

CASSIE RATIONALE, RESEARCH QUESTIONS, AND PLAN OF OPERATION

1. Need for the project

International educators take as an article of faith that their programs result in life-transforming learning outcomes for students. Faith is powerful, but higher education resource allocation processes increasingly demand empirical accountability. Though the empirical evidence base for international education learning outcomes is growing, it remains thin. One area of international education outcomes research that promises to lend accountability pertains to the impact of international education on college success and completion (Rubin, et al., 2014). [Note: references appear at the end of the proposal narrative; but to conserve space, only minimal citation from the scholarly literature is provided]. Accordingly, the proposed project will establish a national Consortium for Analysis of Student Success through International Education (CASSIE).

There is a crisis in college completion in the United States. At a time when our economy is most in need of a highly educated workforce, about 60% of students who initially enroll in college fail to graduate within 4 years and 40% fail to graduate within six. Certain minority and first-in-family college students are especially at risk of failing to complete college.

Financial distress is one common reason why students fail to persist. Additional out-of-pocket costs and loss of opportunity to work part-time are often cited as reasons why low SES students select out of education abroad. Perceived low financial return-on-investment, particularly in an age of high student debt, may be a big disincentive for many students to major in world languages or area studies. However little hard evidence is available to test these suppositions (cf., Whatley, 2017).

Lack of engagement in one's studies likewise puts students at risk of dropping out; conversely "high impact" activities like independent research or discussing issues with peers outside of class are associated with timely college completion. Education abroad is one high impact activity that leads to student engagement and hence is likely to increase chances of graduation. Interacting with individuals from cultures other than one's own is another such high impact experience that increases student engagement (Gonyea, 2008; Kuh, 1998). In addition to student engagement, another mechanism that may link international education to college success is the training in cognitive focusing that international education affords (Hadis, 2005).

Most—though not all—evidence collected to date warrants the conclusion that education abroad improves graduation rates, particularly for minority students and students who enter

college at an academic disadvantage (Redden, 2012; Rubin et al., 2014, Xu et al., 2014). While effects of an educational choice like education abroad are notoriously difficult to disentangle from student self-selection biases, most of these studies did impose some sorts of statistical or sampling controls to mitigate that confounding factor. For example, the IRS-funded Georgia Learning Outcomes of Students Studying Abroad Initiative (GLOSSARI; Sutton & Rubin, 2004) created a campus-only comparison group that was matched with an education abroad group on a number of factors. The most important matching factor was persistence to the same semester that one group went off to education abroad, while the comparison group remained on campus.

GLOSSARI demonstrated the value of a “big data” approach to assessing the impact of international education. Employing that comparison group research design with a large sample of students (about 36,000 for the college completion analysis) from the University System of Georgia (USG), GLOSSARI found that 49.6% of students who had studied abroad graduated in four years, whereas only 42% of students who never studied abroad graduated in four years. Education abroad thus conferred a 17% improvement in four-year graduation rate. The value added to graduation rate was even greater for African-American students. As for GPA at graduation, it was found that education abroad erased the disparity between students who entered college with low SAT scores compared with those who entered with high SAT scores (see www.glossari.uga.edu). A concern for equity in international education and its outcomes pervades this proposal.

While findings linking education abroad to indicators of college success (such as timely graduation) are compelling, they nonetheless point to the need for further research building on that foundation. Accordingly, the needs addressed by the proposed research project include the following:

1. Need: Encompass a broader swath of international education practices in the evidence base pertaining to college success. Objective: Determine whether advantages found for education abroad generalize to other forms of international education. Specifically, does advanced world language study (majoring or minoring in a world language) result in higher probabilities of timely graduation? Of higher than predicted GPA?
2. Need: Establish new paths for assessing Title VI or similar programs. Objective: Apply similar methods to assessing the impact of participation in Title VI or similar programming. Does FLAS support, exposure to NRC-, LRC-, UISFL- or CIBE-sponsored coursework or extended activities increase the probability of timely graduation or higher than predicted GPA? Note that individual Title VI or similar programs may touch

relatively few students each year. Therefore, this method of Title VI or similar evaluation is only possible by pooling data from programs on many different campuses.

3. Need: Financial need is a barrier both to college success and to participating in international education. But little empirical evidence bears on the impact of mitigating financial barriers. Therefore there is a need for better models of how student financial need interacts with reaping the benefits of international education programs. Objective: Incorporate student financial aid into models showing the relation between international education and college success. That is, do the advantages conferred by international education hold equally for students who receive need-based financial aid, or who have unmet financial need (as per FAFSA filings)?
4. Need: The effects of international education on underserved groups like STEM majors or minority students is little understood because sample sizes on any one campus are typically small. Objective: Aggregate data across campuses to identify patterns for underserved groups that might be invisible in smaller samples.
5. Need: Develop data-driven evidence to guide international education leaders and advisors in practical decision-making and resource allocation. Objective: Drill deep into “big data” to illuminate effects of varying international education programs. Do particular types of Title VI or similar programs (UISFL, NRC, etc.) exert greater impact on student outcomes than others? Is it more advantageous to minor in a world language than to double-major? Do STEM students benefit as much from education abroad as students in the social sciences or humanities?
6. Need: Current evidence linking education abroad with college success is dated and derived from a limited set of institutions. Objective: Gather more contemporary data from more diverse institutions. Do findings linking international education to college success hold equally for private and public institutions? For institutions from all geographic regions of the nation?
7. Need: International education offices and Title VI or similar program directors are often not well versed in outcomes assessment. Objective: Build capacity on campuses where assessments of learning outcomes are not well established. In particular, foster routine collaboration between International Education and Institutional Research offices. Leverage the inter-institutional databank to help institutions create benchmarks by which to judge the impact of international education on student success at their particular institutions.

8. Need: Existing evidence regarding the efficacy of international education remains susceptible to methodological critique. Objective: Use more advanced statistical techniques than were previously available. Given the problem of student self-selection into international education programs, use of quasi-experimental statistical techniques such as “propensity score matching”, regression discontinuity, and synthetic control modeling, along with careful probability sampling of comparison groups. Use hierarchical linear regression to parse out the effects of student cohorts and obtain a richer understanding of the effects of student- versus institution-level characteristics on education abroad outcomes.
9. Need: Large-scale research on international education learning outcomes has been sporadic and dependent on external funding. Objective: Plan an infrastructure for inter-institutional databanking that can be sustained after federal funding expires.

2. Usefulness of expected results

The proposed project is nothing if not driven by user- and uses-centered thinking. CASSIE is deliberately designed as a collaborative that begins with a wide inter-institutional embrace and plans to extend that reach even further. This proposed project is perhaps unique in its dual intentions to build sustainable infrastructure to promote research on international education and student outcomes, and its own research productivity using that infrastructure. As explained in further detail in the sections of this proposal on methods and governance, the national databank will capture information from a wide range of private and public institutions. Letters of support appearing in the Appendix show intended participation even at this proposal stage from the 28 constituents of the University System of Georgia, from at least two other Research I public institutions, and from at least one private institution with a very large international education program. The databank will be mined to yield information about the aggregate, as well as about specific institutions. Indeed, the project has explicit aims to build capacity in learning outcomes assessment for collaborating institutions, and especially to provide guidance for improving the cooperation between institutional research and international education offices on campuses.

What will be the pragmatic utility of conducting broad-based research on international education and college success? Intended uses of the databank, co-laboratory, and results to be generated during three years of funding include but are not limited to the following:

1. A robust, current, and representative national database will strengthen claims that international education enhances college success, and therefore **help direct resources** to support and augment education abroad, world language learning, and area studies.

2. A national database of sufficient depth will enable “deep dives” to **answer questions of practical importance** regarding international education best practices, such as the wisdom of recommending education abroad to preprofessional students or whether double majoring in a world language poses any disadvantage over minoring, with respect to college success. The size of the aggregated databank will enable studies of under-represented groups such as minorities and STEM students who are of too low frequency in institution-specific samples to permit meaningful statistical comparisons.
3. Individual institutions that join the CASSIE “co-laboratory” will receive technical assistance to **improve learning outcomes assessment on their campuses**. All participating institutions will receive benchmarking data about how their institution compares on college success indices, relative to the aggregate in the CASSIE databank (after adjusting for confounding variables). In many cases, technical assistance will be provided to enhance cooperation between Institutional Research and International Education offices. The result will be easier reporting about who studies abroad on campus and with what effect. Particularly during Year3 of the project, individual institutions will be invited to nominate mini-studies of specific interest to their institutions. For example, an institution might be interested in comparing whether amount of financial need is a stronger or weaker predictor of GPA among students who education abroad at their institution, relative to others. Such information might help the institution better target need-based aid to students who have studied abroad.
4. CASSIE will foster more creative and **robust evaluations of Title VI or similar programs**. For example, the proposed project will facilitate use of comparison groups that could be used to judge whether FLAS students are making more progress toward their degree objectives than they might be expected to make without their stipends. Outcomes assessment for Title VI or similar programs are challenging in part because student cohorts in individual programs tend to be relatively small, and in part because data collection can be spotty. While DCREICS will focus just on data about college success, it will spawn evaluation planning that goes beyond counting number of participants and their OPI scores.
5. Because it will collect data about student receipt of need-based financial aid, the project will advance our **understanding about the role of financial aid** for students in international and language studies. Currently, the dominant presupposition is that additional scholarship monies will help lower barriers and increase participation in international education. However the empirical evidence on that subject is scarce, and hardly uniform in finding big effects for unmet financial need. Thus CASSIE will provide much needed information to help guide fund raising and distribution of financial aid for international education.

3. Development of new knowledge

The databank and co-laboratory concept is designed to develop new knowledge by leveraging its two foundations:

- A. The “big data” sample of learners from diverse institutions sustains not only highly generalizable findings at the aggregate level, but also “deep dive” interrogations involving relatively rare student subgroups (e.g., FLAS recipients).
- B. Multiple collaborators from diverse institutions each have a voice in designing analyses of mutual interest (e.g., the graduation rate of preprofessional students who education abroad compared to preprofessional students who do not). Institutional partners may also commission targeted studies of local/institutional interest (e.g., graduation GPA of world language majors at institution X, relative to world language majors in the aggregate sample, after controlling for confounding factors).

CASSIE will revisit certain questions in international education that have already been addressed, but will do so with greater authority than has been possible in the past, and with currency. The prime example pertains to education abroad and rate of timely college completion. But CASSIE will also address questions that were not previously answerable in a credible way. It will interrogate certain assumptions that have rarely been interrogated. For example, are students with lower GPAs really at greater risk if they are admitted to education abroad programs, or can program directors cease using GPA as a screening criterion and in fact invite students who have been earning lower grades in their classes? This question is important given well-known correlations between academic achievement and socioeconomic status. That is, the use of minimum GPA requirements may effectively block many lower socioeconomic status students from participation in education abroad, thus depriving them of its benefits. Given the non-random distribution of socioeconomic status by race/ethnicity in the United States, these requirements likely contribute to the race/ethnicity gap that permeates education abroad participation today.

While the range of practical and policy-related questions that CASSIE collaborators will pursue is broad, new knowledge will be generated in three areas of special importance: underserved subgroups, interactions with financial need, and evaluation of Title VI or similar programs.

- A. **How does participating in international education affect college success for typically underserved groups?** Participation in education abroad is believed to be contingent on students’ academic major and demographic/cultural identity (as well as other factors such as gender; Twombly, Salisbury, et al., 2012). CASSIE will interrogate this belief empirically and will extend the query to additional aspects of international education (e.g., Are Latino students under-represented or equitably represented in advanced world language study? In Title VI or similar program participation?) CASSIE will determine whether participation in international education has a disordinately positive or negative effect on students from such underrepresented groups, relative to more highly represented groups. For example, are those relatively few STEM majors who education abroad held back from timely graduation, as is commonly supposed by many

college advisors? Do the (presumably) relatively few minority students who participate in FLAS graduate at a different rate than otherwise comparable minority students who do not receive FLAS funding?

Research regarding underserved demographic groups will be facilitated by including minority serving institutions, including HBCUs, in the CASSIE databank and co-laboratory. The University System of Georgia itself houses three HBCUs. In 2016, about 27% of USG students were African-American, 8% Hispanic, and 8.5% Asian. Among collaborating institutions will be additional minority serving institutions, such as Howard University (see letter of support in Appendix).

- B. How does student financial need interact with participation in international education in affecting college success?** Student finances are presumed to be a major barrier for increasing participation in education abroad, particularly for low SES students. The barriers are imposed not only by additional costs incurred by study travel, but also by opportunity costs in lost wages from jobs, possible caregiver expenses, and by the presumed—but now debunked—extra time to graduation associated with education abroad. Similarly, financial considerations may affect choices to forego other kinds of international education. For example, prospective world language majors (and their families) may fear that majoring in world languages lowers one’s earning potential, relative to majors like business administration. International education fellowships and scholarships like FLAS (and Gilman) are intended in part to help overcome these finance-related barriers. This project will offer data to at least obliquely examine the distribution of FLAS stipends. For example, are FLAS recipients more or less likely to be recipients of need-based aid relative to otherwise comparable students?

Recent but limited hard evidence bears on the question of student neediness and the choice whether to education abroad. GLOSSARI did collect data about need-based financial aid, including amount of unmet financial need for those students who filed a FAFSA. Using GLOSSARI data, Whatley (2017) confirmed that students’ finances contribute to their decisions about education abroad, but that this relationship is more complex than it appears at first glance. For example, need-based grant aid was found to positively contribute to student participation in education abroad, while students relying on loans to pay for school were less likely to education abroad. What happens to those students who persist in education abroad, despite their financial neediness? Or what happens to financially needy students who do pursue majors in world languages? Do these decisions impair timely college completion in a manner that puts aid recipients behind their needy peers who do not engage in international education? Does receipt of FLAS support mitigate any such adverse effects? Addressing such questions about financial aid, participation in international education, and college success will be a major priority for CASSIE.

- C. How can large institutional datasets help in evaluating the impact of Title VI or similar programming?** Program evaluation has long been central to the Title VI initiative.

However implementing rigorous student learning outcomes assessment as part of that evaluation has proven elusive. The well-conceived Evaluation of Exchange, Language, and International Area Studies (EELIAS) system funded at Maryland by IFLE recognizes that outcomes can only be judged in comparison to external data sources, and like CASSIE, EELIAS recognized the utility of “propensity score matching” statistical techniques. However, EELIAS adopts the institution as the unit of analysis rather than the student. EELIAS tracks the value added by Title VI to institutional *output* in international education (Brecht et al., 2007). But *output* is not the same as *outcome*, and certainly not the same as *learning* outcome. Procedures that use some form of oral proficiency interview to test increments in Title VI student language proficiency do contribute to learning outcomes assessment. The Institute for International Education’s (IIE) (2015) groundbreaking analysis of Boren Award winners’ language learning as a result of education abroad is a prime instance. However it remains rare for Title VI programs to use a recommended pretest/posttest comparison group quasi-experimental design (Rubin & Tarrant, in press). Therefore it is impossible to infer the degree to which high absolute scores on an OPI are attributable to the Title VI program participation *per se* (Sutton, Miller & Rubin, 2007).

One recurring difficulty evaluating Title VI outcomes is that usually too few students pass through a program to allow inferential statistical analyses. Such might be the case with FLAS programs on individual campuses, which might host an annual cohort of 12-15, only some of whom are undergraduates. In other instances, it is hard to accurately count the number of students “touched” by a National Resource Center or a UISFL grant. CASSIE will directly address those challenges by (a) aggregating data from Title VI programs across several campuses to increase sample size, and (b) creating protocols for campus international education offices to identify students who participated in Title VI-sponsored classes or other formal instructional experiences.

In the fall of 2013, CASSIE Co-investigator Don Rubin was invited by IFLE leadership to speak with Title VI directors about learning outcomes assessment. In his talk, he demonstrated the compelling evidence for education abroad effects on college completion arising from GLOSSARI. But Rubin’s presentation at that time failed to connect the dots back to the needs of Title VI directors for generating program- and campus-specific evidence of efficacy for, say, a UISFL project or a NRC. The CASSIE co-laboratory will make that need a high priority. It will create a data analysis protocol whereby campus-specific programs can compare their impact on college success with a statistically controlled benchmark.

4. Formulation of problems and knowledge of related research

The research literature on education abroad learning outcomes has burgeoned since the last round of IRS funding on this subject about a decade ago. Much of that literature pertains to world language learning via classroom instruction or via immersion (Freed, 1998; Vande Berg,

Connor-Linton & Paige, 2009). Excepting that literature pertaining to additional language learning, probably the greatest share of research in international education learning outcomes pertains to the development of a constellation of related attitudes, values and beliefs variously called cultural sensitivity (Vande Berg & Paige, 2012) or cultural competence (Deardorff, 2009) or global citizenship (Tarrant, Rubin & Stoner, 2014).

Literature on the impact of international education on college success is scarcer. While some institutions claimed positive effects of education abroad on graduation rate, much of that work simply compared raw frequencies of members of an entering cohort who had studied abroad with those who did not. The problem with this simple approach is that all members of the education abroad group will have persisted to sophomore or junior or senior year when they embarked on their trip. However, the non-education abroad group would have experienced considerable attrition before the “target semester.” The education abroad group will show an advantage simply because they are sampled later in their college careers. What is needed, then, is a comparison group that evinces the same survival as the education abroad group. For example, for every student who studies abroad during the second semester of her second year, we must identify a second semester junior who did not education abroad at all during her college career. Because of the rigor of the sampling needed for this approach, it is more likely to be undertaken institution-wide rather than by any single international education program. GLOSSARI was the first project to implement this methodology (along with other elements) and to advocate its use nation-wide. Subsequently, research conducted at the University of Texas-Austin (Hamir, 2011), San Diego State University (Cisneros-Donohue, et al., 2006), Old Dominion University (Xu, et al, 2013) and IRS-funded Project SOAR at California community colleges (Rubin, et al., 2014) all adopted the GLOSSARI methodology. All these projects verified that education abroad confers advantages with respect to overall college success and completion.

Note, however, these studies have examined only a single international education component, namely, education abroad. While world language study in high school is fairly well established as a predictor of college retention and completion—and especially so for minority students (Fleming, 2002)—we have not identified a similar study showing a similar effect for advanced language study in college. Nor are we aware of a convincing study linking participation in a Title VI or similar program to college completion or success. In addition, given the close association between financial need and college success, it is noteworthy that no study to date has examined how financial neediness interacts with international education experience in affecting college success (though studies are beginning to investigate financial neediness and education abroad participation—e.g., Whatley, 2017).

The 16 major *a priori* hypotheses and research questions enumerated below parse out issues of interest pertaining to three kinds of international education experiences: (a) education abroad, (b) world language study, and (c) participation in Title VI or similar programming (FLAS support or a course/extended experience sponsored by a LRC, NRC, UISFL, or CIBE). They address effects of these elements of international education on undergraduates in general and also on several subgroups: (a) minority students, (b) students receiving need-based financial aid, (c) STEM and preprofessional majors, (d) world languages majors and minors, and (e) Title VI or similar

program participants. The hypotheses and research questions are explored with respect to six indices of college success (e.g. college completion in 6 years; the full list appears in the following hypothesis).

- I. Hypothesis: Using a sample of 2010 and 2011 incoming cohorts aggregated across numerous institutions, and controlling confounding factors by means of both sample matching and propensity score matching, undergraduate students, who participate in at least one education abroad experience, have greater college success than their peers who do not.
 - a. Greater probability of graduating in 6 years
 - b. Greater probability of graduating in 4 years
 - c. Fewer semesters to degree completion
 - d. Fewer credit hours to degree completion
 - e. Higher average credit hours completed/semester
 - f. Higher GPA at graduation
- II. Hypothesis: Participation in at least one education abroad experience is a stronger predictor of indices of college success (Ia-I f, above) for minority students than for their nonminority peers.
- III. Hypothesis: The number of education abroad programs in which students participate during their college careers predicts indices of college success (Ia-I f, above).
- IV. Research Question: Does the impact of education abroad on indices of college success (Ia-I f, above) differ for students who receive need-based financial aid at any point in their college careers as compared with their peers who do not?
- V. Research Question: Does the impact of education abroad on indices of college success (Ia-I f, above) differ for students who education abroad in Anglophone as compared with non-Anglophone nations?
- VI. Research Question: Does the impact of education abroad on indices of college success (Ia-I f, above) differ for students who major at graduation in highly sequenced STEM or preprofessional degree programs, relative to their peers who do not?
- VII. Hypothesis: Employing the CASSIE method described in (I) above, the number of world language courses a student completes predicts indices of college success (Ia-I f, above).
- VIII. Hypothesis: Students who major or minor in a world language at graduation experience greater college success (indices Ia-I f, above) than their peers who do not.
- IX. Research Question: Do students who major in a world language at graduation fare differently on indices of college success (Ia-I f, above) than students who minor in a world language?

- X. Research Question: Is majoring or minoring in a world language at graduation a stronger predictor of indices of college success (Ia-Ij, above) for minority students than for their nonminority peers?
- XI. Research Question: Does majoring or minoring in a world language at graduation exert a different impact on indices of college success (Ia-Ij, above) for students who receive need-based financial aid at any point in their college careers as compared with their peers who do not?
- XII. Research Question: Does minoring in a world language at graduation exert a different impact on indices of college success (Ia-Ij, above) for students who major at graduation in highly sequenced STEM or preprofessional degree programs, relative to their peers who minor in different subjects?
- XIII. Research Question: Employing the CASSIE method described in (I) above, does participating in a Title VI or similar program (FLAS support or a course/extended experience sponsored by a LRC, NRC, UISFL, or CIBE) predict indices of college success for undergraduates (Ia-Ij, above)?
- XIV. Research Question: Does participation in any one of the several Title VI or similar programs (FLAS support or a course/extended experience sponsored by a LRC, NRC, UISFL, or CIBE) exert a different impact on indices of college success (Ia-Ij, above) compared to the other Title VI or similar programs?
- XV. Research Question: Does participating in a Title VI or similar program (FLAS support or a course/extended experience sponsored by a LRC, NRC, UISFL, or CIBE) exert a different impact on indices of college success (Ia-Ij, above) for students who receive need-based financial aid at any point in their college careers as compared with their peers who do not?
- XVI. Research Question: Is participating in a Title VI or similar program (FLAS support or a course/extended experience sponsored by a LRC, NRC, UISFL, or CIBE) a stronger predictor of indices of college success (Ia-Ij, above) for minority students than for their nonminority peers?

As explained in previous sections about the role of collaborating institutions in DCRIEFS, additional hypotheses and research questions—including institution-specific questions will emerge out of that collaborative process and are therefore not enumerated above.

5. Specific statement of procedures

Building (and Sustaining) the Collaborative. Since this project is designed to be an inter-institutional collaborative, early and on-going activity will raise awareness about the value of the national databank and recruiting partner institutions to the co-laboratory. Although the 28 University System of Georgia institutions plus at least 4 other diverse institutions (Howard University, University of Texas-Austin, University of Delaware, and California State University at Dominguez Hills; see letters of support in the Appendix) are already committed, Institute for International Education (IIE) co-investigators will spend much of Year 1 helping to build the collaborative into a truly national network. It will do so by leveraging its already extensive network of campus contacts associated with *Open Doors* reporting and Generation Education abroad institutions. An advisory panel of staff from selected partner campuses will provide campus-based perspectives on CASSIE priorities and progress.

Institutional capacity building for learning outcomes assessment will be another important component of building the collaborative. CASSIE will prepare a guide to collaboration between institutional research and international education. IIE staff will also facilitate IE/IR telemeetings for campuses that request such services. In addition, CASSIE will make presentations aimed at capacity building at international education conferences, including IFLE-sponsored meetings for Title VI or similar directors. IIE will generously provide registration scholarships for up to 10 partner institution staffs at its March, 2018 Best Practices Conference.

A long-term goal for building the collaborative is to plant the seeds for a sustainable collaborative to periodically update the national databank and allow for open-access following the end of IRS support in 2020. IIE staff will be mindful of that sustainability goal as they interact with partner institutions.

Building the databank.

Assembling a multi-institutional databank is logistically complex. It involves elements of data security, data transfer, and data management. Fortunately, IIE partners in CASSIE can draw upon their experience assembling the *Open Doors* report. USG partners can draw upon their experience in compiling the GLOSSARI database, which included about 31,000 education abroad students and 18,000 who studied only on campus. In addition, CASSIE draws upon the tools and expertise of the Western Interstate Commission on Higher Education, which has devised the state-of-the-art Multistate Longitudinal Data Exchange System (see Appendix for letter of support from WICHE).

The data collection protocol for building the national databank will no doubt vary across campuses. For example, a campus that already uses course suffixes to designate classes taught abroad will have an easier time of sampling students. Among the 28 University System of Georgia campuses, International Education offices will be able to coordinate directly with the USG Office of Research and Policy Analysis to enable sampling. At many other campuses, however, offices of International Education and of Institutional Research will be working together (sometimes for the first time). Directors of Title VI or similar projects over the last 7

years will need to provide rosters to identify undergraduates who received FLAS funding or who participated in classes or extended activities arising from Title VI or similar projects.

Keeping in mind that the sampling procedures will be unique to each campus, the ideal procedures would include the following steps:

- I. Pull records for all first time, full-time, first semester students matriculating in fall of 2010 and 2011.
- II. Identify three (highly overlapping) groupings of students: (a) those who have studied abroad, (b) those who have taken an advanced world languages class, and (c) those who participated in Title VI or similar programs (FLAS or other). Identify also the "target semester" in which they had that experience. In many cases this will require cross-walking rosters held at offices of International Education and by Title VI or similar project directors with student lists generated by Institutional Research offices.
- III. Draw comparison group samples for each of the three (overlapping) groups above by identifying students who never studied abroad, didn't take an advanced world language class, or didn't participate in a Title VI or similar program, respectively, in their college careers, but who "survived" to the same target semester as their counterparts. Further matching by major would be ideal.
- IV. For each student in both the "treated" group (that is, students with international education experiences) and the comparison group--using Common Education Data Standards (CEDS) where applicable--draw the following data elements about precursors or demographic variables associated with college success:
 - a. SAT or ACT score
 - b. race/ethnicity
 - c. gender
 - d. first-in-family identifier if available
 - e. +/- recipient of need based financial aid and semesters of receipt
 - f. for FAFSA filers: amount of unmet financial need [need - awards],

Draw the following data elements--using Common Education Data Standards (CEDS) where applicable-- regarding international education exposures (if any) and regarding college success outcomes:

- g. semester in which degree was completed, if degree conferred
- h. GPA for "target semester"
- i. GPA at final semester of enrollment
- j. number of credits earned at "target semester"
- k. number of credits earned at final semester
- l. major field of study at final semester
- m. minor field of study if any at final semester
- n. number of courses completed in world language
- o. highest level of study completed in any world language
- p. number of semesters of Title VI or similar FLAS support if any
- q. participation in other Title VI or similar-sponsored class or extended activity (i.e., class or activity arising from UISFL, LRC, NRC or CIBE project).

- V. Using protocols developed with the assistance of WICHE's Longitudinal Multistate Data Exchange System (see WICHE letter in Appendix) and procedures already in place for data feeds from USG constituent campuses, securely transmit campus data to USG data warehouse.

Analyzing the Data.

Once the databank is compiled and cleaned, for certain analyses (e.g., comparing world language majors and minors with students majoring in other subjects) the comparison group sample will be further refined by employing a statistical procedure known as "propensity score matching." PSM will use variables such as SAT scores and gender to increase comparability of groups on all dimensions except the one of focal interest (e.g., academic major).

For most analyses the primary statistical tool will be Ordinary Least Squares regression (or logistic regression for dichotomous outcomes like +/- 4 year graduation). The dependent or criterion variables will be the six indices of academic success noted in hypothesis I in the preceding section of this proposal. We will also attempt some hierarchical linear regression models that "nest" students in their respective institutions. The HLR models may prove a better fit in that they will be able to account for both student- and institution-level independent variables. To test the differential effects of the five student-directed Title VI or similar programs, for continuous dependent variables like number of semester to graduation, it may be most informative to run ANOVAs and then to perform multiple pair-wise comparisons among five program means.

One objective of CASSIE is to render findings intelligible to multiple stakeholders, many of whom may have little background in quantitative analysis. Therefore CASSIE will supplement the statistical analyses described above with data visualization that can help some stakeholders grasp the findings in a more intuitive fashion (Ward et al. 2010).

6. Adequacy of research methodology and scope of project

The proposed project seeks three years of funding from IRS.

Year 1 will include major outreach from national collaborating partner, Institute for International Education (IIE), to enlist partner institutions in addition to the ones already collaborating. Year 1 will also see IIE assisting in capacity building for outcomes assessment and campus cooperation between Institutional Research and International Education. At the same time USG staff will begin to design and populate the databank during Year 1.

Year 2 will see additional institutions recruited to the collaborative. The major focus, however, will be on developing the databank and conducting queries on the aggregate data to address the 16 research hypotheses and questions enumerated earlier in this proposal.

During Year 3, mini-grants will be offered to up to 8 institutions for focused studies of local or institutional interest. During Year 3 CASSIE will develop a benchmarking system to aid institutions in evaluating their college success impact. Consistent with this campus-directed data analysis, CASSIE will develop data visualization tools to help campuses and the international education community at large present its evidence more effectively to various stakeholders. Organizationally, Year3 will work toward sustainability of CASSIE, anticipating the termination of federal funding.

It is not unrealistic to project that at least 40 institutions will partner and contribute data to CASSIE. See letters of support in the Appendix for the 28-institution University System of Georgia, Howard University, University of Delaware, University of Texas-Austin, and California State University at Dominguez Hills. These 40 institutions will be diverse in terms of geographic region, mission, private and public sectors, and demographics. Among the partners will be sites for a good many Title VI or similar projects as well as institutions which are among the top senders of students to education abroad.

The research methodology to be employed in CASSIE builds upon and refines the big data methods pioneered by the IRS-funded GLOSSARI and adopted in subsequent studies at University of Texas, San Diego State University, Old Dominion University, and the IRS-funded California Community College SOAR project (e.g., Redden, 2012, Rubin et al., 2014, Xu, et al., 2012). A signature feature of this research methodology is careful sampling of comparison groups that are matched with the international education groups in that the groups have equal probability of surviving to the same “target” semester.

One way in which CASSIE expands upon GLOSSARI is by examining three modes of international education instead of just education abroad. In addition to investigating the impact of (1) education abroad, CASSIE also addresses the impact of (2) advanced world language study on college success. Further, it extrapolates the model to (3) Title VI or similar programming. It promises to assess the relative impact of 5 student-directed Title VI or similar programs (FLAS, LRC, NRC, USIFL and CIBE) on college success.

The six indices of college success that will serve as dependent or criterion variables for the analyses were enumerated in a preceding section of this proposal stating the main research questions and hypotheses. Those indices reflect efficient course-taking, timely degree completion, and achievement in class (the latter captured by GPA).

The preceding section of this proposal detailing research procedures offers a comprehensive list of the independent or predictor variables that will be compiled. These predictors include the main independent or “treatment” variables of interest, that is, participation in education abroad, advanced world language study, and Title VI or similar programming. Predictors also

include demographic and precursor determinants of college success such as gender and SAT score. By statistically controlling for these determinants, CASSIE can estimate the “pure” effect of the international education experiences. Statistical controls are offered by techniques such as propensity score matching and linear (or logistical) regression. CASSIE will also attempt to apply hierarchical linear regression, which controls for “cohort effects” by parsing out institution as a factor.

As reflected in the series of 16 main hypotheses and research questions listed in a preceding section of this proposal, analyses performed on the aggregate data set will be replicated to tease out effects that may be specific to particular subgroups of particular interest. These subgroups include (a) minority students, (b) recipients of need-based financial aid, (c) STEM and preprofessional students who engage in rigidly sequenced curricula.

As an inter-institutional collaborative, CASSIE will offer its constituent partners opportunities to “commission” studies of particular local or institutional interest. Thus, for example, it could be possible for CASSIE to track a group of at-risk students who participated in a summer “bridge” program and to determine their engagement in international education and whether that engagement exerted the same salubrious effects as it did on their peers who were not “bridge” students. Furthermore, partner institutions will be able to commission benchmarking studies that show how their students fared on the indicators of college success and international education, relative to the aggregate databank, after controlling for confounding variables. It is anticipated that these benchmarked studies will prove useful for institutional evaluation and reporting.

In addition to typical tables and graphs, CASSIE is committed to presenting data in ways that will be more intuitive and comfortable for stakeholders who may not be familiar with statistics. Toward that end, the project will adopt a number of data visualization approaches (Ward, et al., 2010)

Outreach Activities

Creating and maintaining a national research consortium of collaborating institutions is conceived as an *outcome* of DCRIECES. Accordingly, it is appropriate to explain methods that will be used to create this research consortium. To enable broad participation from a wide range of higher education institutions, the Institute of International Education (IIE) will conduct outreach to promote the data project to a national network of over 3,000 U.S. colleges and universities that are active in international education. In Year One, IIE will develop an outreach list of potential participants, drawing on their relevant networks, including partners of IIE’s Generation Study Abroad® initiative, the Open Doors® U.S. Study Abroad Survey, and IIE Network members. IIE will also develop outreach messaging and conduct broad email outreach

to this list to promote the consortium and recruit consortium partners. In Years Two and Three, IIE will continue to update the outreach list and conduct wide outreach, as well as targeted email and phone follow-ups to consortium partners to encourage follow-through on reporting.

Drawing on its expertise in conducting large-scale survey research in education abroad through Open Doors® and Generation Study Abroad®, IIE will also conduct activities to improve the capacity of institutions to collect and report consistent and comparable data to the consortium. IIE will develop content for an online toolkit for institutions to orient potential participants to the project and provide resources on effective data collection practices that will enable strong reporting by the consortium partners. IIE will also develop and deliver a one-hour workshop on effective data collection on student outcomes of education abroad. The workshop will be delivered by IIE's research and data experts and may also include outside presenters to provide institutional perspectives on data collection. IIE will deliver the workshop as a live online webinar that will also be recorded and made available online afterwards. To extend their outreach, IIE may also seek to deliver the workshop content at relevant conferences, such as the annual meetings of NAFSA, Association of International Educators, the Forum on Education Abroad, or the Generation Study Abroad Summit.

7. Plan of operation

The overall design of the project is a collaboration headed by the lead agency and grantee, University System of Georgia (USG). USG is responsible for overall project administration, for compiling and managing the databank and for data safety, and for statistical analyses and report writing. (See letter of support in Appendix from USG Chief Academic Officer.) IIE is the primary national partner in this collaboration. IIE's primary responsibility is to recruit additional diverse institutions to the collaborative and to implement capacity building among collaborating institutions. (See letter of support in Appendix from IIE Vice President for Research.) It is anticipated that as many as 40 individual campuses—including the 28 USG institutions--will become collaborating partner institutions. These partner institutions supply data for the national databank, nominate specific analyses of local interest, and receive institution-specific benchmarking information. (See letters of support in Appendix from additional collaborating institutions such as Howard University and University of Texas.)

Project Management. Full project position descriptions appear in the Appendix. Overall administrative oversight for the project lies with the Project Director, Dr. Angela Bell, who is Associate Vice Chancellor for Research and Policy at the University System of Georgia. Responsibility for assuring progress toward the projects multiple objectives on a more granular basis is vested with the Principal Co-Investigator, Dr. Donald Rubin. Rubin was the Director of Research for the precursor GLOSSARI project and an advocate for international education learning outcomes assessment. The Co-Investigator role at IIE will be shared by Dr. Christine Ferrugia, Assistant Director of Research for IIE's Center for Student Mobility Research and Impact by Dr. Rajika Bhandari, Vice President and Director of Research at IIE. Co-Investigator

Ferrugia will be responsible for day-to-day progress at IIE for recruiting partner institutions and conducting capacity building webinars and consultations. Co-Investigator Bhandari will exercise overall oversight over IIE's participation in CASSIE and will provide strategic insights. An Advisory Council of international educators from the collaborating institutions will be convened via webconference at least three times during Year 1 and twice during each of Years 2 and 3. The Advisory Council will provide feedback and guidance to the project leadership to ensure that the needs of campus stakeholders are being adequately addressed. The Advisory Council will also help draft a sustainability plan.

Meeting the purpose of the 2017 IRS funding program. The absolute priority for this round of IRS funding is “[a]pplications that propose research projects, surveys, or studies.” Competitive Preference Priority 2--which this proposal directly addresses--is “Research Projects, Surveys, and Studies on the Outcomes of International Education Programs for U.S. Postsecondary Education Students.” Examples of appropriate research topics given in the funding invitation announcement include, “ the relationship between participation in international education and students’ persistence, completion, and/or academic and/or personal achievement in postsecondary education; underserved students’ access to, and participation and success in international education...”

The proposed CASSIE project directly addresses the absolute priority and Competitive Preference 2. It is a research project of large, national scope. CASSIE's national databank creates infrastructure that will be available to the international education research community at large. Moreover, DCREICS embeds specific research projects—corresponding to its 16 hypotheses and research questions.

DCREICS is absolutely aligned with the example stated in the funding notice regarding college persistence, completion and academic achievement. In addition, the IRS program is charged with facilitating assessment of Title VI or similar impact. CASSIE is deliberately designed to test the efficacy of five Title VI or similar programs in promoting college success. It does so by pooling data from Title VI or similar programs from many institutions, and thus creating a large enough sample to enable that testing for the first time.

Deploying project resources to achieve objectives. CASSIE is housed in the Office of Research and Policy at the University System of Georgia. This office, whose director was previously engaged in GLOSSARI research, has responsibility for a data warehouse that securely collects and maintains data for all 28 institutions in USG, with a combined census of about 320,000 students. The constituent institutions are quite diverse, including four research universities, four comprehensive universities, 10 state universities, and 10 state colleges, several of which offer primarily associate's degrees. Among the 28 institutions are three HBCUs: Albany State, Savannah State, and Fort Valley State.

USG is thus well equipped to securely transmit data from diverse institutions, create a robust databank that can be readily queried, and conduct both descriptive statistical studies and more complex statistical modeling.

CASSIE national partner, IIE, is uniquely equipped to interface with diverse institutions and their international education programs nationwide. IIE has extensive experience collecting data from nearly all US institutions for its annual *Open Doors* report about international education participation rates. Its *Generation Study Abroad* project has enrolled over 700 institutions in an unprecedented capacity-building and advocacy initiative. It is anticipated that a number of the Generation Study Abroad partners will likewise enroll as CASSIE partners. These initiatives at IIE are run out of its Center for Student Mobility Research and Impact. The Director and Assistant Director of that Center are both key personnel in CASSIE.

Providing equal access and participation. CASSIE is committed to recruiting and enrolling diverse institutions. In fact, the research model demands that in order to assemble adequate sample sizes for underrepresented groups such as minority and low income students. At the time of this proposal, four HBCUs, including three at USG, will be participating. Additional minority serving institutions will be recruited through IIE efforts.

To assist institutions with under-resourced International Education offices, CASSIE's national partner, IIE, has generously agreed to provide 10 registration scholarships to help collaborating institutions attend the March 2018 CASSIE partner meeting to be held in conjunction with IIE's Best Practices conference.

CASSIE adopts GLOSSARI's commitment to open access data and reporting (see www.glossari.uga.edu). As with GLOSSARI, it is anticipated that CASSIE will mount deidentified data sets and corresponding codebooks on password protected websites. Individuals wishing to view or use the data and reports will be granted access free of charge upon presentation of appropriate credentials and subscription to a security agreement. Utilization of the GLOSSARI data and report archives has been significant. The data sets have been downloaded nearly 300 times. The presentations and reports have been downloaded thousands of time, with a final report presentation enjoying nearly 3000 downloads and a summary of results pertaining to minority students about 3600 (not to mention online views).

5. Evaluation plan

Typical evaluation models distinguish between process indicators and product outcomes. That model works reasonably well for instructional interventions in which the process might entail developing materials and delivering instruction to numbers of learners, and the product is the measured achievement of those learners. For DCREICS, however, the line between process and product is not so clear. The proposed project develops research infrastructure—the national databank—and conducts analyses using that resource. It also creates a collaborative of participating institutions and offers capacity building for institutions and Title VI or similar programs to better engage in international education learning outcomes assessment. Much of that work looks like process. Given its particular mission, we conceptualize DCREICS's "products" as outcomes such as the number of institutions and students included in the

databank, the number of hypotheses and research questions tested, and the number of presentations delivered and manuscripts prepared explicating CASSIE's research. Sustainability beyond IRS funding is also an important outcome by which this project may be evaluated.

Hiring evaluators external to the project is also common evaluation practice. For CASSIE, external evaluation was deemed an unnecessary use of limited resources. CASSIE key personnel include individuals who in fact might be called upon as evaluators for other projects. That is, key personnel possess a high level of evaluation expertise. And adopting relatively concrete and mostly objective performance benchmarks reduces the impact of evaluation bias. Moreover, the Advisory Board comprised of international educators from collaborating institutions will be charged with providing evaluative perspective from multiple points of view.

Evaluation of year 1:

Outcome Indicator: Number of institutions agreeing to collaborate and submitting 2010-2011 entering class data to the project. **Benchmark:** 40 institutions including the 28 USG colleges and universities

Outcome indicator: Number of Title VI or similar programs identifying student participants. **Benchmark:** 20 FLAS, LRC, NRC, UISFL or CIBE projects.

Process Indicator: Development of file specifications for submission of data consistent with Common Education Data Standards (CEDS) where applicable and derived through consultation with participating institutions for fields beyond CEDS. **Benchmark:** acceptance by 75% of participating institutions

Process Indicator: Data quality checks run on all submitted data (auditing for missing data, data outside acceptable values, and outlier analysis) and resubmission of problematic data. **Benchmarks:** zero out-of-range values; 80% of remaining missing values accounted for by factors at submitting institutions

Process indicator: Advisory committee participation. **Benchmarks:** 8 collaborating institutions represented at in-person meeting at IIE Best Practices conference; 66% of collaborating institutions participating in web-based meeting.

Evaluation of year 2:

Process Indicator: Successful merging of all submitted, audited data. **Benchmark:** 90% of datasets submitted by collaborating institutions integrated into the databank.

Outcome Indicator: Reporting descriptive statistics for aggregated databank around International Education (education abroad, advanced world language study, Title VI or similar engagement) participation (by sample parameters such as gender, race/ethnicity, program of study, etc.) and outcomes of participants (section 4, 1a-f). **Benchmarks:** all 6 outcomes included

in report; all 3 international education experiences included in report; 6 sample parameters included in report; report disseminated to 100% of participating institutions (as well as via CASSIE webpage).

Outcome Indicator: Reporting descriptive statistics for aggregated Title VI or similar programs to Title VI or similar directors' network. **Benchmarks:** report aggregates data for 20 Title VI or similar programs; all 6 outcomes included in report; disseminated electronically to IFLE plus 80% of Title VI or similar Part A and CIBE directors.

Outcome Indicator: Number of hypotheses and research questions tested with rigorous, appropriate statistical methods. **Benchmark:** 12 of 16.

Process Indicator: Advisory committee participation. **Benchmarks:** 66% of collaborating institutions participating in web-based meeting.

Process Indicator: Number of collaborating institutions proposing Year 3 mini-research projects. **Benchmark:** Requests from 25% of collaborating institutions.

Process Indicator: Develop prototype for institutional benchmarking tool based on project outcomes. **Benchmark:** prototype approved by 75% of advisory committee members.

Outcome Indicator: Conference presentations. **Benchmark:** Presentations about CASSIE delivered at 3 international education or higher education conferences.

Outcome Indicator: Number of collaborating institutions receiving capacity building information or consultations regarding international education outcomes assessment and/or about cooperation between offices of Institutional Research and International Education. **Benchmarks:** 20 institutions attending webinar; 10 institutions engaged in telephonic consults.

Process Indicator: Satisfaction scores on survey of collaborating institutions. (Sample item: CASSIE staff provided expected level of assistance in developing our data compiling process.) **Benchmark:** Average score on items querying collaborating institutions about their approval of CASSIE progress and activity will be 4 on scales where maximum score is 5.

Evaluation of year 3 and summative evaluation:

Outcome Indicator: Number of mini-grants studies by collaborating institutions completed and reported back. **Benchmark:** 7 of 8 funded in Year 2

Outcome Indicator: Institution-specific international education outcomes benchmarking studies conducted and reported back to collaborating institutions. **Benchmark:** Comparison between institution and statistically equated aggregate achieved for all 6 student outcome variables for 75% of collaborating institutions.

Process Indicator: Satisfaction scores on a survey of collaborating institutions. (Sample item: Participating in CASSIE has improved coordination between International Education and Institutional Research on my campus.) **Benchmark:** Average score on items querying collaborating institutions about their approval of CASSIE achievements--focusing especially on capacity building activities--will be 4 on scales where maximum score is 5.

Outcome Indicator: Number of collaborating institutions and other stakeholders endorsing a sustainability plan. **Benchmarks:** 50% of collaborating institutions endorsing sustainability plan and committing to submit additional years of data; 10 additional institutions endorsing sustainability plan; 2 national organizations endorsing sustainability plan and committing to assist in locating resources.

Outcome Indicator: Visualization tool on website allows filtering of graphic results by outcome measure and by sample parameter. **Benchmark:** Visited online 50 times/month.

Outcome Indicator: Conference presentations. **Benchmark:** Presentations reporting CASSIE findings delivered at 3 international education or higher education conferences.

Outcome indicator: Scholarly manuscripts prepared and submitted for publication. **Benchmarks:** 1 practical manuscript for international educators and administrators; 1 manuscript focusing on outcomes for Title VI or similar participants; 1 manuscript for higher education journal. [Note: it is anticipated that even the two years of data collected and analyzed by DCREICS under IRS funding will sustain considerably more manuscript publications beyond Year 3.]

References

Brecht, R., Golonka, E., Hart, M. & Rivers, W (2007). *National Capacity in Language and Area Studies, Post 9/11: An Evaluation of The Impact of Title VI/Fulbright-hays of The Higher Education Act*. Accessed July 21, 2017 at https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwi8hZ7w8a7VAhXlq1QKHb-HC3cQFgg2MAM&url=http%3A%2F%2Fwww.nflc.umd.edu%2Fpublications%2FBrecht_Golonka_Hart_Rivers_2007.pdf&usg=AFQjCNFVlFkhMT_ik7AGZSD64WiiAwGYkA

Cisneros-Donahue, T., Krentler, K. A., Reinig, B., & Sabol, K. (2012). Assessing the academic benefit of education abroad. *Journal of Education and Learning, 1(2)*, 169.

Deardorff, D. K. (2009). Synthesizing conceptualizations of intercultural competence: A summary and emerging themes. In DK Deardorff (Ed.), *The SAGE handbook of intercultural competence*, 264-270. Beverly Hills: Sage.

Fleming, J. (2002). Who will succeed in college? When the SAT predicts Black students' performance. *The Review of Higher Education, 25(3)*, 281-296.

Freed, B. F. (1998). An overview of issues and research in language learning in a education abroad setting. *Frontiers: The Interdisciplinary Journal of Education abroad*, 4(2), 31-60.

Gonyea, R.M. (2008). The impact of education abroad on senior year engagement. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Jacksonville, FL.

Hadis, B. F. (2005). Why are they better students when they come back? Determinants of academic focusing gains in the education abroad experience. *Frontiers: The Interdisciplinary Journal of Education abroad*, 11, 57-70.

Hamir, H.B. (2011). Go abroad and graduate on-time: Education abroad participation, degree completion, and time-to-degree. (Doctoral dissertation). Retrieved from <http://digitalcommons.unl.edu/>. (CEHSEDADDISS65).

Institute of International Education. (2015). *The Boren Awards: A report of oral language proficiency gains during academic education abroad*. Washington, DC: Institute of International Education.

Kuh, G.D. (2008). *High impact educational practices: What they are, who has access to them, and why they matter*. Washington, DC: American Association of Colleges and Universities.

Redden, E. (2012, July 10). New studies link education abroad to on-time graduation. *Inside Higher Ed*. Retrieved from <https://www.insidehighered.com/print/news/2012/07/10/new-studies-link-study-abroad-time-graduation>.

Rubin, D.L., & Tarrant, M.A. (in press). "It Changed My Life": Strategies for Assessing Student Learning. In L. Chiefo and C. Spaeth (Eds.), *NAFSA's Guide to Successful Short-Term Programs Abroad*, 3rd edition. Washington, DC: NAFSA.

Rubin, D., Sutton, R.C., O'Rear, I., Rhodes, G., & Raby R.L. (2014, Fall). Opening the doors of education abroad to enhance academic success for lower achieving students. *IEE Networker*. (pp 38-41). <http://www.nxtbook.com/naylor/IEEB/IEEB0214/index.php?startid=38>

Sutton, R. C., & Rubin, D. L. (2004). The GLOSSARI project: Initial findings from a system-wide research initiative on education abroad learning outcomes. *Frontiers: The Interdisciplinary Journal of Education abroad*, 10, 65-82.

Tarrant, M., Rubin, D., & Stoner, L. (2014). The added value of education abroad: Fostering a global citizenry. *Journal of Studies in International Education*. 18(2) 141–161.

Twombly, S. B., Salisbury, M. H., Tumanut, S. D., & Klute, P. (2012). *Education abroad in a New Global Century: Renewing the promise, refining the purpose*, ASHE higher education report. John Wiley & Son

Vande Berg, M., Connor-Linton, J., & Paige, RM. (2009). The Georgetown Consortium Project: Interventions for Student Learning Abroad. *Frontiers: The Interdisciplinary Journal of Education abroad*, 18, 1-75.

Vande Berg, M., & Paige, R.M. (2012). Why students are and are not learning abroad: A review of recent research. In M. Vande Berg, RM Paige and KH Lou (Eds.), *Student learning abroad* (pp 9-58). Sterling, VA: Stylus.

Ward, M. O., Grinstein, G., & Keim, D. (2010). *Interactive data visualization: foundations, techniques, and applications*. CRC Press.

Whatley, M. (2017). Financing Education abroad: An Exploration of the Influence of Financial Factors on Student Education abroad Patterns. *Journal of Studies in International Education*, 1028315317697798.

Xu, M., de Silva, C.R., Neufeldt, E., & Dane, J.H. (2013). The impact of education abroad on academic success: An analysis of first-time students entering Old Dominion University, Virginia, 2000-2004. *Frontiers: the Interdisciplinary Journal of Education abroad*, 23, 90-103.