

HOW *SCIENCE WITHOUT BORDERS* STUDENTS PERCEIVE
INTERNATIONALIZATION STRATEGIES IN PRACTICE AT A U.S. UNIVERSITY:
A PHENOMENOGRAPHIC STUDY

by

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DEDICATION

“Oh give thanks to the Lord, for He is good; for his steadfast love endures forever!”

(Ps. 118:10)

Lord, I give thanks for life and strength you give me, for the love I receive. Thanks for helping me from the start to the end. I know that all good things come from you. To you, oh Lord, be all the honor, all the glory, and all the praise!

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LIST OF ABBREVIATIONS

Abbreviation	Description
ACE	American Council on Education
BCC	Brazil Cultural Center
CAPES	Coordination for the Improvement of Higher Education
CIGE	Center of Internationalization and Global Engagement
CNPq	National Council for Scientific and Technological Development
ENEN	National High School Examination
FIES	Financial Aid for Undergraduate Students
GAP	Global Awareness Profile
GATS	General Agreement on Trade Services
GPI	The Global Perspective Institute
HE	Higher Education
IHEs	Institutions of Higher Education
INEP	Institute of Education Planning and Research Anísio Teixeira
IO	International Office

MEC	Ministry of Education and Culture
OECD	Organization for Economic Cooperation and Development
PNE	National Plan of Education
ProUni	Program University for All
STEM	Science, Technology, Engineering, and Mathematics
SWB	Science Without Borders
SAU	Southwest American University

ABSTRACT

Internationalization of higher education (HE) has become more of a requirement than an option for universities and colleges worldwide. Institutions of HE are tasked to prepare students as citizens of the globalized world. This requires students adjust to different cultural settings and to competition in the global market. Internationalization of HE involves the integration of an international/intercultural dimension into the teaching, research, and services of an institution. Brazil has recently initiated a program called *Science Without Borders* (SWB) that sends students to study overseas. The SWB program is increasing the presence of Brazilian undergraduate and graduate students in prominent universities worldwide and advancing internationalization in Brazil. The recent initiation of the SWB program came about from the awareness of the Brazilian government that to be competitive, it needed to rapidly modernize and internationalize its workforce and scholars in the area of science and technology. This program provided an opportunity to investigate a well-defined effort at internationalization in terms of the goals of the program, the experiences of the student participants, and the effectiveness of the internationalization practices of the host institution. A qualitative interpretivist approach was used in this study to gain an in-depth understanding of the meaning SWB students gave to their experiences. A phenomenographic methodology was utilized to analyze the different ways these experiences were perceived. The participants that were interviewed included six Brazilian students from the SWB program as well as faculty, staff, and administrators at SAU. The findings revealed the host-institution implemented

a wide range of internationalization strategies and provided an academic environment that made it feasible for the SWB program and SWB students to meet their goals. Moreover, SWB students' experiences with internationalization strategies were represented in these categories, *coping with transition and integration abroad, enhancing expertise, improving employability, learning and living with English, cultivating intercultural skills, and improving science and internationalization at home*. This study presents several implications for practice for universities, for the SWB program and students.

CHAPTER 1

INTRODUCTION TO THE STUDY

We are at the beginning of the process of globalization, not at the end. We are at the beginning of a fundamental shake-out of world society ... and we do not really know as yet where it is going to lead us ... we are the first generation to enter a global age (Giddens, 1997, p. 2).

Statement of the Problem

The Strength through Global Leadership and Engagement: U.S. Higher Education in the 21st Century report by the American Council on Education's (ACE) Blue Ribbon Panel on Global Engagement urges,

It is the obligation of colleges and universities to prepare people for a [globalized] world, including developing the ability to compete economically, to operate effectively in other cultures and settings, to use knowledge to improve their own lives and their communities, and to better comprehend the realities of the contemporary world so that they can better meet their responsibilities as citizens (2011, p. 14).

The ACE urges university leaders to implement changes in education that will prepare their students to compete in the global world. These changes include implementation of comprehensive strategies for *internationalization* on campus that incorporate a “global perspective into teaching, learning and research, that build international and intercultural competence among students, faculty, and staff; and establish relationships and collaborations with people and institutions abroad” (ACE-CIGE, 2014). Thus,

internationalization is seen to be a requirement rather than an option for institutions of higher education (IHEs).

Internationalization of higher education (HE) is “the process of integrating an international or intercultural dimension into the teaching, research and service functions of the institution”; it refers to the policies and practices implemented by and in the academic system and institutions to abide with the trends of the global society (Knight, 2004, p. 12). The term *global* is intertwined with the complex conception of *globalization*, which refers to the notion of world-scale transactions and connectivity in areas that include the economy, education, technology, and culture (Albrow, 2001).

Globalization is a current process that has information and innovation as its pillars (Carnoy, 2006). Modern globalization relies on advanced technology and infrastructure which promotes global communication, network, and knowledge exchange, which are often facilitated by the internet. Improved infrastructure encourages companies to expand worldwide and become global (Lucchesi, 2009). As globalization accelerates so also does the production of knowledge. These factors drive the need for higher levels of education. IHEs are facing the unprecedented challenge to educate the global citizen in order to meet the needs of the global society (Lamb, Roberts, Kentish, & Bennett, 2007).

Certainly, practices of internationalization cannot be examined in isolation from the dynamics of globalization for they are intertwined with the global and national context where these universities are geographically situated. However, the responses to these challenges differ across IHEs because their programs can be affected by economic, geographical, cultural, managerial and even linguistic contextual factors (Knight, 2005).

To illustrate the factors that influence the internationalization of HE, consider the United States and Brazil. In a developed country like the U.S., colleges and universities are relatively well-funded and are known for cutting-edge and innovative research. They are among the most prestigious universities in the world, making them attractive for international students (Alperin, 2013). Large numbers of international students stimulate advances in their internationalization processes (Hudzik & Briggs, 2012). As result, the U.S. has many of the top ranked universities, many of these institutions have given preference to faculty candidates with international backgrounds. In addition, they have allocated funding for study abroad programs (ACE-CIGE, 2012).

In the case of a developing country like Brazil, IHEs struggle to become more competitive internationally and to attract international students. Brazilian IHEs are divided between tuition-free public universities and private universities that charge fees. The public federal and state universities have a research tradition, but limited budget. They can only admit about 25% of eligible students (Alperin, 2013). Most IHEs in Brazil depends on private institutions that have no research tradition, yet they educate the remaining 75% of college students.

With a major focus on improving the quality of education at home, Brazil has only recently developed an emphasis on globalization. Recognizing a need for globally and technologically competent faculty, students, and workforce, Brazil recently implemented the *Science Without Borders* (SWB) program. The SWB program was created in 2011 and aims to send 101,000 students (undergraduate, graduate, and post doctorate) and researchers overseas “to promote the consolidation, expansion and internationalization of science and technology, Brazilian innovation and competitiveness

through exchanges and international mobility” (Santos & Guimarães-Iosif, 2013, p. 21).

The Brazilian government not only wants to send Brazilian students to top ranked universities overseas, but also to attract a great number of international scholars and students to Brazil. What the program hopes to achieve is that,

by targeting North America and Europe, President Rousseff is globalizing Brazilian science and its educational institutions. Science Without Borders students will build networks of friendship and collaboration with professors, mentors, researchers, and the next generation of the world’s scientists and engineers. One additional, and no less important, consequence is that the returning students will bring new perspectives and expectations to their home universities in Brazil, thereby provoking change and development in Brazilian higher education (Shannon, 2012, p. 3).

This is an important step for Brazil that wants to internationalize and compete internationally in the areas of advanced science and technology. For this reason, the SWB program only provides scholarships for proposals focusing on scientific and technological field of studies (Brasil/Ciencia sem Fronteiras, 2015).

Traditionally, the number of Brazilian students studying overseas has been small compared to other groups such as students from China (Szelenyi, 2006), but currently, Brazilian students are responsible for a 20% increase in the number of international students pursuing their education in the U.S. (Institute of International Education, 2013). The United States is still the major destination for Brazilians students who choose to study abroad (Brasil/CsF, 2015).

Brazil has made a huge investment in the SWB program and has high hopes for the benefits it will bring home. However, what is not clear is whether the investment in and expectations for the program are justified. One thing is clear, Brazil sees internationalization as a key to its future growth and advancement. But will sending students and researchers abroad achieve the goals of the government? This program presents an interesting and potentially valuable test tube in which one can examine internationalization in operation. What is unique about the SWB program is that it has a defined purpose and a defined method but the outcome remains to be seen.

While Brazil may have good reasons for investment in the SWB program, it must admit that there is a gap between the rhetoric and the actual implementation of internationalization strategies (Shoorman, 2000). Olson concurs saying there is a “gap between what leaders say about the importance of international learning and what is actually happening at their institutions” (Olson, 2005, p. 56). Therefore, the analysis of the strategies of internationalization in practice in IHEs is in the center of this study. The analysis compared practices of internationalization seen from the vantage point of the host institution, of the sending institution, and of the Brazilian students from the SWB program from Brazil.

With this gap between the rhetoric and the actual strategies in mind, we might wonder if the investments made in the SWB program will pay off. In part the outcome will depend on how students experience internationalization. This in turn may depend on the practices of the host institution and on the experiences that students will have while studying abroad. For this reason, a major focus of this study concerns what students actually learn and experience while abroad, and how that learning and those experiences

connect (or do not connect) with the strategies of internationalization implemented by the host institution.

This study focused on the experience of SWB students studying in the US and their perceptions of internationalization strategies implemented on campus. The student sample was from a tier one university in the Southwest of the United States—Southwest American University (SAU)—that hosts SWB students. SAU was selected for several reasons including its academic stature and tradition of attracting a large number of international students—approximately 5,000 enrolled in 2013 (SAU, 2013). SAU currently hosts over 90 SWB students which provides a large sample from which participants were chosen. According to the information available on SAU website, there are several strategies in place to assist Brazilian students, such as a) the creation of the Brazil Cultural Center (BCC), which is the point of contact for Brazilian students and scholars, and for development of research topics related to Brazil; b) the presence of a Brazilian student organization on campus; and c) intensive English as a Second Language (ESL) courses for Brazilian students prior to the start of their courses (SAU, 2014).

At present there is relatively little information on the experiences of Brazilian students studying abroad. For instance, The Global Perspective Institute (GPI) released a report called *Uneven Experiences: What's Missing and What Matters for Today's International Students* (Glass, Buus, & Braskamp, 2013). This study compared experiences of international students regarding a sense of community, faculty-student interactions, and global perspectives, which were then compared with those of American students. However, this report does not include students from Brazil.

This particular study adds to our knowledge about the experiences of students from Brazil. However, it is hoped that results of this study will enable IHEs to enhance their strategies and practices of internationalization and help students to achieve their cross-cultural and academic goals.

Research Questions

This study aims to investigate the internationalization practices implemented in a university in the Southwest part of the U.S. and to contrast these practices from the standpoint of Brazilian students, and of the SWB program. The research questions are,

1. What is the relationship among the named strategies of internationalization of a host-university, the goals of the SWB program, and the academic and cross-cultural development goals of Adult Brazilian SWB undergraduate and graduate students?
2. How do Adult Brazilian SWB undergraduate and graduate students experience internationalization strategies in practice at a host-university? And, in what ways might these strategies impact SWB students' learning experiences while abroad?

To answer to these questions, this particular study adopted a methodological phenomenographic approach in which the experiences of the participants were described freely during interviews (Marton, 1994). A phenomenographic research study explores how people make sense of their experiences and then identifies a range of meanings common to the participants (Akerlind, 2012). A phenomenographic approach offers a profoundly rich and in-depth description of the experiences lived by the participants.

Researcher's Background

My interest in the topic of Brazilian students and internationalization emerged from my experience as an immigrant who moved to the U.S. as an adult and returned to

school to pursue a doctoral degree. I am a Brazilian educator who is familiar with the Brazilian educational institutions, and I speak the language. Moreover, as with any other foreign learner, I went through a process of adapting to a new language and culture. Even though I spent many years learning English in my home country, initially it was challenging to communicate fluently in the US, especially in an academic setting where new vocabulary was required. Furthermore, I needed to write with much higher precision and in ways that were almost opposite to the writing habits to which I was accustomed. For example, academic writing in Brazil was typically embellished and wordy whereas English needed to be concise, with an economy of words. In class I needed to go beyond merely observing the cultural, social, and educational contexts of American society. I now had to engage in reflexive practice and discussions.

Considering my experiences and similar experiences of other international students in their new academic environment, it became evident that the implementation of strategies of internationalization can support these students in their cross-cultural adaptation and learning. For instance, faculty who include an international perspective through the content and pedagogy of the course foster more engagement between international students, their peers, and the faculty (Green, 2005). Engagement of international students with faculty and peers contributes greatly to the successful academic and cross-cultural experience.

Definition of Terms

The following list provides clarification of terms as used throughout this work.

Globalization – refers to the flow of technology, economy, knowledge, people, and value across-borders (Knight, 1997), which influences the political, economic, cultural, and educational dimensions of a country (de Wit, 2011).

Internationalization of higher education – refers to the efforts of institutions of higher education to meet the demands of the global market by incorporating global perspectives into teaching, learning, and research. It aims at promoting international and intercultural competence among students, faculty, and staff, and establishing collaborative work between people and institutions abroad (ACE, 2012).

Strategy - means “a method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem” (Business Dictionary, 2014, para. 1)

Strategies of internationalization - are practices implemented at the most concrete level in organizations, and involve program activities and organizational efforts to internationalize at the institutional level (Knight, 2004).

Science Without Borders program – is an initiative from the Brazilian government to internationalize its higher education, improving scientific, technology, and innovation in Brazil. The program provides scholarships for Brazilian students to study abroad in top universities and to attract qualified researchers to conduct research in Brazil.

Phenomenology – is a qualitative research approach that seeks to understand how people make sense of their experience and to “discover” the essence of the phenomenon. It uses interviews as preferred method of data collection, because it allows the participant to speak freely about their experiences.

Essence – refers to the essential nature of a thing that makes a thing what it is (van Manen, 1990).

Phenomenon – it is an observable fact or event that is captured by a person's senses, which implies that one is aware of something, that experienced something (Patton, 2002)

Phenomenography – emerges from a phenomenological research approach.

Phenomenography focuses on identifying variation in the ways people understand and describe their experience to form categories of description (Marton, 1994).

Categories of description – are descriptive categories generated from the analysis of the data collected (Marton, 1994).

Cross-cultural learning – is the interaction of people and culture, in which people develop interpersonal skills that facilitate adaptation to a different cultural environment (Yamazaki & Kayes, 2004).

Adult Brazilian SWB students – Adult Brazilian students are undergraduate or graduate student, 21 and older, who are participating in SWB exchange program abroad (as defined in this study)

CHAPTER II

LITERATURE REVIEW

Internationalization of higher education (HE) has become complex with a variety of rationales, policies, and strategies (Coryell et al., 2012). Internationalization in HE is a “process of integrating an international and intercultural dimension into the purpose, function, and delivery of post-secondary education” (Knight, 2003, p. 2). Globalization is one of the key factors that impacts or influences the internationalization of HE. Frequently, the terms globalization and internationalization are used interchangeably, but they reflect different motivations which are described in this chapter.

In 2011 Brazil launched a major initiative towards internationalization called *Science Without Borders* (SWB). This program was introduced as the most significant step Brazil has taken towards the internationalization of HE. Here, I discuss the historical and educational context of the SWB program. Lastly, I present a review of studies investigating student perceptions of internationalization strategies.

Globalization and Internationalization

“Internationalisation represents one of the most significant drivers of change facing the modern university” (Taylor, 2004, p 168). Yet, the concept of internationalization may not be simple to grasp (Coryell, Durodoye, Wright, Pate, & Nguyen, 2012) because of its complex relationship with globalization. Globalization is defined as “the flow of technology, economy, knowledge, people, values, ideas ... across borders” (Knight, 1997, p. 6). Globalization influences the political, economic, cultural and educational dimensions of a country through advanced technology and instantaneous communication. It also promotes interdependency and competitiveness between nations

bringing great demand for education. Globalization affects economies through the reduction and removal of barriers between nations to the extent that it facilitates trade and the flow of capital, services, and labor. As a factor in HE, globalization leads to greater competition between institutions and to the increased commercialization of HE (de Wit, 2011). The tradition of cooperation and partnerships in HE has been challenged by a shift to a more competitive model over the past 10 years (de Wit, 2011).

The central aspects of the definition of internationalization from Knight (1997) and de Wit (2011) refer to crossing borders, which implies the global or worldwide scope of globalization. The ideas of worldwide movement and flow are important elements for the comprehension of globalization and of the factors that are connected with this flow (Knight, 2005). Technological infrastructures facilitate the movement and flow of information and innovation through global communication made feasible with the Internet (Lucchesi, 2009).

Information and innovation are both based on knowledge, and the transmission of knowledge is fundamental to globalization (Lucchesi, 2009). Globalization has impacted how knowledge is delivered and it affects all aspects of the international dimension of education, including the curriculum, teaching, international programs, students and academic mobility (Knight, 2005).

Although, the terms *globalization* and *internationalization* are used interchangeably, according to Teichler (2004) and Urry (1998), they fundamentally differ. Internationalization, is an effort to promote respect for other cultures and traditions whereas globalization tends to standardize cultures worldwide. According to Urry (1998), globalization is intrusive, showing no respect for national borders, blurring differences

between societies, and reducing national power. Internationalization instead seeks collaboration between nations. Globalization is driven by market forces and prefers competition to cooperation. It regards education as a tradable commodity and not necessarily as a public good (Teichler, 2004). From the market perspective, HE is seen as a service offered to those that can afford it and not as a human and social right to all (Santos, 2010; Santos & Guimarães-Iosif, 2013).

Increasingly, internationalization has become more relevant to IHE; institutions are finding that they can no longer avoid planning and integrating internationalization into their policies and programs. However internationalization does not necessarily have the same meaning or the same implementation at all these institutions. Thus, it is necessary to discuss what internationalization means (Coryell et al., 2012).

Meanings of Internationalization

Knight is one of the most prominent proponents of internationalization as pedagogy (Absalom & Vadura, 2006). This study draws heavily from Knight's work (2004, 2005, 2008) for definition, strategies, and rationales for internationalization while acknowledging that the term conveys a range of interpretations and applications. Knight (2004) states there is confusion about what internationalization means because the term has been used more widely to address the international dimension of HE.

Internationalization has been frequently used in the literature in relation to “international education, international studies, internationalism, transitional education and globalization of higher education” (de Wit, 2002, p. 103). Understandably, researchers and practitioners face problems when dealing with diverse definitions of the term.

A definition of internationalization of HE that has been widely used is the one from Knight (2001) who defined internationalization of HE as “the process of integrating an international or intercultural dimension into the teaching, research and service functions of the institution” (Knight, 2001, p. 12). Further, Knight (2004) clearly expresses the evolution of her understanding of internationalization and through carefully selected words, presents a new definition as follows: “Internationalization at the national/sector/institutional levels is defined as the process of integrating an international, intercultural or global dimension into the purpose, functions or delivery of post-secondary education” (Knight, 2003, p. 2).

The word *process* is used deliberately to communicate that internationalization is an ongoing and continuing effort. International, intercultural and global dimensions are intentionally put together as a tripod to the definition. *International* refers to the relationship among nations, cultures or countries. *Intercultural* relates to internationalization at home. The word *global* stipulates worldwide range or scope. *Integrating* refers to the infusion of the international and intercultural dimensions. *Purpose* involves the objectives of the postsecondary education. *Function* refers to the elements that characterize the national postsecondary system. Finally, the word *delivery* refers to the offering of education courses and programs at home and abroad (Knight, 2004).

Another definition of internationalization comes from Bartell (2003), who developed a framework to analyze the internationalization of universities that focuses on organizational culture. Internationalization is understood by Bartell (2003) as an organizational adaptation to external demands that “requires its articulation by the

leadership while simultaneously institutionalizing a strategic planning process that is representative and participative in that it recognizes and utilizes the power of the culture within which it occurs” (p. 43). The focus here is at the institutional level, on the organizational culture that promotes (or not) the implementation of internationalization practices.

There are significant differences in the way universities approach internationalization (Coryell et al., 2012; Knight, 2004). Universities differ in their strategy (action plans), structure (hierarchy of authority and coordination), fields of study (different disciplines) and university culture (Bartell, 2003). While culture can be defined in different ways, Bartell (2003) uses the definition of culture proposed by Deal and Kennedy (1982), “as the values and beliefs of those associated with the university (including administrators, faculty, students, board members and support staff), developed in a historical process and conveyed by use of language and symbols” (Bartell, 2003, p. 54). University culture and underlying structure can either inhibit or facilitate both the approach to and the process of internationalization.

Rationales for Internationalization of Higher Education

Rationales for internationalization refers to what motivates IHEs to internationalize. Rationales are commonly given in their policy documents or statements. Traditionally, these rationales have been presented under four categories: economic, political, academic, and social/cultural (de Wit, 1995; Knight & de Wit, 1997).

Economic and political rationales are perhaps the most common argument for both public and private sectors to internationalize, since they both thrive on technological progress and economic growth (Knight & de Wit, 1997). The academic rationale refers to

achieving international standards of quality in teaching and research. Cultural and social rationales include both improving the quality of life and national policies that emphasizes the export of cultural and moral values (e.g. France and the United States) (Knight & de Wit, 1997).

Recently, Knight (2004) reformulated the rationales for internationalization of HE into rationales at the national and institutional levels. This helps clarify the context of the four categories. For example, economics could motivate an institution or a nation to internationalize. However, the contexts are entirely different. The driving force for an institution might be to gain more students whereas nationally it might be to enhance the workforce and make the country more competitive.

At the national level, human development (or brain power) has become a prominent rationale, because nations compete internationally in the areas of economy, science, and technology. This competition challenges nations to develop and recruit talented workers with the necessary knowledge and skills for the job market (Altbach & Peterson, 1999; Knight, 2004).

A good example of the human development rationale at the national level is the program *Science Without Borders* in Brazil. This program is sending 101,000 students and researchers to top universities abroad for development of their education. It is hoped that this will meet the needs of the Brazilian labor market (Brasil/CsF, 2015). At present, Brazilian companies, taking advantage of Europe's economic troubles, are hiring many foreign engineers to help to carry out housing, energy, and infrastructure projects in Brazil (Groth, 2012). According to Business Insider magazine, Brazil will need 1,100,000

engineers by 2020—twice as many the country has now (Groth, 2012). The SWB program aims to cultivate domestic engineering talent in the years ahead.

Other national rationales for internationalization include: *strategic alliances*, *commercial trade*, and *social and cultural development*. *Strategic alliances* are made between countries that wish to establish collaborative research and educational initiatives with the purpose of building relationships (Knight, 2004). Economic alliances are becoming frequent, particularly when countries are trying to achieve a stronger position internationally. Strategic alliances are usually formed through bilateral cooperation between countries through internationalization programs of their postsecondary education (Knight, 2004).

Commercial trade is known for its cross-border delivery of education, whereas new education franchises deliver courses or programs online or at satellite campuses. Some countries are showing an increased interest in exporting education for economic benefits (Knight, 2004). At the same time, other countries are interested in importing education for nation-building purposes (Knight, 2004).

It should be pointed out that the SWB program is an example of a strategic alliance, in this case between the United States and Brazil. This alliance came about as a response to the American program 100,000 Strong. In March 2011, President Obama visited several countries in Latin America, and during his visit, he announced the launch of the 100,000 Strong program. The goal of this program is to increase the number of exchange students between the U.S., Latin America and the Caribbean (Chow & Gale, 2012). Funding for the 100,000 Strong program comes from the private sector. In

contrast, funding for the Brazilian SWB program comes from public sources. The cost of the SWB program is estimated at \$1.65 billion in scholarship funds (O'Neil, 2012).

Finally, other motivation for internationalization is for *social and cultural* reasons, which relate to the “promotion of intercultural understanding, and national cultural identity” (Knight, 2004, p. 25). These rationales are still important driving factors for internationalization, but they are not as dominant as the economic and political based-rationales (Knight, 2004).

At the institutional level, rationales for internationalization seem to vary from one institution to another. The various stated rationales depend on various factors including “student population, faculty profile, geographic location, funding sources, level of resources, and orientation to local, national, and international interests” (Knight, 2004, p. 25).

The *international profile and reputation* rationales have driven institutions that are seeking to gain international recognition as a high-quality organization. Such recognition serves to attract talented scholars and students, and hopefully, a considerable number of international students (Knight, 2004). *Students and staff development* is another institutional rationale that seeks to enhance international and intercultural understanding and skills in students and staff. Some of the factors contributing to student and staff development are: a) academics that help students to understand global issues because international and cultural conflicts are becoming more acute; b) the ability to work with a culturally diverse population due to mobility in the labor market; and c) information and communication technology requires a deeper knowledge of the world (Knight, 2004).

It must be admitted that one of the motivations for internationalization is simply *income generation*. Institutions are always looking for ways to generate additional sources of income and to attract more international students (Knight, 2004). Another rationale is *research and knowledge production*. Knight (2004) stressed that it should not be forgotten that the main role of IHEs is the production and distribution of knowledge. However, the size and scale of some projects are simply too big for a single institution or even a single nation to embrace. For example, there is an escalating interdependency among nations to solve global issues such as health and environmental problems, which cannot be addressed only at the institutional level. This then becomes a driving force for increased collaboration. Governments play an important role as they give research and knowledge production an international dimension.

Knight (2004) also includes *strategic alliances* as an institutional level rationale suggesting that a recent trend in IHEs are the development of networks, despite the difficulties of dealing with a variety of education systems and cultures. Certainly, “the rationale for developing key, strategic, international-education alliances at both the national and institutional level is not so much an end unto itself but a means to achieving academic, scientific, economic, technological, or cultural objectives (Knight, 2004, p. 27). One can see an example of such alliances in the building of ever larger and more expensive telescopes that are operated by university consortia and often located outside the U.S. (Jansen, von Görtz, & Heidler, 2010).

Strategies of Internationalization

Strategies of internationalization are practices implemented at the most concrete level in organizations, and involve program activities and organizational efforts at the

institutional level. Knight (2004, 2005), presents a list of organizational strategies for internationalization that can be put into practice in different areas:

- Academic programs (e.g. students exchanges, foreign language study, internationalized curricula, work/study abroad, international students, and cross-cultural training)
- Research and scholarly collaboration (e.g. international conferences and seminars, international research agreements, and research exchange programs)
- Domestic activities (e.g. community services and intercultural projects)
- Cross-border activities (e.g. cross-border delivery of educational programs, international partnerships and networks)
- Extracurricular activities (e.g. students clubs and associations, international and intercultural campus events, peer support group and programs)

Still at the institutional level, organizational strategies to implement internationalization would involve:

- Governance (e.g. articulated rationale and goals for internationalization, recognition of international dimension in institutional mission and policies, and active involvement of faculty and staff)
- Operations (e.g. integrated institution wide including departments, college level planning, budgeting, and quality review system)
- Services (e.g. support from institution service units—library, registrar, and housing, and support services for incoming and outgoing students)

- Human Resources (e.g. recruitment and selection procedures that recognize international expertise, reward and promote policies to reinforce faculty and staff professional development).

Knight (2005) points out that these strategies are more applicable to traditional public and private IHEs that emphasize research or service to the community, and less relevant for new private commercial-based providers. She also separates strategies of internationalization that take place mainly on campus (at home) with those that occur across borders. *Internationalization at home* (IaH) (or internal internationalization) aims at making students intercultural and internationally competent without leaving home (Knight, 2005, 2008). It appears that there has been a growing need for the differentiation of these two terms—*at-home* and *cross-borders*—to bring attention to the aspects of internationalization happening on campus, since the term *cross-border* has been related to internationalization (Knight, 2005, 2008).

IaH includes a variety of activities such as inclusion of international themes in the curriculum and programs, integration of international and intercultural perspective into teaching/learning process, international and intercultural campus events, involvement of students with the local community through internships and applied research, and participation in seminars and conferences (Knight, 2008). Cross-border strategies of internationalization include activities such as, students studying abroad, scholars traveling abroad to conduct research or professional development, delivery of courses in partnerships between foreign and domestic institutions, and other capacity building initiatives (Knight, 2008).

Knight (2008) emphasizes a need for a comprehensive approach to internationalization in order to counterbalance the market-oriented approach used in trade agreements such as the General Agreement on Trade Services (GATS). A commerce-oriented approach does not include nonprofit academic collaboration or international development projects, which are important components of internationalization.

In a comparative study of five universities, Coryell et al. (2012) demonstrated that the concept of internationalization is not uniform, and the implementation of practices of internationalization is not always smooth. Institutions face a variety of challenges to create a systematic process to implement internationalization.

Higher Education in Brazil and Internationalization

The process of internalization of HE in Brazil can be better appreciated when placed in a historical and educational context. Brazil had a relatively late start in developing its program of HE compared to other countries in Latin America. While other countries in Latin America had universities in place from the sixteenth century onward, the first Brazilian university was established in São Paulo during the 1930s. The subsequent growth of higher education was seen in two waves. The first period of growth was from the mid-1960s to the beginning of the 1980s and the second wave took place from the mid-1990s onward (Castro, 2000; Neves, 2010). The prosperity of the 1960s caused a huge expansion in public universities with enrollment jumping from 53,094 to 300,079 between 1960 and 1973 (Castro, 2000; Neves, 2010). The federal government expanded higher education by establishing at least one university in each Brazilian state, for a total of 26 states and one federal district. By 1980 there were thirty-four federal universities in the country. They were created to become centers of teaching, research,

and extension courses and grew not only in size but also in status and respectability (Castro, 2000; Neves, 2010).

Currently, there are 59 federal universities and 39 state universities in Brazil, all of which are tuition free. The lower cost and better reputation of federal universities makes them highly attractive but also highly competitive (Pacheco & Ristoff, 2004). Admission is difficult, and students must obtain high scores on the national achievement test *vestibular*, equivalent to the SAT in the United States; currently the ratio of applicants to accepted students is about 10:1 (Pacheco & Ristoff, 2004). This is a problem because the primary school system is relatively weak such that students who can afford to attend private schools have a great advantage over those attending public schools (Pacheco & Ristoff, 2004).

The limited space in federal universities and difficult admission exams lead most students to enroll in private IHEs. In order to maintain the quality of these private IHEs, Brazil has needed to implement an extensive reform of private HE. In endeavoring to provide a high level of equal access to higher education in the last decade, the Brazilian government made changes in the admission process based on the policy of *Reforma Universitária* (University Reform). This policy institutes quotas for students from public schools with sub quotas for Blacks and indigenous peoples (Cattani, Hey, & Gilioli, 2006).

Despite the effort to expand access to public universities, the university system could not accommodate the numbers of students graduating from high school. For instance, in 2004 there were 8.5 million students graduating from high school with 7 million of these looking for an opportunity to continue their education. To address the

need of greater access to HE, public policies facilitated the creation and expansion of private institutions of HE that now comprise 90% of the IHEs in the country (Pacheco & Ristoff, 2004).

Reasons driving these governmental reforms were to accomplish the goals proposed in the *National Plan of Education* (PNE), to have 30% of college age students enrolled in IHEs by 2010 (Pacheco & Ristoff, 2004). Thus far, this goal has not been achieved. A complementary goal was to invest in the private sector, which it was hoped could develop and overcome the problems of low admission rates and student dropouts.

Two national loan programs were created to help students attend private colleges. The FIES program, set up in 1997, provides loans to finance 50 % of tuition fees at a fixed annual interest rate of 6.5 or 3.5 %, depending on the program of study. Students are expected to pay the loan back after they graduate from college (Neves, 2010).

Another program, ProUni (Program University for All) was created in 2005 that helps the poorest students by providing full or partial scholarships. The ProUni program benefits IHEs through tax exemptions, but institutions need to comply with Affirmative Action policies—laws that favor minorities to access HE. This means that IHEs should reserve places and facilitate entrance examinations for students from public schools and for those who self-declare their race as Black, Pardo or Indigenous (Neves, 2010). In summary, ProUni was created to promote access to higher education addressing both student and private sector demands while simultaneously accomplishing the goals established by the PNE (Brasil/MEC/INEP, 2010).

The Brazilian Higher Education Census (Brasil/MEC/INEP, 2010) revealed that in 2010, over 6 million college students were enrolled in higher education with 74.2% in

(2,112) private institutions and 25.8% in (98) tuition-free public universities. This represents a growth of 110 % from 2001 to 2010. “Meanwhile, Brazil offers a total of 3,600 master’s and Ph.D. programs. In 2012, out of 200,000 graduate students, 93.4 % studied in public universities. More than 12,000 PhD’s and 41,000 master’s degree certificates were awarded in 2010” (Knobel, 2014, p. 12). The percentage of students in master’s and Ph.D. programs are minimum.

Because of the gradual advances in HE and increasing recognition on the world stage, Brazil has recently seen the need to internationalize its IHEs. Internationalization of HE in Brazil has just begun and has been implemented unevenly among various institutions and student populations (Laus & Morosini, 2005). Nonetheless, undergraduate programs have only recently permitted internationalization, because of a high degree of government control and legislation prohibiting a more flexible curriculum (Knobel, 2011; Laus & Morosini, 2005).

The Brazilian Ministry of Education (MEC) formulates and evaluates national educational policies in order to maintain quality and compliance with the law. To do this, MEC relies on the Coordination for the Improvement of Higher Education (CAPES) and the National Institute of Education Planning and Research (INEP). Other major institutions that assist with the coordination and development of HE are the Secretariat of Higher Education and the Ministry of Science and Technology (Laus & Morosini, 2005; Westphal, 2013).

MEC is responsible for the recognition of courses offered by foreign institutions and the validation of degrees, diplomas, or certificates obtained abroad. MEC also controls the quality of programs offered by foreign institutions in the country. One of the

effects of these procedures has been to slow down the expansion of undergraduate and graduate courses offered by foreign institutions, with or without partnership with Brazilian IHEs (Laus & Morosini, 2005).

CAPES was created in 1951 to promote graduate studies in Brazil and abroad and to act as a consultant for policies related to graduate studies. CAPES awards scholarships for masters and doctoral degrees for institutions in Brazil that receive good evaluations, and abroad for Brazilian students and researchers attending top ranked universities (Laus & Morosini, 2005; Westphal, 2013). INEP is responsible for evaluating the educational systems and the quality of education of IHEs in Brazil (Laus & Morosini, 2005).

Science and Technology in Brazil

The Ministry of Science and Technology is in charge of coordinating programs and deploying policies in the area of science, technology and innovation. Its principal agency is the National Council for Scientific and Technological Development (CNPq), which was created in 1951 to promote funding for scientific and technological research and training for researchers in Brazil and abroad.

These institutions played an important role in the internationalization of IHEs in Brazil (Laus & Morosini, 2005). However, Brazil still faces many challenges to internationalize its IHEs, and in particular, to attract foreign scholars to the country. Some of these challenges are presented by Knobel (2011), who is the Dean of Undergraduate Programs and Professor of Physics at the *Universidade Estadual de Campinas* (UNICAMP). He has seen first-hand some of the difficulties for internationalization and proposes a few practical solutions and policies that would make Brazil more attractive to talented students and faculty.

According to Knobel (2011), one of the major problems is government bureaucracy. Foreigners who go to Brazil face many obstacles, such as getting a visa, renting a house, opening a bank account and even registering their children at school. Knobel (2011) suggests that it is necessary to cut bureaucracy and ease visa policies as major steps to facilitate internationalization.

A recommendation from Knobel (2011) is to revise national limits on teaching in English, since it is rare to find courses offered in English or Spanish. In general, professors only speak Portuguese, and the majority do not have international experience. Knobel (2011) proposes that universities, together with funding agencies, should promote programs that provide international experience to the faculty members as well as to graduate and undergraduate students. In addition, to overcome the language barrier, universities should create intensive language support programs on campus for Brazilian students and staff who want to study abroad.

Another impediment to internationalization of Brazilian universities is the adoption of a school calendar that differs from that in the northern hemisphere. In Brazil, classes are held from February to June and from August to December, which presents problems for students in exchange programs. For this reason, Knobel (2011) concludes that there needs to be more flexibility in the academic calendars, and universities should look for ways to minimize the problems. Finally, Knobel (2011) argues that universities need to diversify and consider curricula and syllabi in a less rigid way, in particular regarding the recognition of foreign course credits, which is currently both rigid and slow. Both Brazilian and foreign students face the risk of losing credit hours for studies not recognized in their study plan.

While Brazil still needs improvements in policies and strategies to advance internationalization of HE, but the Science Without Borders (SWB) program is undoubtedly the most important effort at internationalization in Brazil's history. It is sending 100,000 students and researchers to top universities around the world. The program is promoted jointly by CAPES and CNPq (Brasil/CsF, 2015).

The Science Without Borders Program

The SWB program was created in 2011 with the purpose of consolidating and expanding science, technology and innovation in Brazil through international exchange and mobility (Brasil/CsF, 2015). Through the program, CAPES and CNPq provide scholarships for undergraduate and graduate students, and for faculty to study abroad. These scholarships allow students to attend 238 foreign universities, which were selected on the basis of rankings (Grove, 2011). The SWB program also funds collaborative fellowship programs to attract senior foreign researchers to conduct projects in Brazil.

The outcome envisioned by the program is to (a) increase the presence of undergraduate and graduate students, scientists and industry personnel from Brazil in prominent international institutions abroad, (b) attract young talents and highly qualified researchers from abroad to work in collaboration with domestic researchers, seeking the return of successful Brazilian scientists working overseas, and (c) promote interactions between foreign universities and research centers in Brazil to establishment of international partnerships (Brasil/CsF, 2015).

Areas of Interest of the Science Without Borders Program

Priority areas for the SWB Program are engineering and other technological areas, pure and natural sciences, health and biomedical sciences, information and

communication technologies, aerospace, pharmaceuticals, sustainable agricultural production, oil, gas and coal, renewable energy, biotechnology, nanotechnology and new materials, technology for prevention and mitigation of natural disasters, biodiversity and bioprospecting, marine sciences, minerals, new technologies for constructive engineering, and formation of technical personnel (Brasil/CsF, 2015).

Scholarship Modalities

The scholarships for students and researchers in the SWB program fall into different categories or modalities. The modalities of scholarships for students are: *Full PhD*, *Visiting PhD Student*, *Post Doctorate*, *Visiting Undergraduate Students*, *Technologist*, *Technologist in Development*, and *Professional Master's degree*. However, there seems to be some confusion regarding the modalities, because the list of scholarships differs according to the language the user selects on the SWB website. In the English version only three categories appear: *Full PhD Fellowship*, *Visiting PhD Student*, and *Post Doctorate*. Only the Portuguese version gives the complete list of modalities. The modalities of scholarships for scholars are: *Young Talent Researcher* and *Special Visiting Researcher*. Proposals for all scholarships must be focused on the areas supported by the SWB.

Out of the 101,000 scholarships offered, 75,000 are funded by the Brazilian Government and 26,000 are reportedly funded by the private sector. The program goals to be met by 2015 are to provide scholarships in biology, science, and technological courses as follows,

- Full PhD - 4,500
- Graduate - 15,000

- Post doctorate - 6,440
- Undergraduate - 64,000
- Technological Development and Innovation Abroad – 7,060
- Young Talent Researcher (in Brazil) – 2,000
- Special Visiting Researcher (in Brazil) – 2,000

CAPES and CNPq only consider proposals focused on the area of interest of the SWB program, and applications of candidates are prioritized by the program. Each modality has its own requirements.

Full Ph.D. Fellowship. This scholarship is intended for candidates who want to do a complete doctoral degree abroad. Candidates must have proficiency in the language required by the host university. They must also be approved by the foreign host institution, which is, in turn, qualified by its level of excellence in being cutting-edge in scientific and technological areas that Brazil regards as important to its future. Selected candidates receive benefits for up to 48 months, support that includes a monthly living stipend, airfare, housing assistance, health insurance, and full tuition and fees, all paid for by the SWB program (Brasil/CsF, 2015).

Visiting-PhD Student. This scholarship enables the recipient to spend between 3 to 12 months studying abroad. It is for students who have been regularly enrolled in a PhD course in Brazil for at least 1 year and have proficiency in the language required by the host institution. In this modality, students would be able to substantially advance theoretical aspects, data collection and analysis, or the experimental portion of their dissertation research, which will be defended in Brazil.

Post-Doctorate. Postdoctoral fellows can study abroad between 6 to 12 months with possible extensions up to 24 months. Requirements for this scholarship are a Ph.D. degree, language proficiency as required by the host institution, and acceptance by a university or institutions abroad (Brasil/CsF, 2015).

Technologist. Students eligible for this scholarship are in graduate technological courses in areas of interest to the SWB program. For this modality, the area of interest is limited to Industrial Control and Processes, Information and Communication, Industrial Production, Infrastructure, Technology Security, Product Design, Natural Resources, and Public Health and Safety (Brasil/CsF, 2015). Applicants must have concluded at least one semester of coursework and they must have proficiency in the language required by the hosting institution (Brasil/CsF, 2015). The duration is for 12 months, but the period can be extended when an intensive English course is offered; out of 12 months, three are intended for internship in companies. The benefits offered in the Technologist modality are similar to those of other categories.

Technological Development and Innovation. Although it sounds similar to the Technologist modality this category differs in that rather than students, it supports researchers, specialists, and technicians working in the areas prioritized by the program that can benefit from training and improvement of technical skills through courses or internship abroad. The duration of this grant is up to 12 months and benefits provided are akin to the other categories.

Professional Master's Degree. Candidates who have a college degree within the areas of interest of the SWB program and did not complete a master's or doctoral degrees are eligible for this modality. Similar to other categories, the duration of the program is

for 12 months but can be extended up to 24 months; benefits include airfare, housing assistance, and health insurance.

Young Talents Researchers. This scholarship aims at attracting young researchers living abroad, especially Brazilians, who have excelled in their scientific and technological accomplishments within the areas of interest to the SWB program. Funds for at least 100 young researchers are available for a 12 to 36 months research project in Brazil, including the benefits of \$3,500 per month for accommodation and living expenses, and a grant of \$10,000 per year for research (Brasil/CsF, 2015).

Special Visiting Researcher. The goal of this category is to attract foreign senior researchers who are recognized internationally to conduct projects with Brazilian researchers, visiting Brazil up to 3 months each year over 2 to 3 years. The SWB program provides support for living expenses when the researcher is in Brazil as well funding for a local laboratory; the program also offers scholarships to Brazilian doctoral and postdoctoral researchers to be assistants in the projects (Brasil/CsF, 2015). The Special Visiting Researcher scholarship covers a period from 12 to 36 months including benefits of \$7,500 per month for living expenses, airfare, and research grants up to \$28,000.

The Brazilian government expects that students receiving these awards will be exposed to highly competitive environments and an attitude of entrepreneurship. Furthermore, Brazil expects that these students will have strong chances of employment both in industry and academia back in Brazil (Brasil/CsF, 2015). Finally, it is hoped that the SWB program will strengthen the partnership between the United State and Brazil. As a result, SWB students choose the U.S. as their major destination. In 2009 to 2010, there were 8,786 Brazilian students in American universities which represented only 1.2

percent of the international students studying in the United States (Chow & Gale, 2012). However, from 2011 to 2014 over 20,000 students were sent to U.S. universities. By comparison, only 3,099 U.S. students studied in Brazil for full credit.

This exchange partnership between the U.S. and Brazil has presented some challenges from both sides, and these issues have been discussed previously by Knobel (2011). On one hand, most Brazilian universities host few U.S. students, and the offering of courses in English is almost nonexistent. At present most American students prefer to go to a Spanish-speaking country where they can advance their Spanish rather than to spend time in a Portuguese-speaking country (Chow & Gale, 2012). U.S. universities, on the other hand, are prepared to receive international students, but Brazilian students still face challenges related to language, academics, and cross-cultural adaptation (Chow & Gale, 2012). Thus, practices of internationalization that provide support for students are seemingly essential for the success of SWB students. In fact, few studies have investigated the experiences of Brazilian students abroad and to what extent they succeed, from the standpoint of the students or with respect to the goals of the Brazilian government.

Experiences of Students Participating in the SWB Program

As of 2014, the SWB program has sent over 75, 000 students abroad, to leading universities in Europe, United States, Canada and other English-speaking countries. Upon their return to Brazil, these students shared some of their academic experiences. Bubadu , Carnevale, de Paula, Padoin, Melo, and Neves are nursing undergraduate students who studied in Canada for 2 semesters and reported their experiences in a publication (Bubadu  et al. & Neves, 2013). In their programs they attended seminars and lectures,

networked with professionals in other areas of expertise, engaged in group discussions about relevant topics for their area of study, and developed professional/practical activities. They felt that these practices improved their academic development. In addition to their academic development, they pointed their integration to the Canadian culture and their improvement in English.

As result of their positive experiences, Bubadu  et al. (2013) want to continue their education and pursue a graduate degree abroad. They reported that there is an ongoing international collaborative research initiative between their home and host-institutions, but they want to expand the efforts of internationalization for the nursing course at the Federal University of Santa Maria.

The outcome of Bubadu  and colleagues international experience was an improvement of foreign language proficiency, academic advancement, and the desire to implement practices of internationalization at their home-university. They also wanted to maintain international collaborative research with their host-university in Canada. They benefited academic and cross-culturally from their international exchange.

In another report, a law school student returning from a 1-year exchange in Portugal, indicated that she had no problems following the pace at the *Universidade do Porto*. In fact, her international academic experience helped her to realize that she received a good-quality education at her home-institution (Unileste, 2015).

Victor Hugo, a mathematics student from UNICAMP is pursuing his doctoral degree in physics in the Swiss Federal Institute of Technology in Zurich. He saw that in Zurich the work routine for graduate students was very different from that in Brazil, as he explained,

The work schedule is very different for graduate students here [in Zurich]. We have a strict schedule, not less than eight hours day. I am considered a regular employee of an organization. I have to report periodically the results of my work and to write one article per year. They are very strict. I do not need to teach. I am hired to conduct research (G1.Globo, 2014, para. 12).

Victor continues,

I am in a transitional stage. I am not sure what direction I will go, whether I continue in the academy or work for the private sector. I think that having expertise I have now, when I return to Brazil, I want to apply what I learned. I want to get a job, to take advantage of the new know-how I have gained (G1.Globo, 2014, para. 16).

Victor studied in a high-quality technological institute. He was hired to conduct research, not to teach. He is not sure whether he will be able to apply the expertise that he acquired abroad.

Vivian conducted research on infectious diseases at the National University of Singapore. Her decision to go to Singapore was based on the program and the particular researcher that she wanted to work with. Vivian also pointed out that she felt it was important to return to Brazil and give back the benefits received through the Brazilian government: “Many of my colleagues go abroad and they do not ever want to return [to Brazil], they want to live abroad. I think we have to return because then we can advance as a country” (G1.Globo, 2014, para. 23).

Vivian highlights an important issue that is “brain drain” (Garcia, 2015), when the highly competent workers leave their home country and migrate to other places, they

often enjoy well paid jobs and a better life. Some of the SWB students do not want to return to Brazil, but others such as Vivian believe it is important to return to Brazil and give back in response to the benefits she received.

Paola also told of her experience in the United States. She is in medical school at Harvard University pursuing a doctoral degree. She said that there she has access to technology not available in Brazil (G1.Globo, 2014). Paola added,

As soon as I arrived here [Harvard University] I noticed a huge difference concerning access to materials and to equipment. When you order antibodies, they are here the next day. In Brazil, you need to deal with import procedures, it needs to go thorough Anvisa (The National Health Surveillance Agency) and sometimes we do even receive it” (G1.Globo, 2014, para. 6).

SWB students consistently compared their experience abroad to their previous experience in Brazil. In leading universities abroad, SWB students had access to technology and equipment they do not have in Brazil. Problems with bureaucracy is another obstacle in conducting research in Brazil. Yet, there are differences in research procedures that help improve research in technological centers of high quality abroad. Paola said, “Everything is very organized. For example, I spent 2 weeks in training. No experiments were allowed, nothing. In Brazil we just start, we work anyways. Here is different” (G1.Globo, 2014, para. 8). SWB students’ responses reveal an overall successful experience in top tier universities abroad. These reports are important for the assessment of the SWB program.

Perceptions of Students on Internationalization

The perceptions students have of internationalization at their host campuses has become an important topic for HE. This is reflected in the American Council on Education's (ACE) report *Internationalization in U.S. Higher Education: The Students Perspectives* (2005), which focuses on student experiences and beliefs regarding international education in U.S. colleges and universities (Green, 2005). This report is drawn from an ACE study *Final Report 2003: Mapping Internationalization on U.S. Campuses* (Siaya & Hayward, 2003), conducted earlier, that maps the state of internationalization IHEs in the United States.

Drawing from previous reports, this study (Green, 2005) sampled the perceptions of internationalization of 1,290 U.S. undergraduate (sophomores, juniors, seniors) students. The 2005 report investigated students' international learning experiences before college; students' attitudes toward international learning; students' international learning experiences during college, including academic programs, co-curricular activities, and travel abroad; students' perceptions of faculty role in fostering international learning; and students' awareness of international learning opportunities (Green, 2005).

The findings of the study reported by Green (2005) suggested that the majority of the students enrolled in institutions actively involved in internationalization were exposed to international learning before entering college, through living or travel abroad or learning a foreign language. In addition, students demonstrated a positive attitude towards international learning, but low levels of interest in participating in on-campus international activities outside the classroom. Moreover, the study highlighted that faculty play an essential role in fostering international learning "through the content and

pedagogy of their courses” (Green, 2005, p. v). Finally, students indicated their awareness of international activities and programs on campus, typically hearing about these events through bulletins boards, campus-emails, flyers, and friends as opposed to their professors or advisers. Although Green’s (2005) report provided data on how domestic students experienced internationalization, it did not discuss the perceptions of international students studying in the US.

The book *Internationalization and the Student Voice* edited by Jones (2010) provides a compendium of several authors from different countries writing on the perspectives of students, staff, and faculty regarding internationalization. Some of these authors include international students in their studies (Borg, Maunder, Jiang, Walsh, Fry, & de Napoli, 2010; de Grosbois, Kaethler, & Young, 2010; Harrison & Peacock, 2010; Osmond & Roed, 2010; Thom, 2010; Trahar, 2010). The studies in this book are presented in five sections, which address student responses to the curriculum, the impact of study abroad and international volunteering activities, students’ learning in the cross-cultural classroom, and transnational education and support for international students (Jones & Caruana, 2010). The findings indicated that students see the intercultural and global dimension of their learning as important for future employment and personal growth (Jones & Caruana, 2010).

Another important finding is that “students and staff alike are learners in crossing cultural boundaries and may benefit from sharing experience and perceptions in order to gain mutual understanding of the complexity of internationalization and the international curriculum” (Jones & Caruana, 2010, p. xvi). This means that effective cross-cultural

learning require that students and faculty or staff to work together to create a multicultural classroom.

In observing interactions in a multicultural classroom, Osmond and Roed (2010) found that domestic students felt that working with international students was motivating, but they also regarded international students as poor contributors, and that working with them tended to reduce their grades. On the other hand, while international students liked to work with domestic students for their peer support, they also thought that domestic students were lazy (Osmond & Roed, 2010).

Examination of an overseas volunteering initiative based at a university in the UK suggested that students involved in the program experienced a personal transformation as they learned about themselves and about cultural “others.” This transformation was more profound than that experienced by students who study abroad (Jones & Caruana, 2010, p. 83). This qualitative study included eight students, all of them have been international volunteers who studied abroad for one semester to 1 year. Open-ended interviews were conducted. Findings suggested that volunteering programs are more flexible than study abroad programs and can provide more opportunities for cross-cultural engagement (Jones & Caruana, 2010).

Another study conducted by Borg et al. (2010) investigated academic acculturation and the role of relationships in the doctoral process. Acculturation is particularly challenging for graduate students, whose voices are often marginalized in discussions of internationalization, according to Borg et al. (2010). Acculturation is the process of change, cultural and psychological, that involves diverse forms of

accommodation. The methodological approach consisted first in an online questionnaire eliciting background information from the 18 participants (Borg et al., 2010).

The participants in Borg et al' (2010) study were international PhD students from China and from Central and South America, all in the area of science and engineering. They were interviewed and questioned about their experiences, expectations, and career aspirations (Borg et al., 2010). This study suggested that international PhD students are less engaged with university life compared to domestic students. In addition, it highlighted the need for PhD supervisors to be aware of the importance informal relationships have for international PhD students. Supervisors can play a key role in initiating and developing these relationships (Borg et al., 2010).

Absalom and Vadura (2006) discussed how students perceive the internationalization of the curriculum. They conducted a study at the University of South Australia (UniSA). The approach of UniSA to internationalization is reflected in their Graduate Qualifiers framework, which includes the goal of developing international perspectives that students need as professionals and citizens—Graduate Quality 7.

Absalom and Vadura (2006) used online open-ended questionnaire with three questions. These questions addressed their views of internationalization, the types of curriculum activities they experienced, and which ones were successful. The authors conducted a qualitative analysis, adopting a thematic analysis approach. Student responses to a questionnaire revealed that to acquire an international perspective, simply adding international content to the curriculum is not enough. What is needed is for students to apply that content through interaction. “Knowing and acting of the curriculum

must reach outside the narrow focus of the classroom and make itself relevant to life in a broader sense” (Absalom & Vadura, 2006, p. 331).

Distinct studies concerned with students’ perceptions of internationalization have focused their attention on specific fields of study such as agriculture (Davis, Snyder & Widmar, 2014), business (Mitchell & Vandegrift, 2014), and engineering and computer science (Braslavsky, Pierre, Tuokko, & Branzan-Albu, 2012). However, a closer look at these studies shows that they are more closely related to the consequences of internationalization, such as increased mobility of international students forming a much more diverse group in colleges, universities, and businesses. For instance, Mitchell and Vandegrift, (2014) wanted to examine how U.S. business students experienced internationalization, multiculturalism, and diversity at a mid-sized private university in the United States. The study recognized “the importance of interpersonal and personal skills in achieving diversity and cross-cultural competency” (Mitchell & Vandegrift, 2014, p. 39), since this is important for doing business. The authors employed qualitative focus groups that included 32 racially and ethnically different students.

In addition, findings of this particular study revealed that students acknowledged the need for internationalization and demonstrated enthusiasm for global issues, but they lacked the skills needed to work in a diverse domestic and global work environment (Mitchell & Vandegrift, 2014). Moreover, the study concluded that institutional and curricular factors are responsible for perpetuating the lack of multicultural/internationalization experiences in the institutions. Thus, institutional leadership, especially within the international business faculty, plays an important role in enhancing students’ multicultural and international experiences through discussions in

the classroom and through integration of multicultural and international perspectives in the curriculum (Mitchell & Vandegrift, 2014).

Braslavsky et al. (2012) conducted a study at the University of Victoria in Canada, which has seen an increase in the number of international students. For this reason, Braslavsky et al. (2012) wants to investigate how interactions occurred between people with different backgrounds, including undergraduate and graduate students, faculty, and staff in the Faculty of Engineering. The study included five staff, four faculty members, six graduate students, and three undergraduate students, for a total of 15 participants. Each participant was asked to complete a short demographics questionnaire to provide information on cultural background. 10 participants self-identified as being international and five self-identified as being local (Canadian). Braslavsky et al. (2012) conducted three focus groups and seven individual interviews.

Results from the qualitative analysis were grouped in two categories: expectations and integration. Regarding expectations, participants expressed concerns about international students' expectations of the program, policy, and regulations within the university (Braslavsky et al., 2012). For instance, international students had different expectations of student-teacher interactions than the local students. International students assumed that professors know everything and are always right; they are less likely to engage in discussion with their professors or ask for help from a faculty member when needed (Braslavsky et al., 2012). Moreover, some participants also expressed concerns about student motivations for coming to the University of Victoria. As one professor noted, "sometimes I feel more like an immigration officer than a professor" (Braslavsky et al., 2012, p. 5).

Another finding involved participants' perceptions of plagiarism and cheating, whether it is acceptable or not. International students expressed the need for more clarification from the faculty members concerning the goals and subtleties of plagiarism policy (Braslavsky et al., 2012). Faculty members reported they felt that international students expected to receive more close assistance, to be "spoon-fed" (Braslavsky et al., 2012, p. 5), which is not the approach faculty took at that institution.

Concerning integration, it was shown that language barriers were an obstacle for international students trying to engage in group-work with local students. In addition, adjustment to a new culture and social isolation were obstacles to their integration with other students, faculty, and staff (Braslavsky et al., 2012).

Davis, Snyder, and Widmar (2014) carried out a case study with 68 students enrolled in different agricultural courses at Purdue University for the 2012 Spring semester. Davis, Snyder, and Widmar (2014) utilized a new method of internationalizing the curriculum, which included an international case study (with Costa Rican) into the curriculum of the Agricultural Economics and Crop Science course. Findings indicated that students in the agricultural production field used international case-study in their learning, and affirmed that they were able to understand the content at an international level and gained an increased intercultural awareness.

Supplemental to the case studies, a *Facebook* group was created and organized by international scholars, who invited all agricultural undergraduate schools of Costa Rica to join the group. Davis, Snyder, and Widmar (2014) administered a pre-assessment and post-assessment questionnaires to all participants. The assessments aimed to capture perceptions of students' experiences of the internationalized curriculum. Assessments

included a pre-test with 19 questions and the post-test with 25. All questions were asked based on a five point Likert scale. In addition, students were asked to complete questions based on Corbitt's (1998) Global Awareness Profile (GAP) with the pre-test and post-test. According to the results, students indicated that with this methodology (case study and Facebook groups) they greatly expanded their international relationships by interacting with people from Costa Rica and elsewhere using (Davis, Snyder & Widmar, 2014).

Some other studies have examined specific ethnic groups. For example, Briguglio and Smith (2012) analyzed the perspectives of Chinese students about their experiences in Australian universities. In 2009, when the study was conducted, the number of Chinese students in Australian universities totaled 118,301. Utilizing an ethnographic qualitative approach, Briguglio and Smith (2012) gave two rounds of semi-structured interviews to 20 undergraduate Chinese students enrolled in the School of Accounting. These students were interviewed in the second or third week of their arrival on campus. In the follow up interviews at the end of the semester, 17 students participated (Briguglio & Smith, 2012).

Results from initial interviews indicated that, from the start Chinese students demonstrated a high level of self-efficacy and believed in their ability to succeed academically. However, the language barrier was an obstacle to interaction with domestic students. None of the participants formed any friendships with locals or had been to an Australian home or family events (Briguglio & Smith, 2012). By the end of the semester, Chinese students reported they had a positive experience. They felt they had more flexibility in learning things of their interest at their Australian host-university compared to their learning experience in Chinese universities (Briguglio & Smith, 2012). Moreover,

this particular group of participants indicated that they did not experience isolation because they were able to find help within their own group, which was large at that institution. Briguglio and Smith, (2012) recommended that the university needed to promote more opportunities for interactions between international students and local students.

The perceptions of Israeli college students regarding internationalization at colleges and university campuses in Israel was examined by Yemini, Holzmann, Fadilla, Natur, and Stavans (2014). They developed a survey based on the American Council on Education (ACE) assessment to measure internationalization. The ACE assessment covers four categories: institutional support, academic requirements, programs and extracurricular activities, and international students. The questionnaires, given in Hebrew and Arabic, was answered by 1650 students from seven universities in Israel. The questions were presented as a Likert scale. Moreover, to address one of the questions, factor-analysis and stepwise linear regression was used. The majority of the students were from engineering, arts and teacher-training colleges (Yemini et al., 2014).

Yemini et al. (2014) found that engineering and art colleges on average offered higher levels of international activities compared to teacher-training colleges. The lower level of internationalization in the teaching-training colleges was explained by teachers' curricula being probably more locally and nationally oriented and less receptive to international and global factors (Yemini et al., 2014).

Israeli students perceived international aspects in college through the following factors, in order of importance: study abroad, interaction with international students, participation in student exchanges, international reputation of the institution, intercultural

reputation of the institution, English proficiency, Global content proficiency, and intercultural content proficiency (Yemini et al., 2014).

A major finding in Yemini et al.'s (2014) study is that students revealed two separate trends in their perceptions of internationalization: those that are experience-related and those that are skills-related. Students perceived the skills domain more relevant for their career. This shows that students were “more focused on the results of the international experience—namely, developing international and global competencies – than on the experience itself (such as studying abroad)” (Yemini et al., 2014, p. 316). In other words, students are seeking more for the practical outcome of internationalization rather than the international experience itself.

Trahar and Hyland (2011) conducted a study investigating perceptions of internationalization from five UK universities. Participants were international and local academics and students. They were interested in understanding participants' views on internationalization through their interactions and group-work in cross-cultural environments. A qualitative focus group methodology was employed for 15 groups in five UK cities totaling 63 participants. The participants were predominantly from the business, education, engineering, and psychology disciplines. Their study pointed out that faculty were sensitive to the diverse cultural backgrounds of their students and to the different academic traditions, but they did not know how to mediate learning and teaching practices in such a culturally diverse group. They also found that students from diverse cultures failed to interact in the classroom and on campus due to their cultural and language differences (Trahar & Hyland, 2011).

In carrying out group-work, both faculty and students found it challenging because of difficulties in communication issues, unequal commitment to the group, and over-talking or interrupting (Trahar & Hyland, 2011). However, several suggestions for improvement were given by academics and students: faculty should form diverse groups during classroom tasks and make sure that self-selected, non-diverse groups are an exception rather than the rule. Students should be given time to know each other before starting a task, and culturally-mixed group work should be routine and embedded into the curriculum. Finally, student interactions should be encouraged from the beginning (Trahar & Hyland, 2011).

Still other studies examined perspectives of international students of U.S. universities. The report released by the Global Perspective Institute, *Uneven Experiences: What's Missing and What Matters for Today's International Students* (Glass et al., 2013), included a sample of 36,973 American and international undergraduate students from 135 U.S. colleges and universities. These colleges and universities administered the *Global Perspective Inventory* through an online questionnaire. The collected data was analyzed through a qualitative approach.

Glass et al.'s (2013) study investigated the experiences of international students studying in the US who came from the top five sending countries: China, India, South Korea, Arabia and Canada. In this report, the authors examined to what extent these students experienced a *sense of community*, the faculty-student interactions, and their *global perspective-taking* as compared to the experiences of American students.

The major findings are that international students rated their sense of community much lower than U.S. peers, even when they felt a part of a supportive group of

colleagues and friends in their institutions (Glass et al., 2013). Regarding faculty-student interactions, international students are less likely to believe that faculty challenge their views on various topics and problems presented in the classroom from different cultural perspectives. This is despite the fact that the frequency of interaction of faculty with U.S. and international students is similar (Glass et al., 2013). On global perspective, the study indicated that students from China, South Korea, and Saudi Arabia are far more likely to rely on authorities as a reference of knowledge and truth than U.S. and Canadian students. However, students from the U.S. are far less likely to form social relationships with peers from other countries.

There have been few studies that included Brazilian students' perspectives on internationalization (Magyar & Robison-Pant, 2011; Trice & Yoo, 2007). Magyar and Robison-Pant (2011) discussed how 37 international doctoral students from 23 different countries, including Brazil, found themselves "moving between differing identities and learning to mediate between sometimes conflicting priorities and values of their UK supervisors and their 'home' employers and sponsors" (p. 664). Magyar and Robison-Pant (2011) conducted an ethnographic research which involved the participation of a group of 10 first-year international research students. The group met regularly over the year to share their experiences in their Ph.D. programs. In addition to the discussion group, the researchers conducted 20 initial individual interviews with the participants from across each year of their Ph.D. studies. Subsequently, 14 more individual interviews occurred as part of making a DVD training resource.

In their study, researchers utilized a *transformative internalization* approach, which involved challenging and transforming dominant values—requiring individuals to

move from an ethnocentric to an ethnorelative position—at both the institutional and individual level. It also involved transforming institutional ethical and belief systems, teaching and learning practices (Magyar & Robison-Pant, 2011). The authors concluded that practices that develop and promote a transformative internationalization would assist international students in negotiating procedures and approaches when conducting research in UK universities. Transformative internationalization would implement practices that help international students in developing a relationship with their advisors and likewise to understand the advisor's feedback, and would also assist students in their challenges of reading and writing across cultures (Magyar & Robison-Pant, 2011).

Trice and Yoo (2007) investigated how 497 international graduate students, including Brazilians, perceived their academic experience. A survey was sent to the international students including questions about their experiences in the classroom, with the faculty members, social life, satisfaction with some specific offices on campus, and their concerns about employment after graduation. In the study, they adopted a mixed method approach, utilizing descriptive and inferential analysis. The descriptive analysis focused on a general overview of students' academic experiences. The inferential analysis employed a variance (ANOVA) model. It targeted students' perceptions of their academic satisfaction, of their preparedness to work at home and in the U.S., and of their perception whether the curriculum had an international focus.

The authors highlighted some areas that needed consideration from department leaders. For instance, few of the participants in the study believed their curriculum had an international focus. Thus, the authors called for department leaders to consider how their curriculum could be adapted to the needs of international students, in particular, for those

who plan to return home. Furthermore, Trice and Yoo (2007) suggested that advisors should assist students when they feel unprepared to return to jobs back home. Another area of need relates to academic advising and relationships with faculty members. Students demonstrated some concern with the limited exposure to faculty and the little assistance received from faculty in designing doctoral research projects (Trice & Yoo, 2007).

Summary

IHEs worldwide are increasingly internationalized, but at rates due to historical, cultural, economic, and infrastructural factors. Internationalization of HE in Brazil had a late start compared to other industrialized countries, but the SWB program hopes to boost the process of internationalization of HE in the country. The program has already sent over 70,000 students and scholars to top ranked universities abroad. The United States is still the major destination those in the program. Moreover, Brazil hopes to increase partnership opportunities and research collaborations with high-profile universities in the areas of science and technology, and to expose sponsored students to a more competitive environment abroad. In addition, the program is inviting and funding Brazilian and foreign senior researchers to develop research in Brazil.

Because internationalization of HE is fairly new and is occurring in IHEs across the globe, several studies investigated the perceptions of students—domestic and international—regarding their experience of internationalization strategies at their host-institutions. Some of the major findings of these studies are that language and cultural differences are an obstacle for integration with domestic students, that within university life, faculty play a major role promoting group-work between diverse cultural groups in

the classroom, and that international students expected more interactions with their advisors and faculty. Another relevant finding revealed that students value the skills they acquire in their international experience more than the international experience itself, because they feel these skills are more relevant for their careers.

However, a few studies included Brazilian students when investigating perceptions of international students of internationalization. Thus, this study hopes to enhance the discussion on strategies of internationalization from the perspective of Brazilian students studying in the United States. Their perceptions of internationalization strategies at their host-university will shed light on how effective and meaningful these practices are to their academic and cross-cultural learning. The findings will likely be relevant for the Brazilian government since at present, there does not appear to be any formal mechanism for evaluating the experiences of SWB students abroad. This study may also help to prepare SWB students for the next stage of their exchange program. Additionally, international students in general may benefit from this study, since they gain more awareness of programs and strategies of internationalization that can be put into practice in institutions of HE. Finally, this study may be informative to host institutions in evaluating the effectiveness of their international programs.

CHAPTER III

METHODOLOGY

This study sought to understand the experiences of Brazilian students in relationship to the goals of the Science Without Borders (SWB) program and the internationalization strategies in practice at their host university in the United States. Additionally, this research focused on whether these internationalization strategies in practice facilitated academic and cross-cultural experiences of SWB students on campus, seen from the vantage point of the SWB students, from the personnel at the host-university, and from the SWB agency in Brazil.

This topic is important and timely because universities are under pressure to internationalize and prepare students for the globalized world. In order to do that, universities develop and implement strategies of internationalization they hope will prepare their students to operate effectively in other cultural settings and to compete in the global market (ACE, 2011). Governmental programs such as the SWB in Brazil send their students abroad with expectations of a successful academic and cross-cultural experience (Brasil/CsF, 2015). Unfortunately, research has not yet identified whether or not internationalization strategies on U.S. campuses align with the expectations of foreign government programs sending international students and of the international students, themselves (Altbach, 1991). The key question then concerned if there was a gap between what the expectations regarding what these strategies were, what was actually implemented on campus, and what was perceived by the students?

The Brazilian government has invested heavily in sending students to study abroad indicating how important this is to the government. As a result, there are a

relatively large number of Brazilian students studying at U.S. universities, yet, there is little literature regarding their experiences abroad. Accordingly, this study focused on Brazilian students from the SWB program who were studying at a U.S. university—Southwest American University (SAU). The research questions that guided this study were,

1. What is the relationship among the named strategies of internationalization of a host-university, the goals of the SWB program, and the academic and cross-cultural development goals of Adult Brazilian SWB undergraduate and graduate students?

2. How do Adult Brazilian SWB undergraduate and graduate students experience internationalization strategies in practice at a host-university? And, in what ways might these strategies impact SWB students' learning experiences while abroad?

In this chapter, I outlined the methodological framework for addressing the research questions of this study. It began with an overview of the characteristics of qualitative research and the interpretivist paradigm. Next, I discussed phenomenology to lay the foundation for phenomenography, a phenomenological research approach aimed at presenting various conceptions people have of a given phenomenon (Marton, 1981; Barnard, McCosker & Gerber, 1999). I then presented a description of phenomenographic research, and I finally introduced the methods of data collection and analysis.

The design of this study attempted to relate the experience of the participants to the meaning they assigned to the phenomenon under study, in this case, to the strategies of internationalization in practice, as experienced by SWB students. *Phenomenon* in a phenomenological perspective can be defined as an observable fact or event, or the object

of a person's perceptions captured by the senses (Patton, 2002). *Experiencing* a phenomenon implies that one is aware of something, experience it as a something (e. g. a book or a chair), that one must be able to discern it from an environment or a context, and assign meaning to it (Limberg, 2000).

According to the Business Dictionary (2014), the word *strategy* means “a method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem” (para. 1). The term, *strategies of internationalization*, herein referred to programs, activities, and organizational initiatives implemented at the institutional level (Knight, 2005). These strategies are implemented in the following areas (categories): *academic programs, research and scholarly collaboration, domestic activities, cross-border activities, and extracurricular activities* (Knight, 2005). Still, at the institutional level, organizational strategies of internationalization are put into practice through *governance* (active involvement of leaders, faculty, and staff), *operations* (integrated into institution-wide planning, budgeting, and quality system), *services* (involvement and support provided by institution-wide services units), and *human resources* (recruitment and selection that places value on international expertise, and faculty and staff development).

Epistemological and Methodological Framework

Qualitative Research

Qualitative research is defined by van Manen (1979) as “an umbrella term covering an array of interpretative techniques which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world” (p. 520). Simply, qualitative

researchers seek to understand meanings people have constructed about people lived experiences in the world and about their perspectives of the world in which they live.

Studies aimed at investigating and interpreting the complexity of human experiences can be analyzed scientifically and statistically, but while important, these approaches do not provide a deep comprehension of lived experiences. The alternative qualitative research approach used here, while descriptive in nature, sought to gain an in-depth view of people's experiences (Merriam, 2009; Patton, 2002).

Qualitative research entails philosophical assumptions about the nature of reality (ontology) and the nature of knowledge (epistemology). For instance, the interpretivist paradigm assumes that all human activity is fundamentally a social and meaning-making experience, that reality is socially constructed, and that there can be multiple realities and interpretations of a single phenomenon. Regarding knowledge, researchers do not find it, they create it in interaction with respondents. Moreover, researchers operate from different frameworks that serves as guidance for interpretation of reality and for generating new knowledge (Denzin & Lincoln, 1994; Merriam, 2009; Patton, 2002).

Interpretivism

Contrary to positivism, which assumes that the role of scientific research is to uncover and generalize laws of what was observed and replicated, interpretivism moves away from the deterministic explanation of human behavior which seeks to identify causal relationships between variables. Rather, interpretivism aims to capture the meaning and interpretations that people subjectively attribute to a phenomenon (Leitch, Hill & Harrison, 2009). However, interpretivism attempts to see the research problem holistically, “to get close to the participants, enter their realities, and interpret their

perceptions as appropriate” through rich descriptions of events and contexts, which preserves the meaning given by the participants (Leitch et al., 2009, p. 4).

The credibility of these descriptions and interpretations depends on the use of appropriate procedures. Lincoln and Guba, (1985) assert that the foundation for interpretative study depends on trustworthiness, which should include these four components: *credibility*, *transferability*, *dependability*, and *conformability*. Credibility refers to the confidence in the truth of the findings. Transferability shows that the findings have applicability in other contexts. Dependability shows that the findings are consistent and could be repeated. Conformability refers to the degree or the extent to which findings in a study can be confirmed and corroborated by others (Lincoln & Guba, 1985). These procedures respond to concerns of the research community and outsiders as they grant trust for the findings of qualitative research, and in particular, to the interpretivist paradigm where many traditions of interpretivism have developed, such as phenomenology and phenomenography (Merriam, 2009).

Phenomenology and phenomenography assume an interpretivist paradigm. They share the assumption that reality is constructed intersubjectively through the meanings and understandings developed socially and experientially, even though the focus of analysis within each are distinct. Phenomenologists aim to find the structure and essence of the phenomenon under investigation (Patton, 2002). Phenomenographic researchers investigate different ways in which people experience or think about something, and then they categorize the descriptions that emerge from the data (Patton, 2002). This study used a phenomenographic method of inquiry, which emerged from phenomenology. Thus, I discussed the main aspects of phenomenology to lay the foundation for a holistic

comprehension of the phenomenographic research approach, as I sought to compare and contrast both approaches.

Phenomenology

Phenomenology requires researchers to endeavor, to understand, describe, and analyze a lived experience as seen through the eyes of those who have experienced it. The fundamental question to be asked in phenomenological research is “what is the meaning, structure, and essence of the lived experience of this phenomenon for this person or for a group of people?” (Patton, 2002, p. 104). However, there are various phenomenological approaches from different disciplines that may bring some complexity and confusion to its meaning (Patton, 2002), and exploration of all the different approaches to phenomenology is beyond the scope of this study. Here, I used the studies of Edmund Husserl (1962; 1997) and later of van Manen (1997) to lay the groundwork for understanding phenomenology.

Husserl (1962) initially developed phenomenology as a philosophical discipline to better comprehend consciousness or mental life, and it became a significant movement in the 20th century,

even though their adherents do not all agree, and the movement is quite amorphous... the major contributors—Husserl, Heidegger, Sartre, Merleau-Ponty, Ricoeur, and Levinas—all agree that the focus of philosophy has to be consciousness, human existence, or the very nature of being itself. In other words, this philosophy introduces the shift of focus away from the thing and nature toward human beings and their world (Giorgi, 2005, p. 76).

Philosophy has always reflected on human nature, but Husserl's philosophy which he named *phenomenology* enlightened our understanding of consciousness and subjectivity (Giorgi, 2005). People in their everyday life experiences become a significant object of study for phenomenology, and for this reason, I turned to this philosophical and methodological approach for this particular study.

Husserl (1962) introduced in his early works the concept of the *life-world*, which refers to the world "as lived," where people communicate, interpret, and engage with the world. The concept of the life-world indicates value in which the world is experienced by people. Therefore, *consciousness* is a key concept and a point of departure of phenomenology since the only access human beings have to the world is through consciousness (Giorgi, 2005; Husserl, 1962; Patton, 2002; van Manen, 1997). Husserl's (1970) basic philosophical assumption is that people can only know what they experienced through perceptions and meanings that awaken their conscious awareness. Consciousness refers to the fact of awareness; to be conscious is to be aware of some aspect of the world (van Manen, 1997).

The central idea of phenomenology is to explore "how human beings make sense of their experience and transform experience into consciousness" (Patton, 2002, p. 104). Husserl (1970) sought to develop a method to access consciousness in spite of its nonphysical character, since "the methods of the science of nature are not to be models for studying consciousness" (Giorgi, 2005, p. 76). However, the understanding of an experience initially comes from sensory experience of the phenomenon, but then consciousness presents itself when one reflects upon the experience, which is exclusively

nonsensorial. One is confronted with thoughts, images, and memories, which are all nonphysical characteristics of consciousness. Nonetheless,

there is an immediate awareness of our own conscious processes, and yet we cannot at all use the language of things to describe the nature of the object of which we are aware. It has neither color, nor shape, nor size, nor smell, and it is noiseless (Giorgi, 2005, p. 76).

There is a distinction between things and consciousness. Phenomenology is interested in a first-order perspective, which is focused on the world as people experience and explain it (Barnard, 1999; Marton, 1981). Therefore, phenomenology is based on the assumption that there is an essence and structure of a lived experience of a phenomenon for a person or a group of people (Patton, 2002), and phenomenologists aim at discovering this essence and structure. The term *essence* here means “the inner essential nature of a thing, the true being of a thing”; it is what makes a thing what it is, and without which it could not be what it is (van Manen, 1990, p. 177). This means that researchers are looking for the very nature of the phenomenon and its structure. The way to uncover the essence of the phenomenon is through *reduction* (van Manen, 1990). Reduction here has to do with the intention of removing what is perceived—on the surface--and leaving what is essential. In other words, it reduces “the textual (what) and the structural (how) meanings of experiences to a brief description that typifies the experiences of all of the participants in a study” (Creswell, 2007, p. 235).

One example given by Luft (2004) illustrates the concept of reduction and essence,

consider, for example, the occurrence of a car accident. Imagine then the different ‘true stories’ heard from different people involved: the drivers, a passer-by on the sidewalk, etc. Especially when some interest is at stake (who assumes the culpability), one will hear very (if not altogether) different ‘versions,’ all claiming ‘truth.’ These are ‘situational truths,’ and it is the task of a judge to ‘judge the truth,’ which might lie, as often implied, ‘in the middle.’ Obviously neither the notion of truth nor that of knowledge are taken emphatically (absolutely). The task of the judge entails the ‘distillation’ of ‘the’ truth from different stories. The result is only an approximation to what ‘really happened’ (Luft, 2004, p. 201).

What “really happened” (truth) is the essence of the phenomenon, and to find that essence the judge must put aside his own assumptions, listen to all the versions, and sort the stories (reduction) to “discover” what happened (the essence). The discovering of the essence and structure of a particular phenomenon is the defining characteristic of phenomenological research.

Epoche or *bracketing* is one type of reduction. *Epoche* is a Greek word that means refrain from judgment; in the *Epoche* the everyday meaning, judgments, and knowing about the phenomenon are set aside or *bracketed*, then the phenomenon is revisited (Merriam, 2009). For researchers, this means that they should examine and be aware of their own viewpoints, biases, and assumptions regarding their phenomenon of interest and set them aside when conducting their study, prior to and during data collection and analysis (Merriam, 2009; Moustakas, 1994; Patton, 2002; van Manen, 1990).

The way someone experiences something can be described in terms of structure at a particular moment. The structural aspect of an experience is two-fold; the outer and

internal structure (Barnard et al, 1999). The outer structure refers to the way in which the phenomenon is delimited and related to its context” (p, 216). For example, one can discern the figure from the ground (Limberg, 2000), which is called *external horizon*. The internal structure refers to “how component parts of the phenomenon are understood and are related to each other” (Barnard et al, 1999, p, 216), for instance, to discern the print, the pages, the cover of a book and how they relate to one another (Limberg, 2000), which is called the *internal horizon*. This implies the phenomenological dualistic view of subject and object—a separation between the inner world that is inside someone’s head, and outer world (Barnard et al, 1999; Limberg, 2000).

Nonetheless, there is an inseparable connection of the human beings to the world, and this fact generates the premise that human activity is always oriented and intentional. For instance, when people think, they think about something, when people listen, they listen to something, even though people are not conscious of this intentionality (van Manen, 1997).

The challenge researchers face is to describe and interpret the researched experience to a certain level of depth and richness—description and interpretation are essential parts of the phenomenological methodology (Patton, 2002; van Manen, 1990). Yet, descriptions and interpretations of experiences are so intertwined that they bear some discussion. For example, Husserl (1997), followed by Giorgi (2005), insist that phenomenological research is a pure description of the phenomenon, and purity is achieved when the essential structure of the phenomenon is “discovered”; they also argue that interpretation, in turn, falls within the boundaries of hermeneutical phenomenology.

The hermeneutical phenomenological approach to research and writing is introduced by van Manen (1997) as supplementary to Husserl's phenomenological method. Hermeneutics focuses on the problem of interpretation, and gives special attention to context and to the purpose of what someone wants to communicate (Patton, 2002, p. 114).

The semiotic dimension employed by van Manen (1997) as part of his interpretative phenomenological research approach, highlights several elements that should be considered when meaning and interpretation are given. He suggested,

from a semiotic point of view any social behavior or practice signifies and may be read as a text, as a language. For example, nobody merely talks. Every speech-act displays a complex of messages through the 'language' of gestures, accent, clothing, posture, perfume, hair-style, facial manner, social context, etc., above, behind, beneath, beside and even at odds with what words actually say. Similarly, everything around us systematically communicates something meaningful to us, and one can thus speak of 'the world as a text' (van Manen, 1997, p. 186)

Semiotics reveals that meaning-making involves much more than the analysis of written words, it involves additional analyses of the context, culture, and other factors that are communicated without words. Common sources of data in phenomenological studies are often textual; however, non-discursive artistic material also reflects human experiences, since people produce art to express their lived experiences (van Manen, 1997; Giorgi, 2005). These additional components or aspects of communication provide the groundwork for phenomenography, which has its foundation in phenomenology.

Phenomenography

Phenomenography was developed from an empirical educational framework by Ference Marton (1981) and aims at describing the different ways a group of people understand a phenomenon. In other words, “the possible alternative conceptions students may have of the phenomena” (Marton, 1981, p. 183). Phenomenological and phenomenographic approaches share the same goal of exploring how human beings make sense of their experiences, and due to their similarities, several authors argue that they are essentially the same (Morgan, Taylor & Gibbs, 1982; Prosser, 1993). Even though, phenomenography emerges from phenomenology there are distinctions between these two approaches. These differences have been discussed by Marton (1981) and by other researchers who employed the phenomenographic method in their studies including Akerlind, (2005), Bowden, (2005), Larsson and Holmstrom (2007), and Richardson (1999).

The key difference between phenomenology and phenomenography is that the first assumes a dualistic ontology in which the object and the subject are considered separately and independently. Phenomenography adopts a non-dualistic view in which the object and subject are not independent, this means that the object cannot have meaning in itself without having a subject who is experiencing and giving meaning to it. This difference does not make the use of phenomenology and phenomenography incompatible, yet it explains the different approaches each methodology adopts to investigate the way in which the subject experiences the object.

For instance, Larsson and Holmstrom (2007) conducted a study using phenomenological and phenomenographic approaches to investigate the ways

anesthesiologists make meaning of their profession. The authors employed a phenomenological approach and adopted a first-order perspective in their analysis to describe the essence of the phenomenon—the profession of anesthesiology. Then, he used a second-order perspective to describe the variations or different ways anesthesiologists experience their profession.

Phenomenography focuses on a second-order perspective in which the world is described as it is understood (Barnard, 1999; Larsson & Holmstrom, 2007; Marton, 1981; Richardson, 1999). A second-order approach arrives at another level of description, which focuses on the understanding of different ways individuals made meaning of their experiences. In the current research, a second-order approach is employed in order to grasp the different ways participants make sense of strategies of internationalization in practice. In a first-order approach, the focus of the analysis would be on the essence of the internationalization practices, on what they are, and not on varied perceptions students have about these practices.

Historically, phenomenography has been used to research experiences of learning and teaching—different ways students understood the content learned (Marton, 1981). The Piagetian theory mapping how children gradually construct an abstract formalism (Piaget, 1955) is used by Marton (1981) to illustrate the different ways children viewed various aspects of the world in the different stages of their development. However, contrary to Piagetian theory that classifies children into different categories of development, phenomenography does not classify people, nor does it

[compare] groups, to explain, to predict, nor to make fair or unfair judgments of people. It is to find and systematize forms of thought, in terms of which, people

interpret aspects of reality—aspects which are socially significant and which are at least supposed to be shared by the members of a particular kind of society; namely, our own industrialized Western society (Marton, 1981, p.180).

One of the positive characteristics of phenomenography is that it “provides a way of looking at collective human experience of phenomena holistically despite the fact that such phenomena may be perceived differently by different people under different circumstances” (Akerlind, 2005, p. 116).

For phenomenography, interview is the preferred and most common method used for data collection which aims at having the participants reflect and openly describe their experience; interviews focus on the world of the participants and seek to reveal their feelings, beliefs, realities and experiences of a phenomenon (Larsson & Holmstrom, 2007; Sjöström & Dahlgren, 2002). The researchers’ goal is to get the participants to express themselves clearly. For instance, the question “What strategies of internationalization are effective?” might instead be posed differently, namely “What perceptions SWB students have regarding strategies of internationalization implemented at their host-university?” This way, we can learn about strategies of internationalization from the Brazilian students’ perspectives and get a greater and deeper comprehension of the strategies of internationalization implemented on campus. Even though interview is the preferred method to enter into the participants’ lifeworld, phenomenographic studies also use group interviews, observations, drawings, written responses and historical documents (Marton 1994; Lucas, 1998), as well as video recordings (Limberg, 2000).

In phenomenography, researchers focus on identifying and systematizing the data into different categories of description. Categories of description are formed from the

analysis of the data or other forms of communication. Interview transcripts, for example, provide descriptions of the experience, which are “condensed to portray meaning” (Barnard, et al.1999, p. 219). Descriptions can be brought together in categories according to their similarities and differences. Criteria are then established that provide for classification of participants’ conceptions of the phenomenon into categories (Akerlind, 2012).

The next step is defining the structural and hierarchal relationship between categories, which is the major outcome of a phenomenographic study. The process of finding, categorizing, and describing the logical relationship between/among categories, such that they can be placed in a hierarchy is referred to as an *outcome space* (Marton, 1981). The structure of an outcome space is not always a linear hierarchy of inclusiveness, but it can also take “the form of a branching structure of hierarchies” (Akerlind, 2012, p. 123). Each category in a form of an outcome space is a representation of the phenomenon; for Marton (1981), the outcome space is a synonym for phenomenon.

Context of the Study

The governmental SWB program in Brazil is providing over 75,000 scholarships to Brazilian students from 2011 to 2015 in the fields of science, technology, engineering, and mathematics (STEM) to study abroad, and 25,000 scholarships for researchers to develop collaborative work overseas. The SWB students may opt to enroll in the following categories: Full PhD, Visiting PhD Student, Post Doctorate, Visiting Undergraduate, Technologist, Technologist in Development, and Professional Master’s degree. The modalities offered for scholars living abroad, but who want to conduct

research in Brazil are: Young Talents and Special Visiting Researcher (Brasil/CsF, 2015). These categories are described in chapter two.

The scholarship modalities provide an overview of opportunities given to students and researchers through the SWB program. Students participating in this study fell into the *Full PhD Students* and *Visiting Undergraduate Students* categories. Typically, undergraduate students need to have some knowledge of English so they enroll in one semester of ESL at their host-institution prior to taking classes. They take then TOEFL (Test of English as Foreign Language) test to determine their admission (or not) into the desired program. For PhD students, proficiency in English is a prerequisite to initially enroll in the program, so they proceed directly to attend classes and conduct research. These differences were relevant for this study as the goal was to comprehend how practices of internationalization are experienced by the students. ESL and English course are among the practices of internationalization offered for SWB students at their host-institutions that are funded by the SWB program.

Most of the students in the SWB program are hosted in U.S. universities; out of 70,000 scholarships already offered 20,358 are in the universities in the U.S. (Brasil/CsF, 2015). For this study, SAU is a tier one university, one of the most prestigious universities in the Southwest part of the U.S., and one that attracts a large number of international students (approximately 5,000 in 2013 according to the SAU International Office). SAU was selected to be part of this study for several reasons including that it hosts Brazilian students from the SWB program, and for SAU's commitment to internationalization. SAU has hosted 90 SWB students since the program started in 2011. Moreover, SAU hosts the Brazilian Cultural Center (BCC) as a support for students

and scholars from Brazil. It also has a virtual Brazilian student organization on *Facebook* that has been a point of contact for Brazilian students on campus. Finally, SAU has an ongoing effort at internationalization as reflected in: a) centralized offices responsible for international activities; b) study abroad and international exchange programs; c) international student organizations; and, d) internationalization strategies as a stated priority in the institutions' mission statement (SAU, 2014).

Sample and Participant Selection

Qualitative research typically uses a small sample and focuses on an in-depth understanding of the phenomenon (Merriam, 2009; Patton, 2002). In phenomenological research, several authors have different recommendations for sample size, but all suggest small samples. Denzin and Lincoln (1994), recommend for phenomenological research to include approximately six participants, since the goal is to conduct an in-depth study for deep understanding and reflexive description of the experiences (Patton, 2002).

Phenomenographic studies have used different numbers of participants. For instance, McDonald (2012) included 10 participants in her phenomenographic study about experiences of adult learners' in blended learning in higher education. Norris (1998) also had 10 participants in her study on how social service professionals perceive poverty in South Dakota, but she suggested that "the achievement of data saturation was satisfied at the conclusion of seven interviews" (p. 58). Larsson and Holmstrom's (2007) study included 19 anesthesiologists, who described their profession in the operating room and intensive care centers. The variety of sample sizes in these studies led me to the considerations of Patton (2002) regarding sample size. He asserts that "there are no rules for sample size in qualitative inquiry" (Patton, 2002, p. 244), and that sample size, in

particular when purposeful sampling, should be judged according to the purpose and rational of the study.

Therefore, considering the recommendations of qualitative researchers for phenomenological inquiry (Denzin & Lincoln, 1994; Merriam, 2009; Patton, 2002) and studies using phenomenographic approach (Larsson & Holmstrom, 2007; McDonald, 2012; Norris, 1998), this study included the following participants six students from the SWB program, the administrative head of the IO, an assistant director at the IO, undergraduate academic adviser, an faculty at the School of Engineering, the director of the Biomedical Engineering program, the chairman of the Aerospace Engineering, and the coordinator of the Brazilian Cultural Center at SAU.

This study is comprised of four full Ph.D. students and two undergraduate students. It included five males and one female, despite all efforts to balance the number of male and female student. Due to the participants' recruitment strategy, snowball sample, only one female graduate students was indicated by their peers. Students' age ranged from 21 to 25. This sample size was appropriate due to the degree of in-depth interviews and to the variety of data collected—a demographic survey, interviews with SAU personnel, and two rounds of in-depth interviews with each student. The criteria for participation of students in this study included: being at least 21 years and older, being part of the SWB program, being an undergraduate or graduate student at SAU, and having studied for at least 3 months at SAU.

Recruitment

The recruitment of SWB students happened through social media, in particular through the SWB Facebook page. The SWB program opens a Facebook group for SWB

newcomers for each new semester. Students included in the SWB Facebook were contacted and invited to participate.

In addition, SWB students were selected through snowball sampling. Snowball sampling gave the researcher the opportunity of selecting key-informants for the study. Snowball sampling consisted of asking well-situated people, in this case other SWB students, to recommend people who could be valuable to the study (Patton, 2002). The first participant was contacted and upon verbal consent, a demographic questionnaire was sent in the Facebook private messages. The same protocol was followed for all participants. After answering the questionnaire in the Facebook private message, students were asked to refer another student.

Students from the SWB program were selected based on the time they had been attending the SAU and their degree. Participants in this study have been in the U.S. for at least 3 or more months. One may argue that a period of 3 months might not give students enough time to be challenged in their new academic and cultural environment, however, the study of Cemalcir and Falbo (2008) bring some light to this issue. They conducted a longitudinal study investigating the adaptation of international students in the University of Texas at Austin in which the data were collected from 90 international students after 3 months into their first academic semester. They found that after completing about 3 months in their first year, students had significantly increased their identification with their host culture, and at the same time maintained consistent levels of identification with their home culture. These researchers also discovered that after approximately 3 months, students experienced significant declines in their psychological well-being, and that even for students with substantial knowledge of English, the international transition could be

psychologically challenging. Therefore, these findings suggest that 3 months is enough time for international students to experience a significant transition. Therefore, interviews with SWB students after 3 months at the SAU were appropriate and timely. Nonetheless, by the time the second round of interviews were conducted, all participants have studied at SAU for over 8 months.

The administrative Head of the International Office (IO) at SAU was selected for an interview because of her specialization and responsibility in implementing and overseeing the internationalization efforts on campus. An email was sent to the IO inviting her to participate in this study. The assistant director at the IO was the first person of contact at the IO and was referred by the head of the IO to participate in the study. This assistant director answers to the head of the IO and attends to sponsored students. Both the assistant and the head of the IO were interviewed over the phone.

In the School of Engineering, a biomedical engineer professor, the director of the Biomedical Engineering program, and the chair of the Aerospace program were contacted and inquired about strategies of internationalization implemented in his department and how international students, in particular SWB students were helped. Both the biomedical engineer professor and the chair of the Aerospace program agreed to answer the interview questions by e-mail. The director of the Biomedical engineering program participated in a face-to-face interview.

A face-to-face interview with the undergraduate academic advisor was conducted. The importance of her participation was due to her interaction with SWB students from enrollment in their respective programs in the School of Engineering to completion of the program. A face-to-face interview was conducted with the coordinator of the BCC where

she was asked about the support given to SWB students and their participation in the BCC events. The coordinator of the BCC is engaged in promoting Brazilian studies and interdisciplinary studies of Brazil. She is the person responsible to create a network of Brazilians, to support teaching, study, and research agendas of students, faculty, and visiting scholars at the university (Brazilian Cultural Center/Southwest American University, 2014). Finally, information on the goals and mission statements of the SWB program was obtained from the SWB program website.

Data Collection

Information about a person's conception of a certain phenomenon can be collected through their speech and actions (Patton, 2002). In this study, data was collected through, demographic questionnaire, interviews, and documents.

Questionnaire

A demographic questionnaire was sent through Facebook (private messages of the participants). This electronic tool was used to collect information from SWB students (who had informally agreed to participate in this study). Participants were informed about the purpose of the study, the voluntary nature of their participation, the right participants have to stop the research at any time, and the procedures used to protect confidentiality (Groenewald, 2004). Participants were then selected through a snowball purposeful sampling (Patton, 2002). Students who were contacted through Facebook were those who were recommended by other students, and who had informally agreed to participate in this study. (See Appendix A for the questionnaire.)

Interviews

Interviews were conducted with six students from the SWB program, with the administrative head of the IO, an assistant director at the IO, an undergraduate academic adviser, a faculty at the School of Engineering, the director of the Biomedical Engineering program, the chairman of the Aerospace Engineering, and the coordinator of the BCC at SAU. In phenomenographic research, interviews using open-ended questions are recommended, so participants can talk freely and researchers can understand deeply the experiences the participants lived (Creswell, 2007; Patton, 2002; Larsson & Holmstrom, 2007; Marton, 1981). Therefore, in-depth face-to-face interviews were conducted on campus because of the importance of knowing the participants' environment. Interviews were conducted in a quiet and private place where participants were encouraged to speak freely about their experience and to avoid superficial descriptions. Description is a very important element in the data collection for phenomenographic research, which requires from the interviewees an articulation and reflection on the experience that is as complete as possible (Larsson & Holmstrom, 2007; Patton, 2002). All interviews were audio-recorded and transcribed verbatim.

Interviews with SWB students - Two rounds of face-to-face interviews were conducted with the SWB students. In the first round of interviews, students were asked about their academic and cross-cultural goals at the time they joined the SWB program and about their experiences in their host community. Students spoke freely about their experiences in approximately 60 minutes semi-structured, open-ended interview. One undergraduate SWB student was interviewed by skype. Interviews with SWB students were conducted in Portuguese. Interviews were transcribed from Portuguese (audio) to

English (transcript). Translations were conducted by fluent speakers of Portuguese and English.

First interview with SWB students. In the first interview, students were asked about their interest in participating in the SWB program. After that, a list of internationalization strategies was provided to the SWB students. (See Appendix E.) This list was formed from information gathered in interviews with the IO, with the coordinator of the BCC, with a personnel from the School of Engineering, and from information collected in SAU webpage. Students were then asked to identify strategies in practice at SAU and to talk about their experiences. (See Appendix B for interview questions.)

Second interview with SWB students. In the second interview, following the procedures for phenomenographic approach for *member check*, I showed to the students the emerging findings from my analysis of the first interview. I verified with them whether the preliminary categories of description were captured correctly (analysis procedures are discussed in the data analysis section). For this interview semi-structured, open-ended questions were asked. Interview lasted approximately 60 minutes. (See Appendix C for interview questions.)

Interview with faculty, staff, and administrators at SAU. Interviews were conducted with SAU staff, faculty, and administrators. Different approaches were utilized, face-to-face and over the phone interviews. Two participants corresponded by email. (See Appendix D for interview questions with faculty, staff, and administrators.)

The head of the IO. An interview over the phone with open-ended questions was conducted with the head of the IO. The interview was conducted to verify strategies of internationalization at the institutional level.

Interview with the assistant director of the IO. An interview was conducted over the phone with open-ended questions. The interview was conducted to verify the strategies of internationalization in place that support SWB students from Brazil in their academic and cross-cultural development.

Interview with the coordinator of the BCC. A face-to-face interview with open-ended questions was conducted. The questions addressed the strategies of internationalization in place that support SWB students from Brazil in their academic and cross-cultural development.

Interview with an undergraduate academic advisor. A face-to-face interview with open-ended questions was conducted with the assistant director of the IO. The interview was conducted to verify the strategies of internationalization in place that support SWB students from Brazil in their academic and cross-cultural development.

Interview with faculty and administrators in the School of Engineering. The biomedical professor and the chair of Aerospace program answered the questions by email. The director of the Biomedical Engineering department. Questions were answered in a face-to-face interview. The interviews were conducted to discover the strategies of internationalization in place in their respective departments that support SWB students from Brazil in their academic and cross-cultural development.

Documents

Documents included in this study are those available online in SAU, in the SWB program in Brazil, and those provided by the assistant director in the IO. Information gathered about the SWB program was collected from the SWB program webpage regarding their mission, goals, and motivations of their program. Additional information

was gathered at SAU webpage, such as its mission statement, goals for internationalization, and documents regarding internationalization strategies implemented in the SAU campus. All collected documents were analyzed prior to the interviews with students.

Data Analysis

A Phenomenographic Research Approach

A phenomenographic (second-order) approach was used in the analysis of the experiences with the phenomenon—strategies of internationalization in practice--through students' descriptions of their experiences. Akerlind (2012) highlights that the focus of phenomenographic research is to explore the range of meanings within a sample group, as a group, not the range of meanings for each individual within the group. This means that one interview transcript (interviews represent the most common data source for phenomenographic analysis) cannot be understood in isolation from the others (p. 117). Thus, I analyzed the whole group of interviews transcripts from the SWB students and I provided back to the individual participants the findings.

The analysis of the collected data follow the steps for a phenomenographic analysis provided by Larsson and Holmstrom (2007) which included: 1) read the whole text; 2) read the text again and mark where participants gave answers to the questions; 3) look for what participants focus on and how they describe the phenomenon. Make preliminary descriptions regarding the predominant way the phenomenon is understood; 4) group the descriptions into categories, based on similarities and differences. Formulate categories of description; 5) look for non-dominant ways of understanding; 6) find the structure in the outcome space.

Data Analysis with NVivo

NVivo is a qualitative data analysis computer program designed primarily to assist users to organize and analyze non-numerical or unstructured data. The software allowed me to classify and sort information, search for relationships within the transcripts of the interviews with SWB students, and cross-examine information (Bazeley, 2007). For this phenomenographic study, NVivo was appropriate because it allowed me to discover initial nodes, and then form preliminary categories of description.

Storage of the Data

Data collected for this study were kept on my personal computer, which is password protected, and on a backup drive (also password protected) at my home. The data were also stored electronically on a personal project site in the learning management system of Texas State University called TRACS, which stands for Teaching, Research and Collaboration System. Both TRACS and NVivo are password protected to ensure the security of data.

Trustworthiness

There are several verification procedures a qualitative researcher can put into effect to increase credibility and trustworthiness of a qualitative study (Creswell, 2007; Glesne, 2011; Merriam, 2009; Patton, 2002). The procedures that were employed in this study included:

Triangulation is a technique used to validate the data through cross verification from two or more sources (Patton, 2002). In this research, a variety of data—interview transcripts, and documents—were cross-triangulated across participants and across data sources to confirm emerging findings. Analysis of the interviews with the SAU

personnel, documents collected on SAU and from the SWB program webpage, and with the documents provided by them generated a list of strategies of internationalization in practice at SAU that support academic and cross-cultural development of the SWB students. Triangulation was also used across the interviews with the SWB student. A phenomenographic approach was used aimed at finding categories of description that better described the collective meaning that participants assigned to their experience.

Member check or respondent validations is a strategy used to ensure credibility of researchers' findings; it consists of asking for feedback from the participants on emerging findings (Merriam, 2009). Member checks happened in the second interview with the SWB students when they verified whether initial analysis of data collected in the first interview accurately represents their ideas. Similarly, feedback from the students were solicited after analysis of the second interview.

Rich and Thick Description—It is expected that phenomenological studies present a rich and thick description of what the participants experienced and how they experienced a given phenomenon. Rich and thick descriptions are a very descriptive and detailed presentation of the settings, participants and findings with appropriate evidence presented in form of quotes from participant's interviews, field notes and documents (Merriam, 2009). In my study this strategy enhanced the possibility of transferability of results from one study to another (Merriam, 2009).

Epoche or bracketing is the strategy of refraining from judgment and setting aside assumptions one may have regarding the phenomenon under investigation (Merriam, 2009). For phenomenological inquiry, this means that the researcher will make every effort to put aside his or her own preconceptions regarding the phenomenon under study.

Particularly, this strategy required that, as the researcher for this study and a Brazilian graduate student in the U.S., I made an effort to be consistently aware of my own assumptions based my own experiences with the practices or lack of practices of internationalization, prior to and during data collection and analysis.

Researcher's Position or reflexivity is the process of reflecting critically on the self as researcher, which requires a clarification of the researcher's assumptions and experiences regarding the study being conducted (Merriam, 2009). As the researcher of this study, I made explicit in the introductory part of this proposal what my experience with the phenomenon was. I made a commitment to constantly reflect on my own subjectivity and assumptions while conducting this study.

Significance of the Study

Universities worldwide face the challenge to internationalize—to develop and implement strategies that will help students to succeed in the global market. This study can provide IHEs with insight about international students' perceptions of their experiences with strategies of internationalization that were effective and meaningful to them.

The Brazilian government is making a great effort to internationalize its own universities and to support student mobility at top ranked universities all over the globe. The Brazilian government can benefit from this study as it aims to better understand the challenges and successes SWB students encounter in their academic and cross-cultural experiences abroad. In doing so, this study supplemented the rather sparse literature regarding Brazilian students' experiences in exchange programs. The SWB program can develop different ways to prepare future students going overseas to adjust to new cultural

environments. Consequently, SWB students could benefit when government and host universities promote engaging and effective strategies of internationalization. By engaging and effective, I mean strategies that help international students with cross-cultural interactions with the host university community (including students, faculty, administrators, any category of staff, and volunteers) and that help them to succeed academically.

The United States is still the major destination for Brazilian students who choose to study abroad. IHEs may benefit from the international/intercultural perspective that Brazilian students bring to internationalization practices and implemented at their home universities. Learning from this group, IHEs may be able to enhance their strategies and practices of internationalization.

Finally, a phenomenographic research approach to investigate students' perceptions of their experiences with strategies of internationalization in practice is rare. I believe the use of phenomenography research methodology of data collected and analysis can contribute to new knowledge in the field of adult education and internationalization of higher education.

Summary

In this chapter, I developed the research design for my study. So far I have discussed the methodological implications of a qualitative research and of the phenomenological approach from which phenomenography emerged. I have explained the similarities and differences between the two research methods, as well I have detailed the methodological design for data collection and analysis using phenomenographic

research that aimed to find category of description of the phenomenon. Finally, I presented the significance of this study.

CHAPTER IV

FINDINGS OF THE STUDY

Overview

In the fall of 2013, Victor travelled over 5,000 miles from Brazil to study in the United States. It was his first time leaving home to go abroad. This was the same for all the other Science Without Borders (SWB) students participating in this study who traveled similar distances to come to the United States in pursuit of their academic goals. The SWB program was fulfilling the dream of these Brazilian students, which included learning English and attending an American university. Here, the pseudonym Southwest American University (SAU) is used for the US University in which they enrolled.

Historically, Brazil is not ranked at the top of countries sending students to study overseas. The SWB program is changing this scenario. The program is increasing the presence of Brazilian undergraduate and graduate students in prominent universities worldwide, in particular in universities in North America and Europe. SWB's goals were to increase the presence of Brazilian students and scholars abroad and to establish international research partnerships in science and technology (Brasil/CsF, 2015).

Participants in this study are students who attend SAU, a large top-ranked university in the Southwestern United States. SAU has been recognized by its excellence in teaching and research, and for its efforts in implementing comprehensive strategies for internationalization on campus. In the past 5 years, SAU received the Paul Simon Spotlight award for its study abroad initiative program. Thus, the experiences that SWB students have at their host-universities are at the center of this study because they help us to determine whether students and the sending-institutions' goals have been met.

In this study, findings resulted from data analysis aimed at discovering different ways SWB students made meaning of their international academic experience and how internationalization strategies implemented on campus influenced their perceptions. This chapter presents findings from interviews with the personnel at SAU and with students of the SWB program and is divided into three parts. In the first part, profiles of the participants are provided. In the second part, the first research question is addressed, which investigates the relationship between the goals of the sending institution, the SWB students, and the internationalization strategies implemented at SAU. To define these goals, information was obtained from the SWB website and from interviews of the SWB students and with SAU personnel. The goals of the host institution are embodied in the internationalization strategies as implemented at various levels in the university (university wide, departmental, individual instructors, etc.). The findings from these inquiries then leads to discussion of the relationship between the goals and strategies of the participants.

The third part of this chapter addresses the second research question. The focus of this question is to examine how students from the SWB program experienced strategies of internationalization in practice at SAU. Findings for the second question were derived from analyses of the interviews with students in the SWB program. These are summarized in an overview of the internationalization strategies experienced by SWB students, and categories of description were explored following a phenomenographic methodological approach.

Participants

The participants included in this study are six Brazilian students from the SWB program; two undergraduate and four graduate students. The SAU personnel included are the assistant director of the international office (IO), the head of the IO, an undergraduate academic advisor, a professor in the School of Engineering, the director of the Biomedical Engineering Program, the Chairman of Aerospace Engineering, and the coordinator of the Brazilian Cultural Center.

Demographics of the SWB Students

To gather demographic information about the students participating in this study, a questionnaire was sent to each of them in their Facebook private inbox inquiring about their age, gender, personal contact (email address and a phone number), major, degree, starting date, and SWB scholarship category (e.g. visiting undergraduate, full doctoral, or visiting doctoral student). (See Appendix A for questionnaire.) However, to maintain confidentiality of the participants, no identifiable information collected in the questionnaires will be provided in this study.

This study is comprised of six students, four full time Ph.D. students and two undergraduate students. It included five male and one female students, despite all efforts to balance the number of male and female students. This seems to reflect gender disparities that are often found in STEM disciplines (Blickenstaff, 2005). All participants are first generation to study abroad. Two of them studied abroad during college, but for the rest of them it was the first time.

Profile of the SWB Students

Students participating in this study come from different regions of Brazil and some had never left the country before coming to the United States. They all studied at public universities in Brazil, including some of the leading institutions such as the *Universidade de São Paulo* (USP) and the *Universidade Estadual de Campinas* (UNICAMP). In fact, the majority (over 80%) of the students in the SWB are from public universities (Brasil/CsF, 2015). Some information about the participants are offered here.

Table 4.1.

Students' Demographics

Participants	Olavo	Maria	Luciano	Victor	Jackson	Raul
Gender	M	F	M	M	M	M
Grade	Undergrad	Undergrad	Graduate	Graduate	Graduate	Graduate
Type of scholarship	1 ½ year exchange	1 ½ year exchange	Full PhD	Full PhD	Full PhD	Full PhD
First generation College degree	No	No	No	Yes	Yes	Yes
First generation PhD degree	N.A.	N.A.	No	Yes	Yes	Yes
First generation Study Abroad	Yes	Yes	Yes	Yes	Yes	Yes
First time in an exchange	Yes	Yes	No	Yes	No	Yes
Private or public University	Public	Public	Public	Public	Public	Public

Olavo. Olavo is an undergraduate student who has always wanted to study abroad, as he says, “I have always wanted to study abroad, to enhance my knowledge, to

network, to learn a foreign language, and to know other countries. To have all of it!”

Olavo’s aspiration has always been to come to the United States, “It was a great feeling getting to the United States. I don’t know how to express how eager I was to learn and communicate in English.” Both Olavo’s parents graduated from college, but he is the first in his family to go abroad. He recognized that without the SWB program he would not afford to go to a place like SAU. Olavo plans to pursue a Master’s and a doctoral degree abroad, preferably in the United States.

Maria. The great aspiration Maria had was to go abroad because she wanted to learn English. In her hometown, proficiency in English is required by several companies, as she explains, “I would like to learn English because good positions here [in my city] require proficiency in English, even to work as a trainee you need some knowledge of English ... besides, I wanted to study abroad.”

After 4 years in college and with more to come, Maria felt tired and desired to do something different. She thought of going abroad through the SWB program, “even if I need to go to Portugal and learn English by myself”, said Maria. However, she really wanted to go to an English speaking country. “I was in one of the first group to whom an ESL course was offered in the first semester in the program. ... I was lucky to go to the United States.”

Luciano. After receiving his Master’s degree in Brazil, Luciano wanted to pursue a doctoral degree abroad. When an undergraduate, Luciano studied abroad in France and got an internship at CERN, in Switzerland. Luciano shared the impact of his experience at CERN,

Cern is that particle collider with 37 km in length. They speed the particles at the speed of the light, the particles collide, and then they reproduce conditions similar to the Bing Bang. It was when I worked there that I saw many researchers and PhDs. At that moment I realized that ‘Man, if I want to come to a place like this in the future, I need to go to a graduate school, I need to graduate well, I need to have a lot of knowledge,’ so that's what motivated me to go to grad school.

The study abroad experience in Switzerland had a great influence in his decision to continue with his education and to pursue his Ph.D. overseas, as he explains, “because of that [first international experience], I wanted to do a PhD abroad, which is why I learned about Science Without Borders, so I used it.”

Victor. After receiving his B.A. and Master’s degree from one of the best universities in Brazil, Victor wanted to study overseas. He is from a small rural town in Brazil and was a little concern to leave Brazil for the first time. His siblings did not attend college and his parents did not complete middle school. Victor states, “my father was a taxi driver and my mom has never had an outside job, she is a housewife.” Victor’s story is marked by determination in his pursuit of higher education,

When I was in my 8 grade [last year of middle school] I decided I wanted to go to a good high school. I realized I needed to work hard to go to a good high school. In my hometown we have the university technical high schools. They are associated with universities and they are among the best in the country. ... I worked hard and got a good public [free-tuition] education in high school. I received the best education available in my hometown. I then passed in *vestibular* and was admitted to a public [free-tuition] Federal university. I have never paid

anything for my education. I think it depends a lot on the person too. Of course, if you have a good socio-economic level you have more opportunities, but it was not my case.

Victor is the first in the family to complete college, to pursue a Ph.D. degree, and to go abroad. He remembers how challenging it was for him to leave home for the first time, “I have never left Brazil before.” Victor believes he has overcome many barriers to this point.

Jackson. During college, Jackson benefited from the SWB program, when he studied abroad in Holland. Jackson is currently pursuing both his Masters and full Ph.D. at SAU. He shared that his experience in Holland was rewarding and challenging,

I had the courage to go out of Brazil and stay away from home for a long period of time. When I left for Holland, it was the first time I was far from my family, but even though it was hard to stay apart, I saw that it was bearable.

The positive international experience Jackson had in Holland motivated him to go abroad again, as he announced, “I would like to try it again, but this time, in the United States.” Jackson is the first in his family to pursue a B.A., a Masters, and a Ph.D. degree. He is also the first in his family to go abroad. Jackson credited the SWB program for making it possible for him to have an international academic experience. “If it wasn't for Science without Borders, I wouldn't have a way to even apply. I wouldn't have had a chance,” Jackson revealed.

Raul. Raul is graduate student studying for his Ph.D. at SAU, who received his Master's degree in one of the best universities in Brazil. Nonetheless, Raul wanted to pursue his doctorate abroad. In his own words,

I have always wanted to do my doctorate overseas. I was doing my Masters in ecology at (a Brazilian university), which has a highly rated ecology program. It is not that I wasn't happy, but I felt I have already gotten what I needed from their program and professors.

It was through a collaborative research project with the researchers from Cornell University that he was encouraged to start searching for a suitable doctoral program. Raul says,

I wanted to go to because they had the people whom I wanted to work with. ... I applied to several universities, [I was] lucky and [I was] accepted in all of them. Then it was up to the best offer... and to the area research I would work with. My advisor is one of the best in the field.

Raul got an offer for a Teaching Assistant (T.A.) position and scholarship from the SAU. However, being able to come using the SWB program gave him the option to have his first year paid. Raul shares, "I didn't want to arrive already having to teach." Some other factors weighed in his decision to use the benefits of the SWB program, Raul asserted, "So I felt it was better to dedicate myself [to the program], having to go to a different country, and speak a different language. It's better for me to take the benefits offered to me by Science without Borders." Thus, Raul started his course at SAU on the scholarship offered by the SWB program so he would not need to work as a T.A. in his first semester.

Profile of the SAU Personnel

Herein, the profile of each SAU personnel member who participated is provided along with the purpose and the method of data collection and questions used in the

interviews. Information collected is displayed in Table 4.2. To maintain confidentiality, no identifiable information about participants is given.

Table 4.2.

Participants' Profile, Methods and Purpose of Data Collection

Participant	Place of work at SAU	Method of data collection	Purpose of data collected	Questions
Undergraduate academic advisor	School of Engineering	Face-to-face interview	Information collected was used to identify internationalization strategies in practice at SAU. A list of strategies was created and presented to SWB students in their first interview for verification.	1. To your knowledge, what are the internationalization strategies in place that are the most important to support the academic and cross-cultural development of the SWB students from Brazil at SAU? 2. What is the role of the Advisors in supporting students from the SWB program? 3. What are the strategies implemented in the engineering school that help International/SWB students to succeed academically? 4. How do you perceive Brazilian students challenges and successes at SAU?
Head of the Int'l Office	International office	Interview over the phone	Information collected was used to verify whether there was internationalization efforts being implemented at the institutional level.	1. Are there specific internationalization efforts implemented at the institutional level? If so, what are they? 2. Is there a key person who is responsible for implementing and overseeing internationalization programs and strategies at the institutional level?
Assistant Director, Sponsored Student Services	International office	Interview over the phone	Information collected was used to identify internationalization strategies in practice at SAU. A list of strategies was created and presented to SWB students in their first interview for verification	1. To your knowledge, what are the internationalization strategies in place that are the most important to support the academic and cross-cultural development of the SWB students from Brazil at SAU?

Professor in the School of Engineering	School of Engineering	Corresponded by e-mail	Information collected was used to identify internationalization strategies in practice at SAU. (The focus here was on academic strategies of internationalization). A list of strategies was created and presented to SWB students in their first interview for verification.	1. Are there internationalization programs or strategies implemented in your department focused on international students, including SWB students, to help them in their academic endeavor? 2. If there are Brazilian students from the Science Without Borders mobility program in your department, what have been their academic and cross-cultural challenges and needs (if different of other international students)?
Director of the Biomedical Engineering Program	School of Engineering	Face-to-face interview	Information collected was used to identify internationalization strategies in practice at SAU. (The focus here was on academic strategies of internationalization). A list of strategies was created and presented to SWB students in their first interview for verification	1. Are there internationalization programs or strategies implemented in your department focused on international students, including SWB students, to help them in their academic endeavor? 2. If there are Brazilian students from the Science Without Borders mobility program in your department, what have been their academic and cross-cultural challenges and needs (if different of other international students)?
Chairman of the Aerospace Engineering	School of Engineering	Corresponded by e-mail	Information collected was used to identify internationalization strategies in practice at SAU. (The focus here was on academic strategies of internationalization). A list of strategies was created and presented to SWB students in their first interview for verification	1. Are there internationalization programs or strategies implemented in your department focused on international students, including SWB students, to help them in their academic endeavor? 2. If there are Brazilian students from the Science Without Borders mobility program in your department, what have been their academic and cross-cultural challenges and needs (if different of other international students)?
The coordinator of the Brazilian Cultural Center	Brazilian Cultural Center	Face-to-face interview	Information collected was used to identify internationalization strategies in practice at SAU that supported Brazilian students. A list of strategies was created and presented	1. To your knowledge, what are the internationalization strategies in place that are the most important to support the academic and cross-cultural development of the SWB students from Brazil at SAU?

to SWB students in their first interview for verification	2. What is the role of the Brazil Center in supporting students from the SWB program? 3. What are the strategies implemented on campus to assist Brazilian students to integrate and to adapt to the university community?
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Undergraduate academic advisor. The undergraduate academic advisor works for the School of Engineering. Her work with the SWB program begins from the moment she is informed that applicants are accepted into any of their programs. This particular academic advisor coordinates orientation and social events for international students, including SWB students.

The head of the international office. The head of the IO has coordinated the office for over 10 years. The IO is comprised of different units that offer several different types of services supporting international students and scholars in their transition and integration into life and study at SAU.

Assistant director at the international office. The assistant director answers to the head of the international office and attends to sponsored students. Sponsored students are those who are sponsored by their respective countries such as the Brazilian students sponsored by the SWB program.

Professor in the School of Engineering. This professor is a biomedical engineer who has worked at SAU for over 15 years. He has taught international students, both undergraduate and graduate, throughout the years. He has also had a few teaching assistants (TAs) who were international students.

Director of the Biomedical Engineering program. The director has been at SAU for the past 40 years, who is a former chairman of the Department of Mechanical

Engineering This director has been involved in several international activities. He taught abroad through the SAU faculty-led program for several years and was a visiting professor in a foreign country and invited to speak in several different countries, including Brazil.

Chairman of the Aerospace Engineering program. This chairman has been on the faculty at SAU for the past 25 years and recently has been chair of a department in the School of Engineering.

The coordinator of the Brazilian Cultural Center. The BCC coordinator is engaged in promoting Brazilian culture throughout the campus and to support Brazilian students and scholars studying at SAU.

Goals of the SWB Program, SWB Students and Internationalization

Strategies of SAU

The first research question investigates the relationship between the three main participants; the goals of the SWB program in sending Brazilian students abroad, the goals of the SWB students in going abroad, and the internationalization strategies in practice at SAU. The aim was to examine the relationship among these elements, and whether the strategies of internationalization in practice at SAU facilitate the accomplishment of the goals of both the SWB program and of the SWB students. Thus, in this part of the analysis I sought to answer, *What is the relationship among the named strategies of internationalization of a host university, the goals of the SWB program, and the academic and cross-cultural development goals of Adult Brazilian SWB undergraduate and graduate students?*

In addressing this question, I discuss initially the goals presented by the SWB program followed by the goals of the SWB students, and finally the internationalization strategies in practice at the host-institution. The goals of the SWB program presented here were obtained from the SWB program webpage. Finally, strategies of internationalization in practice at SAU were identified through information collected from the SAU webpage and from interviews with SAU personnel, including the coordinator of the BCC.

Goals of the SWB Program

In the history of Brazil, the SWB program is the most significant effort of internationalization of HE launched by the Brazilian government. The program started in 2011 aimed at sending over 100,000 students and scholars to prestigious universities worldwide. Through international exchange and mobility, Brazil hopes “to launch the seeds of what could revolutionize the R&D system, the Brazilian students and researchers exposed to an environment of high competitiveness and entrepreneurship” (Brasil/CsF, 2015, para. 1). The R&D system, in this context, refers to activities of scientific research and development.

The main goal of promoting “the consolidation and expansion of science, technology and innovation” in the country involves three strategies (Brasil/CsF, 2015, para. 1). The first strategy is aimed at increasing the presence of students, scientists, and industry personnel from Brazil in international institutions of excellence. The accomplishment of this strategy counts with some support from the private sector for the payment of fees involved. Another strategy is intended to encourage young talent and highly qualified researchers from abroad to develop collaborative projects with

academics in Brazil. The intention is to contribute to the capability of human resources in Brazil and to promote “the return of Brazilian scientists working overseas” (Brasil/CsF, 2015, para. 1). Finally, the program intends to promote the internationalization of Brazilian universities and to create research centers through which international partnerships can be established (Brasil/CsF, 2015). Even though the two last strategies are not in the scope of my analysis, they are relevant because they show other areas that were targeted in the SWB program that are vital in the process of internationalization of HE in Brazil.

Results of the SWB Program

According to data available at the SWB webpage, as of January 2015 the program has granted 77,806 scholarships to Brazilian undergraduate and graduate students (Brasil/CsF, 2015, para. 1). Of these, 61,534 grants were given to visiting undergraduates who spent three semesters abroad. In the first semester these students attend ESL courses and take the TOEFL, an English proficiency assessment test. Students who meet the requirements of their host-institutions are allowed to stay and register for academic courses. Visiting Ph.D. students have received 7,792 scholarships, and full Ph.D. students have received 2,680. Post doc students have benefited from 4,291 scholarships.

Regarding areas of study, students in engineering related areas received 34,491 scholarships, followed by biology, biomedical and health sciences with 13,598. Students in courses related to Nano technology and industry innovation received approximately 6,000 scholarships each. Students attending computer science and technologies courses received 4,855 scholarships.

United States and European countries have hosted the majority of the SWB students. Out of approximately 77,806 awards, 22,731 were granted to students who went to the United States. 10,242 scholarships were given to students taking biology, engineering or technological courses in the United States. The United Kingdom was the destination for 9,107 SWB participants. France received 6,586 students and Canada, 6,529. Moreover, distribution of grants according to gender were 43,547 for males and 34,149 for females.

Students' Perceptions of the SWB Program

In the interviews, graduate and undergraduate students shared their perceptions of the SWB program. Some of the issues with the program involved advertisement of the SWB program, how they came to learn about it, and registration at the host-university. Other issues were students' orientation at the host-university, and validation of course credits upon return of the students to Brazil.

How students learned about the SWB program. Students were asked how they learned about the SWB program. Many of the students came to know about the SWB program through their peers or the internet. The majority of the students did not remember exactly how they learned about the program, however, most did not learn about it from their respective universities. A graduate student commented, "I don't remember exactly how, but I heard about Science without Borders in some way, and so I applied." An undergraduate student attested that he did not hear of the SWB program in his university, but he added, "It was in the internet, I was looking for something, or it was an advertisement." Victor learned about the SWB program from a friend's posting on Facebook,

One of my friends who is doing her doctorate at USP posted this on Facebook, and I decided to look for more information. On the post it said that they had scholarships for Brazilians that still hadn't been used, to do their doctorate in universities of excellence abroad. So I decided to investigate and go deeper into this. This is how I became interested in being a candidate at these universities through the Science without Borders. To see if it would work.

Only Jackson learned about the SWB program through his Brazilian university.

According to Jackson, it was in the beginning of the program and "the only way to know was through the universities," Jackson explained. He tells that "the international office from there [my university] delivered us e-mails regarding opportunities available for exchange."

The majority of the SWB students learned about the SWB program indirectly, through classmates, by advertisement on the internet, and on Facebook. According to Jackson, in the beginning of the program there was an effort to advertise the program in the universities. Currently, there is evidence in the findings of a coordinated strategy to advertise the SWB program to college students in Brazil.

Registration to the host-university. Regarding selection and registration to the host-institution, graduate students had help from the organization named Academic and Professional Programs for the Americas (LASPAU), which is affiliated with Harvard University. According to Luciano, "LASPAU helps us with our applications and our letters. They review all of our applications to increase our chances of coming here. If we pass, we get to choose five universities, two top, one intermediate, and two low-tier universities." Luciano added,

To get to the United States, you have to go through LASPAU ... We sent our curriculum to LASPAU. LASPAU selects the candidates, and then we send the documents to CAPES [Coordination for the Improvement of Higher Education]. I don't know what criteria they use, if they accept a lot of people, or if they deny a lot in CAPES, but I know that we begin with LASPAU.

For some SWB Ph.D. students, the process to go abroad started with an individual contact with potential advisors from universities in the United States. Raul explained how it was for him, “I began looking for professors to do my doctorate. I was able to get funds to come to the conference here [in the U.S.] at the time. So I visited universities and contacted some professors at different universities.”

However, undergraduate students went through a different admission process. Many of the undergraduate students who came to the U.S. did not choose U.S. in their applications because of the language requirements. According to students' responses, in the beginning of the program, students eligible to enroll were those who could prove language proficiency of the desired country. Due to lack of proficiency in foreign idioms, most of the students applied for an exchange in Portugal, where they can speak the Native language. However, Portugal could not support the high demand (Brasil/ Ciencia sem Fronteiras, 2013). Seeking to find a solution to the lack of proficiency in foreign languages and to diversify the hosting countries, the SWB program offered one semester of language courses for students. Maria stated, “starting with my group, the Science Without Borders offered language courses according to your destination, English course for those going to the U.S., German course to Germany, and so on.” The idiom courses

were taken at the host-universities in the first semester. Registration to the host-university depended on the score on their TOEFL test, usually taken after attending ESL courses.

Problems with undergraduate course credits. Undergraduate students mentioned how disappointed they were not to receive any credit for courses they took abroad. Maria at present still does not know if she will receive credit for her study abroad course. She hopes she will get at least one course credited after her university reviews her transcript, as she said, “I do not know yet, if for sure I will have one course accredited.” Olavo is facing the same challenges, as he commented,

my ‘fight’ is to get credits for these classes that I took [abroad]. They [officials at the home university] are considering counting courses taken abroad as supplementary courses. It is just like I went abroad to take a supplementary course, like I went to an event or a conference. I spent the entire year doing what? Studying overseas. I spent 1 year studying in one university thousand times better, in terms of quality, and now that I return to my [home] university they don’t give me any credit for it? It is just like I was there [abroad] attending to a conference. I am discussing my situation with the Dean of students to see what he can do about it, to bring this [my situation] to a board at the university to try to change this.

Both Maria and Olavo are struggling to validate courses they took at SAU. According to these students’ experiences, the SWB program has no policy or agreement with Brazilian universities to accept courses taken abroad, this is despite the fact that SWB is a national program and the majority of SWB students attend public federal universities.

Olavo commented that some of his friends did not want to study abroad because they knew it would delay their graduation, as Olavo described,

Some friends of mine told me that they did not do it [enroll in the SWB program] because they did not want to delay the conclusion of their course. I think they had an idea. I don't know how much they really knew it [going abroad] would delay them.

This fact leads one to assume that the lack of a policy to validate courses taken overseas may discourage some Brazilian students from pursuing study abroad.

SWB Student Goals

In this section, the goals of the SWB students are discussed. These goals are obtained from student responses to the question, *why were you interested in participating in the SWB program?* Students' responses were analyzed and a set of collective goals was formulated. In the second set of interviews with these student participants, the list of goals was presented to them for feedback as a *member-checking* strategy used for validation (Merriam, 2009). Students' interest in participating in the SWB program varied. They held a set of goals including personal and academic achievements, among others. The collective goals for enrolling in the program are the following,

- Work with people who are experts in their field of study
- Have an international academic experience
- Advance their education to conduct top-quality research
- Improve their employment opportunities at home
- Improve their employment opportunities in an international context
- Enhance their curriculum
- Acquire skills to be able to compete globally
- Have access to career opportunities not available in their home country

- Learn English
- Be academic and personally challenged
- Learn another area of expertise

As students analyzed the list during member check, they agreed that all these goals reflected their objectives for going abroad. However, students commented more extensively on some of the goals such as to learn English, an opportunity to learn an area of expertise, and to work with people who are experts in their field of study.

Learning English was one of the most important goals for the students. English was considered important for their academic career, for employability, for personal satisfaction. For instance, Victor “wanted to learn a foreign language and to be challenged.” He considered “English very important for research,” and added,

I want to learn English as much as I can. In Brazil, I didn’t have the opportunity to learn English when I was younger. I believed that only way [to learn English] is to live in a foreign country for me to improve my language proficiency. If I were in Brazil I probably would take a language course. I think I wouldn’t learn as much as I am learning here.

English has also been considered an essential skill when looking for a job. In the case of Maria, who has always wanted to learn English, the main reason for needing proficiency in English was employment. She affirmed that most of the good positions in her town require proficiency in English. “I think this [English] would help me in my academic career, in my profession. Nowadays, as more you know, easier it is to get a job.” Thus, studying abroad and learning a foreign language, in particular English, may increase Maria’s opportunity of employment.

Victor, in turn, wanted to learn another area of expertise. His plans are to return to his home-country and use both areas of studies, “when I return to Brazil I want to combine both fields.” However, it has been challenging for him to acquire the foundation needed,

I just started in this field of study. I go to classes ‘raw.’ I don’t have the same basic knowledge they [peers] have. If I don’t read articles or learn something about the topic of the class before going, everything is going to be new to me. My questions and doubts will be concerned [about] basic concepts, or something the professor said that I haven’t learned the concept or vocabulary. The other students, in turn, have that foundation, and then they ask more elaborated questions. It is easier for them to improve their knowledge, but I am getting started.

Yet, people in his lab do not have the expertise he has in chemistry, and they cannot do what he is doing in his research project.

In Raul’s response he made it clear that he wanted to work with people who are expert in his field of study, so he will be able to advance his studies, which gives him personal satisfaction. Additionally, this international experience gives him a feeling of personal satisfaction, which is related to a sense of finding a career path that gives him professional and personal realization.

I guess it’s more for personal satisfaction. This is what I like doing, this is what I want to work with, and what I want to do for the rest of my life. If here is the group that does this the best right now, this is what I want to do for the rest of my

life. I want to learn from whom I admire currently, who does this the best currently.

In addition, Raul makes a comparison between the academic and the intercultural goals, “I think the academic goals are at a much higher level of importance. The intercultural is just secondary.” The international academic experience is very relevant for Raul, who seeks to advance his education and conduct top-quality research. Raul adds, “I wanted to do science the way they do it here [in the U.S.].” This statement can be explained with a comparison Raul makes between Brazil and the United State regarding research in his area of study,

Because in the circle we have in Brazil, the science is still very basic. I think for all areas, but specifically in my field, the area of ecology, the majority is still very basic. When thinking about publishing, it is very difficult to find publications of Brazilian researchers in my area in good journals like the ones they publish in here. It is not that Brazilian researchers in this area are not as good as the ones here [in the U.S.], it is that there is still a lot of things to be done for them [Brazilian researchers] to reach the stage they [American researchers] are at here [in the U.S.].

Raul’s goal is to advance his expertise. He felt that in his area of study Brazilian science is less advanced. According to Raul, being in the United States, at SAU, will help him to gain knowledge in his area of interest that he is unable to attain in his home university.

Students’ Perceptions of their Goals’ Accomplishments

In the second interview, students were asked whether they think some of their goals have been met. All participants agreed that even though they have not completed

their courses, some of their objectives have been accomplished. Students pointed out that they are working with people who are experts in their fields of study, learning English, and advancing their education to conduct top-quality research. Victor concurred,

Just being in such a diverse environment, with such intellectual advancement already helps a lot. Just in my field there are three seminars each week with researchers in the most diverse areas. One of them is only with researchers from other universities. Just by having contacted, being able to meet these people, and being in an environment where they interact with students is already something that has enriched me a lot.

Victor suggested that being in an academic environment with so many opportunities to interact with students and experts in his area is something he wanted.

Similarly, Olavo said he has accomplished his main goal, which was to learn English, “I learned English, this is what I hoped for.” Still, Olavo sought to intern during summer to gain professional experience in area of study, but he did not achieve this goal because he did not receive appropriate orientation, he felt. Olavo thought that eventually, the lack of a professional experience would hurt him when it came time to seek employment, as he explained,

I think I have an advantage [with an international experience]. However, I did not have the chance of doing an internship in my field there [in the U.S.]; I don’t know if this would be a determinant factor for me to get ahead. Of course, I have the practice [I acquired] in my field, but I don’t know what people [employers] would make of this. I think this goal I did not achieve.

Olavo did not meet the goal of obtaining work experience that he hoped for through an internship. In general, students stated that other goals such as improving their employment opportunities at home or in an international context cannot yet be evaluated because they have not finished their courses and have not yet sought employment.

The Southwest American University

SAU is a large research intensive university in the Southwest part of the United States. According to data from the SAU international office, approximately 1,500 international faculty work at SAU. In addition, the university hosted approximately 5,000 international students in fall 2013. Among these are 113 Brazilian students and scholars, including 26 undergraduate and 61 graduate students. Out of the 113 Brazilian students, 12 were sponsored students by the SWB program. SAU is recognized by its groundbreaking research and cutting-edge teaching and learning.

SAU was named one of three recipients of the Senator Paul Simon Spotlight Award, an honor giving by the Association of International Educators (NAFSA) for innovative study abroad programs. SAU launched a program to increase the participation of first-generation students in study abroad programs. Additionally, SAU has been praised as an example of success in their efforts at internationalization on campus.

Strategies of Internationalization in Practice at SAU

Internationalization strategies are practices implemented at the most concrete level in organizations and involve programs and activities and organizational efforts at the institutional level. Internationalization of higher education involves the integration of an international/intercultural dimension into the teaching, research, and services of an institution. (Knight, 2004; Knight & de Wit, 1995)

Findings from searching the SAU webpage showed that internationalization goals proposed by IO are to prepare its students to become competent global citizens, to partner with faculty and staff to facilitate participation through integration into the curriculum (IO/SAU, 2014, para. 2). IO wants to increase the number of students studying abroad, although SAU sent over 2,000 students abroad in 2013 (International Office/Southwest American University, 2014, para. 2).

Internationalization strategies implemented at SAU were analyzed according to Knight's (2004) classification, which are: *services*, *academic programs*, *research and scholarly collaboration*, *domestic and cross-borders activities*, and *extra-curricular activities*. Services, refers to the support from institution-wide services units (e.g. student housing and registrar), involvement of academic support units (e.g. library and curriculum development), and student support services for incoming and outgoing students (orientation programs). Academic programs involve student exchange programs, foreign language study, internationalized curricula, international students, teaching and learning process, joint/double-degree programs, cross-cultural training, faculty/staff mobility programs, and visiting lectures and scholars (Knight, 2004, p. 14). Finally, extra-curricular activities include student clubs and associations, international and intercultural campus events, interaction with community-based cultural and ethnic groups, and peers support groups and programs (Knight, 2004, p. 15). Through interviews with the personnel at the SAU and from searching in the SAU website several strategies of internationalization were identified.

Services

Internationalization of higher education involves the integration of an international/intercultural dimension into the services at an institution of HE (Knight, 2004; Knight & de Wit, 1995). At the SAU, IO provides a wide range of services for domestic and international students and scholars. (See Appendix F for a list of internationalization strategies in practice at SAU.)

The International Office. The IO seeks to bring quality services to assist students in their transition and integrations to the university. The IO provides general support services including assistance with general admission, health, and housing issues. IO also offers academic support such as ESL and other English courses, as well as programs aimed at improving student communication. (See Appendix F for a list of programs offered by IO.)

Intercultural Programs and Events

Aiming at providing services for international students, scholars, and their families, IO offers a wide variety of unique and entertaining social, academic, and cultural activities throughout the year. The goal is to help them adjust to living abroad in the United States. (See Appendix F for intercultural programs and event offered at SAU.)

Advisor of Undergraduate International Students. An undergraduate international student advisor was interviewed because she works with SWB students going to the School of Engineering. Her involvement with SWB students starts once they graduate from the ESL courses and get admitted to the engineering school. Some issues related to SWB students were raised by the advisor, such as proficiency in English, and the difficulties SWB students have connecting with their course advisor.

According to the advisor, Brazilian students come with a greater deficiency in English, relative to other international students. She explains, “They [other international students] have probably come a little more prepared language-wise, so we don't have to lift them up like the Brazilian students in that regard.” The lack of proficiency in English has been a great obstacle for Brazilian students who have faced a much more difficult transition when compared to other international students. This is the perception of the advisor,

I think a lot of those [international] students that come from there [abroad] go to schools where the focus is on them learning English—academic English—so even from an early age, they've been groomed to learn the language. So it's not that the transition isn't difficult, but it's less of a difficulty for them [international students] than the Brazilian students, who aren't as fluent and have those roadblocks. But we try to help them out before they get in too deep.

Another problem SWB students face is that they arrive at the host-institution only a few days before classes start. They do not have time to familiarize themselves with the institution and requirements. When the advisor is informed that a certain SWB student was admitted to the engineering school, she calls them for orientation,

Once I know they [SWB students] have admitted to the engineering school, I invite them to an orientation at the beginning of the semester. So, whatever semester they start, they come to an engineering orientation, they learn about our engineering policies and procedures. I started doing [the orientation] a couple of years ago because they were having difficulties getting connected to their departmental advisor, because they come literally a few days before the semester

begins sometimes. ... I have the faculty advisor come and do the advising, so that way they don't have to chase them around and it just makes things smoother and easier for them [SWB students]. They automatically have a face with a name because I've been communicating with them a little bit back-and-forth before they arrive, so I'm able to introduce myself and talk about college policies, introduce them to their departmental advisor, and from that moment, that is when they get their classes. So that has really helped things a lot, not only for the Brazilian students, but all of the exchange students.

SWB students in a different academic and cultural environment needed to communicate in English and to deal with a variety of requirements from the host-institution.

The advisor considers herself as “the middle man.” She makes sure that SWB students have all their transcripts and necessary paperwork and that faculty advisors will look them over and alert her of any issues, like “this student is not going to be a success here. We don’t want them to come here and do horribly, so we would rather cut that off at the helm,” she explained. When professors are having any issue with students, she mediates the situation.

Another unit that offered support for Brazilian students was the BCC. Findings regarding available services and programs from BCC were obtained through searching the BCC website and through an interview with the BCC coordinator.

The Brazilian Cultural Center. The BCC is an interdisciplinary center created to support teaching, research, and studies of Brazil. The Center aims at creating a network of Brazilian students and scholars on campus and enhancing the knowledge about Brazilian social, cultural, and economic issues. The coordinator of the BCC was

hired in the past five years. Even being new to her position, in a face-to-face interview, the coordinator gave an account of activities and services provided to students and scholars, in particular to Brazilian students and scholars. The main goals regarding Brazilians from the SWB program for both students and scholars are to create a network that provides support during their stay. (See Appendix F for program and activities offered by BCC.)

Extracurricular Programs

SWB students received support from organizations on campus that helped them to integrate to the American culture. There are several active student organizations at SAU, but several participants in this study referred to *Bridges International* as promoting activities that helped with their integration to the American culture.

Campus Organization – Bridges International. Several SWB students reported that *Bridges International* was particularly helpful in helping them adapt to American culture. Information about Bridges International was available in the SAU website. *Bridges* is a Christian non-profit organization on campus that seeks to help international students through service activities, social networking and spiritual resources (Bridges International, 2015, para. 1). According to Bridges, 80 percent of international students “never set foot in an American home” (Bridges International, 2015, para. 1). (See Appendix F for a list of strategies offered by Bridges International.)

Academic Programs

International Office. Academic programs found at SAU include several study abroad programs, ESL, and other language programs. (See Appendix F for a list of

academic program offered by IO.) In an interview conducted with the head of the IO she explained that,

there is no centralized or formal effort of institutionalized internationalization strategy on campus. Colleges and schools ... are really free to implement their own structure based on what internationalization strategies mean to their college ... and within their structure, they are creating ways through which they support the [international] exchange of students and scholars ... creating an international presence within their colleges.

The head of the IO went on to say that the College of Engineering has an international program section, and they do more student exchange. She continued, “What IO is doing is to know how we can reinforce the path for programs that bring diversity and internationalization to our campus.” Thus, face-to-face interviews and correspondence by email with faculty and administrators were used to identify internationalization strategies at the School of Engineering.

School of Engineering. As discussed previously, internationalization of HE involves the integration of an international/intercultural dimension into teaching as well (Knight, 2004; Knight & de Wit, 1995). To identify how and which strategies of internationalization are integrated into teaching, faculty and administrators from the School of Engineering were interviewed or contacted by email. Information from the School of Engineering is relevant for this study because of its importance to the SWB program. Three of the participants in this study are in graduate programs in the School of Engineering. The chair of Aerospace Engineering corresponded by email, as did a faculty

member in biomedical engineering. A director of the Biomedical Engineering program engineer participated in a face-to-face interview.

The first question asked in emails and interviews was, *are there specific internationalization efforts (programs, strategies etc.) in your department that are focused on helping international students in their academic endeavors?* A brief note regarding the concept of internationalization was added, “Internationalization strategies would involve incorporation of an international, cultural, or comparative dimension into existing courses or programs, teaching/learning, extracurricular activities, and research and scholarly activities.” In addition, participants were encouraged to discuss whether any cross-cultural training for professors and staff was available.

The response of the professor in the Engineering department indicated that he was not aware of any coordinated efforts of internationalization implemented on campus either at the institutional or at the departmental level. The professor referred to international student organizations as a strategy of internationalization in practice. He explained,

I am not aware of any specific efforts directed by the department towards internationalization. Many times these efforts are motivated by the students themselves, for example the Korean Student's Association or the Chinese students have an organization. From the University, a group exists for International Students and they serve as a resource for international students and can work with international students and the department. For example, if a research group wants to sponsor a researcher for a Green Card the department will work with the Office for International students. Another area is when a department hires a faculty

member who is international. This sets off a sequence of activities that must be dealt with by the department, college and University. Increasingly, new faculty members are international in their origin.

Student organizations, visiting scholars, and the hiring of international scholars were acknowledged by this professor as strategies of internationalization in practice.

Formation of student organizations is up to the initiative of students to organize, in order to connect with other students or scholars with similar interests. However, the process of inviting visiting scholars and of hiring international faculty requires action from a university administrator and/or faculty. These actions lead us to the assumption that these are coordinated internationalization strategies happening in the department even though they were not acknowledged as such by the professors and administrators.

The director at the School of Engineering was asked whether the hiring of international faculty was an intentional internationalization strategy. On his own words he explained,

No. I would say it's very strongly dominated by identifying and choosing the top talent. One of my colleagues we just hired is Israeli, and she got all of her degrees in Israel, came to MIT [Massachusetts Institute of Technology] for a post-doc.

She is among the top people in the world, and then we recruited her and hired.

The hiring of international faculty at the School of Engineering is result of a departmental policy to recruit top talented faculty and not an intentional strategy to increase the number of international faculty. The fact that SAU has been a top-ranked tier one university has benefited the institution because it has attracted talented international faculty, it provides a quality education and provides access to research of their interest.

SAU has also attracted the interest of high-tech organizations such as NASA, which has formed a partnership with the School of Engineering to expand into new areas of space research (SAU, 2015). The school has also partnered with 3M, which provides both research opportunities and grants (SAU, 2015).

The question regarding internationalization strategies implemented in the department was pursued further which is how to integrate an international/intercultural perspective into their teaching. To this question, the director at the School of Engineering answered,

In my domain, the primary thing that it takes to internationalize is a teacher-led course ... but we did not have a strategy to try and make the flavor and the culture and the practice of engineering to be more international. I'm not sure that one can even say that the practice of engineering is international. The way you build a computer is basically the same way in Japan as it is in the United States, so there is a different intellectual foundation for engineering than there is for a lot of [other] academic disciplines. I can absolutely understand and appreciate how certain program areas might be a lot more international than engineering by design, as I'm sure you are well aware, some international and academic programs are designed that way, but that's not our target in engineering. It's not our mission. This director has been an engineering faculty for more than 40 years. In his perspective, engineering courses are not designed to incorporate international components into the course, at least this is not taken into consideration in the course goals. In his understanding, internationalization relates more closely to study abroad, for instance, to faculty-led

programs. However, he pointed out that other academic disciplines may intend to integrate an international perspective into their courses.

The second question asked to the School of Engineering personnel was, *If there are Brazilian students from the Science Without Borders program in your department, what have been their academic and cross-cultural challenges and needs (if different from other international students)?* The presence of Brazilian students from the SWB program was not recognized by the chair of the aerospace engineering, even though there is one SWB full time Ph.D. student in that program. The professor at the biomedical engineering did not know whether or not there were SWB students in his department or in his classes, but he commented on his approach to international students in general,

I try to be aware of international students and sensitive to their needs. At the graduate level, nearly half of the students are international and this can have a big impact on teaching a class. Many times the cultural background of the international students can add a high level of variance to the class in many ways. For example, many times Asian international students will have a more substantial training in mathematics than their peers from say the US. The impact of international students in the classroom is mostly felt at the graduate student level and generally adds variance to the cultural context of the classroom experience. This is a rich area where the role of international students is felt probably most directly.

Similarly, the director at the School of Engineering concurred that it was at “the graduate level where there is any significant interaction with the international students in engineering.” At the graduate level, a closer relationship between advisor and student is

established. It is different for students at undergraduate level who take classes having a large number of students. The director further commented on the difference in admission of undergraduate and graduate international students,

Very few non-US citizens come at the undergraduate level, and of those, probably the largest numbers are from China. Their absolute numbers are very small, now at the graduate level it's a very different situation. We have always, by design, recruited—well this is too strong a word—admitted international students. We really do not actively recruit at the international level, and we get all of the top quality international applicants that we want to process just by students applying. I must say though, there is a network of former students from various countries, and perhaps they do some recruiting themselves, for example, we've had quite a pipeline from Brazil.

The SAU has attracted talented international students without intentionally recruiting them. Alumni play an important role in the recruitment of new students, but in the case of SAU, there are many more international applicants than can be accepted. This was also corroborated by the assistant director at IO, who explained that SAU cannot sustain the demand of international students trying to gain admission to the university.

The director was asked about the ways the School of Engineering supported international students, and whether international students' experiences were shared or taken into account. He replied,

One is accommodating students that don't come from an American background, and doing what it takes to help them reach their potential, and there's very much an attitude of doing that. There's a lot of help in writing, although we really try to

select students who are able to write, so that is important, although if somebody has special needs, that's not showing favoritism, that's just doing what you should do to help the student if he has the capability to reach that. It's everybody's business to do that. On the other hand, beyond discussing personal experiences, I would say I have no recollection whatsoever of structures within a course organizing an opportunity for students from international backgrounds to share about their experiences. It's a broadening perspective. In my mind, and I think my colleague's minds also, we would be really hard pressed to do that because we have so much technical content that we need to cover. Perhaps if someone was teaching a course in entrepreneurship or something like that which tends to have much more of a cultural component to it, then it might be appropriate, but we don't teach anything like that. It's all technical.

International students at SAU had presumably met admission requirements, including proficiency in English. They have proven to be amongst the top-qualified students in the competition for a place at SAU. However, SAU offers services to help international students in their academic writing and also offers accommodation for students with disabilities. According to the director's account, the pressure to cover content and to provide adequate information is one of the obstacles to include a personal, cultural, or social perspective in their teaching.

Still, international graduate students receive support to get through their courses and to pass their qualification exams. However the interactions that occur in the lab are more culturally relevant, as the director of the school of Engineering explained,

Students come in and they take courses to get through, and we try to accommodate them if they're non-English or come from non-American cultural backgrounds, and that would mean getting through the PhD qualifying exams, ... but I would say that a lot of the accommodation and acculturation occurs in the research lab. For research students, that's where the real integration occurs, not so much in the classroom.

Graduate students in STEM courses spend a great part of their time in the laboratory conducting research. This requires a certain level of interaction with (domestic and foreign) student peers in the lab and with the advisor.

Interviews with SAU personnel revealed that the faculty and staff differ in their understanding of what internationalization is. For example, the director of the Biomedical Engineering department thought that internationalization was mainly relegated to study abroad opportunities available to students in the School of Engineering. One professor in Biomedical Engineering considered internationalization in terms of student associations on campus and to their intention to invite international scholars as guest speakers.

The Chair of the Aerospace Engineering asserted that there were no integrated internationalization strategies in place despite the fact that there is a SWB Ph.D. student in his department. The international office described internationalization in terms of described partnerships they are developing with some foreign countries and their study abroad and exchange programs. Finally, the BCC emphasized the support offered to Brazilian students and scholars. Moreover, BCC pointed out programs intended to promote Brazilian culture across campus.

The different concepts of what internationalization is as well as the lack of awareness of faculty and staff of practices or programs of internationalization makes it difficult to promote combined efforts to meet the needs of international students and to benefit from the international and cultural perspective they bring. It would be difficult to evaluate whether institutional goals such as the formation of a global citizen have been met. In addition, most of the attention given to strategies of internationalization center on domestic students, such as faculty-led international programs, study abroad, and the increase of international presence on campus by hiring international faculty.

Relationship among Goals and Strategies

The relationship among the goals of the SWB program, goals of the SWB students, and internationalization strategies implemented at SAU can be best understood by discussing separately the connection between the goals and strategies. First, this discussion addresses the relationship between SWB program goals and SAU internationalization strategies, followed by the analysis of the link between the goals of the program SWB and the goals of the SWB students. Finally, the relation between internationalization strategies and the goals of the SWB students is discussed.

The relationship between the goals of the SWB program and the internationalization strategies at SAU. The SWB program has two major goals. The first goal is aimed at placing students, scientists, and industry personnel from Brazil in international institutions of excellence. The second goal is to expose Brazilian students and scientists to highly competitive and entrepreneurial environments, with the hope of advancing scientific research and industry at home. The SWB program has greatly increased the number of Brazilian students and scholars now studying abroad at high

profile universities. At SAU alone, the number of Brazilian students increased from approximately 70 in 2010 to over 110 in 2013.

Internationalization at SAU was demonstrated through services provided by the IO which supported students' transition and integration to SAU. The BCC also offered orientation and support services to Brazilian students hoping to connect with SWB students, but with little success. Internationalization was also exemplified by partnerships between the School of Engineering and transnational high-tech organizations such as NASA and 3M. These partnerships are included as practices of internationalization because of their transnational nature that incorporates trends of the global market, which provide real world research problems for students and scholars in the School of Engineering. They also expose students to a highly competitive and entrepreneurial environment, according to the experiences of two students working with NASA and 3M. Examples and analyses of these experiences are described in the second section of this chapter.

Working in a competitive environment also is evidenced by the recognition of SAU as an internationally top-ranked university that provides a distinguished high-quality education. This reputation attracts high-caliber American and international scholars, as well as a large number of international students. As pointed out by the director of the Biomedical Engineering department, SAU does not need to recruit international students or faculty; rather SAU selects and admits the best students, and hires top-quality faculty. In summary, the Brazilian program has sought a competitive and entrepreneurial environment comprising high-quality teaching and learning, and advanced research, which has been found at SAU.

The relationship between the goals of the SWB program and the goals of the SWB students. The SWB program seeks to increase the presence of Brazilian students overseas. From 2011 to 2015, approximately 77,000 Brazilian students and scholars were sent to top-quality universities worldwide. According to students participating in this study, many of them would not have studied abroad if it not had been for the SWB program. The aspirations of many Brazilian students to study abroad came through due to the scholarship given through the program SWB.

A major objective of students participating in this study was to go abroad and learn English, but this presented a problem because admission in American universities often depended on demonstrating English proficiency. To overcome this problem, the SWB program supported SWB students to attend a semester's worth of ESL at the U.S. university. Taking ESL classes prior to academic courses was the essential importance success for both SWB program and for SWB students to meet their respective goals. Additionally, the lack of policy or strategies to accept courses taken abroad for credit does not reward students' achievements abroad and works against the advancement of scientific and technological knowledge sought by the program. Undergraduate students are in an ongoing struggle to have some of their courses accepted for credit at their home university. This difficulty did not seem to trouble graduate students similarly, however.

In summary, SWB students have asserted that the SWB program has made it possible for them to study abroad. The possibility to learn English in their first semester made it feasible for SWB students to meet the requirements for admittance at SAU. Students' goals not yet met are those related to employability. These findings are represented in Figure 4.1.

Relationship between SAU internationalization strategies and SWB students' goals.

Brazilian students in the SWB program wanted to have an international academic experience. Through IO, SAU offered SWB students services that facilitate their transition and interaction with their new university community. These services included ESL, cultural events, engaging with campus organizations, finding housing, and orientation programs. In addition to efforts of the IO, the BCC provided services aimed at facilitating the integration of Brazilian students and scholars to the host-university.

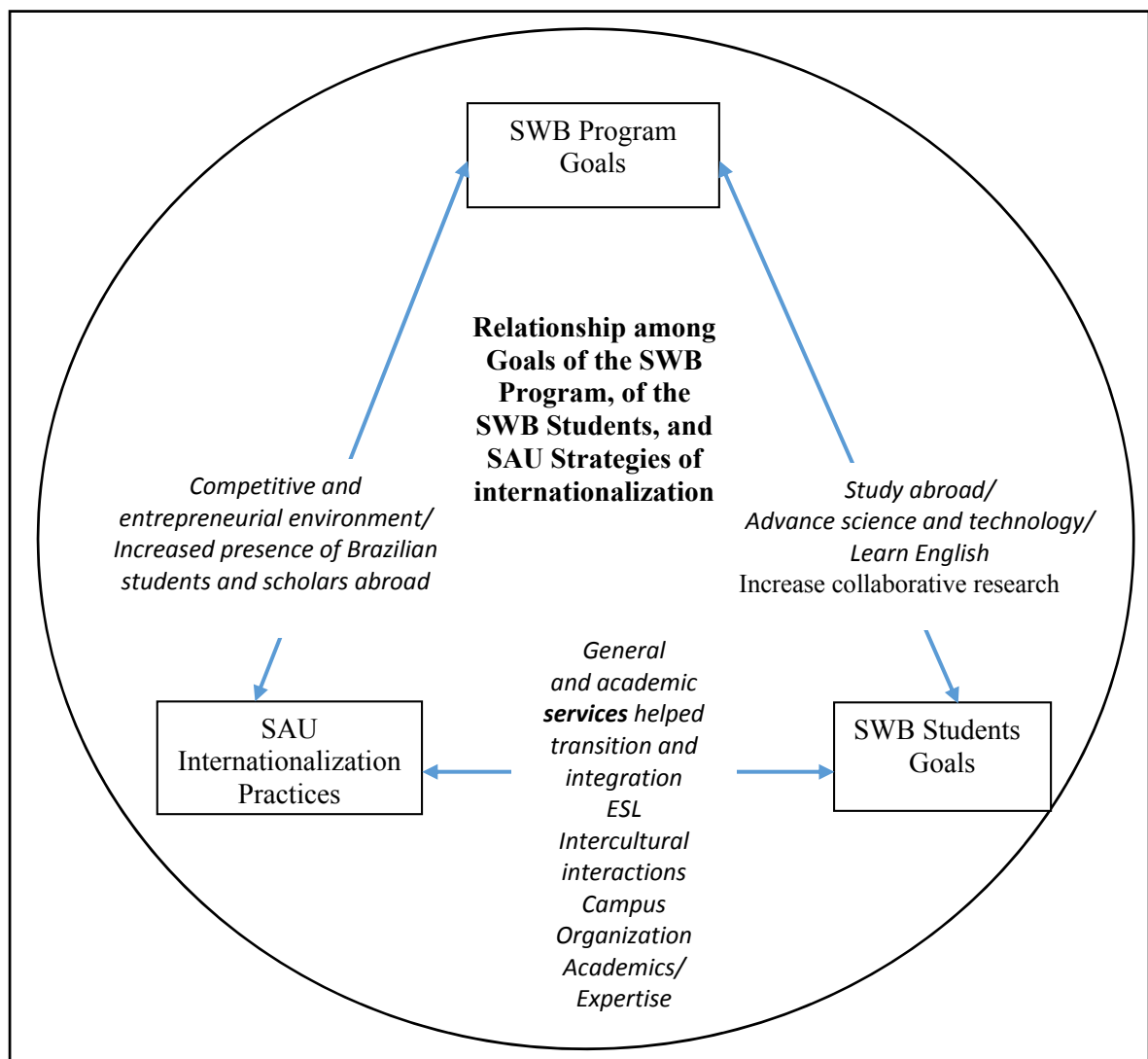


Figure 4.1 Relationship among Goals of the SWB Program, of the SWB Students, and SAU Strategies of internationalization. Adapted from Coryell (2013).

At the same time SWB students hoped to learn English and prepare for TOEFL, an English test required for international students to be admitted in any college or university in the United States. At SAU, SWB undergraduate students attended ESL classes in the first semester to enhance their language skills, prepared to take the TOEFL, and to meet all requirements for admittance. Graduate students needed to give proof of a certain level of English proficiency before admission to their respective programs, and they also benefit from English courses upon their arrival at the host-university.

SWB students aspired to develop skills that would help them compete globally. Proficiency in English is an essential requirement for this, as is the development of international intercultural skills which enable individuals to operate in cultural environments different from their own. The international office, through several services offered to international students, facilitated the transition and integration of SWB students into the host university community. Services include assistance with housing, health insurance, and tax forms, etc. The IO also organizes social events to promote integration with American and other international students.

SWB students wanted to improve their employment opportunities and develop skills to enable them to work at home and internationally. Goals related to employment have not been assessed because students are not yet on the job market. However, at SAU students had the chance to engage in academic and professional activities. For instance, T.A. positions gave graduate students opportunities to improve their communication and teaching skills. Partnerships with high-tech organizations such as NASA and 3M, allowed students to connect in a professional manner with international science organizations. These strategies combined have urged SWB students to develop skills that

are of high importance for employment. In addition, these experiences enhance students' curriculum, which is one of their goals.

SWB students wanted to learn from experts in their fields. Students admitted that an international experience in a top-ranked tier one university such as SAU gave them the opportunity to engage with professors who are leaders in their fields. SWB graduate students are working with faculty, some with international background, who are experts in the area of their research interests, which is allowing them to conduct high-quality research.

Although students wanted to study abroad and learn English, none mentioned they wanted to learn more of the American culture. Many students demonstrated a connection with campus organizations and familiarity with the culture, but this was not a primary goal.

In summary, SAU provided services that helped SWB students to meet their goals. At SAU, students had access to ESL courses, to partnerships with high-tech organizations, to support services (housing, help with taxes, tours), to social and cultural events on campus, to campus organizations, high quality teaching and research, to interaction with a large number of international students and scholars (Americans and from other nations), to advisors, and to the BCC, as demonstrated in Figure 4.1.

However, findings also indicated that SAU strategies of internationalization proved to be more oriented towards mobility programs that target domestic students. In addition, the lack of an integrated strategy to implement internationalization at SAU at the intuitional level does not promote a common vision of what internationalization is and what practices should be implemented in all units to accomplish common goals. For

instance, what practices should be implemented to increase involvement of international students on campus or in the internationalization of the curriculum. How to improve cross-cultural training and to adapt services to meet the needs of international students, even though their major goals (related to improvement of academics and employability) were met.

Goals and Strategies: Demands of the Globalizing World

Goals of the Brazilian SWB program reveal its overarching objective of internationalization of the country's future scientists. The SWB program hopes to advance science and technology in Brazil, to increase the presence of Brazilian students and scholars abroad, and to promote international partnerships and collaborative research with distinguished research centers. The organizers feel the need to prepare Brazilians for the globalized world, to operate in different cultural environments and to compete globally. Aligned with SWB major goals, SAU aimed at preparing global citizens. SAU is a well-funded institution which promotes high quality teaching and cutting-edge research with top-quality scholars. Its academic and organizational structure make it possible for students to engage in programs and activities that have helped SWB students to meet their goals and the goals of the sending-institution.

For SWB students, their reason for going abroad is related to employment, to improve employment opportunities, to learn English, to enhance their scientific knowledge and skills, to be able to compete globally. In fact, the goals and strategies of internationalization at SAU are intertwined with those of the SWB program and its students. They all concurred that a paramount goal is to attend to the demands of the

globalized world and of the global market. The relationship among the goals and strategies in this study is represented in Figure 4.2.

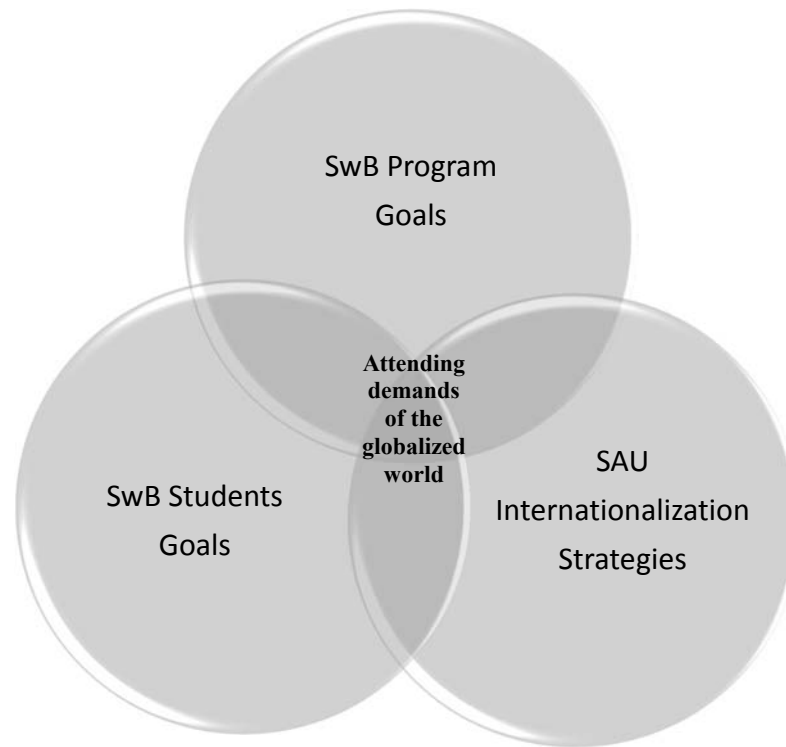


Figure 4.2 Relationship among Goals and Internationalization Strategies

SWB Students Talk of Internationalization: Ways They Experienced It

Information on strategies of internationalization in practice at SAU were obtained from the SAU website and from SAU personnel, based on their perceptions of what these practices are and are not. In this second part of this chapter, the findings are based on accounts of how SWB students experienced these strategies and how they impacted their learning. The research question that guided inquiries for this second part are, *How do Adult Brazilian SWB undergraduate and graduate students experience internationalization strategies in practice at a host-university? And, in what ways might these strategies impact SWB students' learning experiences while abroad?*

Findings for these questions emerged from a phenomenographic analysis of student accounts of their experiences at SAU. A phenomenographic methodological approach aims at describing the ways individuals experience a phenomenon, which in this study, concerns practices of internationalization. Student narratives led to formation of categories of description that represent their perspectives of their lived experiences.

Categories of Description: A Phenomenographic Approach

Phenomenographic research allows researchers to uncover experiences that were meaningful to the participants. The following categories represent the description of practices of internationalization students experienced and shared in the interviews. Knight's (2004, 2005) categories are used in this study as a reference to identify areas where SWB students experienced internationalization.

Knight's (2004, 2005) categorization of internationalization practices is comprised of types of internationalization, whether *at-home* or *cross-border*. Internationalization at home (IaH) concerns practices of internationalization that implement an international and intercultural perspective into the curriculum, research, and services at an institution. Cross border internationalization relates to study abroad and other mobility programs. In this study I focused on practices of IaH. Knight (2004, 2005) proposed five major components of IaH, which encompass *curriculum and program, teaching and learning, extracurricular activities, liaison with local cultural and ethnic groups, research and scholarly activities*. Still at the institutional level, Knight (2004, 2005) pointed out that strategies of internationalization can be put into practice through *governance, operations, services, and human resources*. These categories are described in chapter two.

From the findings, six categories of description emerged. These categories are descriptive of their experiences, although the categories may not represent the perspectives of other groups of international students. However, these categories may indicate areas where practices of internationalization are more evident and where they need to be strengthened.

Categories of Description: An Overview of the Findings

The categories offered involve the description and classification of participants' experiences, which results in categories that represent their perceptions of a phenomenon. These categories show what students have experienced at SAU and how they perceived their experiences. Each category consists of a set of related topics derived from student comments. For the purpose of organization, each component of each category is highlighted/sub-headed. Categories are represented in Tables 4.3.

Two types of categories of description resulted from the analysis of interview transcripts with SWB undergraduate and graduate students. The categories *coping with transition and integration abroad* and *enhancing expertise* refer to the direct participation in internationalization activities or programs. These categories relay perceptions of factors SWB students experienced that impacted their transitions and integration to SAU, such as ESL and English courses and other support services. The first category also includes SWB students' perceptions of factors that advanced their expertise in their field of study.

The second type of category represents the impact that practices of internationalization had on their learning. These categories are, improving employability,

learning and living with English, cultivating intercultural skills, and improving science and internationalization at home.

Table 4.3.

Categories of Description: SWB Students' Perceptions of their Experiences with Internationalization Strategies in Practice at the Host-University

Categories of description	Elements forming the category
Coping with Transition and Integration Abroad	SWB students' perceptions of factors that impacted (or not) their transition and integration to SAU: - ESL and English courses - Support services - Student orientation - Advisors - Brazilian Cultural Center - Campus organization - Student network
Enhancing Expertise	SWB students' perceptions of factors that promoted advancement in the academic development - Working with experts and international scholars - Conducting cutting-edge research - Publication in academic journals - Participation in seminars
Improving Employability	SWB students' perceptions of factors that improved employability - Collaboration with international organizations, in addition to the factors that contributed to their academic and intercultural development
Learning and Living with English	SWB students' perceptions of the implications of English proficiency and communication in their international experience
Cultivating Intercultural Skills	SWB students' perceptions of factors that influenced their development of intercultural skills
Improving Internationalization at Home	SWB students' intentions to implement practices of internationalization at their home-universities in Brazil

Coping with Transition and Integration Abroad

The category *coping with transition and integration abroad* comprises the experiences of the SWB with services offered at SAU that supported their transition and

integration in the host-university. Several services were provided by the international office (IO) and other units, such as the language department, the BCC, and a campus organization Bridges International. Some of the services the IO provided to international students included assistance with housing, health care, tax forms, student orientation, academic advising, and social events. The language department offered ESL and other English courses, and helped students take the TOEFL test that is required for admission. The Brazilian center arranged social and cultural events to welcome and connect Brazilian studying at SAU. Finally, the campus organization, Bridges, organized cultural and social events to help SWB students integrate into the American culture. I start the discussion of the following category with a quote from Olavo, a SWB undergraduate student,

I arrived in August. By December I was fine. I still [mentally] translated some [English] ... I was slow, but I was able to communicate. I knew nothing when I got here [in the U.S.]. I knew only the verb to be and only present tense. No past, no future tense. I was 'raw'. But everything worked out.

Olavo arrived in August 2013 and by December he felt he was able to communicate well. As with the other SWB undergraduate students, Olavo attended ESL classes to prepare for the academic year. In the ESL course, students reported having a variety of activities that helped them improve their communication. Olavo explained that anyone (American) could be a volunteer and work in the ESL program as a conversation partner. This involved sitting in a circle at a table and engaging in conversations with international students. These types of activities forced students to engage in conversation and that helped Olavo to learn quickly.

ESL and English courses. Both graduate and undergraduate students attended English courses at SAU. Even though graduate students have to provide proof of English proficiency before starting their program, some needed to further enhance their ability to communicate. This was the case of Raul, who said,

I actually took this English as a Second Language. ... I took it in my second semester. They offered a course called advanced oral communication. They offer basic to advanced English. They also offer writing. I chose that course because it was the most advanced for communication. But it really did not help me. I think it helps, but ... there were some people ... with more basic [English] and who were more difficult to understand. ... But I think that it is a really good program that especially undergrad can benefit from.

For Raul, the communication course he took did not help him to advance his ability to communicate as much as he expected. In general, SWB students agreed that ESL courses helped them to improve their communication skills. ESL and other language courses were essential to internationalization (Knight, 2004, 2005) because they helped improve communication skills and consequently their integration into the university community (students, staff, and faculty), and in their academic success.

Support services. SWB students reported that their transition and integration to the SAU community was facilitated by several services the IO offered such as the welcome reception for international students and tours around the city. For Jackson, these activities facilitated interaction with other students, he said,

In the first month, the international office was very welcoming. They prepared receptions, trips, and visits to parks. In the beginning [of the semester] we met

people and started to familiarize. ... After that, they [the IO] prepared other activities. Then I had a meeting with a group of students-- just with sponsored students—for us [to] know each other. Later, they offered an opportunity for us to go to a house of an American family at Thanksgiving. This event is done through the International Office, with American families that are interested. Later, I came back for Christmas with the same family. I think the international office helped me a lot.

IO created opportunities for interaction between SWB and other students through visits to the city and social events. Integration to the American culture was facilitated through holiday celebrations with American families. In addition to social events, IO offered guidance over a range of other issues, such as payment of tuition and acquisition of health insurance. Raul described how IO helped him,

They offered an orientation that helped you to fill out the tax form. The services they offer for things that we are not familiar with. For example my visa is a J-1 and they changed the requirements. I needed a new health insurance plan and they needed to check the insurance plan, they needed to check my form of payment for tuition. They figured everything out, I only had to go in to sign a few things. The international office has to make the payments to SAU before they receive the money from the Science without Borders and TA work. So they resolved everything. I go on the website and everything is zeroed out. These services helped a lot, so I don't have to worry about these things

Raul's account indicated that general services offered for international students were of great assistance. Services are important component of internationalization that ease the transition to new academic and cultural settings (Knight 2004, 2005).

Student orientation. Along with general services, students reported that orientations provided at the beginning and at later stages of the exchange program were very helpful. Victor commented, "I attended some of the orientations offered by IO and by the department. We get a lot of things from IO and from the program, and this is beneficial." Additionally, graduate students received orientation for the teaching assistant (T.A.) position at the beginning of the semester. Luciano reported, "It [training] was just informing us about the situations [we may encounter] as a TA and possible outcomes. They alerted us about language and communication, issues and that you [as a TA] need to be tolerant." Orientation for T.As included cross-cultural issues, such as problems with communication that students may encounter when assisting their professors.

Advisors. Students founded that international student advisors played a central role in guiding them throughout the program and organizing events to promote integration with domestic and international students. However, the importance of undergraduate advising can be also seen from cases where it failed. Both undergraduate students in this study said they received poor advising when it came to opportunities for internships.

SWB undergraduate students are encouraged to enter an internship in the summer semester which is their last semester abroad, if they find a professor who is willing to instruct them. While Olavo and Maria did not have the opportunity to intern, many of the other students did. Both Olavo and Maria felt they missed the chance for an internship

due to poor advising at SAU. Olavo stated, “I realized that she [academic advisor] did not know enough about the SWB program.” Olavo believed there was a lack of understanding about the SWB program, which made it difficult to help SWB undergraduate students to obtain an internship. Maria shared the same opinion, “she [academic advisor] misguided us.” Maria and Olavo felt they were not able to take advantage of all the possibilities the program provides to students.

Olavo also felt that advisors could have had a more personal approach with SWB students, as he explained,

But I did not feel that I had a personal interaction with my advisor; this was missing. I know students are supposed to be active and seek help from their advisors. But there were so many students from the SWB program that I think they should have given us more attention. ... They could have asked how the students were doing. I think this was missing, asking us if we needed something. I know that advisors work with many other people, so they can't do it all the time.

During the semester I did not get an email asking whether or not I needed anything. When I had to do something required by the program I contacted them.

Olavo felt that a close and sensitive advising for SWB students was lacking. He thought it was important to be contacted not solely regarding academic issues but also about his general well-being. The central issue here is their perceived sense of value to the University and how services might be adapted to meet their needs.

Brazilian Cultural Center. Support to SWB students was also available from the BCC, but often, students did not participate in the events promoted by the center. Many of the students recalled having received an email informing them about a breakfast to

welcome Brazilian students. The breakfast event took place in fall of 2014. According to the BCC coordinator, it was very frustrating because only three students showed up. “I sent emails and invited them,” explained the coordinator. In interviews with students, students noted that they had heard about the BCC and received their emails, but they were not able to attend their events. Luciano talked about his absence “I couldn’t attend any of their events because I had classes.” The reason here was a conflict with classes.

When SWB students were asked about the orientation or other activities offered by the Brazilian Center, they could not promptly remember or could not remember at all. Victor said, “the only thing I remember about the Brazilian Cultural Center is the breakfast.” However, Victor remembered having received a recent email, “I recently received an email from them. I don’t remember what it was about. I don’t always receive emails from them. I received the one about the breakfast and another one recently.” Even though Brazilian students received emails from the BCC advertising their events, SWB students seemed unable or even not interested in connecting with the Center. These SWB students’ perceptions indicated that they did not seek the BCC for any kind of support or networking. They felt that what was offered was either not useful or scheduled at times when students were attending class.

Campus organization. According to accounts of SWB students, the campus organization *Bridges* was particularly helpful to their integration into the new culture and in enjoying their time in the United States. Bridges played an important role helping students to connect with the local community and becoming more familiar with the American culture. Many students reported that the most meaningful experiences they had

were during events promoted by Bridges. For instance, Maria talked about how Bridges helped her feel welcomed and connect with American and international students,

These events helped me to meet many international and American students. They also helped me to get to know more about the American culture. For instance, getting to know which holidays are more important to them [Americans], such as Thanksgiving, and the food they eat on these occasions ... Anyway, in a very friendly manner they helped me to feel at home. Sometimes we had a potluck dinner, which introduced us to the culture and to typical American dishes.

The Bridges organization allowed SWB students to visit American homes and join in for celebrations. In these socials gatherings, Maria felt a sense of belonging, she felt at home. Bridges also organized a four-day trip to the Bahamas where students interacted with American and international students. Jackson concurred saying that Bridges “helps a lot” in their cross-cultural interaction with the university community.

Student network. Among SWB Brazilians students there was a network of support that came through social media, especially through Facebook. Luciano explained,

There is a group on Facebook that all of the students from Science Without Borders [program] who are coming to the United States this year [can join]. 1 year before applying to come here, we gave each other information through each stage.

This Facebook support group helped to facilitate the transition and adjustment of SWB newcomers. Victor experienced that firsthand,

There are a lot of Brazilians here doing their doctorate, and they are all very receptive. The moment you tell them you’re coming they get very excited. A

Brazilian couple offered to come pick me up at the airport, and I stayed at their house. They are also doing their doctorate here in the same department, and I stayed at their house for a week before my apartment was cleared for me to move in.

Social networking sites facilitated connection and communication between SWB students. They formed an organization that provided new SWB students with knowledge and a strong support network. Virtual organizations such as these were important because of their shared language and cultural identity and how they foster a sense of belonging.

Enhancing Expertise

Another category that reflects student perceptions of internationalization is “improving expertise.” SWB students felt they obtained a high-quality education at SAU. The sense of quality was based on their ability to work with experts in their field of study, to participation in cutting-edge research, to better prospects for publication in prestigious academic journals, to participation in seminars, and, finally, to engage in research collaborations with transnational organizations such as NASA and 3M. In discussing this with Raul, a biology Ph.D. student, he commented,

It was the first time that I realized I was here [at SAU] and that it would be good for me. I came here to work with the person that wrote most of the articles and books I used in Brazil. I think it was the second week of class when I attended a lecture with the professor of behavior, Professor Johnson, who is an amazing guy. I used his books [in college], and always kept up with his work. It was an amazing lecture. We were using as the text a book he had just published. I left the lecture with the book. As I was entering the department holding his book, Professor

Murphy one of the oldest professors here in the department was leaving. He is in the area of ecology and evolution one of the people that pioneered the field. He is like the father of evolutionary ecology. I was holding the book of the professor whose class I had just left, and I was crossing paths with the guy who started it all, and going to the lab of the guy who elaborated the theory for the area in which I work. Across from the hall there was a shelf with books from Professor Taylor who is an expert on fluorogenics, a topic that I worked on. ... It was that moment when it clicked and I realized ‘This is what I wanted.’

Raul said he came to realize that he was learning among the best scholars in his field, and it was they who would have great influence on his education and research projects.

Raul’s response revealed that SAU has a body of high-caliber scholars who are renowned and whose work has a national and international reach, qualities that have attracted Raul to study at SAU.

Working with experts and international scholars. Internationally top-ranked institutions attract both domestic (American) and international experts. The expertise they possess becomes vital for development of advanced research and the advance of science and technology. Indeed, SWB students consistently mentioned their desire to study abroad at a high-ranking university in order to work with experts in their area of study. Leading universities such as SAU have a large number of international scholars that also impacted SWB students’ experience. During his first semester in the Aerospace Engineering department, Luciano had foreign professors for all his classes. He commented, “One thing I’ve noticed is that none of the professors were Americans. One is Indian, another is Greek, and the third is from Vietnam. It already shows the level of

internationalization of the University.” Luciano is learning from professors of different nationalities, and he acknowledges that this is a trend of internationalization.

Raul’s advisor collaborates with researchers from France and Canada, which adds an international dimension to his research activities. Jackson’s advisor is from Indonesia, and as he stated, “He got his B.A. in Indonesia, and received his Master and Ph.D. degrees from SAU.” This level of exposure to scholars from a wide range of nationalities is an important factor in the implementation of internationalization. International scholars and students bring different cultural and academic perspectives to the institution and can contribute to cross-cultural interactions in the university.

Conducting cutting-edge research. SWB graduate students valued the opportunity to conduct cutting-edge research in their field of expertise. Access to equipment and technology available at SAU was essential to conducting cutting-edge research in their areas of interest. SWB students consistently compared the opportunities available at their home-universities to those at SAU.

At SAU, Raul felt that he could advance his research in his area, ecology, as he explained,

Here [at SAU] they force you to think more about the theory before anything else. While in Brazil we are doing a lot of natural history, which is important, but it won’t help you advance the theoretical area. So, there are a lot of people focused on doing this. There [in Brazil], we are detecting the standards of what we observe in the nature. ... They [researchers in the U.S.] have already detected the standards, they have already made theories, and they are testing and manipulating

things experimentally. While there [in Brazil] this part is still very slow due to many limitations, such as lack of resources and staff.

Raul believed that there is a superior quality to the graduate education in the United States. He indicated the challenges he faced conducting research in Brazil such as the lack of staff and resources. Raul emphasized that research in his area of ecology needs improvement. Similarly, Luciano perceived that he is improving his expertise developing cutting-edge research in aerospace engineering. Luciano talked about his experience at SAU,

We developed so many things. We developed a small mother board for drones this size (student demonstrated with his hands the size of the board) ... it is a processor that holds the intelligence. Basically, we can place it in any drone. It is necessary to change one thing or another when you change from one helicopter to another such as, mass, ... then one needs to place it there [in the drone].

Luciano is conducting research with drones, acquiring knowledge of how to build mother boards for drones and how to adjust them to different types of helicopters. Advanced research such as the one conducted by Luciano require access to cutting-edge technology and expensive equipment, which is available at SAU. Luciano commented on how research with drones in Brazil is more limited, “some of the equipment that is used in research with drones at SAU costs over 100,000 dollars, which makes it difficult when you think of doing this in Brazil.” Financial resources is a major factor that impedes research in Brazil and facilitates research in the United States.

Publication in academic journals. SWB graduate students perceived that publishing in highly ranked academic journals was very important, as Raul said,

“Because what moves everyone is publication.” Publishing articles and papers is one of the internationalization strategies that reflects academic productivity (Knight, 2004). Raul noted that it is difficult for Brazilian scholars to publish in good academic journals in his area,

When thinking about publishing, it is very difficult to find publications of Brazilian researchers in my area in good journals like the ones they publish in here [in the U.S.]. It is not that the Brazilian researchers in this area are not as good as the ones here, it is that there are still a lot of things that need to be done for them to reach the stage they [researchers in America] have reached here.

In Raul’s comparison of Brazilian and American scholars, he posited that Brazilian researchers are as good as the Americans, but there are advances to be made in the field to reach the same level of expertise as the American scholars. Raul shared a situation he had recently encountered with his colleagues from Brazil and with his peers in the United States,

I see this as a clear difference between here [in the U.S.] and Brazil. One of the journals here [in the U.S.] which most of the time is their [Americans] last choice, is the one that many researchers I have met in Brazil were happy to publish in. For example, there are people whose objective is to publish according to a journal’s impact factor, where a three or a four is okay with them. Here it is different, I even saw this as an example last week, some of my friends there [in Brazil] published in a journal here [in the U.S.], and they [Brazilians] were very happy, while here they [American peers] were testing something that went wrong and they got very bad result, and they [American peers] sent it to the same journal

as the people from Brazil who had been very successful. Here [in the U.S.] they [American peers] have higher goals. Here research has to be much better because they think a lot more before doing it.

Raul pointed out how important it is in academia to publish in journals with high impact factors, and how difficult that can be. Raul witnessed two research teams from different academic backgrounds trying to get their study published, one group was from SAU, a highly-ranked American institution, and another from Brazil. Raul stated that the Brazilian team was pleased they could publish their work in journal that had a low impact factor, while the SAU team would be disappointed if they had to resort to publishing their work in the same journal. Raul sees that his American peers had higher expectations and goals compared to the Brazilian team, but he was not clear about why the teams had different expectations. Raul emphasized that in the U.S. there is more preparation before researchers start a research project.

Participation in seminars. In addition to publications in academic journals, SWB graduate students appreciated the seminars in their colleges because they had opportunity to learn and to interact with leading scholars in their disciplines. Participation in seminars is a familiar activity to SWB students in their home universities in Brazil. Victor affirmed “In Brazil we always had that as well.” However, the incidence of these lectures and seminars is higher at SAU. Scholars from inside the United States and international visiting scholars are invited to speak and to spend a few days interacting with faculty and graduate students at SAU. For instance, Raul explained that there are four seminars per week offered by his program and by the department that are meant for all students, and others that are offered solely for an internal group. In Raul’s own words,

There are various types [of seminars]. There are department seminars where each lab invites one or two researchers. They come and spend about 2 or 3 days visiting the university and during this time you can sign up to speak with these researchers for half an hour or one hour. You put your name on the list and he [the visiting speaker] will be available to talk to both students and professors in addition to the lecture he gives. Once a week ... there is the seminar for the program, there are researchers and speakers from both SAU and other institutions. They give a talk about the research they're doing at SAU or a new work that has come out. This is more for the program. So, you end up knowing more of what they're doing and sometimes someone comes that also stays a few days to talk to the students.

Raul's college provided several seminars per week where students had the chance to interact with prestigious scholars and discuss the latest research in the field. Students are encouraged to make an appointment to individually talk with guest speakers, which included going out for lunch or dinner with speakers, with expenses being paid by the department. Raul informed how students engaged in inviting scholars and in interacting with them,

The students also get to participate. They have a vote in the beginning of each year. Each professor can bring one, and then students have a vote, because there is a lecture where the students can bring in a speaker. If there is a speaker from Europe that interests many of the students, they can write to the department, and the department may bring that person in for a seminar. The person stays here 2 or

3 days, gives a lecture and talks to the students. It's really cool, we take them out to lunch and dinner and the department pays for everything.

Thus, participation in seminars and lectures was more than mere “sit-and-get” attendance. Students were involved with the planning of the event, they participated in the seminar, they interacted individually with the speaker, and socialized with them by taking the speakers out for lunch or dinner. Interaction with guest speakers either domestic (Americans) or foreign gives opportunities for students to network with scholars and develop ongoing relationships. Consequently, participation in seminars at SAU creates opportunities for students to develop academic, intercultural communication, and social skills.

Improving Employability

Graduate students perceived that at SAU they discovered possible career paths that may not exist, may be unknown or scarce in their home country. These newly discovered possibilities are, in some cases, more aligned with students' professional aspirations. At SAU, graduate students had access to advanced research projects at the university with transnational organizations (such as NASA and 3M). These helped students gain a professional perspective. Research collaborations with other international partners constitute a significant strategy of internationalization (Knight, 2004, 2005). I addressed the category “improving employability” starting with a comment from Luciano, a Ph.D. student in the aerospace engineering program,

In Brazil, we see a PhD [degree] as something for professorship, but I didn't want to be a professor in a university, In Brazil, it [professorship] is basically the career of a PhD. However, when I was in Europe, I saw that their PhD's do not work

only as professors, but some only work as researchers. I was in the biggest institute of particle physics in the world, and I felt that life there was pretty nice. I realized this was the type of organization I wanted to work in. So I knew that I had to get a PhD to work in a good research place. I thought such a research institute was very nice, especially because I've always wanted to work for an organization [and not in a university].

Luciano changed his mind and decided to pursue a Ph.D. degree because of his experience at a cutting-edge research institution during his first exchange program. He understood that abroad he would have other career opportunities not found in Brazil. Thus a broader professional or academic perspective came about because of students' international educational experience.

Collaboration with international organizations. At SAU, Luciano is in a department involved in research with NASA, as he said, "I've already had meetings with two men from NASA the other day. They came from Houston telling us that they needed a student researching a particular topic." This is an opportunity to engage in research with a transnational organization and conduct advanced research. Jackson too felt it was important to work with his research team in partnership with a company such as 3M, developing products they need, especially because Jackson does not want to work in a university. Jackson added,

Another [important] experience I think is working with companies (in the industry). Even though it is not much, we have a partnership with them [3M] that we did not have before, so that is a positive thing for me. ... It made a big difference to me. This was our [research team] first contact outside [the

university], which I have never had before. The University there [in Brazil] is good, but isn't in the area that I intended to work.

Access to theoretical and practical training opened up new possibilities for career paths that would likely not have been known had it not been for the partnership with a company such as 3M. Due to this research project, Jackson is working collaboratively with his colleagues, acquiring expertise, and gaining professional experience.

Learning and Living with English

A major factor determining SWB students' success in their international experience is English proficiency. According to information provided by the international student advisor interviewed, Brazilian students from the SWB program have demonstrated limited ability to communicate in English, when compared to other international students at SAU. Lack of English proficiency has caused students to limit their participation in class discussions, in talking to other students, affecting their academic performance and social integration. However, participation in English courses and interaction with other students both domestic (Americans) and Internationals, has helped them to improve communication. I begin to address students' perspectives of their experiences in communicating in English with a statement from Victor, a Ph.D. student in the biology department,

First semester was very rough. The professors here are Native so they speak very fast. I recorded the first few classes to listen to them again at home, so I could keep up with the pace. [During class] I would look at the slides but if he [the professor] tried to extrapolate I would get lost. If I blinked an eye I would get lost. But this got better with time. The first few exams I took I did well because they

required short answers. But the test was divided in two parts and administered by two professors. One of them wanted us to give long answers. So there wasn't one question where I got all the points. On these tests I did not do well, but because I did well on the first few tests, it [my grades] balanced out. The other part was multiple choice questions, and I did well on those because I did not need to write.

Lack of English proficiency added more stress to Victor's academic experience, it affected his academic performance, and required extra work to catch up on classes, especially during his first semester. Gradually, Victor felt he had improved his knowledge of English and his ability to communicate.

Victor shared another example where poor English proficiency made participation in academic activities very challenging for him. He was encouraged by one of his committee members to sign up for a conversation with a guest speaker. Initially, Victor was reluctant because of his limited ability to communicate, as he is only gradually improving his English skills. Victor gave more information about his interaction with the speaker,

I talked with her [the speaker] in the beginning, when it was only she and me. I felt that it was easy for me to talk with one person, but when a third person joined the conversation and this third person expressed her point of view or redirected the conversation to another topic, it became more difficult for me to interact. I just kept my opinions to myself. I just listened and tried to understand what people were saying. I can't express my point of view yet. In the beginning when it was only the two of us it was nice ... The first ten minutes were great and the rest of

the time, fifty minutes, I just listened. But it was still nice because I met people from her lab... I went and it was great.

A committee member played an important role in encouraging Victor to sign up for a conversation with a guest speaker. Professors are not always sensitive to the challenges faced by international students with limited English. This situation required Victor to overcome personal barriers, such as fear to communicate in English. Nonetheless, Victor engaged in a conversation with the speaker when it was only the two of them, but did not feel confident to express his ideas in a group of people. Occasions such as this, give students a chance to improve communications skills, to gain expert knowledge, to network with scholars and peers. Victor perceived his experience as successful, perhaps because of the steps he took in overcoming personal barriers. Positive experiences boost student confidence, but negative experiences may hinder student self-esteem and restrain further interactions. The achievement of such skills are some of the outcomes sought by comprehensive internationalization.

For SWB students, good communication and integration go hand in hand. The more difficult it is to communicate in English, the harder it is to integrate with peers. For instance, Luciano had no problem to adjust to the new cultural environment. He attributed his successful adjustment into the SAU community to his personality and his aptitude to communicate in English,

I can easily talk to people, and already coming here with good English facilitated things for me. It's completely different from my experience in France, because I didn't speak French. Not that I didn't want to go with them, but whenever I went out with someone, they started to talk and I had no idea what they were talking

about, so it wasn't very cool. Yesterday I was at a MLK party at the house of some Americans. So at night we were playing around and I even learned a little about the civil rights and about their culture.

Luciano compared his experience in France, where he spoke no French, and in the United States being now fluent in English. No language proficiency hinders student integration and leads to isolation. Ability to communicate well in English facilitated Luciano's relationship with his peers in academic and social settings. It also expanded his knowledge of the American culture.

Cultivating Intercultural Skills

The ability to adapt and adjust to new cultural and linguistic environments involves intercultural competence, which is an outcome of internationalization efforts (Deardorff, 2006; Knight, 1997). SAU is an institution with a large number of faculty and students of different ethnicities. SWB students realized that at SAU, they were challenged to develop intercultural skills to interact with peers and faculty. Some intercultural interactions took place in academic and social settings, but laboratory was where most acculturation occurred. For some SWB students, integration with other students was easy and pleasant, while for others it was challenging. SWB students found SAU to be a more competitive environment, although with different perceptions of competitiveness. Victor is a graduate student who has been deeply affected in this transition phase. He came from a small city in Brazil, and it is his first time overseas. I introduced the category *cultivating intercultural skills* with one quote from him,

Having to deal with a different culture was difficult. In the beginning I thought that the Victor who lived in Brazil stayed behind and that I was a different person

here. I did not know how to act in public, how to greet people, I had to reinvent myself. In Brazil, Victor was a partier. I would plan parties and invite people to go out. Here I did not have the same initiative, and I still don't have it. Little by little you gain confidence, I have more affinity with Brazilians and Latinos. It [America] is a different culture, and I am having to adapt.

Victor shared how he felt in the early stages in the program. He struggled with his transition and integration into the new cultural environment. Victor found it hard to behave in the same manner he did with his friends in Brazil. He acknowledged the need to adapt to the new culture, and that this process takes time. However, integration to the university community cannot happen without intercultural interactions.

Maria said that she did not feel a strong cultural shock because the American culture is well known to Brazilians and it did not seem too different from Brazil. "I did not notice a huge cultural difference because we have a great influence from American culture in our lives, such as the music we listen to ... and the clothes we wear." Due to similarities and influence of the American culture in Brazil, there was not a huge cultural shock.

The benefits of intercultural interaction was identified by Jackson, who believed the opportunities he is having at SAU to connect with people from different cultural backgrounds is preparing him to work either in his home country or abroad. Jackson compared his experience at SAU to his previous international experience in Holland,

One important difference I think was the diversity of nationalities here [at SAU]. When I went to Holland, there were at most six different nationalities, but mostly there were a lot of Dutch people. Here it's not [the same]. In one of my classes

you find many different nationalities. I think that my experience at SAU has helped me to develop more intercultural skills than my previous experience [in Holland]. For example, Asians are way different from us [Westerners]. I have never had any contact with Asians before I came here. If one day I work in an Asian country, I think it'd be interesting, and I would already have a starting point to help in the interaction with them.

Jackson realized that in the United States he was exposed to a wider range of nationalities than in Holland, where he studied previously. He acknowledges that SAU offers an academic environment where he is able to develop intercultural skills, which he thought would be important for employability. Interacting with people from Asia gave him the chance to develop intercultural abilities that would be useful if he eventually works in China.

Intercultural learning opportunities for graduate students were also evidenced in the laboratory. The director in the School of Engineering interviewed in this study emphasized that it is in the lab where most of the acculturation of international students takes place because graduate students spend many hours conducting research in the laboratory. Victor agreed saying “I have more contact with people in my lab.” In the lab, students learn the norms, the appropriate ways of interacting and communicating. At SAU, SWB students felt welcome and supported. Victor said, “When I need help, people are always ready to help me.” Moreover, interactions among students in the lab often extended beyond academic settings. Victor informed, “They [lab peers] invited me to go out with them.” Socializing with peers generate opportunities of more integration with the group.

The ethnic diversity in the lab group offered Victor a great international environment. Victor reported,

The end of year we [people in the lab] went out. And the coolest part was everyone was from a different place. There were people from Japan and Vietnam, and there isn't any other way of communicating other than in English.

By interacting with a variety of international colleagues, students are forced to relate and to communicate across cultures. Students improve their social lives and their proficiency in English at the same time. The participants in this study believed that SAU, as a leading university, attracts a large number of international students and that favors intercultural interactions with a broad range of nationalities.

Students thought that at SAU, they were exposed to a more competitive environment. Victor stated, "I think we have a more competitive environment here [at SAU]." Students felt challenged to be more independent and to solve problems by themselves. One student associated competitiveness with a less collaborative approach to research. Victor gave an account of his experience with different collaborative research projects, comparing his experience at SAU to that in Brazil,

Here, what I see is that people have their own research projects. If you need help, they help you, but everyone is focused on their own work. Something I did not see here are collaborative research projects. Sometimes you have a big research project where several students are involved, this is my case here, but each of us has a specific topic to work on. In Brazil we have something similar called thematic research projects, which involved several smaller projects which are components of a larger project. There [in Brazil], each of us works on a specific

topic, but at some point our work converges, and from then on we work together in groups. We develop some analysis together. Here, I do not see this happening. People work individually from the beginning [to the end]. ... Here [at SAU] I need their expertise to develop my part on the project, because nobody works with something related specifically to my project. In this sense I think they are more independent here. Like, in my case, in the beginning I needed help to know how some of the equipment worked. They taught me how to use the equipment and now I am not there with them doing the same experiments anymore. I feel as time goes by I become more independent.

At the beginning of the course, Victor relied on his peers in the lab to teach him how to use the equipment he needed to conduct his research project. Lab peers were very helpful and gave him support when needed. Yet, there are cultural differences regarding research collaboration when he compared his experience between Brazil and United States. Victor believed that Brazilian researchers work together more closely than Americans do. However, a major outcome is the skill this SWB student is developing as result of interactions with peers both—Americans and internationals. HE is becoming more autonomous, more independent in conducting research. In other words, he is learning to adjust to an international and competitive environment, which is critical for further research collaboration he eventually wants to develop when returning to Brazil. Such skill is crucial for implementation of internationalization in institutions of HE in Brazil, in combination and expertise and English proficiency.

SWB students perceived that at SAU they encountered a more competitive environment. Raul believed that Americans are more competitive because they are independent and they want to find things out on their own. Raul explained,

I expected them to be this way. I expected them to be more focused, more competitive. They help you if you need help, but they hardly ever seek help when they need it because they like to figure things out on their own. If you need them, they are friendly.

Raul observed that American peers were very helpful and supportive when they were asked for help. It is likely that what students perceive as competition reflects cultural differences. Another view of competition was shared by Luciano. He said that for him, competition does not mean diminishing others, but competing by being outstanding, by one being noticed for his own achievements.

In my case, I also want to do things well. I want to get good grades. I want my advisor to notice that I am doing well. I don't want to compete with people in order to show that I am better than the other [peers]. It doesn't mean that I want 'to leave them behind', but I want to show how valuable I am and be recognized. Sometimes, competition involves these issues.

In that sense, competition spurs students to work harder and to pursue excellence.

Adjustment to this new cultural academic environment at SAU requires a new set of skills such as autonomy and self-directed learning. Moreover, competition is seen by Raul as promoting advances in research, "And I don't know if it is because there are so many more people researching in a given area, but there is much more competition, so each time your work has to be much better and go much further." Competition is

perceived by SWB students in different ways, as a cultural trait (Americans are more focused and solving problems on their own) being outstanding (showing one's qualities), and as advancing research (research is better, goes further). Despite the different perspectives, adjusting to a more competitive setting involved the ability to adjust to a new cultural environment and different learning styles, which are components of intercultural competence (Deardorff, 2006).

Improving Science and Internationalization at Home

SAU is a place with intensive flow of international scholars and students. SWB students formed a network of peers and scholars (professors, advisors, guest speakers) with whom they connected. As graduate students, they were immersed in academic life and learned from advisors, faculty and peers, working collaboratively. Most of the participants in this study plan to return home and work, but their goal is to put into practice in their home-universities in Brazil what they learned at SAU. Their intention is to engage in collaborative research with the colleagues and faculty they worked with at SAU. In fact, these practices of STEM research and internationalization that they experienced at SAU will most likely be replicated at home. Having as a model strategies they learned at SAU elevates the importance of the practices of internationalization they experienced there. The following quote is from Victor who shared what his aspirations upon his returning home,

Regarding the international context, I envision that I would form a research group and one day I would send students abroad. The network I am forming here with people, in particular with postdoc and doctoral students in my lab and in the

classes I am taking, would be important for the students that I would advise in the future.

Victor intends to return to Brazil and seek a faculty position, where he would have his own lab, conduct research and engage in collaborative research with peers and scholars that he worked with at SAU. In addition to collaborative research projects, Victor intends to send his students abroad. Collaborative research with international partners are internationalization strategies that establish innovative alliances between research teams (Knight, 2004, 2005).

Similarly, Raul plans to return and to engage in collaborative research projects with people at SAU,

Going back to Brazil, I want to conduct research ... but I will likely be a professor as well, because research possibilities there are limited. Here in the USA and some other countries, there are some places where you can only do research. ... Well, the idea is to have my own laboratory and develop research in areas of my own interest ... and to expand. This approach [to research] I'm learning here is something here that isn't in Brazil, because it's difficult, you need a strong [lab] structure like the one we have here. In Brazil there is a lack of that [well-funded structure] because it's too expensive, but the idea is to have my own laboratory and to continue collaborating with people here [in the U.S.].

Academic work in Brazil encompasses challenges such as lack of resources and appropriate facilities. Raul recognized the limitations and implications for his career after returning to Brazil. He wants to conduct research, so a professorship will be the most likely option. While studying in the U.S. he became aware of other career paths available

abroad, but the participants in this study acknowledge these are limited or nonexistent in Brazil. Having SWB students returning to Brazil and eventually implementing internationalization practices could result in significant advancement in international partnerships for Brazilian IHEs, which is a major goal for the SWB program.

Summary of the Findings

The context in which this study was conducted is critical for understanding the findings. As Barnard et al. (1999) stated, “the phenomenon is delimited and related to its context” (p. 216). This means that the experiences of students in the SWB program in other contexts may differ from the experiences of SWB students at SAU. Located in the Southwest part of the United States, SAU is a top-ranked highly ranked institution of HE with a large flux of international scholars and students. The majority of the participants in this study were taking biology, engineering, and technology courses, which are the areas of interest to the SWB program. There were two undergraduate and four graduate students with ages ranging from 21 to 25.

The findings did not reveal a coordinated strategy to implement internationalization across campus, but despite that, the goals of the SWB program were met as were those of the SWB students. The SWB program increased the presence of students and scientists from Brazil in an international institution of excellence abroad. The training of Brazilian students was advanced through the access SWB students had to high-caliber faculty, advanced technology and sophisticated equipment that facilitated cutting-edge research. The advanced training of SWB students complements the SWB program goal of advancing science and technology in Brazil.

SWB students' goals were oriented toward success in academics and employability. Conducting research at SAU provided SWB students access to technology and resources not readily available in Brazil. Moreover, working with international or transnational companies gave SWB students the real-world professional experience they sought. These factors taken together helped this study's participants accomplish their objectives.

Due to the large number of international scholars and students, SWB students interacted with people of many different nationalities both in the classroom and in the laboratory. Students perceived they were in a more competitive environment, even though the perceptions of competition differed across participants. In this environment, SWB graduate students learned to adapt to the academic and cultural norms and become more independent in conducting research (Deardorff, 2006). Ultimately, autonomy is a critical and desirable outcome for success in research and the development of future research collaborations (Glover, Law, & Youngman, 2002; Martin, West, & Bill, 2008). These factors taken together may determine the success of another goal of the SWB program which is to implement internationalization in Brazil. There was a lack of a unified understanding about what internationalization meant to SAU personnel. Typically SAU faculty thought of internationalization in terms of study abroad and other mobility programs.

Programs aimed at increasing the involvement of international students in teaching and learning were also not identified. Science and engineering courses generally placed the greatest value and emphasis on course content. Even so, access to rigorous and

advanced courses was in line with the goals of the SWB program and of the SWB students.

There seemed little in SWB program aimed at forming global citizens, although an international experience may enhance global perspectives. However, this was not noticed as a deficit by SWB students. The impact of practices of internationalization on SWB students has implications far beyond their learning at SAU because students tend to replicate models they experienced in their international education. At SAU, SWB students experienced a wide range of internationalization practices that influenced their learning, from support services to cultural events. These experiences improved academic and intercultural dimensions, and gave them a reference of practices that if adopted in their home universities can advance internationalization in Brazil.

CHAPTER V

DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter discusses the findings, presented in chapter four, in light of the original research questions and how the findings are aligned to the conceptual framework presented in chapter three. This chapter also discusses the implications and limitations of the study as well suggesting recommendations for future research.

Overview of the Study

Internationalization of higher education (HE) has become more of a requirement than an option for universities and colleges. IHEs are tasked to prepare students as citizens of the globalized world. This requires they adjust to different cultural settings and to competition in the global market (ACE, 2011). Internationalization of higher education is “the process of integrating an international or intercultural dimension into the teaching, research and service functions of the institution”; it refers to the policies and practices implemented by the academic system and institutions to abide with the trends of global society (Knight, 2004, p.12).

In an effort to internationalize their own HE, the Brazilian government has invested heavily in sending students to study abroad through the Science Without Borders program. This has led to a relatively large number of Brazilian students studying in prestigious institutions worldwide, and in particular, at U.S. universities. At present, there is little literature regarding the experiences of these students in their studies abroad. This study sought to examine the relationship among the goals of the SWB program, of the SWB undergraduate and graduate students, and the internationalization strategies in practice at the host university.

Coryell, et al. (2012) emphasized that there is a need to investigate the ways internationalization “should ultimately impact student learning within an institution” (p. 75). This study, in part, is an effort to meet that need. It is focused on the experiences of SWB students studying at SAU in terms of the practices of internationalization implemented on that campus, how students experienced these efforts, and how these experiences impacted the learning and future plans of SWB students.

A few previous studies have included Brazilian students as participants when investigating perceptions of international students on internationalization (Magyar & Robison-Pant, 2011; Szeleyi, 2006; Trice & Yoo, 2007). This study enhances our understanding of the perspectives and experiences of undergraduate and graduate Brazilian students with regard to practices of internationalization at their host-university. Along with Brazilian students’ perceptions of internationalization, this study examined how students viewed the SWB program and the support and challenges they encountered while in the program.

The methodological approach for this study was presented in chapter three. It was pointed out that the study was framed through an interpretivist paradigm. Interpretivism aims to capture the meaning and interpretations that people subjectively attribute to a phenomenon (Leitch et al., 2009), which in this study are the SAU’s strategies of internationalization in practice.

The phenomenographic methodology focused on the ways students perceived their experiences, which, in this study, concerned how SWB students experienced the practices of internationalization in practice at SAU. In a phenomenographic approach, the results of the study are the categories of description (Larsson & Holmstrom, 2007). In

some phenomenographic studies, only the categories are presented as the results of the study (Sjostrom & Dahlgren, 2002). However, the analyses can be extended to a discussion of the relationships between the categories, which is referred to as the outcome space (Larsson & Holmstrom, 2007; Marton, 1981). The structure of an outcome space is not always a linear hierarchy of inclusiveness (Akerlind, 2012). Each category, in the form of an outcome space, is a representation of the phenomenon. For Marton (1981), the outcome space is synonymous with a phenomenon. In addition to the relationship between the categories, I choose to examine how each category aligns with existing knowledge on the topic. Along with the findings that emerged from my phenomenographic analysis, this study also presents findings generated from the comparison of the goals of the SWB program, of the SWB students, and the strategies of internationalization at SAU.

Strategies of internationalization are practices implemented at the most concrete level in organizations. These strategies include programs, activities, and organizational efforts at the institutional level (Knight, 2004). In this study, the term “practice” is used throughout to indicate either an activity, a program, or strategy of internationalization.

Categories of Description

Two types of categories of description resulted from the analysis of interview transcripts with SWB undergraduate and graduate students. The first type of category is the result of student perceptions of their participation in internationalization activities or programs in place at the host-institution. These categories are, *coping with transition and integration abroad* and *enhancing expertise*. The second type of category represents the impact student experiences with SAU’s strategies of internationalization had on their

learning. These categories include: *improving employability*, *dealing with English*, *cultivating intercultural skills*, and *improving internationalization at home*.

Student experiences comprising the categories *coping with transition and integration abroad* and *enhancing expertise* had an impact on their learning. The impact on student learning gave rise to the categories *improving employability*, *learning and living with English*, *cultivating intercultural skills*, and *improving internationalization at home*. This means that an international experience in an institution such as SAU, discussed in chapter four, facilitated the outcomes presented in Figure 5.1.

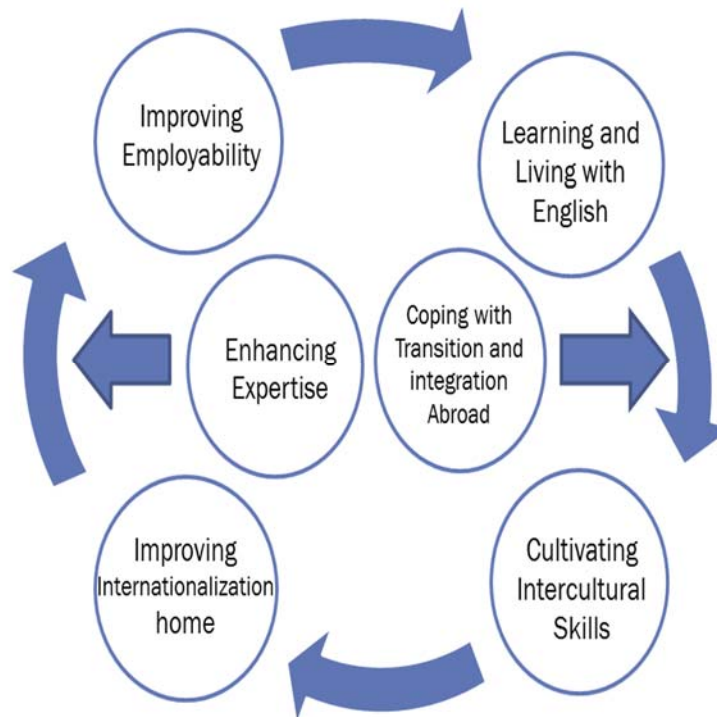


Figure 5.1 Outcome Space: Relationships among Categories of Description

In summary, students perceived that their experiences at SAU increased their opportunities for employment, enhanced English proficiency, promoted the development of intercultural skills, and strengthened the goal of internationalization at home. It should

be noted that while these findings apply to SAU, other universities may offer different sets of services and academic experiences may or may not correspond with the outcomes identified in the current study.

Discussion of Findings

Herein I discuss the findings that emerged from the analysis of interviews with SAU personnel, SWB students, and from information available on SAU and SWB program websites. The findings address the question, *What is the relationship among the named strategies of internationalization of a host university, the goals of the SWB program, and the academic and cross-cultural development goals of Adult Brazilian SWB undergraduate and graduate students?*

The goals of the SWB program are to enhance the workforce in science and technology in Brazil, to increase the presence of Brazilian scholars and students in prominent international institutions abroad, and to expose them to highly competitive and entrepreneurial environments (Brasil/CsF, 2015). Brazil aims to become more competitive internationally in the areas of science and technology, and as such, needs to recruit and develop talented individuals with the necessary knowledge and skills for the job market. According to *Business Insider* magazine, Brazil will need 1,100,000 engineers by 2020—twice as many the country has now (Groth, 2012).

The goals of SWB students in studying abroad were oriented toward success in academics and employability. An international experience meant to them an opportunity to learn English, acquire expertise, and to develop other skills that were sought after by the labor market. In Yemini et al.'s (2014) study, employability was the major motivation for students going abroad. The current study is in line with Yemini et al.'s (2014)

research confirming that students were more interested in the outcome of an international experience than in the experience itself. As with SWB students, students in Yemini et al.'s (2014) study hoped that professional skills they acquired abroad would increase their chances of employment.

For SWB students, English proficiency was another important goal. The increasing demand for an English-speaking labor force in Brazil has resulted in English being a required skill in the labor market. Cristal (2012) predicts that the position of English as a global language is going to become even stronger. An SWB student remarked that most of the good positions in her town required proficiency in English. This also supports Valverde's (2004) study, which found that English has become a requirement for even lower level job positions in Brazil, even though employees will likely not use the language in the performance of their duties.

Consistent with the studies of Knight (2004) and Hudzik (2011), SWB students believed that ESL and more advanced English courses were important strategies of internationalization essential to their academic success. A lack of English proficiency is dramatically illustrated in the case of Olavo who only knew the verb "to be" in the present tense when he started in the program at SAU. In fact, Brazilian students struggled to communicate in English, according to an academic adviser at SAU.

SAU provided an academic environment that made it feasible for the SWB program and SWB students to meet their goals. SAU is an internationally top-ranked university that provides high-quality education. SAU has a body of eminent faculty members and affords costly equipment and high technology for the development of cutting-edge research. Consequently, SAU attracts a large number of international

scholars and students. With the diversity present among students and scholars interacting across the institution, SAU is arguably in a position to meet the American Council on Education's (ACE) requirement to prepare students to adjust to different cultural settings and to compete in the global market. (ACE, 2011).

SWB students believed that at SAU they had access to the latest science-related technologies that helped them to advance their expertise. They reported that at SAU they worked with experts in their area of their study, developed cutting-edge research skills, had access to equipment that is often not available in their home country, and conducted studies in an English-speaking academic setting.

SWB students emphasized the superior quality of education in the U.S., especially regarding research and technology, which was similar to the perspectives of Brazilian students participating in Szeleyi's (2006) study. They considered research more organized and advanced, when compared to the style they experienced at Brazilian universities. In this research study, Luciano pointed out that access to the technology and funding that is available at SAU makes research with drones possible. In Brazil, the lack of resources is an obstacle to this type of research. It should be noted that SWB students participating in this study often come from very good public universities in Brazil, which suggests that they are comparing their research experience at SAU to that Brazil's leading universities.

The accomplishment of SWB students' goals was facilitated by several of SAU's strategies of internationalization in practice that supported SWB in their academic and cross-cultural learning. SAU's goal was to offer a variety of services to international students, which included ESL and English courses, general support services such as help

with housing, health care, student orientation, cultural events, and advising. At SAU, other practices in place included participation in seminars by distinguished national and international speakers, access to publication in highly ranked academic journals, and partnerships with organizations that have international reach. The breadth of services, events, and international speakers corresponds with other studies where researchers discussed the importance of internationalization practices for student academic and cross-cultural learning success (Coryell et al., 2012; de Wit, 2011; Knight, 2004; Sehin, 2015).

However, the findings of this study indicated that, generally, SAU personnel thought of internationalization in terms of study abroad and other mobility programs. Each department independently implemented strategies of internationalization, according to their needs and goals. In addition, the findings of this study did not show evidence of a common understanding among faculty and departmental administrators regarding the definition or meaning of internationalization. Clearly, the implementation of internationalization in an institution of HE is a complex process of incorporating an international perspective into the teaching, research, and services (Knight, 2004). Advancing the goals of internationalization will entail a better understanding and agreement about what it means. The process of implementing internationalization may face some difficulties because the process “involves many stakeholders working to change the internal dynamics of an institution” (Ellingboe, 1998, p. 199).

Stakeholders of great importance in the process of implementing internationalization are faculty because they are in a strategic position to make changes in the curriculum, and they conduct research with domestic and international students (Green & Olson, 2003; Hudzik & McCarthy, 2012). Faculty commitment to

internationalization directly improves the process of integrating an international perspective into the curriculum and activities (Coryell et al., 2012; Green, 2002). At SAU, there did not seem to be programs or efforts increasing the specific involvement of international students in *teaching and learning* in hard science courses. Science and engineering courses placed a great emphasis on course content. Even so, access to rigorous and advanced courses was in line with the goals of the SWB program and of the SWB students.

Implementation of internationalization also involves initiatives that are consistent with the institutional agenda (Green, 2003; Morris, 2009). The findings of this study suggest that SAU put in practice a wide range of internationalization strategies—from support to academic services, and offered a high quality education. However, data did not reveal an integrated and intentional strategy to implement internationalization across the campus. Despite decentralized strategies, the goals of the SWB program and of the students were still achieved due to a variety of internationalization strategies already in place, and due to the high quality education offered at SAU. Concurrently, SAU met its own objective as it offered quality services that advanced internationalization.

I next discuss the findings that emerged from the analysis of interviews with SWB students in light of the following research question: *How do Adult Brazilian SWB undergraduate and graduate students experience internationalization strategies in practice at a host-university? And, in what ways might these strategies impact SWB students' learning experiences while abroad?*

Through a phenomenographic analysis of the interviews with SWB students, six categories emerged. These categories were coping with transition and integration abroad,

enhancing expertise, improving employability, dealing with English, cultivating intercultural skills, and improving internationalization at home. These categories represent the perceptions of SWB students on how they experienced SAU's strategies of internationalization in practice and how these experiences influenced their learning.

Academic and cross-cultural development of SWB students was facilitated through services that helped their transition and integration to SAU. Services included assistance with housing, health insurance, tax forms, ESL courses, etc. The IO also organized social events to promote integration of SWB students with domestic and international students. Supporting Glass et al.'s (2013) findings, this study concurred that there is a need for services that provide an inclusive climate, and that supports the academic and personal growth of all students.

Students saw that their experience in a top-ranked tier one university such as SAU gave them the opportunity to engage with professors who are leaders in their fields and to conduct high-quality research. Moreover, at SAU, SWB students had the opportunity to engage in academic and professional activities such as teaching assistantships where they practiced their communication and teaching skills. In addition, partnerships with high-tech organizations, such as NASA and 3M, allowed students to connect at the professional level with international science and engineering-oriented organizations. As implemented, these strategies offered opportunities for SWB students to develop skills that were needed and sought after by the labor market. Along these lines, the findings of this study correspond with those of Sparks and Waits's (2011) study that students are aware of the requirements of the market and that post-secondary graduates need to be "career ready" and possess intercultural skills. Improving employability was the central

motivation for SWB students to study in the U.S. in the SWB program. Intercultural interactions that would improve employability were also seen as beneficial. For example, Jackson perceived his connections with Asian students as an opportunity to develop intercultural skills that would give him an advantage if he were to seek employment in China.

Harrison (2012) stated, “today’s universities are among the most diverse organizations in the world, with dozens of nationalities typically being represented among students, teaching staff and support staff” (p. 224). This characterization of the modern university accurately describes SAU. SAU is a leading institution in the U.S. that has attracted a large number of international scholars and students, as well as U.S. scholars with an international background. This means, in coming to SAU, students are not just exposed to the norms of one cultural group (i.e. Americans). They are simultaneously exposed to cultural traits of a variety of nationalities. For instance, Luciano said that in his first semester in the aerospace engineering program, he did not have any Native American professors. In this environment, SWB students felt that they had the opportunity to develop intercultural skills and increase expertise by interacting with scholars from different origins. Intercultural competences refer to the ability to adapt and adjust to new cultural environments; it is regarded as an outcome of internationalization (Deardorff, 2006).

SWB students felt that in addition to the multicultural experience they were exposed to a more competitive environment at SAU. In the laboratory SWB students established closer relationships with peers and were consistently required to communicate in English. A major outcome of being in a competitive environment was that students

learned to become more independent in their work and solve problems for themselves. Deardorff (2006) discovered that one component of intercultural competence is the ability to adapt to varying intercultural communication and learning styles. This study's findings suggest that this specific learning outcome—adjusting to an international and competitive environment—is critical for further research collaboration students want to develop on their return to Brazil.

Challenges interacting with other peers involved language barriers and cultural differences. Victor, for instance, found it difficult to integrate with other Americans because of his poor English proficiency. The inability to communicate prevented him from being himself because he felt he was unable to relate to people in the same manner as he used to in Brazil. In the U.S. at SAU, he was “another Victor.” He found himself in what Magyar and Robison-Pant (2011) identified as moving between identities and learning, as he adjusted to the new multicultural environment. Along with Briguglio and Smith's (2012) findings, Trahar, and Hyland (2011) discussed in their studies that students like Victor, coming from different cultures, often failed to participate in the classroom and on campus due to the language barrier. However, over time, SWB students perceived a great improvement in their ability to communicate in English, which becomes a critical learning outcome.

Briguglio and Smith (2012) found that none of the international students participating in their study formed any friendships with locals, had been to a local home, or participated in family events. Contrary to their results, SWB student participants in the current study did participate in events that promoted their integration with domestic students and the local culture. Many participants mentioned Bridges as fostering

connections to domestic students and integration into American culture. Volunteers working for Bridges opened their houses for holiday celebrations, where students learned about traditions and typical American dishes. Bridges also promoted tours aimed to bring American and international students together.

On their return to Brazil, SWB graduate students stated that they plan to develop collaborative research with colleagues at SAU. Both Victor and Raul plan to pursue an academic career and conduct research in their university labs. They hoped also to send their own students abroad. Similarly to Bubadué et al.'s (2013) findings, SWB students in other universities reported having plans to work collaboratively with peers they worked with abroad.

During the 1970s and 1980s, the majority of the students who benefited from governmental financed mobility programs for graduate and postdoctoral studies returned to Brazil and helped to advance higher education (Knobel, 2014). Interest in internationalization in Brazil has increased immensely since the 1990s (Kreber, 2009). This means that the large number of Brazilians students abroad in the SWB program are experiencing a more diverse and internationalized academic and intercultural environment than did Brazilian students who went abroad in the 1970s or 1980s. Currently, SWB students are more exposed to internationalization practices in their host-universities—practices that could, in turn, be adapted and implemented within Brazilian academic and cultural environments. Bringing internationalization home would also involve practicing internationalization at home to benefit Brazilian students that may not study abroad. This would advance internationalization of HE in Brazil.

Conclusion

This study sought to contribute to the current literature on perceptions of SWB students on their experiences with strategies of internationalization in practice at their host-university in the United States. It also aimed to examine the relationship among the goals of the SWB program, of the SWB students, and the strategies of internationalization implemented at the host-institution. This study hopes to fill a gap in the literature considering that little has been published about the perspectives of Brazilian students on experiences with internationalization and those participating in the SWB program.

Findings regarding SWB students in this study support the current literature and the conclusion that Brazilian students feel they have achieved their academic goals and were satisfied overall with their academic experience abroad. Results from this study also indicate that students often emphasized the good-quality education they received in the U.S., especially with regard to access to world-renowned experts, facilities, technology, and research.

Additionally, SWB students wanted to return home, to establish partnerships and conduct collaborative research with classmates and lab peers they met at SAU. Due to the large number of SWB students in leading universities abroad, it is most likely that partnerships and collaborative work will advance internationalization in Brazilian universities and may ultimately benefit Brazilian students who will not go abroad.

This study concurs with the literature (Yemini et al., 2014) indicating that students going abroad place great value on employability and on skills they would acquire abroad that would enhance their chances of employment. Intercultural interactions with students from other cultures (for example from Asia) are also seen as an

advantage in seeking a job in Asia. SWB students also recognized the acquisition of English proficiency as main factor that would enhance they chance of employment, even in Brazil. The SWB student goals were academic and work-oriented only. They did not demonstrate in their responses that they valued personal or interpersonal growth gained as an outcome of the international experience. SWB program's goals are also all related to the improvement of the labor force and the innovation of science and technology in the country—to attend to the demand of the global market.

This study adds new insights to the literature by showing that Brazilian undergraduate students possess poor levels of English proficiency—an issue which leads to the additional challenge of communication and integration in a new cultural environment. This finding indicates that the problem with a lack of English proficiency is an obstacle to the advancement of global competitiveness in science and technology in Brazil, since English is a global language (Cristal, 2012). This is a problem that likely needs to be addressed at the national level and may require implementation of policies that would enhance students' knowledge of English at all levels of education.

Additionally, the study findings did not reveal evidence of coordinated strategies that would implement internationalization at the institutional level. Nonetheless, students believed they had developed important skills for global careers (an often articulated mission of internationalization), due to a high-quality academic environment and strategies of internationalization in practice at SAU. Students perceived that working with experts in their field of study and conducting cutting-edge research in a top-ranked university greatly advanced their learning. Along with academic accomplishments, intercultural interactions in a more competitive environment resulted in the development

of autonomy and self-reliance, which showed students' ability to adapt and adjust to a new cultural environment and learning styles. Such skills are outcomes of internationalization (Deardorff, 2006), and are valuable in order to maintain and to develop future research collaborations with international partners (individuals or organization).

Limitations of the Study

This study present some limitations. Firstly, as the research was a qualitative investigation with six participants, the findings can neither be generalized across all international students nor across other SWB students (Patton, 2002). Secondly, only one female undergraduate student participated in the study, which does not allow for comparison regarding perceptions of internationalization across gender. Thirdly, SWB students in this research are all enrolled in STEM fields, and the experiences of SWB students in other disciplines (e.g., students in the social sciences) may differ. Fourthly, all the SWB participants are enrolled in a very large, tier one research institution in the U.S., and the way they experienced the phenomenon may not be the same as students in small and teaching-focused universities hosting SWB students from Brazil. Fifthly, in snowball sampling techniques, the first participants have a strong impact on the sample, and the identity of participants cannot be withheld from those who have referred them (potential participants) (Black, 1999). Sixthly, the limited time frame within which this study is situated may be a limitation, because student perceptions of their experiences with internationalization may change due to distinctive features of each historic period, including international, political, cultural, and economic factors. Finally, another limitation is that phenomenographic research is interested in describing the variation of

how a certain population experiences a given phenomenon, but it is not concerned with explaining the reasons for that variation (Kaapu, Saarenpää, Tiainen, & Paakki, 2006)

Implications

This study found that the lack of policy to implement, communicate, and share the visions and strategies of internationalization at the institutional level lead to different understandings, and even unclear perceptions, of what internationalization is and what practices of internationalization meet the goals of the institution. Implementation of comprehensive internationalization strategies can only be achieved through strategic planning and combined efforts of the university units and personnel (Ellingboe, 1998). Putting into effect a common proposal for internationalization would benefit the university community and help them work towards a common goal for internationalization across campus (Green, 2002).

Implications for Practice

Based on the findings and the current literature, this study offers implications for practice from different viewpoints of the various stakeholders: the students, the SWB program, and the university.

Implications for Policies

This study found that SWB students encountered challenges with validating the courses they take abroad, in Brazil. Indeed, validation of foreign-issued diplomas and courses in Brazil has been a long-lasting issue involving a highly bureaucratic process (Laus & Morosini, 2005). Seemingly, the lack of validation is meant as a safeguard to Brazilian HE. However, the Brazilian government is investing heavily in internationalization through the SWB program by sending students and scholars to

leading universities abroad such as SAU. As such, there should be policies in place to facilitate the validation of courses and diplomas like these, upon students' return to Brazil (Knobel, 2011).

Implications for Practice for Universities

Practical implications for implementing internationalization across campus, should consider that,

an internationalized campus has more than a series of courses or programs that promote international learning; it links them together intentionally in order to create a learning environment and to provide a set of experiences to as many students as possible (Green, 2002, p. 16).

Internationalization initiatives may include intentional, integrative, and comprehensive approaches that involve departments, schools, and activities across the institution, and may be expressed in the institutional culture, values, policies and practices.

SWB students experienced a variety of practices of internationalization, mainly due to the accessibility of faculty, technology, cutting-edge research opportunities and the large number of international scholars and students. Large universities can offer a wide range of internationalization programs to their students, but this does not mean that students in smaller non-research institutions would not benefit from practices of internationalization. Green (2002) reported on successful experiences of four year and even community colleges in their efforts to internationalize. In fact, research universities, such as SAU, encounter especially difficult challenges in implementing and integrating internationalization due to scale, complexity, and nature (Green, 2002). At SAU, schools

and departments implemented internationalization practices according to their needs and goals.

The implementation of internationalization in universities and colleges occur differently due to their characteristics, such as size and missions (Green, 2002; Knight, 2002), but in all cases an intentional and integrative approach to internationalization requires articulating explicit goals and developing strategies to reach them. Leadership—presidents and senior administrators—play a crucial role in leading their institutions to a vision that internationalization “is vital to the institution’s academic vibrancy and that it is everyone’s business” (Green, 2002, p.17). Leaders can allocate or raise funds to support internationalization. They may consider advice of experts that may assist with steps that would overcome obstacles to fully implement internationalization throughout campus (Coryell et al., 2012).

The process of implementing internationalization should facilitate the involvement of all stakeholders (faculty staff, students) in taking responsibility for the process (Coryell et al., 2012; Ellingboe, 1998). The involvement of faculty is needed in the process of internationalization. Support and guidance should be given to faculty when implementing internationalization across campus such as training focused on international and intercultural issues and on the development curriculum with an international perspective (Coryell, 2013). Practices of internationalization include promoting international experiences for faculty such as research abroad and faculty-led programs (Coryell, 2013; Green, 2005; Knobel, 2011). International experiences such as these increase the enthusiasm and support of faculty for internationalization (Green, 2005).

SAU provided through the IO general support services to SWB students that assisted them in their transition and integration to campus. General services such as assistance with housing, tax forms and health insurance are essential in helping students in their transitions to the host-institution (Knight, 2004; Hudzik, 2011). ESL and other language courses are essential for international students to integrate and to succeed in their academic and cross-cultural experience. ESL courses also offer opportunities for interaction between domestic and international students. Domestic students' participation in conversation sessions help international students to improve English proficiency. In addition, IHEs can also implement strategies to dramatically increase the number of academic courses taught in English at their institutions.

Generally, international experiences are offered to domestic (American) students through study abroad and other mobility programs (Green, 2005). SAU successfully implemented strategies to increase the number of domestic students going abroad, but this number is small, relative to those who do not go abroad. Indeed, less than ten per cent of American students go abroad at some point in college (Freeman, 2010). Institutions may consider implementing practices to increase the involvement of international students in activities that would also help domestic students gain international perspectives as part of their campus learning experience. Cultural events and international gatherings on campus promote intercultural exchanges through opportunities for all faculty, staff, and students to come together (Knight, 2004).

BCC sought at reaching out to Brazilian students to assist with their integration to SAU. However, findings revealed that students participating in this study did not get that involved in events promoted by the center, even though a few students struggled to

integrate within the university community. Students argued that activities promoted by SAU conflicted with their schedule or were not of their interest. BCC may take into consideration the possibility of including SWB students in the year-event planning process, welcoming students' suggestions of activities aligned with their interest. Intercultural events more focused on celebrating traditional Brazilian folklore such as *Festa Junina*, or occasional potlucks including typical dishes from different regions of the country may create opportunities to increase student involvement. Additionally, BCC could provide a more personal approach that was sought by some students who hoped for contact beyond just that related to their academic needs. They were hoping for personal inquiry related to their more general well-being.

Implications for Practice for the SWB Program

In conducting this study, SWB students learnt some about internationalization. Initially the term and the concept of internationalization was unknown to them. As the study progressed, they become aware of several internationalization strategies in practice at SAU. During the interviews, students reflected on their experience with the practices shared about their perspectives. Participation in this study improved student understanding of the concept and practices of internationalization. The SWB program should consider providing an overview about internationalization to SWB students, as well as the goals of the SWB program, prior to starting the program. This orientation would guide SWB students to engage in practices of internalization early on in the program so as to be intentional in collaborating with faculty and peers, and forming partnerships.

Information available in the SWB program website showed that the goals of the SWB program are oriented towards the advancement of science and technology in Brazil, as well as to prepare its labor force for the global market. There were no goals listed relative to the personal and interpersonal or cross-cultural development of the SWB students. I recommend that the SWB program also consider including personal development as a goal to that does not exclude employability, but targets the development of their talents and potential using the whole person.

Findings from this study also revealed that Brazilian students lacked in English proficiency, and thus struggled with communication. SWB students attended ESL and other English courses that gradually improved their English skills, but the majority of Brazilian students do not go abroad. Important strategies to improve English proficiency of Brazilian students at home would require more involvement of the SWB program in collaborative programs that bring English speaking scholars to Brazil, to teach for a while at their universities.

The findings of this study indicated that the majority of SWB students heard about the SWB program through friends or Facebook. Many of the participants considered themselves lucky to have learned about the program and to have been able to apply just before the program deadline for each yearly cycle. The SWB program could be better publicized and in a more consistent manner through IHEs, implementing intentional strategies for marketing of the program to all Brazilian students in Brazilian colleges and universities.

Implication for Practice for SWB Students

This study found that SWB graduate students planned to continue networking with peers and faculty, and to engage in future collaborative research with them.

International collaborative research is one of the strategies of internationalization aimed at advancing knowledge, science and technology. Implementation of practices of international collaboration would greatly advance internationalization in Brazilian universities as well. However, students may need support in how to continue with these collaborations upon returning home.

Other ways that SWB students can advance internationalization in their host-institutions in Brazil would involve support and active participation in the implementation of an integrative, intentional, and comprehensive approach to internationalization. Students may assume roles of leadership, engage with faculty administrators in their institutions to articulate goals, and develop strategies to achieve them.

In addition to this, upon their return, SWB students can be involved in events on campus to share international perspectives they acquired while abroad. These returning students can also be engaged in language programs, perhaps as conversation partners for Brazilian students not going abroad and for those preparing to go. SWB students can be vibrant agents of internationalization in their respective institutions and in their host-institutions. Indeed, international students in general can assume a role of internationalization ambassador in their IHE, advocating for the importance of implementing internationalization practices that benefit the entire university community.

Recommendations for Further Research

Upon completion of this study, I found that several other areas might be recommended for future research. A follow-up study would investigate how SWB students who participated in this study would advance internationalization in their home-universities, as well as examine their challenges and successes in implementing strategies of internationalization in their home-institutions.

Subsequent research that included more female students in STEM courses would be useful to compare and contrast their perceptions of students' experiences with strategies of internationalization in practice of a given institution of HE in the United States. In addition, future studies with SWB participants in other research universities should be developed, including smaller, teaching-centered institutions.

Participants in this study are all young adults either in undergraduate or graduate programs. Future research should be conducted with older SWB students to examine whether their experiences with internationalization strategies may differ from young adults, and what practices might be more meaningful for them. In addition, studies involving more than one nationality should be investigated to expand our knowledge of the different perceptions of international students' experiences of strategies of internationalization implemented in their host-institutions. Even though all participants in this study are Brazilians, international students from different nationalities may also benefit from the findings presented here.

Regarding the methodology, the phenomenographic research methodology aims at describing the ways a group of people understand a phenomenon. While phenomenography is often confused with phenomenology, phenomenology seeks to

discover the essence and structure of a given phenomenon, which means that the focus of phenomenological analysis is on the phenomenon. Phenomenography, rather, seeks to investigate how a group of people perceives their experiences about a phenomenon. The focus of the analysis is on the various experiences people have. Different groups may have different perceptions of the same phenomenon, each seeing from the perspective of their own experiences.

The categories in my study represent the perceptions of students of the SWB program—their experiences with strategies of internationalization in practice at SAU. Other groups of SWB students may have different perceptions of internationalization practices, because their experiences may not be at research-focused institution. Participants in this study are young adults but the entire SWB program includes a component of older students including postdoctoral trainees. It would be important to investigate how older adult learners experience practices of internationalization, how their experiences with these practices influence their academic and cross-cultural learning, if different from the perceptions of young adults. It would also be important to investigate whether or not older adult learners give more value to experiences related to employment, as do the younger adults. Perspectives from different groups on practices of internationalization would help HEIs to be aware of the needs of their students and adjust practices to meet their needs.

APPENDIX SECTION

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APPENDIX A

Questionnaire for SWB students

Please, answer the following questions:

1. What is your age?
2. What is your gender?
3. What is your e-mail address?
4. What is a phone number to contact you?
5. What is your major of study?
6. What degree are you pursuing at SAU?
7. How long have you been at SAU?
8. How long are you staying at SAU?
9. What is your category of study in the SWB program?
10. Are you from a public or private university in Brazil?
11. Why were you interested in participating in the SWB program?

Please, suggest the name of other students from the SWB program that you think may be interested in contributing in this study.

APPENDIX B

First Interview with SWB Students

(At the beginning of the first interview students were asked about their goals)

- Why were you interested in participating in the SWB program?

(At this point, a list of internationalization strategies was presented to the SWB students)

- This is a list of internationalization strategies that SAU has indicated that are in place at SAU. Please take a close look through this list. Have you seen any evidence of these strategies? Which ones?

Questions

1. In what ways have these strategies that SAU listed impacted your academic learning? How? Can you give me an example?
2. In what ways have these strategies that SAU impacted your cross-cultural development? How? Can you give me an example?
3. Tell me about how you are experiencing your academic development in your program here at SAU. Can you give me an example?
4. Tell me about how you are experiencing your cross-cultural development in your program here at SAU? Can you give me an example?

APPENDIX C

Second Interview with SWB Students

1. Have you seen any of the academic development goals you listed in the beginning of the study been fulfilled?
2. Have you seen any of the cross-cultural development goals you listed in the beginning of the study been fulfilled?

Here you find preliminary categories of description emerged from the first interview.

Please, verify if these categories correctly represent your experiences with strategies of internationalization in practice at SAU.

APPENDIX D

Interview Questions for faculty, staff, and administrators at SAU

Questions for the head of the international office

1. Are there specific internationalization efforts implemented at the institutional level? If so, what are they?
2. Is there a key person who is responsible for implementing and overseeing internationalization programs and strategies at the institutional level?

Question for the assistant director of the international office

- To your knowledge, what are the internationalization strategies in place that are the most important to support the academic and cross-cultural development of the SWB students from Brazil at SAU?

Question for the coordinator of the Brazilian Cultural Center

- To your knowledge, what are the internationalization strategies in place that are the most important to support the academic and cross-cultural development of the SWB students from Brazil at SAU?

Question for the undergraduate academic adviser

- To your knowledge, what are the internationalization strategies in place that are the most important to support the academic and cross-cultural development of the SWB students from Brazil at SAU?

Questions for faculty and administrators in the School of Engineering.

1. Are there internationalization programs or strategies implemented in your department focused on international students, including SWB students, to help them in their academic endeavor?

Note: Internationalization strategies would involve the inclusion of an international, cultural, or comparative dimension infused into existing courses or programs, teaching/learning, extracurricular activities, and research and scholarly activities.

2. If there are Brazilian students from the Science Without Borders mobility program in your department, what have been their academic and cross-cultural challenges and needs (if different of other international students)?

APPENDIX E

List of Internationalization Strategies in Practice at SAU

Note: This list was created as a result of information collected in SAU webpage and of interviews with SAU faculty, staff, and administrators. Mobility programs offered to domestic students were excluded from this document. This list was then presented to SWB students during the first interview.

The International Office

- ☐ Assistance and advising regarding general admissions application
- ☐ Coordination between admission office, academic departments, and the English as a Second Language (ESL) program
- ☐ Resources and information on housing options
- ☐ Immigration document issuance and advising
- ☐ Personalized advising services to support the students' welfare during their period of study, including immigration, academic, health, and housing issues
- ☐ Customized orientation for new sponsored students
- ☐ Coordination of campus services and resources for students with disabilities
- ☐ Assistance for sponsored students in fulfilling sponsor's requirements
- ☐ Communication services between agencies and sponsored students, including the use of office fax machine and telephone
- ☐ Support for sponsored students through ongoing updates in student's online community
- ☐ Connection to the University's alumni network
- ☐ Grade reports to the sponsoring agency

- ☐ Invitation to the annual Sponsored Student Reception
- ☐ Schedule an appointment to meet with the Sponsored Student Advisor
- ☐ Student orientation and welcome events
- ☐ Progress reports upon request and unofficial transcripts
- ☐ Cultural excursions and specialized events to enrich students' experiences
- ☐ Designated coordinator and twenty-four hour support
- ☐ Pre-Arrival support, Immigration, housing, welcome materials
- ☐ Airport pick-up and arrival programming
- ☐ TOEFL preparation
- ☐ Academic coursework taught by SAU faculty
- ☐ SAT and ACT test preparation
- ☐ Intercultural programming & excursions
- ☐ Individualized mentoring and academic advising

Intercultural Programs and Events

- ☐ Matching Friends Program – is intended to match international students and scholars with members of the local community for cultural exchange.
- ☐ Excursions in the State – are monthly excursions organized throughout the year to provide international students and scholars with the opportunity to know what the city they live and surroundings have to offer.
- ☐ Reception for Graduating Students – In the Spring a reception is hosted to honor international students who graduated from SAU.

- Social Hours with Scholars – is a social event held in the first week of each month for J-1 Scholars to give them the opportunity to meet other J-1 Scholars and learn more about the SAU community.
- Intercultural Mailing Place – is a place where one can post resources, ask questions, and receive information about upcoming programs.
- Cultural Exchange and Language Advancement Program – is a program sponsored by IO where registered student organizations pair together international and American students to practice English and for cultural exchange.
- Language Pals program – creates opportunities for to practice English or other language while learning about American culture. It also allow American students opportunities to interact with international students and to practice a foreign language.
- Housing and Community – is a program that coordinated by IO and the Housing and Food Service to bring internationally minded students together.
- Internationalization strategies were also identified through interviews with faculty and staff member at SAU.

The Brazilian Cultural Center

- Breakfast (get-together) for new students
- Student orientation for undergrad and graduate students
- Events on campus, such as Brazilian movies, book launches addressing Brazilian issues, and discussion panels.
- Advertise exchange programs in Brazil
- Offer scholarships for students interested in attending faculty-led courses in Brazil

APPENDIX F

List of Internationalization Strategies in Practice at SAU—Updated

Note: This updated list was created as a result of information collected in SAU webpage and of interviews with SAU faculty, staff, and administrators, and with SWB students. The list also includes *cross-border strategies* (mobility programs) of internationalization offered to domestic students by the international office.

The International Office

- Assistance and advising regarding general admissions application
- Coordination between admission office, academic departments, and the English as a Second Language (ESL) program
- Resources and information on housing options
- Immigration document issuance and advising
- Personalized advising services to support the students' welfare during their period of study, including immigration, academic, health, and housing issues
- Customized orientation for new sponsored students
- Coordination of campus services and resources for students with disabilities
- Assistance for sponsored students in fulfilling sponsor's requirements
- Communication services between agencies and sponsored students, including the use of office fax machine and telephone
- Support for sponsored students through ongoing updates in student's online community
- Connection to the University's alumni network
- Grade reports to the sponsoring agency

- Invitation to the annual Sponsored Student Reception
- Schedule an appointment to meet with the Sponsored Student Advisor
- Student orientation and welcome events
- Progress reports upon request and unofficial transcripts
- Cultural excursions and specialized events to enrich students' experiences
- Designated coordinator and twenty-four hour support
- Pre-Arrival support, Immigration, housing, welcome materials
- Airport pick-up and arrival programming
- TOEFL preparation
- Academic coursework taught by SAU faculty
- SAT and ACT test preparation
- Intercultural programming & excursions
- Individualized mentoring and academic advising

Intercultural Programs and Events

- Matching Friends Program – is intended to match international students and scholars with members of the local community for cultural exchange.
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- Internationalization strategies were also identified through interviews with faculty and staff member at SAU.

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- Breakfast (get-together) for new students
- Student orientation for undergrad and graduate students
- Events on campus, such as Brazilian movies, book launches addressing Brazilian issues, and discussion panels.
- Advertise exchange programs in Brazil

Offer scholarships for students interested in attending faculty-led courses in Brazil

Extracurricular Programs

Extracurricular strategies included:

Campus Organization—Bridges International. *Bridges* offers,

- Spiritual support for international students
- Bridges volunteers open their homes for international students during holidays such as Halloween, Thanksgiving, and Christmas.
- Trips where domestic and international students connect

Academic Programs

International Office. Academic programs found at SAU include over 400 study abroad programs offered by IO, which include:

- Exchange programs—through which SAU students are able to study at a foreign university for a year. SAU students take classes alongside local students
- Study abroad programs, varying from semester to summer options with foreign and local students
- Study abroad by major—ensures that students participating in such programs will have meaningful credits applied to their degree, upon guidance of program coordinators
- Faculty-led—is a four-week course taught abroad by a SAU faculty during summer
- Internships—are working positions arranged for students studying abroad as part of a credit-bearing program
- Semester exchange in affiliated programs—is an initiative offered for students with 2.00-4.00 GPA to spend one semester or summer studying abroad in one of

the SAU affiliated programs. Courses taken in affiliated programs are eligible for credit at SAU

- Independent Study and Research program—offer students conducting research independently abroad the possibility to get credit for the work abroad
- Customized programs abroad—a 3-week SAU faculty-led course followed by a fall semester exchange along with an online cultural course. These courses are customized for majors as Government, International Relations, or Global Issues
- Service-learning—refers to credit-bearing community service activities offered for students in a study abroad program

Other special projects promoted by the SAU including:

- Partnerships with selected universities in the Middle East and Latin America
- Project for under-served communities where engineering students help communities abroad with their practical skills
- Professional training for students interested in working in the Middle East and North Africa
- Videoconferences between students from the SAU and the Kabul University in Afghanistan to create a space for dialogue and to dispel cultural stereotypes

APPENDIX G

Institutional Review Board – Certificate of Approval



Institutional Review Board

Request For Exemption

Certificate of Approval

Applicant: Tereza Valverde

Request Number : EXP2014N428235W

Date of Approval: 10/27/14

Assistant Vice President for Research
and Federal Relations

Chair, Institutional Review Board

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