Shifting Perspectives and Perceptions of Agriculture of Undergraduates Through Experiential Programming

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Abstract

An intensive experiential learning program that leverages the principles of cultural competency, servant leadership, and Peer-to-peer engagement was developed to increase the recruitment, retention, and graduation rates of diverse students pursuing agriculture and natural resource careers. Forty-two incoming freshmen participated in the program by enrolling in designated courses offered in the fall, spring, and mini-term semesters. The fall semester course explored the concepts of food safety, food security, and hunger in a local context. These same concepts were further explored in the spring semester from an international context. Through both the fall and spring semesters, students volunteered at a local botanical garden to build and maintain a new community garden project. The program culminated in a two-week international study abroad experience that immersed students in real-world experiences related to the issues they had previously studied. Three significant themes emerged from year-long journaling that indicated shifts in participants’ perspectives: the impact of hands-on experience working in the botanical gardens, realized benefits of community gardens and best practices for agriculture. Additionally, a fully-developed curriculum was created to guide instruction for the semester long courses.

Introduction

To create and maintain an inclusive and diverse working and learning environment that fostered diversity among faculty, staff, and students, designated faculty and staff were charged by the Dean of Herbert College of Agriculture (HCA) to form a Diversity Task Force (DTF). The group served in an advisory capacity to the Dean for the implementation of a college-wide strategic diversity management plan. Aligned and complementary to the University of Tennessee mission, the HCA-DTF focused on promoting diversity by providing enhanced opportunities for awareness, growth, and development. In 2012, HCA was awarded a USDA NIFA Higher Education Challenge (HEC) Grant which focused on promoting “A Culturally Competent Approach for Understanding Food Security and Hunger, and Food Safety in a Local and Global Context (Student Training in Agriculture and Related Sciences (STARS) Initiative – Awad No. – USDA NIFA – HEC 2012-70003-19991).” The program spanned three years and was funded by USDA NIFA HEC. Program goals were

1. Increase the number of diversified and trained individuals entering the Agriculture and Natural Resources (ANR) workforce,
2. Facilitate a continuous pathway of diverse baccalaureate students pursuing STEM science degrees in ANR,
3. Transform perspectives and perceptions of the value of agriculture STEM disciplines through servant leadership activities.

Theoretical Framework

Building Cultural Competency through Servant Leadership and Peer-to-peer Mentoring

Cultural competency is a developmental process that evolves over an extended period. Individuals are at various levels of awareness, knowledge, and skills along the cultural competence continuum (Betancourt et al., 2002; Randel et al., 2017). In developing this culturally competent approach to examining the diverse experiences and perceptions of students exploring ANR disciplines, a training model was created using servant leadership and peer-to-peer engagement. Servant leadership is based on 10 characteristics that practitioners can utilize. Those characteristics are listening, empathy, healing, awareness, persuasion, conceptualization, foresight, stewardship, commitment to the growth of people, and building community (Spears, 2002; Ehrhart, 2004; Neubert, 2016). Servant leadership is based on the context and culture in which the leader and follower are immersed (Figure 1). In addition, leader attributes and follower receptivity are essential in making the servant leadership experience successful. The middle component of the model identifies essential leadership behaviors that are the central focus of leadership (Linden et al., 2008; Witte et al., 2017). A servant leader should exhibit the behaviors of conceptualizing, emotional healing, helping followers grow, behaving ethically, empowering individuals, and creating a value for the community in order for servant leadership to be effective. If a leader has the antecedent conditions and leadership behaviors, the outcomes of servant leadership will be greater self-actualization for the followers, increased organizational cohesiveness, and positive impact on society (Northouse, 2013). To aid in the development of servant leadership abilities, a heavy emphasis should be placed on peer-to-peer engagement.

Peer-to-peer engagement is demonstrated when individuals share knowledge either one-on-one or within a community. In the culturally competent model, peer-to-peer learning gives learners an opportunity to take responsibility for education through engagement in the learning process (Totten et al., 1991). Servant leadership and peer-to-peer engagement are committed to growth of people and building communities.

Components from the servant leadership model were used to enhance the perspectives (interrelationship) and perceptions (awareness) of ANR disciplines amongst incoming freshman. Utilizing this model, students gained culturally relevant knowledge, awareness, and skills through servant leadership activities related to ANR disciplines. The cultural competency gained through these activities intrinsically benefits the participants through advancing their abilities to work with others. It also allows participants to better understand the benefits of how ANR disciplines are interconnected globally. In addition, students are provided the opportunity to construct their own knowledge based on experiences, often known as constructivism. The three main assumptions that follow constructivism are: 1. “Learners actively construct their own knowledge; 2. The knowledge they construct is subjective and may or not be factually correct; and 3. Knowledge is influenced by the beliefs of the individuals as well as situated in an individual’s interactions with his or her environment and with others” (Olusegun, 2015, pp. 66-67). Therefore, the model explored in this paper leverages constructivism, servant leadership and peer-to-peer engagement through a culturally competent approach as a means of recruiting and retaining diverse students into ANR majors.

Figure 1. Model of Servant Leadership
Note. Figure adapted from Liden et al., 2008
Methods

Methodology
This study employs a descriptive multiple case study methodology (Yin, 2003; Baxter and Jack, 2008) that allows for in-depth examination of the intervention (program) among cases within the unique context of the project in which the intervention occurred. The study targeted incoming first year students at University of Tennessee who self-selected into the First Year Studies Course Food Safety, Security and Hunger – Local in Fall 2013 and 2014 and First Year Studies Course Food Safety, Security and Hunger – International in Spring 2014 and 2015.

Recruitment of Program Participants. This study was conducted with the approval of the University of Tennessee (UT) Institutional Review Board (IRB) and all participants provided written informed consent prior to participating in the study. To participate in the STARS Initiative, students had to be incoming freshman as defined by the UT, self-select into the program by enrolling in three (1 credit hour) for-credit courses during the fall, spring, and mini-term semesters of their freshman year, and participate in a service learning project at a local community garden. During the 2013 – 2014 (Cohort 1) and 2014 – 2015 (Cohort 2) academic program years a total of 42 students participated in the course and community gardens learning experience (Table 1). By gender, a total of 12 males and 30 females participated. The cultural, geographic and socioeconomic backgrounds of students were self-reported as shown in Table 1.

Table 1. Demographics of fall and spring FYS 129 course and community gardens

<table>
<thead>
<tr>
<th>STARS Participants</th>
<th>Cohort 1</th>
<th>Cohort 2</th>
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<tbody>
<tr>
<td></td>
<td>Fall 2013</td>
<td>Spring 2014</td>
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<tr>
<td>Male</td>
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<td>3</td>
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<tr>
<td>Felame</td>
<td>12</td>
<td>4</td>
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<tr>
<td>Total</td>
<td>12</td>
<td>7</td>
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<td>Total Participants</td>
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Counts by Gender

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</tr>
<tr>
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First Generation College

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Need-Based Aid Received

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<td>No</td>
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During the spring (2014 and 2015) semester course, FYS 129 Food Safety, Security and Hunger – International, students continued to explore ANR disciplines directly related to food safety, security, and hunger in an international context. Specifically, students actively engaged in cross-cultural experiences, topics of global agricultural commerce, ag-industry, and natural resource management in developing countries. Furthermore, students gained a greater understanding of the socio-cultural context of agriculture, natural resource management, agri-tourism, and commercial tourism. The mini-term course ANR 491 was then developed as an experiential learning course for STARS Initiative 2013 – 2014 (Jamaica) and 2014 – 2015 (Thailand).

Throughout each program year, STARS students were engaged in experiential learning examining food safety, security, and hunger locally by working onsite at the Knoxville Botanical Gardens and Arboretum (KBGA) to design, build, and oversee a 10 plot community garden space at the KBGA. The overarching goal was for a multi-generational program that utilized [program participants] and community members who wished to participate. Located in the heart of Knoxville, KBGA is nestled within a socio-economically diverse neighborhood that has been identified as a food desert by the USDA. The USDA defines a food desert as ‘urban neighborhoods and rural towns without ready access to fresh, healthy, and affordable food’ (‘NAL’ n.d., Food Deserts, para.1). As a result, these neighborhoods are limited in food choices and often dominated solely by fast food restaurants and convenience stores that offer few healthy options. A lack of access to healthy food can lead to limited, unhealthy choices that contribute to overall poor health in the community (USDA, 2015). This community’s need for better access to healthy, fresh, and available food made the KBGA a location ideally suited for this project.

The community garden experience included opportunities for students, looking through the lens of food safety, security, and hunger needs in the local community, to assist those who had a desire to grow their own food, but lacked the space at their own residence. In addition to working with KBGA, during the fall semester of each year, students were exposed to food production locally through field trips to community farms and animal production facilities.

Community Gardens Learning Experience

During the fall semester of 2013, the first cohort (2013 – 2014) of STARS participants worked to develop garden beds and do some initial growing of fall produce. Although the first phase of construction (which include an accessible walkway) was done by a landscape contractor, primary development of garden plots was accomplished through hands-on participation of STARS participants throughout the semester. STARS participants worked 15 one-hour sessions per semester (fall and spring) to fully develop the community gardening beds (19 students x 30 = ~420 total hrs. worked). Appropriate fall crops were added to garden beds as garden areas were completed. The following spring, community residents were invited to participate for free in this project. Those wishing to participate were given their own gardening space. All 15 community gardening plots were utilized during the spring and summer of 2014.

The second cohort (2014 – 2015) of STARS participants began late in the summer of 2014. At this time, garden plots developed by cohort one were being fully utilized. Cohort two was instrumental in the further development of community gardening plots, expanding the space to include 22 additional individual community gardening spaces. The students were involved in clearing new garden areas of approximately 6000 square feet. Additionally, a garden area consisting of five terraces for plot demonstrations was established. These new beds helped tie the original community garden area with older and developing areas and have been now formally named, KBGA Center for Urban Agriculture.

The total estimated harvested (food yielded) from these beds was approximately 2,800 pounds for 2014. This food was distributed, in part, through a local religious organization to community members in need. As part of the program, students worked a total of 15 one-hour sessions throughout the semester (14 students x 15 = ~210 total hrs. worked fall semester, 8 students x 15 = ~ 120 total hrs. worked spring semester).

Journaling Their Experiences

To evaluate the shift in ANR perspectives and perceptions of STARS participants, students were asked to document their experiences at the community gardens and make connections to the course content through journaling. After work sessions at the gardens and each experiential learning activity, participants engaged in a debrief discussion led by peers or faculty members to ensure processing of meaningful experiences. The STARS participants were also asked to highlight their experiences through stories (memories) during the fall and spring of each academic program year. The research team checked student journals weekly to ensure meaningful connections were being made with both the course content and the community gardens service learning experience. Each STARS participant was required to journal for the duration of the program.

Data Analysis

Thematic analysis was utilized to analyze student journal entries. Thematic analysis (Braun & Clarke, 2006) requires one to familiarize oneself with the data, generate initial codes, create themes by categorizing like codes, review themes for fit with data, and define and name themes. Researchers coded student journal entries and categorized the codes into three themes. Those themes were hands-on experience working in the botanical gardens, benefits of community gardens, and best practice in agriculture.

Results and Discussion

The three main themes of impact arose from the year-long community garden experiences. These included (1) hands-on experience working in the botanical gardens; (2) benefits of community gardens; and (3) best practices for agriculture.
Hands-On Experience Working in the Botanical Gardens

Student participants reported that hands-on experiences increased their interest in learning about ANR disciplines. A single key statement emerged and cut across the student experience was; ‘I am motivated when I can visually see the progress of my work and the garden does just that’. Through this process of learning by doing, participants engage in activities that: (1) make abstract ideas and concepts concrete, (2) encourage active engagement by allowing participants to work with plant materials and have interactions with members of the community, (3) encourage creativity, collaboration, and communication. Within the varying activities of the program, participants were encouraged and exhibited creativity in the use of materials and applications. Through peer-to-peer interaction working in pairs, teams or small groups, participants used collaboration and communication skills (Totten et al., 1991). Communication skills were also utilized when students wrote or spoke about the activities, and lastly (4) accessed different areas of the brain -as participants use their hands to build, create, or process materials and/or ideas, different areas of the brain are activated.

Benefits of Community Gardens

Student participants reported contributions to the gardens made them proud to be a part of giving back to the community. This supports the assertion of Witte et al. (2017) that empowering individuals creates an intrinsic value for the community and helps develop strong leadership skills. One participant stated;

Today was probably one of the most inspirational days I’ve had at the garden Knoxville Botanical Gardens and Arboretum... They’re building a community kitchen for people who want to cater but don’t have the resources to do so. He told us about a woman who has two kids and is in school. She’s on food stamps and is struggling financially. She’s going to use the kitchen to support herself and improve her future for her and her kids. I found it so inspiring. I never realized how much the garden was contributing to the community. Not only is it feeding the community, it is helping them better their standard of living. It’s amazing the amount of things the KBGA staff is doing with the garden.

Program researchers observed students shift in the way they viewed the world - heightening cultural awareness. Though the students were still on varying stages of the cultural spectrum, it was evident there was growth from initial beliefs about how they viewed the world (Randel et al., 2017).

Best Practices in Agriculture

Through observations, we were able to see evidence of key components of the program taking shape, the shifting of attitudes and perceptions in agriculture. The third theme, ‘best practices in agriculture’, connects with the prior themes, (1) hands-on experience working in the botanical gardens and (2) benefits of community gardens. The observations of students under this theme highlighted their ability to construct their own learning through engagement in the experience and the opportunity to think critically; thus, supporting the framework of constructivism (Olusegun, 2015). It is here the participants expressed their ability to perform high order thinking and to engage with the science, materials, literature, and people engaged and supported by agriculture and the related disciplines. Some examples of student statements are as follows; (1) Effective farming that could maximize resources is a great way to approach hunger. By maximizing resources you can assure that your resources are being used to feed as many people as it can. You are not wasting time, resources, or profits; (2) There is definitely more planning and strategizing behind agriculture than I would have thought. It just goes to show that no matter the field of study, there is always dynamics that you will not truly be aware of until you actually study the discipline. That is what I am starting to witness with all the different dynamics that go into the field of agriculture; and (3) It will be interesting to see if agricultural workers in Thailand have to do anything special to ensure crop growth in such extreme temperatures.

Reflections of the Practitioners

Planning and executing a multi-year grant program will invariably present challenges to PI’s involved. Unanticipated issues and unforeseen circumstances, both positive and negative, will always be a part of the process. One of the unforeseen circumstances for this project involved the challenges of recruiting target populations of students into the program. The desired populations of unrepresented students for our program were challenging to reach and recruit despite multi-tiered approaches. It is highly recommended that a contingency plan be put in place to allow the program to continue if the desired population proves hard to recruit. Even with high-level incentives for potential students, the idea of being involved in a program based on agricultural concepts was a difficult sell for students who were not already predisposed to a positive view of agriculture. We addressed this challenge by shifting the focus to incoming freshmen who may not have met the traditional definition of “underrepresented”, but who had expressed an interest in the outdoors and indicated that they had never considered a career in ANR.

Another lesson learned as part of the administration of this project involved using thematic coding for student journals. Reflecting on student journal assignments given, PIs would have done a better job assigning more prescribed journaling. This would involve stricter prompts to students for their journals. This would insure the students are answering specific research questions of PI’s and would allow for easier data collection. Students who are asked to journal about their experience will journal in vastly different ways. [This can lead to vastly different journal entries and more difficult data collection]. If we were to do this same project again, we would present students with specific questions to answer as part of their journals in a specific order. Additionally, we allowed students to keep handwritten journals. This presented additional problems when analyzing
their experiences and trying to extrapolate information on how they grew both academically and personally through the process. Poor handwriting, and inconsistent formatting were all hurdles that had to be overcome. Again, if we were doing the same project over again we would require students to keep electronic journals.

Summary

This program was developed to expose students and faculty to various aspects of cultural competency nested in the servant leadership model through peer-to-peer engagement. The program was effective at engaging students through meaningful experiential learning at the local level through a combination of course delivered content, field trips to local community farms and animal production facilities, and service learning experiences at a local community gardens. Three significant themes emerged from thematic coding analysis of year-long student journaling: the importance of hands-on experience working at the botanical gardens, the benefits of community gardens, and the potential impact of best practices in agriculture. The cultural competency and peer-to-peer engagement model could be adapted for use at other institutions and various disciplines. Curricular pieces of this program continue to be used in various First Year Studies courses at UT.

Program weakness included its inability to impact a large number of students. However, this was not possible due to financial and spatial constraints of community garden plots. It is hoped that students and community participants become ambassadors and servant leaders to reproduce similar programs in their own communities.

Literature Cited


