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Using an International Experience to Bridge the Gap Between Culture and Science Literacy

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Abstract

Today's agricultural industry is charged with feeding a growing population, which means producing larger quantities of food and marketing the food worldwide. Future employers seek graduates that have global perspectives. To mitigate students' lack of international knowledge, many higher education institutions are providing students an opportunity to participate in study abroad programs. The purpose of this study was to explore how an international experience in South Africa impacted participants' perceptions of South African culture, global agriculture, and science. Seven reoccurring themes emerged from the data: a) adaptability (preexperience), b) enhanced communication skills (both pre and post experience), c) an attainment of diverse/broadened academic agricultural knowledge (both pre and post experience), d) risk taking (postexperience), e) intercultural competency and global awareness (both pre and post experience), f) critical thinking skills (postexperience), and g) career enhancement (postexperience). Findings indicate an international experience should integrate cultural learning, academic learning, and should be applied to the participant's future career.

Keywords: international experiences; science literacy; cultural learning; study abroad

Introduction & Literature Review

Agriculture and food production are global enterprises that create a need and responsibility for colleges to prepare students for an increasingly diverse and global workplace (Ekiri, Aceng, Khaitas, Ejobi, & Kabasa, 2013; Gibson, et al., 2015; Malloy & Davis, 2012; VanDerZanden & Iles, 2013; Zhai & Scheer, 2002). National boundaries have lost their significance as increased travel, communication, investment, and trade have proliferated in the global community (Chieffo & Griffiths, 2004). According to the Food and Agriculture Organization of the United Nations (FAO), today's agricultural industry is charged with feeding a growing population (2009). In order to sustain a growing population the agricultural industry must produce larger quantities of food and market the food worldwide (Heinert & Roberts, 2016). Population growth compels the agricultural community to recognize complexities related to growing adequate amounts of food and marketing products to a global community (Heinert & Roberts, 2016).

The National Research Council (2009) acknowledged the importance of purposefully preparing university students to engage in a globalized world and to be prepared to engage in agriculture that uses basic and applied science. Future employers seek graduates that have both global perspectives and related competencies. Bruening and Shao (2005) stated, "today one in six U.S. jobs is directly tied to international trade" (p. 48). LeCrom, Greenhalgh, and Dwyer (2015) added, "few would deny the importance of being globally minded in today's marketplace" (p. 65). Experiences outside the students' home country are invaluable learning opportunities that develop, integrate, and enhance skills necessary to succeed in both their educational and future work and career paths

(Kidwai, 2011). As noted by Moore, Boyd, Rosser, and Elbert (2009), graduates with international experience are a critical component of the United States competitiveness in a global marketplace. Unfortunately, many undergraduates lack knowledge that will assist them in a globalized world (Wingenbach et al., 2003). This is especially true of agricultural students who will be compelled to find efficient and effective means to feed the growing population. In order for agricultural students to meet these challenges, those serving in agricultural education will also become accountable in preparing agriculture students with knowledge of the global workplace. Colleges of agriculture are primed to prepare globally competent graduates (Heinert and Roberts, 2016).

To mitigate students' lack of international knowledge, many higher education institutions are providing students an opportunity to participate in study abroad programs (SAP). SAPs are defined by Alexis, Casco, Martin, and Zhang (2017) as "either short-term or long-term education programs that occur outside the geographical boundaries of the students' country of origin" (p. 249). SAPs offer students a unique opportunity to gain cross-cultural experiences and awareness, along with transforming their worldview. Harrell, Sterner, Alter, and Lonie (2017) posited that challenging students to stretch their viewpoints is critical when thinking on a global level. Specifically, agricultural SAP experiences can provide participants an opportunity to compare their current knowledge about agriculture and related science to what they experience in another country. This new awareness has the potential to break down barriers of agricultural ethnocentrism or biases participants may have had in regard to how others produce food products.

A growing number of institutions are recognizing the positive effects international experiences have on graduates entering the global workplace (Smith, Smith, Robbins, Eash, & Walker, 2013). When considering study abroad as related to agriculture, Malloy and Davis (2012) stated, “it was now time to ask how agricultural colleges could participate in the internationalization of education through study abroad opportunities” (p. 24). Today’s scientific community is connected at a global level (Alexis, Casco, Martin, & Zhang, 2017) and there is a felt need for individuals to be respectful in relation to culture, economics, and politics (Dwyer & Peters, 2004).

Study abroad experiences are gaining interest as the United States continues to expand global horizons. Organizations such as the Institute of International Education (IIE) and the International Education of Students (IES) have collected data that provides supporting evidence in regard to the benefits of students’ participation in educational SAPs (Dwyers & Peters, 2004). As noted by Zhai and Scheer (2002), SAPs are in the spotlight as the primary method used to expose students to global competencies. Agriculture is one area where a significant global interaction occurs. The ability to specialize and trade what a particular geographical area produces most efficiently and effectively is of primary importance from both an agricultural and economic perspective. Worldwide connectivity necessitates those involved in agriculture to broaden their knowledge and understanding beyond their domicile. Participation in a study abroad program is one way to enhance what is taught in the classroom. SAPs provide students an opportunity to interact first-hand with those engaged in agriculture at the host site. First-hand experiences provide deeper appreciation and learning as a result of being part of the activity (Kidwai, 2011; Shelley-

Tobert, Conroy, & Dailey, 2000). SAP experiences also provide participants “a wider range of opportunities for relevant, experiential learning, including hands-on and/or project based work situated in global context” (Jesiek, Haller, & Thompson, 2014, p. 2).

SAPs also provide students an opportunity for acculturation and cultural learning from immersion and direct interaction with individuals in the host country (Akli, 2013). This is especially true when students are ‘mindful’ of their experience. Akli (2013) noted that through mindfulness, students will distance themselves from ethnocentrism, a state where they only see the world from their native perspective. Students will then have the ability to form new perceptions of cultural pluralism and form multiple viewpoints (Alklu, 2013).

Technology has allowed for innovative approaches to be used to help find ways of feeding a growing global population. The ability to efficiently use natural resources and market products globally creates economic gains for both the consumer and producer (Lambin & Meyfroidt, 2011). As concerns for the ability to feed the world continue to grow, scientific knowledge in regard to efficient and effective agricultural production and practices becomes invaluable. Chiasson and Burnett (2001) found “agriscience programs educate students to achieve in diverse areas that are very practical for dealing with the challenges of today’s world” (p. 62). Agricultural careers have expanded to include many different careers and the knowledge and skill taught in agricultural courses can be easily transferred to various careers (Chiasson & Burnett, 2001). As agriculture continues to become less labor intense, technologically advanced, and more globally connected, opportunities for college

graduates with international experience will proliferate (Harder et al., 2015).

Theoretical Framework

The theoretical framework guiding this study was Ajzen's (1985) theory of planned behavior. Ajzen's theory of planned behavior (TPB) posits that an individual's behavior is directly driven by the individual's intention to engage in the behavior and can be used to predict and explain behavior as applied to particular contexts. TPB includes three presiding factors of influence: (1) attitude toward the behavior; (2) subjective norms; and (3) perceived behavioral control. A central component of TPB is a person's *intention* to complete a given behavior (Ajzen, 1991). Intentions are motivators that propel an individual either to engage in the behavior or not to engage in the behavior. However, for the action of engagement to occur, factors such as having the opportunity and resources are primary variables. Perceptions of behavioral control (ability to achieve desired outcome) and behavior intention (motivation to engage or not to engage in the activity) are predictors of behavioral achievement (Ajzen, 1991). As noted by Ajzen (1991), self-efficacy (confidence in one's self) is compatible with TPB. Ajzen (1991) stated, "the theory of planned behavior places the construct of self-efficacy belief or perceived behavioral control within a more general framework of the relations among beliefs, attitudes, intentions, and behavior" (p. 184).

Purpose & Objectives

The purpose of this study was to explore how an international experience in South Africa impacted participants' perceptions of South African culture, global agriculture, and science. More specifically, the objectives of this study were to:

1. Describe how the participants' perceptions of South African culture, global agriculture, and science changed throughout the short-term study abroad program;
2. Describe how the participants' will use their new knowledge in their future careers.

Methods

A qualitative method allows for a holistic approach in which words and feelings can be analyzed (Creswell, 1998). Merriam's (2002) basic interpretive approach was used because it allowed researchers to explore a phenomenon. As noted in Merriam and Tisdale (2016), "a central characteristic to all qualitative research is that individuals construct reality in interaction with their social worlds" (p. 24). Merriam and Tisdale (2016) also posited that the use of a basic qualitative study is most useful when the research is interested in "(1) how people interpret their experiences, (2) how they construct their worlds, and (3) what meaning they attribute to their experiences" (p. 24). These three attributes were principle components of interest in this research study; therefore, a basic qualitative approach was used for this study. Additionally, qualitative data collected from open-ended questions administered prior to and upon completion of the SAP, along with reflective journals, allowed students to contextualize their experience and articulate personal growth from their SAP. This data collection approach provides rich, detailed insight from the students' viewpoint. The study is bounded by the use of specific participants and their experiences from this SAP; therefore, a case study approach has been utilized to explore the phenomenon of interest. As noted by Yin (2014), "a case study allows investigators to focus on a "case" and retain a holistic and real-world

perspective” (p. 4). Case studies are particularly applicable when the research is an investigation that is a contemporary phenomenon of a real-world context where the phenomenon of interest fails to contain a boundary (delineation) between the context and phenomenon (Merriam & Tisdale, 2016; Yin, 2014).

In agreement with Koro-Ljungberg, Yendol-Hoppey, Smith, and Hayes (2009), constructivism was the theoretical perspective. A constructionist epistemology is appropriate for this study due to the researchers’ purpose of finding meaning constructed by the individual, where multiple realities exist (Crotty, 2004). Furthermore, the researchers would like to disclose their interest in globalizing educational programs and communicating science in order to acknowledge potential bias of this study. All researchers bring bias into their research (Creswell, 2013). We are aware of our direct contact with the participants and their future educational outcomes, requiring them to be cognizant of any potential biases. Trustworthiness and validity of findings were established by triangulation of data collection (pre and post experience questionnaires, in addition to daily reflective journals). Dual researchers reading and coding the open-ended questions and the reflective journals enhanced credibility.

Participants & Study Course

Participants were purposefully selected based on their participation in the International Leadership Seminar for State Officers (ILSSO) and their enrollment at the University of Nebraska-Lincoln in a course designed to enhance their international experience. Seven undergraduate students, four male and three female, participated in this study. All participants were Nebraska FFA officers during the 2015/2016 school year. The ILSSO experience took place in

South Africa in January of 2016. The participants traveled first to Virginia where they connected with other State Officers from across the United States and then traveled as a group to South Africa. Class sessions were conducted prior to the international experience and after the international experience.

Data Collection & Analysis

As previously noted, participants of this experience were asked to complete both pre and post experience questions and daily journal reflection entries pertaining to their individual perceptions of each day. Information obtained from preexperience questions focused on background information such as hometown, high school agriculture experiences, career goals/aspirations, personal culture and any prior ‘other’ cultural experiences they may have engaged in. Participants were also asked to theorize on what they might gain from this SAP, what prior knowledge they already possessed about South Africa, and what they might expect to see in their host country in regard to differences in technology, agriculture, and scientific innovation/advancements. Participants concluded with their projections of how they expected this experience to benefit them both personally and professionally.

Upon returning to the United States, participants completed postexperience questions. The postexperience questions included probes in regard to cultural diversity and perceptions of agriculture as related to host country versus home country in aspects such as technology, agriculture, and scientific innovation/advancements. Students were also asked to relate how their SAP experience increased their knowledge, skills, and understanding of the host country and how this experience can benefit them in both their professional and personal lives in the future.

Participants also completed daily reflective journal entries on their experience. The specific prompts that participants based their reflections on were as follows:

1. What did you learn in regards to culture, global agriculture, and scientific advancement within agriculture?
2. How will you use what you learned in your future careers?

Initial data analysis was completed using thematic analysis. Specifically, the block and file approach was used (Grbich, 2007) to identify reoccurring words. Each piece of data was viewed three times and reoccurring words were color coded to identify reoccurring themes. Each theme was given a name that aligned with the data. Trustworthiness techniques (Lincoln & Guba, 1985) were used to enhance the quality of this study. Two data collection methods, multiple researchers, and member checking by use of an outside reader were used to ensure triangulation and to enhance credibility. Thick description of the themes aids in transferability (Dooley, 2007) and decisions of a methodological nature were recorded in a journal to ensure dependability and conformability.

Findings

Six reoccurring themes emerged from the data: a) adaptability, b) enhanced communication skills, c) attainment of diverse/broadened academic agricultural knowledge, d) risk taking, e) intercultural competency, and f) global awareness and impact on future careers.

Adaptability

Prior to South Africa, participants were eager to practice their adaptability (P1; P3; P4; P5). P4 recognized there would be an adjustment period upon arriving in South Africa and it would take some time to learn how to adapt to a different way of living. P5 looked forward to adapting to the surroundings by consciously altering her

behavior. The eagerness and anticipation of adapting to a different culture aligns with Ajzen's (1991) TPD. The participants clearly intended to adapt to the culture in South Africa, which according to Ajzen (1985) an intention can be used to predict and explain behaviors. Prior research indicated that participation in SAPs provides students an opportunity to open their minds to different viewpoints and different cultures (Ayers, 1996; Hutchins, 1996; Garvey, 1996; Kauffmann, Martin, Weaver, & Weaver, 1992; Burn, 1980; as cited in Zhai & Scheer, 2002). Roberts, Conner, and Jones (2013), posited that participation within another culture can result in the participant learning as much about their own culture as what one may learn about the other culture. P3 related the need to adjust their learning to the setting, stating the following, "I adjusted socially by the way I carried my conversations with natives. I had to really watch what I said and make sure that I wasn't going to say anything offensive." Participants were amazed by the cultural differences and P1 realized the significance of being willing to set aside your differences and learn about culture that is unfamiliar. Cultural differences were also evident to participants in regard to names of foods (P5 noted 'chips' meant French fries), meal preparation (spices used in food) and dining experiences (always a dessert and beverage served as a *part of* the meal rather than an *addition to* the meal). P1, P4, and P7 noted this is a culture that is inherently hard working and has a high priority on family. Recognizing the participants initial intent to adapt to the culture in South Africa explains why the participants were able to exhibit the behavior of adaptability and align with Ajzen's (1985) TPD.

Enhanced Communication Skills

The need for enhanced communication skills emerged early on. P7

realized that effective communication began with effective listening, which helped to break communication barriers. P5 had trouble communicating with individuals due to lack of common interests. Interaction in South Africa encouraged P5 to engage in conversations with complete strangers. P3 stated the following in regard to engaging in conversations with another culture, “I learned how to listen and learn about somebody who comes from a different culture.” The ability to listen to an individual allowed participants to determine the subjective norms (Ajzen, 1985) that were prevalent in a particular region of South Africa. Smith et al. (2013) stated, “students who study abroad exhibit personal and professional attributes that are critical to success in the 21st century workplace” (p. 13). In a study conducted by Zhai and Scheer (2004), findings concluded that agricultural students acknowledge the benefits of an international educational experience as one that increased their personal development and global competency. Acquiring a new appreciation for communication skills with individuals outside the participants’ home country was expressed by all seven of the SAP participants. In addition, P2 stated, “if we are able to communicate with people in a different culture then it will make it easier to communicate with people in our own culture.”

Attainment of Diverse/Broadened Academic Agricultural Knowledge

The ‘flattened’ world (Friedman, 2006) has expanded trade and exchanges of technology, allowing businesses to position themselves in many countries (Harder, et al., 2015). Zhai and Scheer (2004) stated, “the expansion of international trade and economic competitiveness means that the agriculture industry must operate on a global scale. Therefore, it is crucial that agriculture

students become more knowledgeable about other countries, their cultures, economy, and roles in world affairs” (p. 40). Participants valued learning about agricultural sciences in South Africa. P5 was interested in the biotech crops that are being grown in order to increase yields in order to make agricultural production more sustainable. P1 perceived South African agricultural sciences to be developed in a way that utilizes scientific advancements within production agriculture. However, there were other instances of where participants experienced undeveloped agricultural practices too. P3 noted in their daily journal, “visiting the old shanty town was neat because we could see how the agriculture evolved with money, time, and different groups of people.” P7 noted in postexperience answers, “the agriculture is much more diverse than I could have ever imagined.”

SAP programs provide students an opportunity to contextualize their learning. Contextualized learning is described as “a set of strategies that provide a holistic approach to instruction” (Shelley-Tolbert, Conroy, & Dailey, 2000, p. 52). SAPs can provide conduits between agriculture and STEM concerns in the United States. A number of research studies posited the benefits of teaching science through agriculture (Chiasson & Burnett, 2001; Shelley-Tolbert, Conroy, & Dailey, 2000; Thompson & Schumacher, 1997). Balschweid (2001) agreed, stating, “research findings have supported the claim that integration of science into agriculture curricula is a more effective way to teach science” (p. 362). Additionally, according to Chiasson and Burnett (2001), “today there are a few areas that one can examine to identify current links between education in the fields of science and agriculture to improve science literacy” (p. 63). Therefore, participation in SAPs where agriculture

students are mindful of not only agriculture, but also science in agriculture, provides twofold learning from a single experience. Participants realized that the agricultural sciences were embedded in South African agriculture (P1; P2; P4; P5; P6). If SAP participants knowingly and purposefully learn about necessary overlap between agricultural production and science, according to TPD (Ajzen, 1985) the participants would be likely to experience a change in attitude or behavior within a particular context.

Participants of this SAP were cognizant of technology and innovation, in addition to underdeveloped agriculture and science practices in South Africa. P2, P3, P4, P5, P6, and P7 noted incredulity in the amount of technology already existent in South Africa, while P7 noted many practices lagging in technological use. P7 summed it up in the following statement, “south Africa is either 15 years behind in scientific innovation in the agricultural industry or 3 years ahead of the United States.” This refers to the noted advancements (P7) in regard to AI and other genetics in animal husbandry, whereas in row crop applications (overall use of machinery and mechanized harvesting) even though participants viewed use of major brands such as John Deere or Case, most machinery was older and manual labor was still evident.

Risk Taking

P1 and P6 looked forward to experiences that would take them out of their comfort zone and force them to take risks. P1 and P4 expressed how this experience required them to ‘step outside their comfort zone’. P4 wrote the following, “I learned to face my fears, quietly make decisions, and how to analyze if I can trust someone with my life on short notice.” Participation in this SAP provided valuable knowledge in regard to appropriate

behaviors in culturally diverse situations. In research conducted by Sutton and Rubin (2004), participating in an SAP “adds value to students’ academic achievements” (p. 77). Gibson et al. (2015) adds from Sutton and Rubin’s (2004) research that there were “higher graduation rates, grade point averages and better cultural competencies than undergraduates who did not study abroad” (p. 149). From their SAP experience, P4 noted an increased confidence in their ability to increase involvement and interaction with others, whether it is in social situations, student organizations, community activities, or their future career. International experiences appear to provide individuals with an opportunity to

Intercultural Competency

Research completed by Harrell et al. (2017) noted study abroad experiences benefit participants in a variety of developmental processes such as gaining knowledge about the country they visit, a potential to increase their foreign language proficiency, an increased awareness of their own capabilities and beliefs, and an increased understanding of intercultural competency. As a part of many study abroad experiences, students will gain not only knowledge of differences in people and places, but often leave these experiences with knowledge in regard to themselves and their homeland. P1 noted in their pre-experience, “I want to understand first-hand that people live life in a different culture of my own.” Upon return, P1 noted, “I learned not to make a big deal out of cultural differences because they don’t define us as people”. P2, in their daily reflective journal said, “I recognize today the amount of greed Americans have and we have blinders on so much of the time.”

Embedded in SAPs is the attainment of intercultural competence. Intercultural

competence is comprised of three dimensions: cognitive (possessing information in regard to cultural issues), affective (possession of open-mindedness to new values and situations), and behavioral (use of culturally appropriate people skills) dimensions (Williams, 2009). The cognitive aspect of intercultural competence is espoused with the knowledge of cultural norms, behaviors, values, and beliefs of the country being visited. This dimension requires the participants to be open and flexible to the attainment of new perspectives and information. As noted by P1, the work environment in South Africa displayed a social atmosphere where laborers were engaging in communication with each other socially (slow paced and relatively relaxed), not just interacting on work related issues. P1 concluded by stating this would be a work environment they would be happy to be employed in.

The affective attribute of intercultural competence refers to a participants' flexibility in adapting to new situations and retaining an open-mind when encountering new values. Every participant (P1-P7) reflected that the South African people they came in contact with demonstrated a happy and cheerful disposition, even those individuals living in shanty towns. P1, P3, and P5 felt that even though poverty was evident in the shanty town, the inhabitants demonstrated pride and contentment in what they possessed and were willing to share what little they had with visitors. Participants also realized that cultural differences would evoke various emotions. P1, P2 and P6 reflected on their unease with street vendors and their persistence in selling goods to them. Participants noted this exposure required them to be aware and savvy when they encountered this street vendors selling goods.

Global Awareness & Impact on Future Careers

The value of global awareness is not only valuable in regard to potential future careers for today's graduates, but also due to the changing demographics within the borders of the United States. Research has shown that in the United States there is a changing demographic, therefore today's majority may become the future's minority (Hempel, 2013; U.S. Census Bureau, 2012; Zhai, 2000). P1, P3, P4, and P7 noted distinct lines of segregation still exist in South Africa. P1, P3, P4, and P7 noted that from their observations Caucasian descent was the minority and white individuals served as managers/supervisors, whereas black individuals were the laborers.

Not only can an international experience increase student sensitivity in regard to other cultures, but participants also attain valuable global competencies to be used in their personal and professional lives (Chang, et al., 2013). As noted by P1, P2, P3, P4, P5, and P6, a new appreciation, understanding, and respect was realized for not only their host country, but also for his/her home country. P4 noted, "these people [South Africans] have so little in terms of material possessions compared to us, yet they are truly joyful in every way. This comes from being grateful for what they have." P1, P2, P4, P6, and P7 noted the friendliness, pride, and humble manner of the farmers and laborers they came in contact with. In postexperience answers, P7 stated, "I believe I have a strong understanding of the global field of agriculture, food, and natural resources in South Africa". P5 added, "I now have a much greater understanding of how the global export and trade markets work." Finally, P1 expressed their increased global understanding by stating, "After spending time in South Africa, I understand that many places in the world use the same agricultural

practices as we do here in the United States”.

As stated by Bruening and Shao (2005), “one in six jobs today is directly tied to international trade” (p. 48). Not only is there an importance of ensuring adequate supplies of food for a growing world population, but there also exists an importance of understanding and assisting with food production systems in developing countries. With increased urbanization, an upsurge in world population, along with lifestyle changes resulting in diverse food preferences, there becomes a necessity to increase animal and crop production, whereby increasing food security (Ekiri et al., 2013; Harrell et al., 2017; Heinert & Roberts, 2016). Zhai and Sheer (2002) noted that as global food needs increase, understanding agriculture in various contexts along with an awareness of international perspectives is imperative to alleviating concerns in regard to adequate food supplies. In a study by Bruening and Frick (2004), it was noted there is a growing need for more agricultural students to participate in SAP experiences in order to increase their cultural knowledge and global contextual understanding. Additionally, by combining cultural awareness with experiential learning as related to agricultural practices, students have the ability to cultivate and develop higher-order thinking along with problem solving skills (Ekiri et al., 2013). Participants in this study learned how to critically think about situations and make quick decisions (P4, P5). P2 used critical thinking when making judgments about South African and American agricultural practices and when thinking about what could be done to ensure that food is transported to people in need.

As noted by Smith et al. (2013), “increasingly institutions of higher learning are recognizing the value of an international experience to students’ preparation for the

globalized workplace” (p. 15). P7 stated, “the quote of if there is a gap, there is an opportunity screams South Africa.” This participant continued by reflecting on the fact that while South Africa agriculture has evolved over time, there still exists potential for improvements. The participant continued, stating their desire to grow food science in this country as a part of their future career path. Exposure to a different culture and agricultural practices seemed to open up a new world for many of the participants and allow them to increase their self-efficacy and realize that there is still room for behavioral change. While only P7 noted their interest in working internationally in the future, P1, P4, and P6 communicated how this experience brought new perspectives into their views on agriculture, trade, cultural relationships, and communication that can be relayed to those in their future professional career fields. The entire international experience contributed to enhancement through knowledge of agricultural sciences, communication, and culture (P1; P5).

Conclusions & Recommendations

Many students entering agricultural programs in higher education come from rural areas where exposure to different cultures and socioeconomic classes is limited. SAP experiences can bridge the gap between prior limited experiences to future pluralistic careers. Zhai and Scheer (2002) stated, “study abroad programs (SAPs) have become the most visible and popular international activity to enrich and broaden students’ global competency at college and university campuses across the United States” (p. 23). They continue by stating how they possess a newfound confidence in improved employability as a result of this experience. This is important as employers seek candidates who are able to contribute to

a company's economic global presence (Cranmer, 2006; Harder et al., 2015).

The findings from this research indicate an international experience can and should integrate cultural learning, be an academic learning experience focused on science that is essential in today's global agriculture industry, and should be a learning experience that can be applied to the participant's future career. In alignment with Ajzen's (1991) assertion that intention is the central component of TPB, participants went into this study abroad experience purposefully looking for new experiences that would remove them from their comfort zone and promote self-growth. Participants went on the SAP with the intention to change their mindset through cultural experiences. However, it is important to note that cultural learning was intertwined with academic learning, which focused on becoming more scientifically literate within the agricultural sciences.

As interdependence and interconnection between and within countries continues to evolve and develop, it becomes increasingly vital for agricultural students to engage in real-time experiences both within and outside their domicile. This is crucial for not only students as they prepare for their future career path, but also for the United States in order to remain competitive in the global economy and when working toward the challenge of feeding a growing world population. In agreement with Smith et al. (2013) and Harrell et al. (2017), as industry continues to expand globally, universities must provide undergraduates with education that prepares them to effectively operate within other cultures. University instructors should purposefully examine their courses to determine how the courses could be modified to focus on global awareness and intercultural competency. Modifications may include opportunities for students to

interact and collaborate with students from other cultures. Interactions could take place on the home campus or interactions could be facilitated online with students or professionals in other countries.

SAPs provide students an opportunity to become *global* citizens, which is positive for all people (Akli 2013). In research conducted by Kidwai (2011), a participant noted, "I learned how narrow my perception of agriculture was" (p. 33). Hillary Rodham Clinton, in her past role as Secretary of State noted the importance and necessity of a globally educated citizenry and appealed to American students to study outside the United States (Smith et al.). According to the Food and Agriculture Organization (FAO, 2009) the rapidly growing population will lead to 70% of the people residing in urban settings. The rising population will challenge agricultural producers to provide adequate food for the world (FAO, 2009). The complexity of feeding the world makes it ever more important to prepare students for a globally connected world (FAO, 2009). Not only are colleges of agriculture positioned to make an impact on students' global competency, but these experiences can also shape student perceptions and attitudes of globalization, creating more globally minded individuals who are workforce ready for the 21st century and beyond. University instructors should contact agricultural employers from multiple countries to identify specific global competencies that agricultural employers are looking for and expecting when hiring university graduates.

It should be noted that findings from this case study may not be transferable to all study abroad experiences. This case study contained a limited number of participants and only included one university and one course. Additionally, outcomes resulting from study abroad experiences continue to gain interest in educational institutions. In

order to increase participant awareness, completion of the Intercultural Development Inventory may provide valuable information in regard to findings from their SAP experience.

The international sharing of technology and resources is crucial to concerns related to growing adequate amounts of food for the world's increasing population. As the interconnectedness of agriculture and science continues to evolve, collaborative research related to international experiences can assist in creation of invaluable connections between technology and agriculture.

Future research should be conducted to determine how intercultural competency levels positively or negatively impacts the success of agricultural careers in the 21st century. Additional research identifying and expanding on the intercultural competencies needed for 21st century agricultural jobs will allow for SAPs to modify their programs to better meet the needs of agricultural employers and students. Research should also be conducted to better understand the barriers of participation in SAPs and how SAPs can be modified to enhance science literacy through an agricultural context.

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