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International Service-learning Experiences: Impacts on Post-service Education

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Abstract

This qualitative phenomenology investigates the acquisition of intercultural competencies during international service-learning experiences. Additionally, the authors of this article examine the impact of intercultural competencies on subsequent coursework. The findings of this study indicate that international service-learning experiences result in the acquisition of multiple intercultural competencies. Participants of this study were able to make their experiences more meaningful through the practice of purposeful reflection. Despite a lack of institutional preparedness, participants of this study unanimously acquired intercultural competencies that were used to contextualize the learning process in a more meaningful way.

Keywords: service-learning, post-service, education

1. Introduction

This qualitative phenomenological study explored the shared experience of twelve students studying at flagship universities in a western state of the United States of America. Participants experienced international service-learning facilitated by their home institution. This study examined academic outcomes of international service opportunities and if and how the same international service-learning experiences were used to contextualize the learning process. Cultural competencies gained in international service experiences were also investigated and how students use them to inform their educational process.

Globalism has prompted institutions of higher education to internationalize the student experience. Today, internationalization is a core issue of concern to the higher education enterprise, touching directly on questions of social and curriculum relevance, instructional quality and prestige, national competitiveness, and innovation potential. Deardorff, Heyl, deWit and Adams (2012) view internationalization as a source of potential revenue. Regardless of motivation, a common characteristic of higher education is the internationalization of curriculum and the student experience overall, including study and service abroad. The American Council on Education has promoted the concept of 'comprehensive internationalization' throughout academia for several years as being "a strategic, coordinated process that aligns and integrates international policies, programs, and initiatives, and that positions colleges and universities to be more globally oriented and internationally connected" (Peterson & Helms, 2013, p.29).

Recently, internationalization professionals, and faculty have made efforts to close the global learning circle by redirecting global learning goals and outcomes toward the students' place of belonging. As noted by Peacock (2007), "Once we achieve global identities, we must ground them, integrating the global and the local in some way that energizes and sustains both" (p. 10). Peacock's concept of Grounded Globalism assumes that humans contextualize their lives, in part, through a sense of place and belonging. The progressive globalization of society necessarily and continuously encroaches upon our sense of place and belonging. Moreover, the same courses of identity promoting a sense of place and belonging often constitute barriers to expanding and reintegrating global learning.

Student assessments do not always assess outcomes; rather, they assess student satisfaction. There is a "state of confounded rationales, program goals, and program types [that] complicates assessing study abroad outcomes to the point that there is limited high-quality evidence on its outcomes" (Bringle & Hatcher, 1999, p. 9).

The central question guiding this research was: how does an international service-learning experience, facilitated by a four-year educational institution, ultimately inform the educational process for student participants?

Definition of Terms

Globalism. "The broad economic, technological and scientific trends that directly affect higher education and are largely inevitable in the contemporary world" (Altbach, 2006, p. 123).

Grounded globalism. A concept that assumes that humans contextualize their lives, in part, through a sense of place and belonging (Peacock, 2007).

Intercultural competence. "Effective and appropriate behavior and communication in intercultural situations" (Deardorff, 2006, p. 249).

International service-learning.

"A structured academic experience in another country in which students (a) participate in an organized service activity that addresses identified community needs; (b) learn from direct interaction and cross-cultural dialogue with others; and (c) reflect on the experience in such a way as to gain further understanding of course content, a deeper appreciation of the host country and the discipline, and an enhanced sense of their own responsibilities as citizens, locally and globally." (Bringle, Hatcher, & Jones, 2011, p. 19)

Research Design

The Phenomenological approach seeks to uncover the lived experience in ways that other qualitative approaches are unable. According to Van Manen (1990), "Anything that presents itself to consciousness is potentially of interest to phenomenology, whether the object is real or imagined, empirically measurable or subjectively felt" (p. 9). The lived experience is how one perceives their own presence in the world at the time of specific events and truths (Morse & Richards, 2002).

Sub-questions

- 1. What were the means by which students were made aware of the expected acquisition of intercultural competencies while serving abroad?
- 2. What, if any, kinds of reflective exercises have students participated in after their international service-learning experience?
- 3. How have students used newly acquired intercultural competencies to inform the educational experience following an international service-learning experience?
- 4. What, if any, underlying themes emerged from international service-learning experiences and how have they informed the educational process following that experience?

Participants

Participants for this study were purposefully selected. Participants were selected based on specific criteria. All participants have had different service-learning experiences, although they may have had those experiences in the same country. The inclusion criteria for participants was as follows:

- 1. Participants must be students at one of the two flagship institutions [in the western state being studied].
- 2. Participants must have participated in an international service-learning experience that was facilitated by their educational institution.
- 3. Participants must be seeking a four-year degree.
- 4. Participants must have spent at least 15 19 hours of service learning outside of the United States [of America].

Data Collection Procedures

Data were collected by interviewing participants in person soon after their international service learning experience. The personal identifiers of participants have been kept separate from data. Written permission to record interviews was received prior to conducting interviews. All interviews were recorded and transcribed in order to achieve the highest level of accuracy in reporting. The researcher using pseudonyms to protect the identity of participants completed transcriptions. Interview questions were structured in such a manner that they would guide the conversation. Interview protocol questions were established based on the sub-questions.

1. What were the means by which students were made aware of the expected acquisition of intercultural competencies while serving abroad? (This question was meant to establish the level of

understanding participants have of intercultural competencies and the extent to which their home institution was involved.)

- a. Can you provide a working definition of the term "intercultural competence," and if so what is it?
- b. How did your institution prepare you for the acquisition of intercultural competencies prior to your international service-learning experience?
- c. How did you prepare yourself for serving in a multi-cultural setting?
- d. What intercultural competencies did you expect to gain prior to your international service-learning experience?
- e. Please describe the interactions and service you were engaged in and how they led to the acquisition of intercultural competencies.
- f. Intercultural competencies can be categorized by knowledge, skills, and attitudes. Have you acquired any of the following six intercultural competencies, and if so please explain the process by which they were acquired?
 - i. Cultural self-awareness
 - ii. Culture specific knowledge
 - iii. View of the world from the perspective of other cultures
 - iv. Patience and perseverance when interacting in multi-cultural settings
 - v. Openness to other cultures
 - vi. Curiosity of other cultures
- 2. What, if any, kinds of reflective exercises have students participated in after their international service-learning experience? (This question is meant to establish the extent to which participants' home institution intervene with international service-learning experience reflection.)
 - a. How long was your service-learning experience?
 - b. Was your service-learning experience immersive?
 - c. What reflection exercises (i.e. journals, group conversations, follow up academic exercise) were offered to you by your institution following your international service-learning experience?
 - d. What self-guided reflection exercises did you partake in following your international service-learning experience?
- 3. How have students used newly acquired intercultural competencies to inform the educational experience following an international service-learning experience? (This question was meant to determine whether or not participants utilized intercultural competencies in subsequent coursework.)
 - a. How have you utilized the intercultural competencies acquired during your international service-learning experience to better perform in the educational setting?
 - b. What impacts, if any, do the newly acquired intercultural competencies have on your educational experience post-service?
 - c. How has your international service-learning experience helped you contextualize your learning process?
- 4. What, if any, underlying themes emerged from international service-learning experiences and how have they informed the educational process following that experience? (This question was mean to establish common themes identified by participants.)
 - a. What have been the major themes associated with your international service-learning experience based on the multi-cultural nature of your experience?
 - b. How have those themes informed your educational experience following your international service-learning experience?

2. Data Analysis

Interview results were stored using a database in order to easily file and retrieve themes that emerged during

data analysis. Analysis followed Creswell's (2013) process for phenomenological analysis. Initially, the researcher's personal experiences was bracketed so that "focus can be directed to the participants in the study" (Creswell ,2013, p. 193). Next, significant statements were identified and categorized by meaning units. The researcher then gave textural and structural descriptions, which when combined, make up the essence of the experience.

3. Findings

Researcher Experiences

Phenomenologists choose an abiding concern to study (Van Manen, 1990). As a result, the researcher assumes the risk of personal experiences impacting the study. Creswell (2013) suggests "In some forms of phenomenology, the researcher brackets himself or herself out of the study by discussing personal experiences with the phenomenon" (p. 77). This is referred to as epoche (Moustakas, 1994) or bracketing (Creswell, 2013). Epoche is rarely perfected. But, the mere act of bracketing one's own experience allows the consumer of research a better understanding of how the researcher's personal experiences may have influenced the research.

The researcher began by journaling as a means for reflection. The researcher has extensive experience abroad, having traveled to or lived in the following countries: Canada, Mexico, the Bahamas, Australia, Singapore, Hong Kong, Thailand, the United Arab Emirates, Bahrain, the Netherlands, Germany, Denmark, Belgium, France, and Poland. Additionally, the researcher has experienced service-learning as a researcher, participant, and facilitator. None of the international experiences were for educational purposes. However, self-guided reflection exercises have revealed the acquisition of intercultural competencies that are part of this study. As a member of the North Atlantic Treaty Organization (NATO), the researcher was constantly subjected to multi-cultural settings. As a result, ethno relativism was achieved naturally. Having acquired the intercultural competencies related to this study, the researcher introduced a natural bias to assume that all participants had similar experiences. Having bracketed the researcher's personal international experiences, the researcher acknowledges the risk and has safeguarded against any leading statements that might encourage faulty answers by participants.

The researcher also brings a natural bias toward service-learning as a form of experiential learning. Having facilitated, advocated for, written, and researched service-learning experiences, the researcher brings to this study a bias toward service-learning as a valuable component to the educational process. There are opponents to service-learning. While opposition is limited, the researcher was mindful during data collection not to let personal biases influence participant answers.

Table 1 provides participant demographic information, including gender, the location of their service-learning experience, and the duration of their experience.

Table 1. Participant Demographics

Pseudonym	Gender	Locale	Duration of Experience
P1	F	Germany	5 months
P2	F	Costa Rica	7 months
P3	F	Kenya	6 weeks
P4	F	Mexico	3.5 months
P5	F	Tanzania	4 weeks
P6	F	Kenya	6 weeks
P7	F	Argentina	3 months
P8	F	Malaysia	5 months
P9	F	Thailand	6 months
P10	M	Albania	5 weeks
P11	M	Nicaragua	6 weeks
P12	M	France	6 months

Note. P = Participant, M = Male, F = Female, Locale = Country of experience.

Textural Descriptions

Participants in this study experienced service-learning in a cultural environment different than their native culture. Many experienced social inequities, putting on display stark differences between their native culture in America and the culture in which their service-learning experience took place. The emerging themes were: (a) lack of standard institutional preparation for the acquisition of intercultural competencies, (b) nearly unanimous acquisition of identified intercultural competencies associated with this study, (c) journaling and peer-to-peer interactions were heavily utilized for self-guided reflection, (d) participants utilized intercultural competencies and international experiences to inform subsequent education, and (e) acquired a deeper understanding of gender roles in different cultures.

Lack of standard institutional preparation

Nearly all participants described a lack of intentional institutional preparation regarding intercultural competencies. Most participants were able to provide their own working definition of the term *intercultural competency*, but none had been introduced to the term by their home educational institution. While participants took measures to prepare themselves, and at times, cited pre-experience coursework as a means for preparation, none were afforded specific academic exercises meant to prepare them for the acquisition of intercultural competencies. However, upon reflection, it was apparent that lessons learned throughout their coursework proved to be greatly beneficial to their international service-learning experience. While participants did not see a well defined institutional model for preparing them to serve abroad, they all cited some sort of institutional experience that aided them in preparing for their experience.

The fact that participants did not receive any institutional preparation did not result in a total lack of preparation for the experience. Rather, participants were adequately prepared for international service-learning after having taking personal steps to prepare themselves. This component of the process was organic, meaning there was no standardized means of preparation.

Acquisition of Identified Intercultural Competencies Associated with this Study

Despite not having been formally prepared for the acquisition of intercultural competencies, participants nearly unanimously shared the experience of acquiring the six intercultural competencies associated with this study including (a) cultural self-awareness (b) culture specific knowledge (c) view of the world from the perspective of other cultures (d) patience and perseverance when interacting in multi-cultural settings (e) openness to other cultures and (f) curiosity of other cultures.

Beginning with cultural self-awareness, participants unanimously responded as having increased cultural self-awareness following their shared experience. A participant described an event that highlights her increased cultural self-awareness by saying "...when I was at this pharmacy with my Mexican friend and I was doing the talking because she's a little more shy and, I mean, maybe that's probably American identity that we're like, 'go guys' as far as asking questions. Like, 'yah, I'm the American, I can handle this." This participant described improved cultural self-awareness by explaining situations where she saw herself as taking on stereotypical characteristics of the American culture while interacting in multi-cultural situations. Conversely, another participant described her experience in terms of differences. "There was a lot of differences that I noticed and I'm pretty good at adapting to that kind of thing. So, I did my best to adapt because I don't want to just standout." This participant's awareness of her native culture came in the form of attempting to blend in to the multi-cultural environment, saying "mostly the easiest way to do that was just, like, dressing the same as other people there."

Culturally specific knowledge was described by many participants as the result of interacting closely with locals. A participant described her experience by saying "When we made local friends, [they] really guided our experience and, ... what that experience mostly was, was being guided through Islam. And so, I learned a lot because they are super open to answering our questions...because they don't want to be judged for how they think and what they believe in." This sentiment echoed throughout interviews with participants reporting very welcoming environments with hosts and peers willing to share local cultural knowledge.

With only a few exceptions, participants gained an understanding of the world from the perspective of other cultures through interactions with locals. One third of the participants noted regular dialogue relating to the American political atmosphere. With all of the participant experiences taking place during the 2016 political campaign, participants noted frequent questioning regarding the Trump campaign. A participant said "Well, I mean, the election in the US was going through the primary at the time... and that was even before Trump was the prime candidate, so there are a number of republicans and a lot of people are asking me 'oh, yeah, you know Donald Trump? Is he really seriously going to be the president?'" Conversations such as this allowed participants a better understanding of how other cultures perceive American politics and outside cultures at large.

Another participant had a similar experience saying, "So I realized when I was there that America is not the only place

where people kind of lump other cultures together because they would have sort of a tendency to lump England and America together because we're all kind of white English speakers and they didn't really like either for various reasons. In a general setting, if they met an American then that's fine, but generally they were really fans of England." He went on later to say, "They would tell, like Obama wanted to visit Argentina while I was there and they were like "Obama, go home because we don't like America."

Patience and perseverance were largely reported to have been acquired due to language barriers, and at time simply due to cultural differences. Language barriers are often the first barrier met in multi-cultural settings. As a result, when experiencing such an interaction, participants had no choice but to exercise patience in order to allow enough time for communication to be achieved. A participant described her experience as challenging due to language barriers. But, she describes a high level of patience when interacting with others. "I don't know, just because someone can't communicate well with you doesn't mean that they're not thinking or they're unintelligent. I think sometimes, ... maybe when I first speak it's just like you have to realize that. You have to realize that they still think even though they can't communicate with you as well."

Another participant reflected the communication responsibility on herself by saying, "when we are going into a new culture, you can't expect to, I mean, you're going to offend people and you have to be patient with yourself." She went on later to add "I just noticed being here in the US, I'm a little bit more patient with other people too, and giving people time ... I think [that is] something ... you learn when you go elsewhere because you learn how to understand people and how to ask questions and to really engage with people and that takes a ton of patience."

Participants reported increased openness to other cultures after having been exposed to multi-cultural settings. The acquisition of this intercultural competency dovetailed with the acquisition of the final competency related to this study, curiosity of other cultures. A participant began by describing what she saw as common misconceptions of other cultures. "There are so many theories behind other cultures and why they're doing what they're doing. Like as a woman for example, the theory is that they're oppressed, you know? Cause that certainly goes out the window and just hearing their story, where they're coming from." In this case, the participant was able to identify a common misconception, and identify how one might overcome that misconception by being open to differences among other cultures.

Another participant described her increased openness of other cultures as resulting from regular interactions with other cultures. "Just being able to accept other people or what they're doing and learning, yeah, that I'm not from the best way of doing anything. There's no best way. That was really a big thing that opened my eyes. It's like realizing... other people do things differently and that's fine and that's good and, just being one of a few white people or American in the city, just realizing that I was one of the minorities."

Increased openness to other cultures tended to result in increased curiosity of other cultures. A participant describes her experience by saying "I think [openness to other cultures] something that grows more and more each time you experience a new culture, at least it has for me. I feel like it's something that's increasing more and more and I think I'm more interested now to the subtle differences." Another participant stated, "We have a tendency here to lump all of Latin America together and since they're actually so distinct from one another, I want to visit all of them."

The acquisition of intercultural competencies was nearly universal among participants. The shared experience under inquiry did not include intentional institutional preparation for the acquisition of intercultural competencies, but did ultimately result in organic experiences that led to their acquisition.

Journaling and Peer-to-Peer Interactions Were Heavily Utilized for Self-Guided Reflection

Reflection exercises facilitated by the participants' home institution were haphazard. However, self-guided reflection was heavily utilized by participants as a means for making sense of their experience. In particular, journaling and peer-to-peer conversations were commonly used tools for reflections. A participant reported "I did a lot of journaling while I was there ...[I] edited all my photos. It's just in my journal, reflecting on the experiences." Additionally, she stated "I had two really close friends who studied abroad at the same time... so it was really fun to get together with them ... there are a lot of common things, ... our experiences were also so vastly different."

Participants of this study shared a common affinity for journaling, which aided them in better understanding their shared experience. Through the process of journaling, participants were able to reflect on their experience and make sense of how those experiences impacted their lives. The result is a better understanding of other cultures, their native culture, and cultural norms.

Participants Utilized Intercultural Competencies and International Experiences to Inform Their Subsequent Education

As with reflection exercises, participants did not receive any formal education regarding the applied use of intercultural competencies during coursework subsequent to their international service-learning experience. Very few participants

realized that they had been utilizing components of their newly acquired intercultural competencies during subsequent coursework. But, once it was brought to their attention, all participants were able to identify specific instances in which they had benefited from intercultural competencies. One participant stated ". I have a bigger better idea of what I'm accomplishing at the university. I know what classes I want to really take seriously. It's almost like applied learning." But that statement was prefaced by her saying "That's kind of something I've never thought to identify before. I personally recognize that first when I returned that my critical thinking skills were definitely on point." In other words, she was able to identify changes in herself, but had not considered how those changes had impacted her educational process. Participants did not typically utilize intercultural competencies for specific assignments such as papers or projects. Rather, they used them to better contextualize the overall message of their learning process and in interactions with their peers and professors. The result for participants is a better sense of their academic experience and a contextualization of content.

Deeper understanding of gender roles in different cultures. Lastly, despite a total lack of inclusion in interview questions, participants voluntarily identified a better understanding of gender roles. Nearly all participants experienced some exposure to the juxtaposition of gender roles in the US and western world with those of the country in which their service-learning experience took place. Participants spoke of gender norms in a matter of fact manner, rather than in a judgmental manner. Simply put, participants were subjected to gender norms that clearly differed from their native culture. As an example, one participant described her experience by saying "[Women] would tell me, 'You're so lucky,' ... and they are talking about how it was kind of counter cultural for the husbands to try to work more with their wives. You know, with their gender roles so strict ... they weren't supposed to help each other. It was ... a source of shame if you had to help your wife with her chores or she help you with your role or responsibilities."

A deeper understanding of gender norms was largely the result of service-learning experiences in developing countries. By witnessing gender norms of developing countries, participants were able to utilize self-reflection exercises and make comparisons to their native culture. As a result, this experience allowed participants a deeper appreciation and understanding for gender norms of their native culture.

4. Conclusions

Implications for Educational Leaders and Faculty

There is a great deal of room for improvement in preparing students for the acquisition of intercultural competencies and for a more targeted preparation in general. Intentional institutional intervention will require a high level of collaboration across disciplines. All participants are pursuing unique majors, meaning there are twelve separate disciplines represented in this study. In order to provide adequate intervention, institutions of higher education must be willing to provide pre and post-experience education cross-curricula.

Institutions providing international service-learning experiences must be able to connect these experiences with the educational process. All participants reported being left to their own devices following their experience. The result was a universal lack of understanding with regard to how the experience should shape the educational process. Rather, participants were able to identify educational benefits to the experience only after having been asked about it.

Educational leaders need to consider how the home institution assesses the experience. Second, if there is no follow-up, are students expected to utilize the outcomes of the experience? Lastly, is there an expectation that such experiences make the educational process more robust, or are they simply an opportunity for students to obtain an international experience?

Due to the high cost and time spent outside of the traditional educational setting, it would be most prudent to maximize the potential for such experiences by including: (a) pre and post-experience educational activities that include guided reflection exercises, (b) discussions that include the outcomes of international service-learning such as the acquisition of intercultural competencies, and (c) dovetailing the international experience with the educational experience to help students inform their professional decision-making process.

5. Summary

In order for the impact of service- learning to become profound, educational leaders and faculty must incorporate a better understanding of intercultural competencies, guided reflections exercises, and career coaching using, in part, the outcomes of the international service-learning experience. This can happen by facilitating pre and post-experience coursework that is cross-curricula, and intentional. Figure 1 offers a visual representation of how this might take place.



Figure 1. Model for Intentional Institutional Intervention

The visual representation above depicts the educational process surrounding an international service learning experience, showing the pre-experience student as one with little understanding of the impact of such an experience. By the time they've reached the post-experience education, the experience will be fully understood and used to inform decision making regarding the educational process as a whole, and professional ambitions.

In the pre-experience class setting, professors should outline the expected outcomes of an international service-learning experience. In doing so, students will have a better understanding of why and how the upcoming experience will impact their educational process. During the experience, students should participate in consistent guided reflection exercises in order to make sense of their current experience. This process will allow students to put in to context the lessons learned in the pre-experience classroom setting as well as develop a better understanding of their current experience. Finally, following the international service-learning experience, students should be shepherded through a guided reflection process to ensure they are able to fully contextualize their experience and apply it to their educational process. By participating in the aforementioned three steps, students will fully realize the value of international service-learning.

References

- Altbach, P. G. (2006). Globalization and the university: Realities in an unequal world. In J.J.F.Forest & P.G. Altbach (Eds.), *International handbook of higher education* I, 121-140. Dordrecht, The Netherlands: Springer. https://doi.org/10.1007/978-1-4020-4012-2 8
- Bringle, R. G., & Hatcher, J. A. (1999). Reflections in service learning: Making meaning of experience. In *Campus Compact's Introduction to Service-Learning Toolkit*, 2nd Ed., Providence, RI: Brown University.
- Bringle, R. G., Hatcher, J. A., & Jones, S. G. (2011). International service learning: conceptual frameworks and research. Sterling, VA: Stylus.
- Creswell, J. W. (2013). Qualitative inquiry and research design choosing among five approaches. Los Angeles: Sage.
- Deardorff, D. K. (2006). Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization. Journal of Studies in International Education, 10(3), 241-266. https://doi.org/10.1177/1028315306287002
- Deardorff, D. K., Heyl, J., Wit, H. D., & Adams, T. (2012). The SAGE handbook of international higher education. Thousand Oaks, CA: SAGE Publications. https://doi.org/10.4135/9781452218397
- Deardorff, D., & van Gaalen, A. (2012). Outcomes assessment in the internationalization of higher education. In D. K. DeardorffH. d. Wit & J. D. Heyl *The SAGE handbook of international higher education* (pp. 167-190). Thousand Oaks, CA: SAGE Publications Ltd. https://doi.org/10.4135/9781452218397.n10
- Morse, J., & Richards, L. (2002). Read me first for a users guide to qualitative researcher. Thousand Oaks, CA: Sage
- Moustakas, C. (1994). Phenomenological research methods. Thousand Oaks: Sage Publications. https://doi.org/10.4135/9781412995658
- Peacock, J. L. (2007). Grounded globalism: How the U.S. South embraces the world. Athens: University of Georgia Press.
- Peterson, P. M., & Helms, R. M. (2013). Internationalization Revisited. *Change*, 45(2), 28-34 https://doi.org/10.1080/00091383.2013.764261
- Van Manen, M. V. (1990). Researching lived experience: human science for an action sensitive pedagogy. Albany, NY: State University of New York Press.

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