad experience matches to what you want in your life or future?

How would you say this study abroad experience has impacted your academics so far?

How would you say this study abroad experience has impacted you as a person so far?

Would you say that your study abroad experience has had an overall positive, negative, or neutral impact on your academic experience?

Would you recommend this program to other UW-Stout students? Why or why not?

Is there anything else you would like to say about your education abroad experience?

Survey Wrap-Up

Do you consent to have your answers directly quoted?

- I consent to have my answers quoted anonymously.
- I consent to have my answers quoted with my given name.
- I do not consent to be quoted. Please report my answers only generally.

If you selected “I consent to have my answers quoted with my given name,” please write your name here:

Are you interested in being interviewed if you are selected?

- Yes
- No

Would you like a digital copy of a report on the results of this research?

- Yes
- No

If you would be interested in being interviewed, or would like a copy of the report, please write the best email address to reach you here:

Appendix C: Student Interview Script

Student Interview

Hello _____,

Thank you for your responses on the survey and for making time to chat with me today. I thought you have really interesting answers that could help me further with my research, so I wanted to ask you more about them, and then get some additional ideas from you.

First of all, I need to get your consent to be interviewed.

Do you understand the purpose of this research?

Yes

No

Do you consent to be interviewed, having this conversation recorded and transcribed?

Yes

No

Do you consent to be directly quoted from this interview? You may choose to consent to be quoted with your given name, anonymously, or not to be quoted, but just have your answers reported generally.

I consent to be quoted with my given name

I consent to be quoted anonymously

I do not consent to be quoted. Please just generalize my answers.

If you consent to be quoted with your given name, please state it now.

Now, my first couple questions will sound like repeats from the survey. This is just to re-establish context for the interview. Okay?

Finally, I wanted to ask you some questions which will help me with my research. As you know from my survey intro, my graduate thesis is on education abroad opportunities for STEM majors, and finding ways to increase those opportunities. UW-Stout is a great place to do this research, since it is a polytechnic university.

Re-establish context

Can you describe your study abroad experience briefly? Where and when did you travel? What did you learn or study?

Please explain how this fit within your larger academic program. Was it general education? Was it degree-specific? Something else?

Gain Deeper Insight

Now, I want to ask you about some of your answers on the survey.

On the question regarding _____, you said _____. Could you elaborate on that please?

On the question _____, you said _____. Why is that?

(Etc., as needed)

Expanding STEM

Thinking about your education abroad experience as a whole, how it fit in with your academic plan, would you say it worked or did not work with your academic plan?

Why do you say that?

(If they give a negative response)

What could have made this study abroad experience better serve your academic plan?

Do you think other UW-Stout students from your field of study would have the same experience, as far as academic fit?

Is there anything you would have changed about the program to better suit your needs?

New Ideas

Do you think this was the best style of program for you to go on, in fitting with your academic goals? Do you think a different style of program might have been a better fit for your goals? By “style” I mean faculty-led, direct exchange, third party provider, etc.

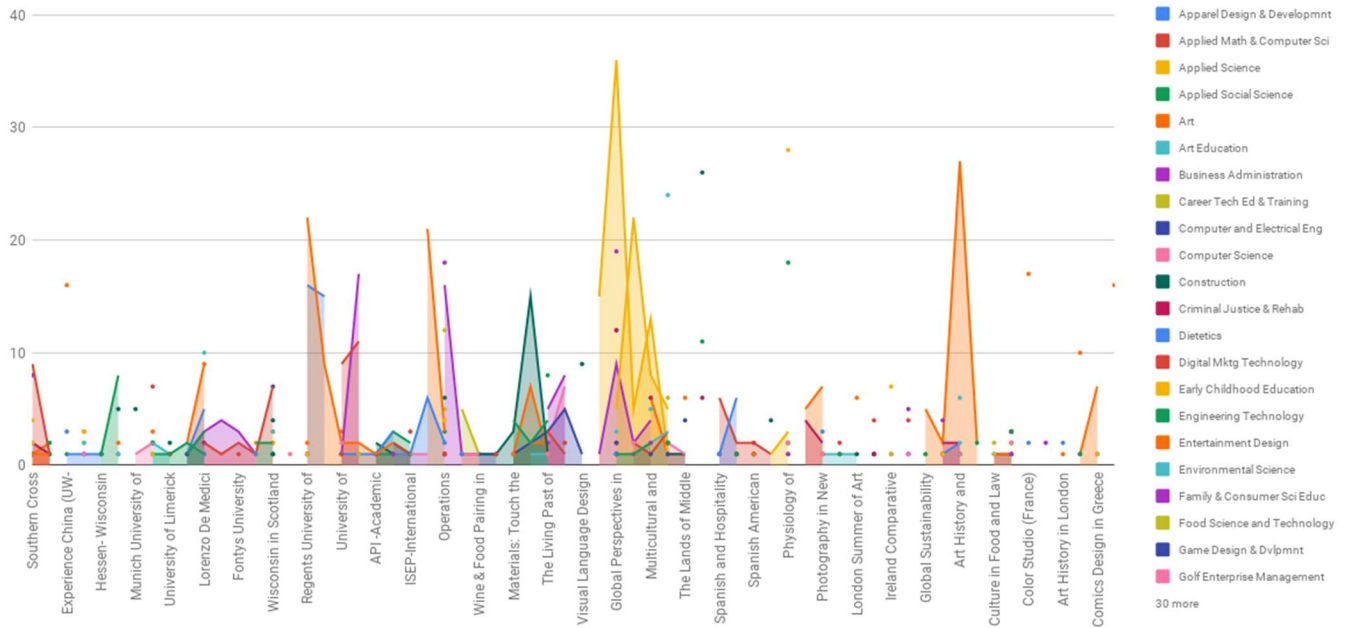
Okay, I’m going to ask one final question, and this is really open-ended, so please let your imagination run wild:

If you could create an education abroad program for UW-Stout students, perhaps other students in your major, perhaps Stout students more broadly, what would your program be? What style of program? Where would the students go? For how long? What would they study?

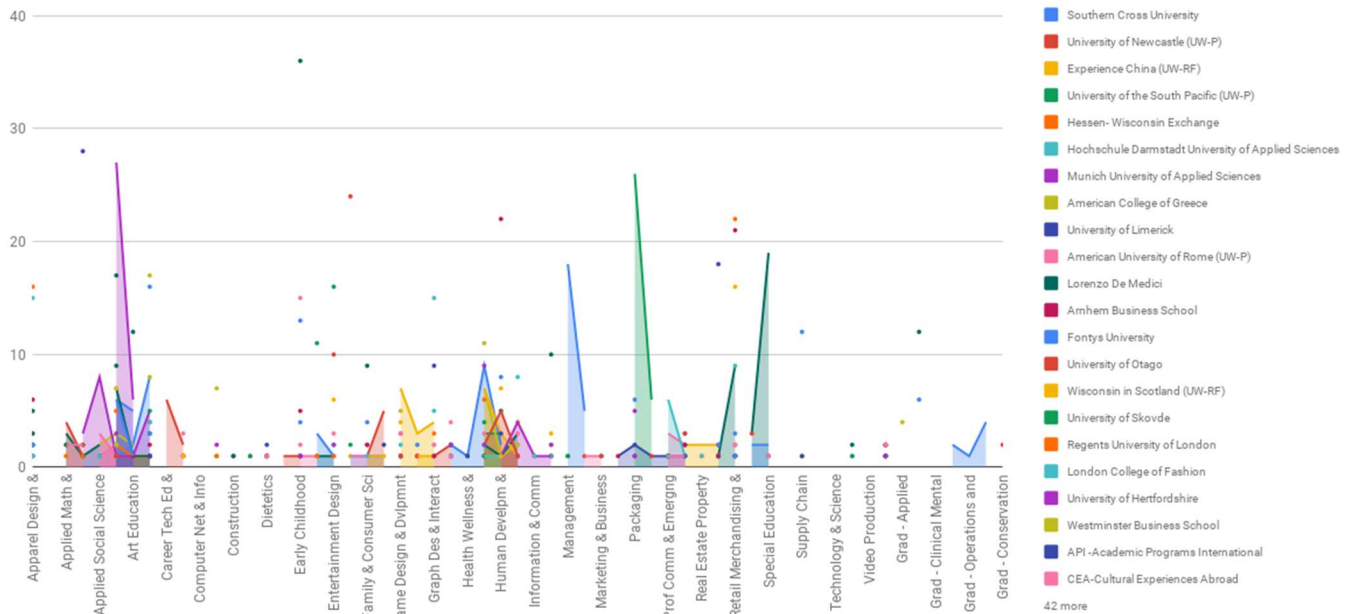
That is a perfectly fine answer!

Thank you for agreeing to this interview, and, again, for taking the time to come and speak with me. Goodbye.

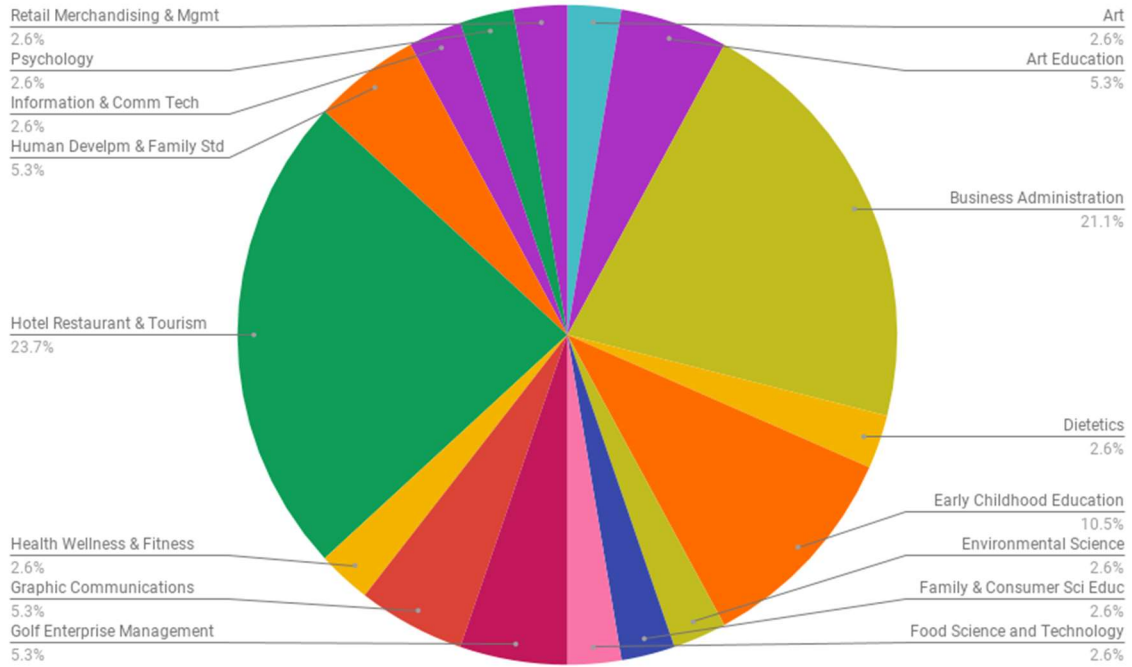
Appendix D: Graph: Programs Divided by Major



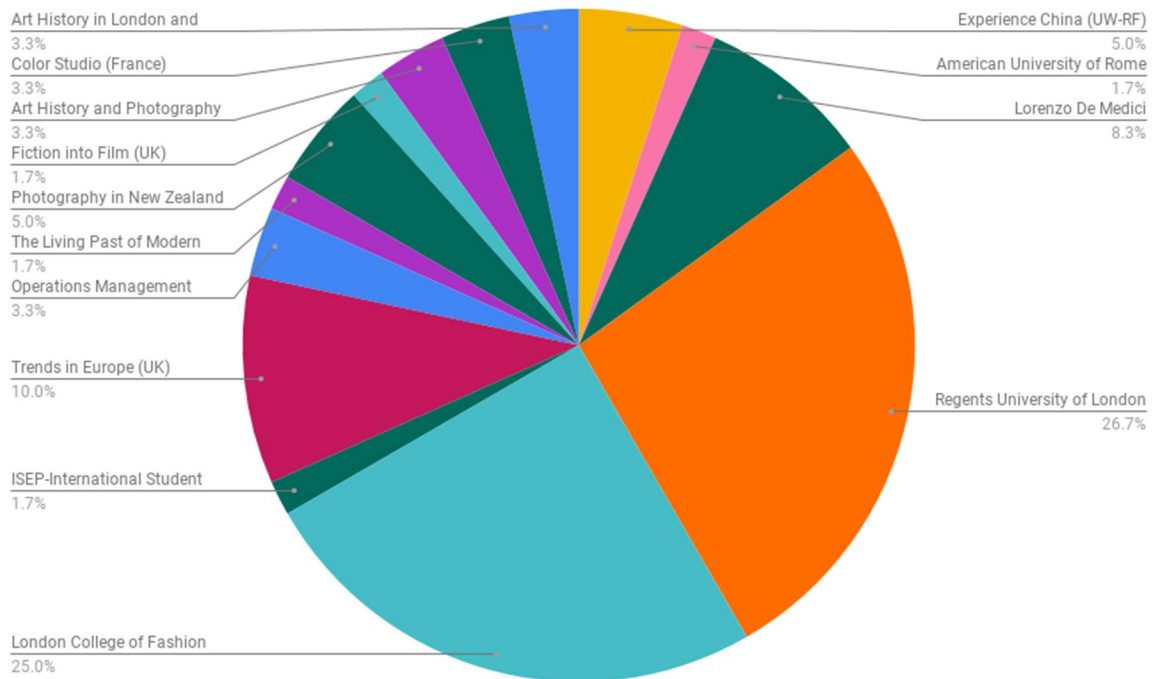
Appendix E: Graph: Majors Divided by Programs



Appendix F: Chart: Top Sending Majors



Appendix G: Chart: Top Receiving Programs



Appendix H: List: Significant Major to Program Correlations

- 36 Early Childhood Education students attended Global Perspectives in Education
- 28 Applied Science students attended Physiology of Disabilities in Guatemala
- 26 Packaging students attended Injection Molding Technology in Germany
- 24 Environment Science students attended Natural History of the Neotropics
- 22 Human Development and Family Studies students attended Autism in Sub-Saharan Africa
- 22 Retail Merchandising and Management students attended Regents University in London
- 21 Retail Merchandising and Management students attended Trends in Europe
- 19 Special Education students attended Global Perspectives in Education
- 18 Rehabilitation Services students attended Physiology of Disabilities
- 18 Business Administration students attended Westminster University
- 18 Management students attended Operations Management in China
- 17 Art students attended Color Studio in France
- 16 Entertainment Design students attended Comics in Iceland
- 16 Retail Merchandising and Management students attended Experience China
- 16 Apparel Design and Development students attended Regents University in London
- 15 Apparel Design and Development students attended the London College of Fashion