The Journal of International Agricultural and Extension Education (JIAEE) is the official refereed publication of the Association for International Agricultural and Extension Education (AIAEE). The purpose of the JIAEE is to enhance the research and knowledge base of agricultural and extension education from an international perspective. Acceptance rates for the past five volumes are: Volume 20 = 21%. Volume 21 = 13%. Volume 22 = 18%. Volume 23 = 12%. Volume 24 = 18%. Volume 25 = 9%. Volume 26 = 26%.

Articles intended for publication should focus on international agricultural education and/or international extension education. Articles should relate to current or emerging issues, cite appropriate literature, and develop implications for international agricultural and extension education. Manuscripts, or portions of manuscripts, must not have been published or be under consideration for publication by another journal.

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A Feature Article should focus on philosophy, current or emerging issues, and the methodology and practical application of specific research and appropriate technologies, which have implications for developed and developing countries. Conceptual/Theoretical and Methodological manuscripts are also encouraged as submission for feature articles. If applicable, a feature article should report the findings from a fully investigated study. Feature articles are no longer than 20 double-spaced pages, excluding references.

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A Research Note is a concise but complete description of a limited investigation that will not be included in a later manuscript. It serves one of the following purposes: (1) presents initial proof-of-concept results on new ideas or program evaluations, timely issues, or innovative approaches; (2) reports replications or extensions of previously published research that does not merit another full-length manuscript yet provides results that contribute to a greater understanding of the phenomena under study. Research Notes are no longer than 10 double-spaced pages, excluding references.
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From the Executive Editor

Agricultural and extension educators around the world face a myriad of challenges when educating about the latest innovations, supporting communities, addressing stakeholder needs, staying relevant, being nimble in times of adversity, and helping their clients answer questions that often do not have clear-cut right or wrong answers. Despite the gray areas we are all living through right now, these are challenges we all face bravely together. It will take bravery to proactively challenge and adapt our current practices in an effort to lead, educate and communicate with the most up-to-date research-based methods and information to those who need it the most; those who will use it to improve their lives and the lives of those around them. If you read the entire December 2020 issue of the JIAEE it will challenge you to think about your current practices and want to make adjustments.

Each and every article provides research-driven recommendations for practical improvements that, when implemented, will take our educational practices to the next level. For example, Ali et al. challenge us to examine and remove barriers to extension educators’ personal resilience post-disaster, Richardson and Roberts examine traditional versus modern takes on the roles women assume in agricultural systems, and Camillone et al. explore the challenges agricultural extension faces in Nigeria. All three pieces challenge us all to think about how far the world has come and how far we still have yet to go in reducing anxiety while improving resilience among extension educators and ensuring equality in the future.

Readers seeking insights into formal secondary and post-secondary education will find several studies for improving educational practice. Hanagriff et al. offer an application of a needs assessment model for improving agricultural education in Guinea, Mulei et al. share their findings on perceptions of youth moving into agricultural careers in several African countries, Ebner et al. offer insights into the employability of agricultural university graduates in Egypt, and Lane and Murphy provide best practices for international college student experiences based on a thorough synthesis of the literature. You will also find an interesting piece offered by Mukembo et al. that uses the experiences of Ugandan youth to explore how to best integrate youth-adult partnerships into agripreneurship projects.

Finally, Masambuka-Kanchewa et al. offer a retrospective analysis that examines the positive and negative role gatekeepers can play in agricultural extension research; an important thing to keep in mind while conducting research within hard-to-reach communities around the globe. I encourage you to read the articles in this December 2020 edition of JIAEE and think about how you can use the information here to bravely challenge yourself to adapt your current educational practice. For it is only through proactive adaptation that we will remain nimble, relevant and supportive of our clientele no matter where we are in the world and what we are facing.

The entire JIAEE editorial team would like to send best wishes to all of our readers as we approach the end of a challenging year. Wishing you all health and safety now and in 2021.

Sincerely,

Alexa J. Lamm, PhD
Executive Editor, Journal of International Agricultural and Extension Education
Modern Women and Traditional Gender Stereotypes: An Examination of the Roles Women Assume in Thailand’s Agricultural System

Morgan A. Richardson
Richie Roberts
Louisiana State University

Abstract
Previous research has demonstrated that empowering women in developing nations has been shown to enhance agricultural productivity and rural development. Although women in Southeast Asia are often considered to be more empowered than in other parts of the world, in Thailand, women still experience persistent barriers to gender equality. In response, this case study examined the positionality of women in Thailand’s agricultural sector by describing their underlying beliefs and values regarding their careers. As a result, three distinct themes emerged: (1) dichotomous gender roles, (2) the perpetuation of gender stereotypes, and (3) positive perceptions and beliefs in gender equality and women’s abilities. The findings illuminated that despite having a distinctly positive perception of themselves and their abilities, women internalize prescribed gender stereotypes in the agricultural industry in Thailand. Such views appeared to impede the participants’ sense of empowerment in the agricultural workforce. Moving forward, we recommend that extension professionals design programming to empower women in Thailand by tailoring professional development opportunities based on regional differences in regard to gendered customs, norms, and traditions. Further, additional research should be conducted to distill the specific topic areas that could be used to stir critical reflection and action among women in Thailand’s agricultural sector.

Keywords: agricultural development; gender equality; Thailand; women empowerment
Introduction and Statement of the Problem

Gender equality and women empowerment are, arguably, two of the most critical factors emphasized in the global development literature, especially in regard to fostering economic and agricultural capacity for developing nations. As an illustration, the 2030 Agenda for Sustainable Development, adopted by the United Nations (U.N.), includes seventeen Sustainable Development Goals (SDGs), one of which focuses entirely on gender equality and the empowerment of women (U. N., n.d.). Beyond that, U. N. Women — a coalition of advocates representing over 100 countries, has also served as a platform to advance the equity of women across the world (U. N. Women, 2018). One central area of focus of this entity has been to foster more technical knowledge and skills for women (Akter et al., 2017; U. N. Women, 2018). As a result of such work, Ansari and Khan (2018) demonstrated that statistically significant and positive relationships existed among the capacity development of women in agriculture, growth to the agricultural sector, and national economic development. Further, the promotion of gender equality in agriculture was also found to help safeguard developing nations from failing to industrialize. Therefore, empowering women in agriculture “...plays an active role in economic development [of nations]...” (Ansari & Khan, 2018, p. 5).

Although women account for 43% of the global agricultural labor force (Akter et al., 2017; Doss, 2011), the statistic trends higher in eastern and Southeastern Asian countries, such as Thailand (Food and Agriculture Organization [FAO], 2011). As a consequence, the FAO (2011) has called (2011) for more examination into the gender disparity problem in the agricultural sector to better address issues regarding food security that threaten to intensify. A need emerged to describe the varying roles women assume in Thailand’s agricultural sector and how such could provide critical implications for extension programming.

Review of Literature

A better understanding of Thailand’s agricultural development is essential to making sense of the roles that women assume. Despite the country’s current dependence on agriculture, Thailand has recently made critical developmental steps toward its goal of being considered a developed nation. Overcoming the persistent barriers to further women empowerment efforts remains critical, especially for extension programming. As such, the review of literature will feature evidence concerning: (a) agricultural development in Thailand, (b) gender equality in agriculture, and (c) women empowerment in extension.

Agricultural Development in Thailand

In Thailand, it is often assumed that agricultural development and economic growth happened in a similar way to nations in Northeast Asia (Booth, 2002). However, Leturque and Wiggins (2011) argued that such occurred in a less egalitarian manner in Southeast Asia due to a skewed distribution of land and incomes, lower intensity of agricultural production labor, and a less pronounced link between growth in agricultural and non-agricultural income. Further, many rural areas lacked opportunities for off-farm employment during this period (Booth, 2002). Rural populations in the region still rely on the agricultural sector as their primary source of income.

Therefore, Thailand’s agricultural sector remains a critical aspect of the country’s economy, with a significant portion of its citizens relying on agricultural production to sustain their livelihoods (Agard & Roberts, 2020; Win, 2017). In fact, Thailand has over 50.4 million acres of farm and agricultural land, which is used to cultivate a variety of crops such as rice, rubber, sugarcane, and cassava (Nations Encyclopedia, 2019). In recent years, Thailand has been
ranked as a high to a mid-level developing country. It has also has begun to make significant strides in transitioning from a developing to a developed nation. For example, in recent decades, the country has experienced urban growth, increased agricultural exports, and a reduction in poverty – key indicators that Thailand is becoming more industrialized (Leturque & Wiggins, 2011). Despite this progress, more work is needed to promote gender equality and women empowerment in the country’s agricultural sector (Booth, 2010; The World Bank, 2019; Trading Economics, 2019).

Gender Equality in Agriculture

Gender equality is essential to agricultural growth and rural development (FAO, 2011; Seymour, 2017). Perhaps one of the greatest strategies to promote gender equality in agriculture is to ensure women have the autonomy they need to seek and direct resources – a concept known as empowerment (Hoddinott & Haddad, 1995; Quisumbing & Maluccio, 2003; Seymour, 2017). Consequently, empowerment represents “the process by which those who have been denied the ability to make strategic life choices acquire such an ability” (Meinzen-Dick et al., 2019, p. 1). A fundamental way to empower women is by promoting agency. Agency has been described as “lifting the burden” for individuals who lack power in a given social system (Meinzen-Dick et al., 2019, p. 17). In Thailand, as well as throughout Southeast Asia, women are often considered to be more empowered than their counterparts in other developing countries such as Sub-Saharan Africa (SSA) (Mason & Smith, 2003). For instance, Akter et al. (2017) reported that women in this region have more agency to make decisions. They also often have relatively equal access to land and resources when they are work as a husband-wife team. As a consequence, women who work in the agricultural sector in Thailand are more likely to have control over household income (Akter et al., 2017).

Nevertheless, persistent barriers to gender equality still exist in rural areas of the country. As an illustration, four main barriers currently impede the empowerment of Thai women (Nguyen et al., 2019). First, women in Southeast Asia, despite their critical contributions to agriculture, are still regarded as secondary farm labor rather than principal earners like their male counterparts. Consequently, a power imbalance exists by which men act as the “de facto heads of households” (Nguyen et al., 2019, p. 1). Second, assumed legal access to resources, such as materials, education, and credit-based loans, does not necessarily produce control over resource usage. Third, women are more likely to be confined to “lower levels of the value chain” (Nguyen et al., 2019, p. 2). Thus, women are relegated to lower-level roles and less likely to hold more potentially lucrative jobs. For example, women in rural or agricultural areas often engage in activities such as crop production, animal tending, food preparation and processing, fuel collection, agricultural trade and marketing, as well as maintenance activities. Despite the nature of these roles, the Thai people do not traditionally view such as agricultural practices. The final barrier is that issues of gender equality and power imbalance are not incorporated into existing agricultural policy (Nguyen et al., 2019). Despite higher levels of women empowerment in agriculture, Thailand still has significant barriers that need to be addressed in regard to gender equality and empowerment through extension programming.

Women Empowerment in Extension

Incorporating women empowerment into extension programming has been advanced as a practice that can have a positive impact on agricultural development (Lecoutere et al., 2019; Niewoehner-Green et al., 2019; Roberts & Edwards, 2017). In particular, Lecoutere et al. (2019)}
demonstrated that agricultural extension efforts targeting women could improve: (1) agricultural knowledge, (2) decision-making, and (3) the adoption of positive agricultural practices. Further, Lecoutere et al. (2019) reported that when women provided information to other women, decision-making, and the adoption of recommended agricultural practices increased. Accordingly, existing literature has demonstrated that the goal of women empowerment through extension can be achieved in a variety of ways (Lecoutere et al., 2019; Niewoehner-Green et al., 2019; Roberts & Edwards, 2017). However, more work is needed to understand how the roles women assume in the agricultural system in developing economies, especially in Thailand, may influence extension outcomes and related programming.

**Epistemological Lens and Theoretical Perspective**

To investigate women’s role in Thailand’s agricultural system, we drew on the philosophical perspective of *critical constructionism* to make sense of the study’s findings while also critiquing such using a critical lens (Denzin & Lincoln, 2008). Critical constructionism holds an interesting position in social sciences because it exists at the intersection of multiple epistemological and theoretical perspectives such as constructionism, social constructionism, and critical theory. The use of such an approach was advanced by Crotty (1998) to help deconstruct complex issues that are often *messy* and *tangled* in the social world. With that in mind, a discussion of each major component of critical constructionism follows. To begin, constructionism is an epistemological position in which individuals view knowledge as permeable and created through direct experience; this can be compared to the view of objectivists who view knowledge and truth as static and existing outside of the human experience (Andrews, 2012; Schwandt, 2003). Social constructionism is sometimes used interchangeably with constructionism; however, it should be considered a theoretical perspective, or a lens that grounds logic in regard to interpreting the phenomenon under investigation (Crotty, 1998).

Through this lens, emphasis is placed on understanding how social interaction and culture shape the construction of knowledge. The final component of critical constructionism draws on another theoretical perspective, critical theory. Critical theory involves taking a critical look at issues that exist in a society with the intent to create change for individuals that lack power.

Therefore, critical constructionism combines the aforementioned philosophical lenses to examine how aspects of society and culture have upheld structures of power (Denzin & Lincoln, 2008). Through this understanding, critical constructionists offer a critique of such power imbalances to chart a new path forward (Denzin & Lincoln, 2008). Or, as Sampson (1987) explained, a critical constructionist takes constructionism a step further. They are not satisfied to assume that human experience is a social construct; instead, they examine the limitations placed on human experience by individuals who possess more power in a given context (Sampson, 1987). Figure 1 demonstrates how critical constructionism is situated philosophically.

As a result, critical constructionism was appropriate to investigate this phenomenon because it provided a layered glimpse into the societal and cultural forces that have historically shaped power dynamics for agriculture, gender equality, and women empowerment in Thailand. Further, the critical perspective was also used to facilitate the juxtaposition between western society’s views on gender roles and those of Thai women.
Statement of Purpose and Rationale of the Study

The purpose of this case study was twofold: (1) examine the positionality of women in Thailand agriculture; and (2) describe Thai women’s beliefs and values regarding such roles. Further, our overall aim of the study was to examine how women employed in Thailand’s agricultural sector viewed their roles within a broader societal context.

Methods

To investigate the role that gender plays in Thailand’s agricultural sector as well as the thoughts and feelings of the Thai women situated within it, we determined that an instrumental case study was the most appropriate method of inquiry (Stake, 1995). This approach allowed for a more in-depth examination of the various factors that influence a real-world context (Stake, 1995). In this study, we bounded the case by place (Thailand) and time (June 2019). For that reason, every individual in this study, whether interviewed, photographed, or observed, was Thai.

Situating Ourselves in the Study – Researcher Reflexivity

The interpretation of the data in a qualitative study is often greatly influenced by the researcher because they “examine[e] [the data’s] meaning and redirect observation[s] to refine or substantiate those meanings” (Stake, 1995, p. 9). Therefore, providing information about our background is critical. To begin, the primary researcher was a graduate student who traveled across Thailand experiencing its agriculture firsthand over four weeks in June 2019, during which she interviewed and observed a variety of agricultural workers (Pigg et al., 2020). The second researcher is a faculty member at Louisiana State University and has experience with global education, specifically in Thailand. When combined, the researchers’ past and current
experiences influenced their interpretation and presentation of the data. Further, the lead investigator found herself uniquely situated within the data due to her gender. As a result, she examined her experiences and the data through a critical lens. Consequently, these perspectives and the intersections of various contextual factors shaped our interpretation.

**Data Sources and Participants**

To triangulate findings (Creswell & Poth, 2018), we employed the following data collection techniques: (a) face-to-face semi-structured interviews, (b) field photography, and (c) researcher observations and fieldnotes over four weeks in Thailand. A semi-structured interview protocol, as advanced out by Creswell and Poth (2018), was developed before travel; it included five major guiding questions. The interview protocol including items about: (1) women’s presence in Thai agriculture, (2) women’s roles in the agricultural sector, (3) the factors that impact women in Thai agriculture, (4) policies or movements directly involving women, and (5) personal opinions and feelings about the phenomenon.

A purposive sampling technique allowed us to select individuals (Miles et al., 2014) at varying levels — federal, regional, and local — of involvement and knowledge of women’s role in Thailand’s agricultural system. In total, five individuals were chosen for interviews. The participants had varied backgrounds within the agricultural sector. A background of participants using their pseudo-name is provided next. Our first participant was Lim; she was an extension agent for one of the Royal Development Study Centers. Our second interviewee, Vu, was a female park ranger at a large animal sanctuary. The third and fourth participants worked for one of the Royal Project Stations and focused on research and extension efforts that targeted the Hill Tribes in Northern Thailand. The fourth participant was a female farmer, Som, who also served as a crop research specialist. The last interviewee, Gan, the only male participant, worked as a guide at a wildlife refuge. It should also be noted that Som and Gan were members of Thailand’s Hill Tribes, one from the Red Palaung and another from the Karen. Although members of these particular Hill Tribes could be considered ethnically Burmese, both participants were Thai citizens. Our second data point was field photographs. The photos were captioned to include the lead researcher’s observations, thoughts, and experiences. Our third and final data point included the lead researcher’s observations and fieldnotes.

**Data Analysis**

In this study, we analyzed the data using the coding processes detailed by Saldaña (2013). Coding helps a researcher assign meaning to the data, which can be further analyzed for potential patterns and categorization (Saldaña, 2013). Our coding strategy involved a simultaneous coding process. Simultaneous coding allows for a single piece of information to have multiple codes (or types of codes) ascribed to it (Saldaña, 2013). We used this form of coding to allow for a more in-depth and robust analysis of the data. The first cycle of coding included three types: (1) descriptive coding, (2) concept coding, and (3) values coding. Descriptive coding was employed to provide a basic, initial meaning assigned to words or phrases from the data corpus (Saldaña, 2013). As such, we used the concept coding approach to capture broader ideas presented in the data (Saldaña, 2013). Then, we employed values coding to understand and better categorize the values, feelings, and beliefs expressed by the participants (Saldaña, 2013). After the first coding cycle, a second cycle was conducted to categorize the data further and identify any patterns that might arise through use of a critical constructionist lens. Accordingly, we used pattern coding to group the first cycle codes into overarching themes. It should be noted that interpreting the data
with a critical constructionist lens influenced our analysis of the data and the resulting themes because we intended to deconstruct structures of power that have limited opportunities for women in the agricultural sector (Crotty, 1998).

Ensuring Standards of Quality

To ensure rigor in this study, we embedded Lincoln’s and Guba’s (1985) four standards of quality into this study: (1) credibility, (2) confirmability, (3) transferability, and (4) dependability. We achieved credibility by triangulating the data collection process by utilizing three separate data points and providing contextually rich and meaningful descriptions that situated the data. Confirmability was established through memo writing during the data analysis phase to document our decisions and potential biases that might influence the thematic outcomes. Transferability was ensured by providing thick, rich descriptions of the research methods employed by the researchers and any findings that came about through analysis. Finally, dependability was achieved by giving a description of the primary researcher’s role in the study. Also, analyses of the data, and subsequent findings, have shown parallelism across the data sources used in this study.

Findings

This investigation provided a glimpse into the roles that Thai women assumed in the agricultural sector. Three distinct themes emerged: (1) dichotomous gender roles, (2) the perpetuation of gender stereotypes, and (3) positive perceptions and beliefs in gender equality and women’s abilities. The themes represent how Thai women have positioned themselves and interpret their roles in the agricultural industry, while also offering a counter-narrative concerning the role that gender stereotypes play in shaping the work of women in agriculture.

Theme #1: Dichotomous Gender Roles

Many women in Thailand’s agricultural sector perform roles of a different nature than their male counterparts. In fact, all three data sources support the presence of dichotomous gender roles. Further, when probed during interview sessions about the roles of women in agriculture, participants often compared the difference between female and male roles in the industry. In particular, Lim explained that certain positions or tasks “are not suitable for the ladies.” Consequently, physical labor is typically reserved for males. More than one participant expressed the opinion that women lacked the strength required to carry out the more strenuous tasks customarily undertaken by men. This viewpoint was supported by our observations of various agricultural related industries and environments across the country. As an example, the existence of dichotomous gender roles was apparent during a visit to an elephant sanctuary outside of Chiang Mai. Despite the founder being a woman and the refuge having a few female guides, all of the caretakers were men. Gan explained:

All of them are men…because, by nature, males are stronger. They are brave. Elephants are a big animal. If you aren’t brave enough, it is not very easy to get close to the elephants. Might get scared…you have to be confident to be near elephants. In general, Thai women are…scared. (sic)

Despite being perceived as weaker and unsuitable for some types of work, however, women did not lack representation in Thailand’s agricultural sector. In actuality, Jay — our third interviewee and extension public relations expert — asserted that Thai women could do “many different jobs” and have “role variety” available to them. In our field notes, we regularly noted
that women are more likely to work in non-labor intensive roles in which they perform tasks related to crop processing, marketing and selling, and scientific research. For example, Vu articulated how she has seen “more and more women” in research-based roles. However, she also mentioned that “very few women [are] going outside” and that it is rare to see females in labor-intensive roles. In support of the view that more women are entering research-based roles, a second individual explained, “…I’ve seen more women come up here [the Royal Projects] than men, and do their research [in] compar[ison] to the past, because 50 years ago…this area was dangerous…so more women are coming up.” Although the roles that women have assumed in the Thai agricultural industry have transformed in recent decades, they continue to uphold and perpetuate the stereotype that women are weaker than their male counterparts (Denzin & Lincoln, 2008).

**Theme #2: The Perpetuation of Gender Stereotypes**

The perpetuation of traditional gender stereotypes was one of the most common themes to emerge from our fieldnotes and photography. It was also prevalent as a general tone that served as an undercurrent to the views and opinions shared by participants in most of our conversations and interviews. For example, some of the more prominent topics involved the lack of women’s physical strength and the belief that outside labor negatively affected women, i.e., because as Lim reported, it is “so terrible for the lady.” Another prevalent theme captured in our jottings and fieldnotes was that many women were observed and photographed wearing hats, long sleeves, and full-length pants while working outdoors in sweltering and humid conditions. When probed on women’s choice of this attire, participants reported that such was grounded in their belief that women are delicate and desire paler skin. Our interviewee Lim stated, “the nature of the lady is they love beautiful” and want to maintain their pale skin. Further, through our observations, we noted that it was rare for a Thai woman to work outside without coverings. Another emergent concept from our analysis of the data was the Hill Tribe women’s adherence to traditional dress. When asked about her traditional dress, Som explained that it was important for women to “make it themselves” to honor their culture and heritage. However, the Hill Tribe men were observed mostly wearing western clothing. In addition to the expectation that the Hill Tribe women wear traditional dress, they “usually take care of…the domestic work like cooking.” Therefore, women are often responsible for more than just agricultural work. According to Som, a woman of the Palaung people,

The women do a lot of domestic work, like washing, cooking…so there’s some additional jobs outside of farming. Like the clothes they use, the women have to make them. Like this [gestures to her traditional skirt] takes three days to make.

Additionally, Som explained that household work is not “divided equally” between males and females. As a consequence, not only are women responsible for their agricultural tasks, the women are also responsible for cooking, cleaning, child care, and other general domestic work. A woman that frequently works with Hill Tribe farmers, Jay, claimed, “both of them will work in the field…but at home, women still have more work to do for their family.”

**Theme #3: Positive Perceptions and Beliefs in Gender Equality and Women’s Abilities**

Despite the continued presence of gendered roles and prominent gender stereotypes, the women of Thailand expressed a firm belief in *gender equality*. From our observations and interviews, women had no sense of being perceived as less valued than males. Further, there was both a feeling of partnership as well as one of pride in their abilities. Male and female
partnerships — often in the form of a married couple — and the ability for the two genders to work together was a distinct topic mentioned by more than one participant. For example, one individual spoke about how “all the time, the man and the lady work together.” And, as explored in previous themes of this report, agricultural fieldwork was often divided equally between men and women. In a wildlife sanctuary observed during data collection, the female park ranger discussed how there were not any advocacy organizations for women in her profession because “it’s already quite equal…everyone is paid equally.”

In addition to their belief in gender equality, participants had distinctly positive views of their abilities. In fact, each woman expressed belief in her self-abilities. There were several positive beliefs identified through data analysis. For example, they voiced their belief that women are better suited for business and public roles. Som explained that “they offer the face and talk with many people to make the products seem interesting,” and also that women “do the business responsibilities very well.” This assertion, however, was double-edged because she followed her statement with the opinion that women were successful with business responsibilities “because they are soft and friendly.” That statement, in particular, illuminated the Thai mentality that women are equal while still maintaining the belief that women should be delicate and feminine. In a similar vein, the participants also held the belief that women are more independent than their male counterparts. Further, there was a separate but related belief that women are more patient with “tedious” tasks, as described by Jay. She went on to express the opinion that “the men would rather do the work that takes a short time, rather than something tedious…that might take the whole day.” In Figure 2, we captured images that depict the phenomenon of women working at tasks that require more patience, such as seeding (see left image; Figure 2). In Figure 2, we observed gendered differences between the roles of males and females. The man quickly filled the seed trays with dirt, whereas the woman carefully seeded the trays. Further, we also observed women transplanting (see right image; Figure 2). Such beliefs appeared to serve as the justifications for the specific positions women held in the agricultural sector.

Conclusions and Implications

This study examined the ways in which Thai women position themselves in the agricultural sector while also describing how such shaped their opportunities in the industry. As a result, this study’s findings produced three emergent themes: (1) dichotomous gender roles, (2) perpetuation of gender stereotypes, and (3) positive perceptions and beliefs in gender equality and women’s abilities. As such, we offered a layered glimpse into the experiences and positionality of Thai women in agriculture by demonstrating how they view themselves as equal to but different from their male counterparts.

The first two themes provided an in-depth look at gendered roles in Thailand’s agriculture sector and demonstrated a relatively traditional view of women’s societal role. As an illustration, the first theme, dichotomous gender roles, portrayed the gender disparities present in the agricultural workforce. For instance, our findings spoke to the ways in which women’s roles in agriculture often involve low-intensity tasks such as marketing, seeding, transplanting, weeding, among others (UNESCO Bangkok & Korean Women’s Development Institute, 2013). Conversely, men were more likely to be responsible for jobs involving heavy lifting and manual labor (UNESCO, 2015). Such a dichotomy in gendered roles coincided with previous research that has reported adherence to prescribed gender roles in Southeast Asia (Akter et al., 2017). In particular, the findings provided insight into the influence of Asian lifestyle and beauty standards.
– a notion Kong (2016) explained reflected the idea that Asian women should be soft and delicate with porcelain skin as well as gentle in personality. The current study, therefore, provided evidence that the perpetuation of gender stereotypes existed in Thailand’s agricultural system. Perhaps these views are a product of sociohistorical practices that functioned to uphold traditional gender disparities (Desautels et al., 1998; Steinberg, 2014). To this point, previous work on women in agriculture has demonstrated that gendered challenges exist in Latin America (Niewoehner-Green et al., 2019) as well as Africa (Roberts & Edwards, 2017). However, in Thailand, documentation of such issues has been insufficient.

Figure 2
Two Scenes Depicting Women at Work in Thailand’s Agricultural System

The male’s role in seeding is different from his female counterpart. For instance, he is filling trays with dirt—a task requiring less precision than seeding. There are also differences in clothing between the two.

A common job for Thai women in agriculture is to transplant orchids for sale on the wholesale market. Based on the data collected in this study, such a task is rarely completed by a man because they perceive it as tedious and requires too much time.

The last emergent theme deepened our understanding of how women perceived their roles in agriculture. For instance, the theme somewhat departed from the dominant narrative on gendered roles explored previously in this investigation. Instead, the theme revealed how the women interviewed held a distinctly positive perception of their abilities and positionality in the agricultural workforce. For instance, the participants viewed themselves as a valuable and critical part of the agricultural workforce. This notion of teamwork and the emphasis placed on the concept is likely grounded in a sense of collectivism (Pimpa, 2012). According to Hofstede (1984), Thailand has historically demonstrated higher levels of collectivism as a society, which often manifests in its people when they place importance on the commitment to groups such as “… family, extended family, or extended relationships” (Pimpa, 2012, p. 36). The sense of collectivism, therefore, shaped how participants placed priority on the larger groups’ needs.

The women interviewed also expressed a variety of positive beliefs about themselves and their ability to be successful in an agricultural-related career. Therefore, we conclude that women were viewed in Thai society as (a) better suited for business and public roles, (b) independent, (c) patient with tedious work, and (d) easier to train for agricultural careers. In many instances, these
beliefs were expressed multiple times in various geographic locations throughout Thailand. The numerous positive beliefs identified, therefore, demonstrated that Thai women do not consider themselves lesser than their male counterparts. Instead, the participants indicated they believed women served in equally important roles as men (Satyavathi et al., 2010). Thus, the emergent themes from this investigation provided insight into a culture – Thailand’s agricultural industry – that is increasingly progressive but remains traditional in many respects.

In some ways, therefore, the findings aligned with previous research that suggested that women in Southeast Asia are more empowered than those in other developing countries (Mason & Smith, 2003; Akter et al., 2017). And, that Thai women work with men as well as within a family unit to gain more decision-making power and control over their household income (Akter et al., 2017). On the other hand, our findings also illuminated that women continue to internalize the traditional gender stereotypes in the agriculture – a concept that has the potential to impede women’s efforts and desire to seek promotions and higher status jobs in the agricultural industry (Siengthai & Leelakulthanit, 1993).

**Applications, Discussion, and Recommendations**

Understanding how Thai women position themselves in the agricultural sector and their self-perceptions regarding their role served as a critical foundation to initiate efforts to create positive change and further women empowerment efforts in the region. Because empowerment efforts in Southeast Asia appear to be more advanced than those in other regions, such as Sub-Saharan Africa, we recommend that extension programming be designed to empower women in Thailand to take into account regional differences regarding the gendered customs and traditions during the initial planning phases (Akter et al., 2017). For example, because women in Thailand articulated a positive self-perception of their beliefs and abilities in agriculture, traditional efforts to empower women may meet resistance due to the perceived gender equity and internalized gender stereotypes held by female agriculturalists. As such, we recommend that additional research investigate which topic areas on women empowerment could stir critical reflection and action among women in Thailand’s agricultural sector.

We also recommend that a targeted extension and educational campaign be designed to introduce women to (a) potential career opportunities in the agricultural industry, (b) networking opportunities with other women in their area, (c) new technological advancements, and (d) technical and economic education. Introducing Thai women to new and diverse career opportunities in the agricultural industry might stoke a greater sense of independence and agency (Roberts & Edwards, 2017). Additionally, encouraging and facilitating networking opportunities with other women in the agricultural industry might lead to an exchange of ideas as well as collaborative opportunities that could be used to foster a greater sense of collective agency (Meinzen-Dick et al., 2019).

Our findings also provided evidence that women are responsible for agricultural as well as tasks that are more domestic in nature. Therefore, we recommend that extension agents introduce women to technological advancements that could help reduce their time and labor investments in such duties (Satyavathi et al., 2010). Such changes could help pave the way for increased gender equality and a “transformation of gender relations” in Thailand (Huyer, 2016, p. 112). In addition to introducing women to more technological advancements, they should also be exposed to greater educational and professional development opportunities to expand their knowledge and skills while also facilitating greater decision-making power in the agricultural industry (Paris et al., 2009). Finally, we recommend that sustained extension programming be
designed to improve Thai agriculturalists’ understanding of how upholding traditional gendered stereotypes in the sector creates limitations for the industry and may stifle progress.

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Perceived Barriers Affecting Extension Agents’ Personal Resilience Post-Hurricane

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Abstract

Related disaster stresses such as employee burnout negatively influences effective disaster response. The prevalence of hurricanes and other natural disasters impact Extension agents around the world. This research explored barriers affecting UF/IFAS Extension agents’ ability to effectively engage in post-hurricane response. Resilience and burnout literature led to a researcher-developed conceptual model. A basic qualitative research design facilitated face-to-face and telephone interviews with UF/IFAS Extension agents engaged in hurricane-response efforts. Results showed mental and physical stress, performance deficits, and perceived lack of motivation negatively affected agents’ ability to engage in post-disaster response. Overall recommendations were to: (a) strengthen communication between Extension administration and county agents, (b) inform agents of ongoing disaster developments to clarify professional disaster expectations, and (c) provide trainings on mental health and coping strategies in disasters. Results of this research suggest this phenomenon should be examined in other Extension systems.

Keywords: barriers, Extension, hurricane, personal resilience, post-disaster response
Introduction

Over the past decade, severe hurricanes and storms frequently affected countries including the United States (U.S.), China, India, and Japan (Center for Research on the Epidemiology of Disasters, 2019). In the U.S., the Extension Disaster Education Network (EDEN) facilitate collaborations among Cooperative Extension Services across all states. EDEN’s role is to provide research-based information to reduce the impact of natural disasters and improve Extension services to those affected by natural disasters (EDEN, 2018).

The U.S. state of Florida, surrounded by the Gulf of Mexico and the Atlantic Ocean, is highly vulnerable to hurricanes. Ideally, Extension agents should be prepared to engage in recovery efforts as they are a trusted source of information (Kistler et al., 2006).

In disasters, communities tend to trust local sources for information more than outside sources (Norris et al., 2008). As such, trust developed from long-term collaborations between Extension agents and communities can help promote successful disaster information dissemination (Eighmy et al., 2012). Furthermore, Telg et al. (2008) found UF/IFAS agents who were involved in disaster relief and personally affected by hurricanes were not prepared to deal with clients’ needs. Agents reported feeling pulled between balancing personal stress and professional demands. Although this study occurred in Florida, results could inform other Extension systems of effective disaster response strategies.

Like EDEN, Agricultural Extension in South Asia (AESA) is the disaster collaboration network in that region. Aiding affected communities is the primary role of AESA and Extension advisory services. After the 2018 floods in Kerala, India, Extension agents visited farmers to assess crop losses and provided specific advice on regaining soil fertility (AESA, 2019a). However, training support was needed to aid Extension agents when responding to disaster events (AESA, 2019b). In the Caribbean region, hurricanes are often the worst occurring disasters (Ganpat et al., 2018). These small islands are particularly vulnerable to hurricanes given their geographic location and topography (Kirton, 2013). Supporting Extension agents in disaster response is important given the extent of hurricane impacts occurring in these islands (Ganpat et al., 2018).

The stress of dealing with natural disasters can negatively affect responders’ abilities to assist effectively in disaster situations (Burnett Jr. & Wahl, 2015). This may result in burnout, which stems from emotional exhaustion and lower levels of personal accomplishment (Maslach & Jackson, 1984). Stress, performance deficits, and perceived lack of motivation and courage to adapt likely hinder the process of improving coping abilities and personal resilience – defined as strategies for coping and problem solving, positive social support networks, and personal well-being (Maddi, 2013).

Burnout among county Extension agents is a gradual process occurring over an extended period resulting from work overload, stress, and lack of self-care (Ensle, 2005; Igodan, 1984). When coping abilities are low, disaster responders may experience burnout in stressful circumstances (Igodan & Newcomb, 1986). Furthermore, job responsibilities in post-disaster response can contribute to additional stress (Ensle, 2005; Telg et al., 2008). Telg et al. (2008) found that disasters affecting Extension agents potentially limit their ability to respond to clients when dealing with personal losses, hardships, and emotional stress.

Minimizing burnout can help responders cope better with disasters and support affected populations. As such, a need exists for robust disaster response efforts to help communities recover from natural disasters (Fath et al., 2018; Kirton, 2013). Factors found to reduce the effects of burnout included age, gender, training, perceived coping abilities, social support, and
self-care (Sprang et al., 2007). The research reported here explored barriers affecting UF/IFAS agents’ ability to respond to clients’ needs post-hurricane.

**Literature Review**

Burnout relates to an individual’s coping behavior (Fetsch & Kennington, 1997). Individuals have different perspectives when coping with stressful situations as each has their own personality, ideals, and levels of work commitment (Igodan & Newcomb, 1986). Ensle (2005) asserted Extension offers agents flexible work schedules but requires many night and weekend meetings. The position requires a person with a high energy level who is well-organized and a good communicator. However, the rate of Extension employee turnover increases as burnout continues to affect agents’ physical and mental health (Ensle, 2005).

Harder et al. (2009) found employee turnover was a challenge facing UF/IFAS Extension. The demands of Extension agents coupled with a lack of retention led to work-life imbalance. Burnout, stress, and frustration resulted from a “do more with less” philosophy (Harder et al., 2009, p. 15). Fetsch and Kennington (1997) found it is increasingly difficult for Extension agents to balance family and work-life given work-related stress, long hours, and resulting symptoms of burnout. Benge et al. (2015) found that reduced job demands, and provision of resources could lessen work-related stress and burnout in agents. In developing countries, poor working conditions often contribute to burnout among Extension agents (Agunga et al., 1997), which likely increases when engaging in disaster response.

Extension agents assume many roles, including educator, counselor, and researcher, while working within county, state, and federal systems (Ensle, 2005). Reporting to various supervisors within these systems is very stressful and possibly accounts for feelings of anxiety and tension (Ensle, 2005). Therefore, fulfilling day-to-day job responsibilities can become more stressful when agents are activated during emergencies and dealing with personal disaster impacts. The flooding crisis in St. George, Utah in 2005 displaced 50 families, and destroyed farmlands, roads, and telecommunication infrastructure (Washburn, 2006). Although the county had an emergency plan in place for earthquakes, it was unprepared for excessive rainfall that led to the overflow of the Santa Clara and Virgin rivers. This unknown danger coupled with delayed responses led to the isolation of one community from the rest of the county. Extension agents were unprepared to deal with the disaster and “unaware of what [their] role should be and how best to assist the county” (Washburn, 2006, Extension and Natural Disasters section, para. 1).

Another flooding crisis occurred in North Dakota in 2009 and affected eight rural counties (Eighmy et al., 2012). Community members sought flood-related educational information and emergency services contact information from the North Dakota State University Extension. However, Extension staff had difficulty in responding to community members due to: (a) limited educational material developed for flood disasters, (b) ambiguity about their role in a flood-related disaster, and (c) confusion about the role of other county and state response agencies (Eighmy et al., 2012).

A critical role of Extension in disaster preparedness and recovery is the coordination of activities (Miller et al., 2006). Klamath Falls, Oregon experienced a community crisis in 2001. Given prolonged periods of drought, farmers in Oregon and California experienced crop losses from water shortages for irrigation (Cartwright et al., 2002). The Klamath County Extension Office responded to the crisis by collaborating with their state’s Office of Personnel and Organizational Development (OPOD) to address community needs and possible solutions (Cartwright et al., 2002). The partnership between the local county office and the OPOD resulted
in collective action. Extension’s role as a facilitator was important in helping communities recover from the water shortage crisis (Cartwright et al., 2002).

In most county Extension offices in Florida, agents’ disaster roles may be twofold – to the county and/or to the state (Murray, 2017). The Dean of UF/IFAS Extension noted that Extension faculty have dual roles with county government and are a part of emergency support functions in disasters (Murray, 2017). As such, they can be activated to provide support to other disaster agencies to deal with specific disaster situations.

Theoretical Framework

Elements of Igodan’s and Newcomb’s (1986) adapted burnout model (see Figure 1), Maddi’s (2002) hardy attitudes and hardy strategies, and the seven dimensions of resilience (Resilience Alliance, 2013) led to a researcher-developed resilience conceptual framework (see Figure 2). The hardy attitudes are commitment (an inclination to connect and be present with others), challenge (desire to continuously learn), and control (striving to gain influence over the stressful situation). The hardy strategies are problem-solving, positive social interactions, and beneficial self-care (Maddi, 2013).

Figure 1
Burnout Model Adapted to Include Personal Resilience


With strength in all three hardy attitudes, an individual possesses the courage and motivation to engage in hardy strategies and coping abilities. The seven dimensions of resilience are flexible social, flexible thoughts, focused, organized, positive self, positive world, and proactive (Resilience Alliance, 2013). The hardy attitudes, hardy strategies, and dimensions of resilience together form the resilience attributes in the resilience conceptual framework. Mental and physical stress, performance deficits, and perceived lack of motivation and courage to adapt lowered personal resilience, as described in the burnout and resilience literature (Igodan & Newcomb, 1986; Maddi, 2013; Unger, 1980). Extension agents’ hardy attitudes, hardy strategies, and seven dimensions of resilience influence their overall personal resilience helping to reduce perceived barriers to engagement in hurricane response. This model informed the study’s interview guide.

Based on the burnout literature, Figure 2 shows that mental and physical stress leads to job performance deficits resulting in perceived lack of motivation and courage to adapt to the stressful situation. Low levels of perceived motivation and courage to engage in the hardy
strategies likely result in low levels of personal resilience. The potential for Extension agents to engage in effective disaster response comes from strengthening personal resilience by reducing perceived barriers to engagement.

**Figure 2**
*Researcher-developed Resilience Conceptual Framework for Determining Extension Agents’ Level of Personal Resilience in Post-Disaster Response*

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**Purpose and Objective**

The purpose of this study was to explore difficulties facing Extension agents in post-hurricane response. The specific objective was to describe perceived barriers affecting UF/IFAS Extension agents’ ability to respond to clients’ needs post-disaster. The researchers theorized the potential to improve Extension agents’ coping ability when responding to clients’ needs post-disaster.

**Methodology**

This study used a basic qualitative design to examine: “(a) how people interpret their experiences, (b) how they construct their worlds, and (c) what meaning they attribute to their experiences” (Merriam & Tisdell, 2016, p. 24).

**Researcher Reflexivity Statement**

Accounting for researcher bias is important when conducting qualitative studies (Merriam & Tisdell, 2016). The lead researcher engaged in data collection and analysis and had no previous experience with Extension or knowledge of agents’ roles in disaster relief efforts. The lead researcher used a guide while conducting interviews and professionally engaged with participants. The researcher was knowledgeable of the overall category labels from the second coding analysis process as labels were predetermined from the resilience and coping literature (Maddi, 2002, 2013; Resilience Alliance, 2013). Other members of the research team had extensive experience working with Extension and hurricane disasters, agricultural communication, and applying qualitative methods to Extension research. Therefore, the lead researcher conducted all analysis to reduce the likelihood of bias.
Population and Sample

The target population was UF/IFAS Extension agents who fit the sampling criteria: agents from any program area affected personally or professionally by a hurricane event. The point of contact for EDEN at the University of Florida provided a list of agents involved in post-hurricane response following Hurricane Irma. Initial email messages sent to five Extension agents (four females and one male) described the purpose of study. The lead researcher contacted three agents to schedule interviews because they were interested in participating in the study. Face-to-face was the preferred method of administering interviews given that participants had to recall sensitive information. However, telephone calls allowed interviews with participants located in distant counties or those unable to meet face-to-face.

Agents were interviewed from various counties across Florida. However, the sample was predominantly female as those county Extension offices had mostly female agents (M. Edmonson, personal communication, January 29, 2019). Literature on coping in disasters showed men and women deal with stress in different ways. Men tend to engage in self-control coping and problem-solving strategies while women seek information, social support, and distractive activities (Slusarcick et al., 1999; Spence et al., 2007). Thus, male engagement in post-hurricane response may vary from female engagement, and this may influence overall levels of personal resilience and coping abilities.

Participants were either involved with disaster response after Hurricane Irma or during a past hurricane occurrence. Agents new to their jobs had their first hurricane encounter and engagement with disaster response following Hurricane Irma. Participants’ program areas included 4-H, sea grant, agriculture, and family and consumer sciences. Participants also sharing their hurricane experiences in this study were current UF/IFAS Extension employees. However, past agents may have had different hurricane experiences.

Sampling Methods

Nonprobability purposive sampling and sampling criteria were appropriate for selecting suitable individuals to participate in this study. According to Hobfall (2001) and Paul et al. (2013), personal losses affect coping abilities resulting in psychological stress. The sampling criteria used in this study were agents professionally or personally affected by a hurricane.

To define the term “impacted or affected by hurricanes,” personal losses included loss of valued objects e.g., physical possessions, personal conditions (employment issues), energies e.g., sleep deprivation, financial difficulties, and personal characteristics such as low self-esteem and coping abilities (Hobfall, 2001; Paul et al., 2013). Agents in the sample were those who experienced losses in any of the four areas of personal losses due to hurricanes.

A snowball sampling technique was also used to further recruit participants. Snowball sampling is a type of purposive sampling which allowed recruitment of additional participants by asking current participants for appropriate references (Merriam, 1998; Patton, 1990). Data saturation then determined when to conclude data collection (Mason, 2010), resulting in interviews with nine Extension agents.

Instrumentation and Study Variables

The resilience conceptual framework (see Figure 2) guided a researcher-developed interview guide. Questions concerning perceived barriers asked participants about their level of stress (mental and emotional) and motivation while engaged in post-disaster response. Other questions asked about participants’ ability to cope with stress, their ability to balance personal...
and professional demands, and their levels of engagement in post-disaster response. Answers to these questions potentially identified barriers affecting motivation and courage to engage in coping strategies (Maddi, 2004). Lack of motivation and courage to engage in coping strategies hinder the process of improving personal resilience (Maddi, 2004, 2013).

Preliminary feedback provided by UF/IFAS Extension faculty resulted in initial revisions to the interview guide. A pilot test with a past Extension agent not included in the sample allowed for changes to the interview guide – adding new questions and clarifying existing ones. The pilot test was also beneficial in estimating the length of the interview, averaging about 45 minutes. Permission obtained from the Institutional Review Board at the University of Florida occurred prior to data collection. As a courtesy, the research team communicated the purpose of this study with the UF/IFAS Extension administration prior to data collection.

Data Collection

A structured interview format was appropriate for this study as participants recalled their hurricane experiences. Data collection occurred during August and September 2018 and Extension agents from various counties in Florida participated in face-to-face and telephone interviews. Three interviews occurred in person and six by telephone. Face-to-face participants met with the researcher at their county Extension offices. Agents received an informed consent form which requested their voluntary participation and indicated their rights to withdraw from the interview at any time. For telephone interviews, the lead researcher verbally informed agents of their rights as a participant. The researcher noted tonal variations in participants’ answers to questions during the telephone interviews.

Saturation occurred by the fifth interview. At the researcher’s discretion, two additional interviews were conducted which revealed new information in the seventh interview. Two additional interviews revealed no new information, which resulted in a total of nine interviews with Extension agents. After transcription, the lead researcher double-checked that each transcript matched its audio file for accuracy. After summarizing transcriptions, member checking began in October 2018 and concluded in January 2019 to verify accurate interpretations of participants’ experiences. Eight of the nine participants responded to member checks and a few revisions were made for clarification. To protect participants’ identities, the lead researcher used aliases in place of participants’ actual names.

Data Analysis

This study used a two-cycle coding process. First cycle coding applied structural coding which split the data into smaller coded segments (Saldaña, 2013). The lead researcher identified pieces of information relevant to the study’s research objective and generated structural codes. These codes were then arranged in hierarchies that highlighted emerging relationships and any duplication of codes (Gibbs, 2007). Having generated the structural codes, the next step was to develop initial interpretations of the data.

Initial interpretations of data consisted of four steps (Harding, 2013): (a) identifying relevant pieces of data, (b) determining which pieces of information aligned to objectives, (c) deciding and omitting unnecessary data, and (d) creating brief notes. Pattern coding used in the second cycle coding process identified overall category labels and added meaning to the data (Saldaña, 2013). The analysis used predetermined codes developed in the resilience conceptual framework (see Figure 2). Peer-debriefing with another member of the research team helped ensure the likelihood of impartial results, as derived from data collection and analysis.
Burnout literature was used to operationalize high, medium, and low levels of stress, performance deficits, and lack of motivation and courage (Ensle, 2005; Igodan & Newcomb, 1986; Maddi, 2004, 2013; Unger, 1980). Indicators such as the inability to cope with stress, alienation, and feelings of powerlessness were considered highly stressful. Other indicators of high, medium, and low levels of performance deficits and motivation included physical exhaustion such as headaches, insomnia, or depression; and behavioral changes such as job turnover, low job performance, or withdrawal.

**Trustworthiness**

To ensure credibility, the researcher engaged in member checking to verify that interpretations matched participants’ intended meanings (Schwandt et al., 2007). Participants had the opportunity to review and verify accurate interpretation of their viewpoints (Christensen et al., 2015). Detailed data collection methods and common elements emerging from the dataset described the context of the study helping to increase transferability of results (Merriam, 1998). Field notes and observations recorded throughout the face-to-face interviews provided detailed information to further help increase transferability of results. Documented journal notes throughout this research helped ensure confirmability and transparency of results by use of audit trails.

**Results and Discussion**

Stress, performance deficits, and motivation and courage were pre-determined themes in the resilience conceptual model. These were the overall categories under barriers of the study’s resilience conceptual framework (see Figure 2). Table 1 presents a summary of the results, consistent with burnout symptoms of physical exhaustion and psychological stress (Igodan & Newcomb, 1986).

**Table 1**

*An Overview of Results for Perceived Barriers*

<table>
<thead>
<tr>
<th>Structural Codes</th>
<th>Pattern/Category Labels</th>
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<tbody>
<tr>
<td>Fatigue</td>
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<tr>
<td>Anxiety</td>
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<tr>
<td>Personal trauma</td>
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<tr>
<td>External stress</td>
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<tr>
<td>Overall devastation</td>
<td>Stress</td>
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<tr>
<td>Single parent</td>
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<td>No personal preparedness</td>
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<tr>
<td>Some things not in your control</td>
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<tr>
<td>Concerned for family abroad</td>
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<tr>
<td>Absence from the office</td>
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<tr>
<td>Unrealistic university demands</td>
<td>Performance deficits</td>
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<tr>
<td>University and county responsibilities clashed</td>
<td></td>
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<tr>
<td>Distracted</td>
<td></td>
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<tr>
<td>Unfocused</td>
<td>Motivation and courage</td>
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<tr>
<td>Overwhelmed</td>
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</table>
Perceived Barriers Affecting Participants’ Personal Resilience

Stress

Mental and emotional stress was the common pattern for the overall theme, stress. Participants generally experienced fatigue. Several factors contributed to Jenny’s stress: poor communication among county departments, vague information concerning how to report damage assessments, unclear roles in disaster relief, and difficulty connecting with others for support. Jenny expressed a general sense of fatigue as she reported to the Emergency Operations Center (EOC) days before the hurricane hit, committed to lockdown during the event, worked 12-hour shifts, and then stayed after the event.

While activated for disaster response, Jenny still had her Extension duties. She said: During a training, they tried to call me into the EOC to work and I begged to be able to finish the training, so I could get certification. The day I came back from the training, I went immediately into the call center to work 12-hour days and I worked the day shift. I didn’t have time to prepare my own property.

Jenny also indicated external stressors such as the influx of people coming to her county after Hurricane Maria. In this case, her Extension building facilitated several events, but poor communication led to difficulties in trying to reschedule venues for her classes and events to get back on track. In trying to deal with this, Jenny gave up on some things and let her health go, putting off some issues she needed to address. However, she had supportive family and friends and they tried to take care of one another.

Emily was emotionally stressed when she received calls from people who wanted to find out about their family members. Furthermore, Emily worried about her family in her home country that experienced another natural disaster at about the same time. Emily had no communication with her family abroad for some time and could not concentrate or come in to work. She said: “I had to take days off because I knew how hard it is in a hurricane, and we were without communication for seven days.” She felt she became one of those people calling into the EOC to find out about their families. She described her emotional state: “It was really bad, and I cried a lot, and it was awful.”

Lynsey shared a similar experience: “As a single parent, having to leave my kids to fulfill my role, it’s a little bit stressful.” Leaving her family behind to take care of her responsibilities within the county was tough, especially with no family nearby. Carol did not experience significant mental or emotional stress but noted: “All of us get a little bit of anxiety when there’s a hurricane coming. It’s the fear of the unknown, you don’t know how it’s going to impact you.”

Lynsey also worked in the EOC and indicated it was a very stressful role because a lot of people reached out for assistance. In addition, Lynsey’s family residing abroad experienced another disaster. She was worried about them, which added an additional layer of stress. She wondered how she would be able to assist them while still carrying out her responsibilities. Julia was also concerned about her friends in another country impacted by a hurricane.

Cindy felt physically and emotionally fatigued from preparing for 16-hour workdays, for four or five days, to dealing with the disaster’s aftermath. She said: “It’s hard to be on high alert for so long.” Sue’s mental and emotional stress resulted from the overall destruction in her county. Although Sue evacuated, she worried about her friends who stayed. Sue’s house was damaged, and she had friends and neighbors who experienced complete losses. She said: “It’s
not easy. It’s very, very hard. It’s still hard. It’s a year later.” Hurricane Irma affected Julia and she felt as though she experienced considerable stress. Julia’s personal impacts and the stress of the hurricane left her feeling hazy in the months after the hurricane.

**Performance deficits**

Balancing personal and professional demands was a common category under performance deficits. For Julia, work tasks such as field assessment reports became burdensome and added stress, especially because she was concerned about her safety on the roads with no power. She added: “The guidance sheet that we were given was so broadly interpretable that it was extraordinarily challenging to focus on that.” Julia found it difficult to balance daily professional demands and what was essential post-hurricane. She further felt as though university requirements post-hurricane were unrealistic. She focused instead on addressing her community’s needs.

For Cindy, balancing personal and professional demands overlapped as her children were out of school and many professional demands pressured her. Though she did not experience an imbalance, she indicated it was important to be realistic about roles and acknowledged difficulties existed in trying to accomplish everything all the time. Jenny expressed an inability to balance personal and professional demands. Her overall feelings of being stressed and fatigued contributed to this imbalance. In addition to poor communication in the EOC, her roles were unclear, and she worked long hours. As a result, she was frustrated being unable to help clients. To this point, she shared: “You know you’re supposedly in a role to be able to help but not being able to provide them information because you haven’t got the information yet.”

Lynsey indicated that balancing personal and professional demands was challenging at times, especially when university and county responsibilities clashed. She said: “I have my responsibility with the county, but I needed to be at a conference right after the hurricane. I needed to be there as I was presenting. So, definitely a conflict of what do I do.” Lynsey also described that some things were out of her control and she could not address all clients’ needs.

Emily was unable to balance her Extension professional demands as she worked in the EOC during and after Hurricane Irma. As a result, she could not fulfill those roles, but she indicated receiving help from others.

**Motivation and courage**

 Desire to act was the common category label under motivation and courage. Julia felt unmotivated to professionally engage in disaster response, which was attributed to “the stress that was being put on me by people who hadn’t gone through the same thing.” Julia’s lack of motivation resulted from her overall personal trauma and stress. She noted a lack of acknowledgement concerning the emotional stress of those who experienced a hurricane. She explained: “To me, expecting agents who just suffered a direct hit from a hurricane to go out and then do an inventory is not reasonable.” Jenny was distracted because there were many things she needed to address. She said: “It just takes some time to be able to feel like you’re accomplishing things again.” Cindy shared a similar sentiment and described herself as unfocused and ineffective because of the amount of work to be done. She described her situation: “I wouldn’t say unmotivated. I would say divided, just not being as effective because there’s this to do over here. [I] definitely felt unfocused.”

Sue was extremely exhausted and needed a break about three months after Hurricane Irma. She attributed those feelings to the cycle of grief where she did what she could during
emergencies and dealt with the stress afterwards. She said: “When things settle down, it catches up with you, and you kind of feel exhausted.” Carol described feeling similarly about post-exhaustion. She was not unmotivated to engage in work tasks throughout Hurricane Ivan in 2004 but indicated feeling overwhelmed and exhausted afterwards. Lynsey also did not feel a lack of motivation to engage in her work tasks. Rather, she was motivated to help because she related to what people were going through having experienced hurricanes in the past. Lynsey added: “Experiencing what my family experienced during a hurricane, I think this motivates me here, so we don’t go through the same thing. It’s a way to help the community.” Despite their resulting levels of stress, performance deficits, and varying levels of motivation and courage, most participants felt able to address clients’ needs.

**Conclusion, Implications, and Recommendations**

Burnett Jr. and Wahl (2015) reported that disaster stress such as employee burnout affected disaster response efforts. Most participants were fatigued and expressed medium to high levels of mental and emotional stress based on their hurricane experiences. While all participants were female, this study recognized that males and females respond to stress differently. As such, male engagement in post-hurricane response could influence overall levels of resilience and coping abilities (Slusarcick et al., 1999; Spence et al., 2007). As many county Extension offices in Florida have predominantly female agents, it is important to recognize how personal responsibilities could potentially add to work-related stress especially when dealing with disaster-response.

Participants were also stressed about the safety of friends and family experiencing other hurricanes locally and abroad. As a result, some participants found it difficult to engage in disaster response given delayed communication to check-in with family abroad. This further resulted in an inability to balance personal and professional demands. A few participants were also single-parents and the inability to connect with family further amplified their stress and ability to respond to a disaster. Such is consistent with findings by Telg et al. (2008) and Ensle (2005).

Regardless, most participants had the motivation to engage in disaster relief. The desire existed to assist with response efforts despite feeling distracted or unfocused. Some agents were new at the time of their first hurricane experience. Others were already involved with Extension but did not experience a hurricane until Hurricane Irma in 2017. As such, results showed differing levels of stress and performance deficits when compared to those who previously experienced a hurricane event. Agents experiencing hurricanes for the first time found it difficult to fulfill their Extension responsibilities while providing disaster relief.

Not knowing roles in post-disaster response can increase stress and performance deficits, and lower motivation and courage to adapt to the situation. Disaster training and mentoring geared toward new county agents could help prepare them for post-disaster relief efforts. The participants not knowing disaster their roles were similar to findings by Telg et al. (2008). For new agents, disaster training provides an opportunity to be prepared at home as they are aware of their roles in hurricane response efforts. Such disaster training can also benefit agents without a direct role in disaster relief (non-essential employees) by reducing stress and improving management of personal and professional demands. Disaster training and mentoring could also be beneficial in other Extension systems where agents require additional support to deal with disasters (AESA, 2019b). Furthermore, it is important that Extension professionals be prepared
to cope with disaster-response stresses. Given predictions for increased intensity and frequency of weather-related disasters (National Climate Assessment, 2018).

While engaged in disaster response, some Extension agents still assumed their day-to-day job responsibilities. In other cases, agents who reported to their county’s EOC could not engage in their regular responsibilities. This created an additional layer of stress which could worsen if those agents experienced a hurricane for the first time or were new to the job. Having realistic reporting timelines for damage assessment reports was also important. Although these reports were important immediately after a hurricane, it posed a risk to agents conducting the assessments. Some participants indicated physical challenges to access areas given damaged roads or flood warnings. Providing accurate and timely information became problematic. This added another level of stress because reporting procedures were unclear to some participants.

Coupled with mental and physical exhaustion, some participants found it difficult to engage in professional demands. In Figure 3, medium to high levels of mental and emotional stress, and medium levels of performance deficits likely resulted in a reduced ability to engage in hardy strategies and coping. This is consistent with Igodan and Newcomb’s (1986) and Maddi’s (2013) results. However, most participants were motivated to engage in work tasks during periods of stress. According to the resilience literature, individuals with high levels of motivation and courage can engage in hardy strategies and coping abilities (Maddi, 2013). This result was consistent with findings by Sprang et al. (2007) about factors reducing burnout. Taken together, participants’ stress, performance deficits, and motivation and courage indicated low to medium levels of overall personal resilience to address clients’ needs. As such, opportunities exist to reduce perceived barriers and increase agents’ levels of personal resilience.

**Figure 3**

*Overall Results for Perceived Barriers Affecting Extension Agents’ Abilities to Respond to Clients’ Needs Post-Disaster*
To deal with stress associated with working in the EOC, some participants expressed the need for professional training which could better support meeting their clients’ needs. UF/IFAS is currently working on disaster trainings and professional development to assist agents in coping with disaster-related stress. Such professional development would include workshops on mental health and dealing with people to help agents’ cope better during disaster response (UF/IFAS Center for Public Issues Education, 2018).

UF/IFAS is also making progress toward supporting agents’ personal and professional disaster needs. However, it seemed participants were unaware of these developments. This might imply some disconnect between policy and practice. As such, this study recommends strengthening communication between Extension administration and county agents. This can be done through social media, webinars, or workshops to keep agents informed of new disaster developments. A future study could investigate effective communication methods between UF/IFAS Extension administration and agents for specific disaster updates.

Other hurricane prone states may benefit from conducting a similar study to determine stressors affecting agents’ response efforts. The conceptual framework (see Figure 2) presented in this study worked well to highlight the level of perceived barriers UF/IFAS Extension agents faced when responding to clients’ needs. Although this study focused on hurricanes, the framework can be revised to assess Cooperative Extension’s response to other natural disasters. The framework could also be revised to compare differences in responses for male and female agents related to disasters. There may be additional factors that could influence personal resilience and coping abilities.

In addition, other Extension systems in hurricane-prone countries may benefit from implementing similar strategies. For example, the impact of severe floods in India highlighted the need for improved disaster training and better collaborations among disaster organizations (AESA, 2019b). The study’s framework (see Figure 2) could be revised to apply to Extension advisory services in other countries to inform disaster trainings and assess agents’ coping abilities in meeting clients’ needs. Furthermore, there is an opportunity for international collaborations among disaster agencies. For example, partnerships with the Global Forum for Rural Advisory Services (GFRAS) could be beneficial for developing universal disaster trainings across varying Extension systems.

This current study could also be replicated with Extension agents in small islands to help reduce burnout and other factors affecting their abilities to respond to clients’ needs post-disaster. Findings can be used by Extension advisory services to inform targeted mental health trainings or mentoring programs to help agents cope during disaster response. For example, the Caribbean Community (known as CARICOM) is an organization that promotes economic development in the Caribbean region. Part of their mandate is help build resilient communities and mitigate disaster impacts. Extension systems within this region can collaborate with CARICOM as a resource to deliver Extension trainings targeted toward coping abilities for Extension agents related to disaster events.

Future research could employ the case study method to compare results among small islands, which may aid in strengthening overall efforts in post-hurricane response. In addition, partnerships across different Extension systems may prove beneficial for implementing effective strategies. Although Extension systems differ, information-sharing between Extension Disaster Education Network (EDEN), Agricultural Extension in South Asia (AESA), the Caribbean Community (CARICOM), and the Global Forum for Rural Advisory Services (GFRAS) may
help inform disaster trainings and best practices to assist agents who experience disaster events across the world.

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Benefits of and Best Practices for International Experiences for College Students: A Synthesis of the Literature

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Theresa P. Murphrey
Texas A&M University

Abstract
Implementation of international experiences for students has increased. Anecdotal evidence suggests that these experiences enhance the quality of students upon graduation. However, a synthesis of literature related to the benefits of international experiences was lacking. We rooted the study’s conceptual framework in the concept of high-impact activities/experiences and related inputs, processes, and outcomes with a focus on the benefits of student participation in an international experience. Our purpose was to establish a benchmark documenting research conducted related to the benefits of an international experience and to identify research gaps. The rigorous literature review process identified 108 articles published across 55 unique publications for inclusion. Documentation of benefits was grouped into four categories: personal growth, international knowledge, cultural awareness, and additional skills. Further, the literature revealed a litany of reasons that students chose not to participate and a wide range of guidance for program planning. We conclude that research has documented specific benefits of students’ participation in international experiences; however, many of these studies are based on data collected immediately following the experience rather than longitudinal data. Our research synthesis provides a summary of benefits and program strategies for utilization by researchers in planning future research and by practitioners in planning future international experiences.

Keywords: study abroad, international experience, benefit, cultural understanding, benchmark
Introduction

A rapidly shrinking world necessitates the need for a global perspective that includes international knowledge and competence (Zhai & Scheer, 2004). No discipline or corporate sector can be separated from the need for global understanding (Wright, 2010). It is imperative to prepare the next generation with first-hand global knowledge to successfully enter a global work environment and emerge as global leaders (Harder & Bruening, 2008; McGowan, 2007; Zhai & Scheer, 2004). These international components are “essential, integral, and central to the education, research and outreach mission of the university” (Bruening & Frick, 2004, p. 90).

Intercultural understanding and sensitivity are essential to live and work with people of different cultural backgrounds (Anderson et al., 2006). Additionally, a shortage of global leaders in the corporate sector has led more employers to look favorably at applicants with international experience (Orahood et al., 2008), particularly graduates with cross-cultural and foreign language skills (Bruening & Frick, 2004). Postsecondary policymakers have also acknowledged the importance of cross-cultural communication skills to be successful in our global economy (Salisbury et al., 2011). Enabling students to come in contact with foreign countries, cultures, and people provides valuable first-hand experiences (Douglas & Jones-Rikkers, 2001). Therefore, it is imperative that colleges and universities introduce curriculum and programs that effectively prepare students to successfully interact and do business with people from different backgrounds and orientations (Anderson et al., 2006). To this end, there is “no better way to understand a culture than by going to a country and experiencing it first hand” (Bruening, 2001, p. 2).

Participation in an international experience provides the opportunity to gain the global knowledge and skills needed for the workforce (Bruening & Frick, 2004). Students who study abroad have been documented as able to function in a “team-oriented, culturally, ethnically, and racially diverse work environment” (Bunch et al., 2013, p. 217). Study abroad is intentional travel outside the geographical boundaries of a student’s country of origin for educational purposes that includes earning academic credit (Alexis et al., 2017; Stone et al., 2017; Varela, 2017). These experiences can range from a weekend excursion to an academic year and may also include internship, research, and service-learning. Students also gain a deeper understanding of themselves and their place in the world when immersed in another culture (Lumkes et al., 2012). Additionally, the disorienting experience caused by study abroad pushes students to review and challenge their perspective and identity (Glade-Wright & Sorin, 2017).

Unfortunately, students in the United States tend to lack understanding of the effects of globalization. Therefore, one of the best ways to broaden understanding of the global market and acquire a global mindset is through participation in an international experience (Bunch et al., 2013; Wright, 2010). International learning experiences are critical to an undergraduate education (Wright, 2010). Colleges of agriculture responded to this need by internationalizing their curriculum and providing a great variety of international programs to better prepare students for a global workforce (McGowan, 2007). Additionally, the Institute of International Education (IIE) launched the Generation Study Abroad campaign as one such effort to increase participation in study abroad. Over 800 worldwide partners including universities, governments, and associations joined the 5-year initiative to double the number of U.S. students studying abroad by 2019 (Interis et al., 2018).
Need for the Study

While many individual studies document benefits of and best practices for a particular international experience, no synthesis of these studies exists. Given the fact that universities and departments are touting international experiences as a necessary component of the educational process, we identified a need for a synthesized summary of benefits and best practices based on the literature. Identifying the benefits of participation in and best practices for coordinating an international program could assist administrators in securing funds and students in obtaining post-graduation employment (White, 2016). To deliver this assistance, we sought to provide a summary of documented benefits and best practices for study abroad. The area of “Meaningful, Engaged Learning in All Environments” of the American Association for Agricultural Education’s 2016-2020 National Research Agenda (Roberts et al., 2016) was the target of this study.

Conceptual Framework

We rooted the conceptual framework of the study in the concept of high-impact activities or experiences and the inputs, processes, and outcomes of these activities or experiences. Kuh (2008) included global learning among a list of examples of high-impact activities that benefit students. High-impact activities included aspects such as dedication of students’ time, interaction with diverse situations, and real-world connections (Kuh et al., 2013). International experiences are a specific area within high-impact activities. Our study specifically focused on the outcomes (i.e., benefits) of and best practices for student participation in an international experience. In general, the study of high impact learning through international experiences has gained momentum as an increase in these types of activities has been recommended.

Purpose and Objectives

Using Kuh et al. (2013) as our framework, the purpose was to establish a benchmark describing not only what research had been conducted related to the benefits and best practices of international high impact experiences but also to identify research gaps. The characteristics of high impact experiences as described by Kuh et al. (2013) guided us as we addressed the following research question: What benefits have been documented related to student participation in an international experience and by whom? Two additional questions emerged during data analysis: Does the research reveal specific barriers to participation in an international experience?, and Does the research reveal guidance for those planning international experiences?

Methods

Descriptive research “describe[s] systematically a situation or area of interest factually and accurately” (Isaac & Michael, 1987, p. 42). A rigorous literature review process enabled the identification of articles specifically relevant to documenting benefits associated with international experiences and in line with Kuh et al. (2013). Cooper’s (2010) seven steps were followed: formulate the problem, search the literature using specified criteria, glean information from identified studies, assess each study’s quality, analyze and integrate study outcomes, interpret the evidence, and present the results. This process established trustworthiness by documenting the exact procedures used to collect and analyze the articles.

The search was conducted within the Texas A&M University library online catalog for articles using the search terms “study abroad,” “international experience,” and “benefit.” The term “cultural understanding” was added based on a review of initial articles. Additionally, a
specify search with the same terms was conducted within the Journal of Agricultural Education and the Journal of International Agricultural & Extension Education due to specific interest in studies conducted within agricultural education. The search was restricted to publications between 2001-2019. A total of 268 articles and papers were isolated for in-depth review. We reviewed each article or paper individually. A total of 108 articles and papers published across 55 unique journals, conference proceedings, and reports were included in the literature synthesis. The remaining 160 reviewed were removed based on the content not aligning with the inclusion criteria of benefits of study abroad or international experiences as shared in Kuh et al. (2013). We ensured rigor by creating a chart that included the following for each article: year, author, journal, and article title. Analysis of the selected articles revealed notable findings related to barriers and planning guidance. These topics were added to the study. Findings represent the synthesis of research and are documented with supporting references as an audit trail. Each table is organized by the number of citations for each finding, noted in parentheses.

Results

What benefits have been documented related to student participation in an international experience and by whom?

A significant amount of research describes benefits derived from participation in an international experience. These gains can be grouped into the following four categories: personal growth, international knowledge, cultural awareness, and additional skills. As Table 1 shows, students gain personal growth through broadening their horizons, career awareness, development of a desire for life-long learning, personal life experiences, and increased academic focus.

Table 1
Personal Growth Gained from an International Experience

<table>
<thead>
<tr>
<th>Areas of personal growth (number of citations)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Career awareness/insight; improved career opportunities (11)</td>
<td>Bender et al., 2017; Deviney et al., 2014; Dwyer, 2004; Farrell &amp; Suvedi, 2002; Jackson &amp; Nyoni, 2012; Lane-Toomey &amp; Lane, 2012; Norris &amp; Gillespie, 2009; Nyaupane et al., 2011; Orahood et al., 2008; Witkowsky &amp; Mendez, 2019; Zhai &amp; Scheer, 2002</td>
</tr>
<tr>
<td>2. Gain personal life experience/personal development (10)</td>
<td>Bunch et al., 2013; Interis et al., 2018; Jackson &amp; Nyoni, 2012; Lumkes et al., 2012; McGowan, 2007; Orahood et al., 2008; Place et al., 2002; Trilokekar &amp; Kukar, 2011; Van Hoof &amp; Verbeeten, 2005; Wielkiewicz &amp; Turkowski, 2010</td>
</tr>
<tr>
<td>3. Increased academic focus; functional knowledge (6)</td>
<td>Bender et al., 2017; Dietz &amp; Baker, 2019; Jackson &amp; Nyoni, 2012; Lumkes et al., 2012; Nyaupane et al., 2011; Redwine et al., 2018</td>
</tr>
<tr>
<td>4. Develop desire for life-long learning; transformational learning (5)</td>
<td>Edgar et al., 2018; Farrell &amp; Suvedi, 2002; Glade-Wright &amp; Sorin, 2017; Stone et al., 2017; Witkowsky &amp; Mendez, 2019</td>
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</table>
In fact, studies have shown that employers value international experiences, particularly those that are service learning or internship oriented (Trooboff et al., 2008). Coleman (2011) surveyed 1,162 graduates from three different universities in the United Kingdom who spent a year abroad in college to work or study and found that skills gained abroad played a role in more than 70% of the students finding jobs. Additionally, more than 30% said their international experience was a significant factor in being hired, and 10% said it was the determining factor for being hired. Di Pietro (2015) surveyed Italian university graduates and also identified a possible casual effect between their participation in an international experience and employment after graduation.

Research shows that students acquire international knowledge through the pursuit of an international experience as displayed in Table 2. International knowledge is obtained through the experience itself and gaining global and regional competence. Students also develop a better understanding of world issues and international affairs as well as global interdependence. Additionally, an international experience enables students to gain awareness of U.S. influence on other countries and may increase appreciation for their home country.

### Table 2

**International Knowledge Gained from an International Experience**

<table>
<thead>
<tr>
<th>Areas of international knowledge (number of citations)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Global and regional competency; prepare for global economy (7)</td>
<td>Bruening, 2001; Bender et al., 2017; Dietz &amp; Baker, 2019; Glade-Wright &amp; Sorin, 2017; Goldoni, 2013; Harrison &amp; Brower, 2011; Smith &amp; Yang, 2017</td>
</tr>
<tr>
<td>2. Explore the world/gain international experience (6)</td>
<td>Bunch et al., 2013; Goldoni, 2013; Marx &amp; Moss, 2011; McGowan, 2007; Nyaupane et al., 2011; Van Hoof &amp; Verbeeten, 2005</td>
</tr>
<tr>
<td>3. Understanding of world issues and international affairs (6)</td>
<td>Bell et al., 2016; Bender et al., 2017; Farrell &amp; Suvedi, 2002; Lane-Toomey &amp; Lane, 2012; Snyder et al., 2012; Williams, 2009</td>
</tr>
<tr>
<td>4. Global interdependence (4)</td>
<td>Glade-Wright &amp; Sorin, 2017; Lumkes et al., 2012; Redwine et al., 2018; Smith &amp; Yang, 2017</td>
</tr>
<tr>
<td>5. Increase appreciation of own country (2)</td>
<td>Harder &amp; Bruening, 2008; Lane-Toomey &amp; Lane, 2012</td>
</tr>
</tbody>
</table>

Cultural awareness was a distinct category that emerged from the literature. An increase in research was revealed related to the importance of cross-cultural skills and understanding which were documented as desired traits that result from international experience participation. Table 3 summarizes the research identified that shows cultural awareness gained by participants through an international experience. Participating students open themselves to different ideas and
values, learn about new cultures, gain cultural awareness and a deep appreciation of differences, and develop cross-cultural understanding. An international experience also provides an opportunity for students to gain a worldly perspective and awareness that can contribute to becoming global citizens. Additionally, students learn first-hand about other people and cultures and develop an appreciation for perspectives and approaches that differ from their own.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Cultural Awareness Gained from an International Experience</th>
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<tbody>
<tr>
<td>Areas of cultural awareness</td>
<td>Sources</td>
</tr>
<tr>
<td>(number of citations)</td>
<td></td>
</tr>
<tr>
<td>1. Cross-cultural skills/ awareness; intercultural competence/ development, cultural understanding (18)</td>
<td>Alexis et al., 2017; Bai et al., 2016; Berg, 2007; Cadd, 2012; Conner et al., 2016; Farrell &amp; Suvedi, 2002; Foronda &amp; Belknap, 2012; Goldoni, 2013; Hernandez-Diaz et al., 2016; Lane-Toomey &amp; Lane, 2012; McGowan, 2007; Pedersen, 2010; Pedersen et al., 2010; Salisbury et al., 2011; Trilokekar &amp; Kukar, 2011; Varela, 2017; Witkowsky &amp; Mendez, 2019; Wright, 2010</td>
</tr>
<tr>
<td>2. Gain worldly perspective/global mindedness/world-mindedness (14)</td>
<td>Alexis et al., 2017; Bruening, 2001; Coker &amp; Porter, 2016; Dwyer, 2004; Farrell &amp; Suvedi, 2002; Interis et al., 2018; Lane-Toomey &amp; Lane, 2012; McGowan, 2007; Nyaupane et al., 2011; Pedersen et al., 2010; Snyder et al., 2012; Sutton &amp; Rubin, 2004; Van Hoof &amp; Verbeeten, 2005; Zhai &amp; Scheer, 2002</td>
</tr>
<tr>
<td>3. Increase cultural/global awareness (10)</td>
<td>Bunch et al., 2018; Chieffo &amp; Griffiths, 2004; Harder &amp; Bruening, 2008; Lumkes et al., 2012; Orahood et al., 2008; Redwine et al., 2018; Roberts &amp; Edwards, 2016; Smith &amp; Yang, 2017; Snyder et al., 2012; Van Hoof &amp; Verbeeten, 2005</td>
</tr>
<tr>
<td>4. Learn about other people and cultures (9)</td>
<td>Bender et al., 2017; Dietz &amp; Baker, 2019; Dwyer, 2004; Farrell &amp; Suvedi, 2002; Harder et al., 2009; Knight &amp; Schmidt-Rinehart, 2002; Lane-Toomey &amp; Lane, 2012; McGowan, 2007; Roberts &amp; Edwards, 2016</td>
</tr>
<tr>
<td>5. Increase cultural sensitivity (8)</td>
<td>Anderson &amp; Lawton, 2011; Bruening &amp; Frick, 2004; Conner et al., 2016; Farrell &amp; Suvedi, 2002; Lane-Toomey &amp; Lane, 2012; Redwine et al., 2018; Smith &amp; Yang, 2017; Zhai &amp; Scheer, 2002</td>
</tr>
<tr>
<td>6. Appreciation of diversity/differences (7)</td>
<td>Farrell &amp; Suvedi, 2002; Jackson &amp; Nyoni, 2012; Redwine et al., 2018; Van Hoof &amp; Verbeeten, 2005; Varela, 2017; Wielkiewicz &amp; Turkowski, 2010; Witkowsky &amp; Mendez, 2019</td>
</tr>
<tr>
<td>8. International/global understanding (5)</td>
<td>Harder et al., 2009; Lane-Toomey &amp; Lane, 2012; Place et al., 2002; Place et al., 2005; Salisbury et al., 2011</td>
</tr>
<tr>
<td>9. Open mind to different ideas and values (5)</td>
<td>Bell et al., 2016; Ellwood, 2011; McGowan, 2007; Smith &amp; Mrozek, 2016; Varela, 2017</td>
</tr>
</tbody>
</table>
A number of additional skills valuable to a student’s personal, academic, and professional pursuits were documented as a result of an international experience and are summarized in Table 4. The most prominent we identified were the attainment of language skills, self-confidence, and flexibility. Research also indicated that students reported greater independence, critical thinking, communication skills, maturity, and teamwork, among other less cited gains.

Table 4
Additional Skills Gained from an International Experience

<table>
<thead>
<tr>
<th>Areas of important skills (number of citations)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Language skills (21)</td>
<td>Alexis et al., 2017; Berg, 2007; Bruening &amp; Frick, 2004; Cadd, 2012; Chieffo &amp; Griffiths, 2004; Dewey, 2017; Dwyer, 2004; Farrell &amp; Suvedi, 2002; Goldoni, 2013; Harder et al., 2009; Hernandez-Diaz et al., 2016; Knight &amp; Schmidt-Rinehart, 2002; Lane-Toomey &amp; Lane, 2012; McGowan, 2007; Norris &amp; Gillespie, 2009; Nyaupane et al., 2011; Okken et al., 2019; Pedersen, 2010; Salisbury et al., 2011; Varela, 2017; White, 2016</td>
</tr>
<tr>
<td>2. Self-confidence; leadership skills (20)</td>
<td>Bai et al., 2016; Bender et al., 2017; Dwyer, 2004; Farrell &amp; Suvedi, 2002; Glade-Wright &amp; Sorin, 2017; Harder et al., 2009; House &amp; Houser et al., 2011; Interis et al., 2018; McGowan, 2007; Okken et al., 2019; Orahood et al., 2008; Pedersen et al., 2010; Place et al., 2002; Place et al., 2005; Preston, 2012; Redwine et al., 2018; Smith &amp; Mrozek, 2016; White, 2016; Wielkiewicz &amp; Turkowski, 2010; Zhai &amp; Scheer, 2002</td>
</tr>
<tr>
<td>3. Flexibility; open-minded; tolerance; adaptability; patience (15)</td>
<td>Andrade et al., 2019; Bender et al., 2017; Chieffo &amp; Griffiths, 2004; Dwyer, 2004; Farrell &amp; Suvedi, 2002; Glade-Wright &amp; Sorin, 2017; Goldoni, 2013; Harder &amp; Bruening, 2008; Interis et al., 2018; Orahood et al., 2008; Root &amp; Ngampornchai, 2012; Russell &amp; Morris, 2008; Sutton &amp; Rubin, 2004; White, 2016; Williams, 2009</td>
</tr>
<tr>
<td>4. Better (cross-cultural) communication skills (6)</td>
<td>Bender et al., 2017; Farrell &amp; Suvedi, 2002; Orahood et al., 2008; Smith &amp; Mrozek, 2016; White, 2016; Williams, 2005</td>
</tr>
<tr>
<td>6. Maturity/responsibility (5)</td>
<td>Chieffo &amp; Griffiths, 2004; Dwyer, 2004; Orahood et al., 2008; Van Hooff &amp; Verbeeten, 2005; Wright, 2010</td>
</tr>
<tr>
<td>7. Independence/autonomy; self-efficacy (4)</td>
<td>Cubillos &amp; Ilvento, 2002; Okken et al., 2019; Sutton &amp; Rubin, 2004; Wielkiewicz &amp; Turkowski, 2010</td>
</tr>
<tr>
<td>8. Teamwork (4)</td>
<td>Bender et al., 2017; Farrell &amp; Suvedi, 2002; Sutton &amp; Rubin, 2004; White, 2016</td>
</tr>
</tbody>
</table>
Does the research reveal specific barriers to participation in an international experience?

Our review of the literature, which focused on benefits of international experiences, also revealed a litany of reasons that students chose not to participate. A majority of these reasons were provided by students with some offered by parents, faculty, or university advisors. A summary of these barriers is provided in Table 5. The cost/financial constraint was the most frequently mentioned barrier. This was followed by students’ concerns about graduating on time, coursework needed for their degree, and lack of familial support among others.

Table 5

<table>
<thead>
<tr>
<th>Barriers to participation (number of citations)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cost/financial constraints (17)</td>
<td>Andrade et al., 2019; Brux &amp; Fry, 2010; Coker &amp; Porter, 2016; Deviney et al., 2014; Doyle et al., 2009; Edgar et al., 2018; Estes et al., 2016; Gordon et al., 2014; Harder &amp; Bruening, 2008; Houser et al., 2011; Lewis &amp; Niesenbaum, 2005; Lovett, 2018; McGowan, 2007; Murphrey et al., 2016; Nyaupane et al., 2011; Salisbury et al., 2011; Smith &amp; Mrozek, 2016</td>
</tr>
<tr>
<td>2. Delayed graduation/not able to take classes needed abroad (10)</td>
<td>Brux &amp; Fry, 2010; Deviney et al., 2014; Doyle et al., 2009; Gordon et al., 2014; Harder &amp; Bruening, 2008; Interiset al., 2018; Lewis &amp; Niesenbaum, 2005; Nyaupane et al., 2011; Salisbury et al., 2011; Stroud, 2010</td>
</tr>
<tr>
<td>3. Lack of family support/encouragement (7)</td>
<td>Brux &amp; Fry, 2010; Coker &amp; Porter, 2016; Deviney et al., 2014; Doyle et al., 2009; Gordon et al., 2014; Hernandez-Diaz et al., 2016; Lewis &amp; Niesenbaum, 2005</td>
</tr>
</tbody>
</table>
4. Safety/security; fear (4) Deviney et al., 2014; Gordon et al., 2014; Lewis & Niesenbaum, 2005; Murphrey et al., 2016
5. Unaware of opportunities (4) Brux & Fry, 2010; Doyle et al., 2009; Harder & Bruening, 2008; Interis et al., 2018
6. Culture shock (3) Foronda & Belknap, 2012; Lovett, 2018; Zaykovskaya et al., 2017
7. Do not speak another language (3) Deviney et al., 2014; Doyle et al., 2009; Harder & Bruening, 2008
8. Lack of ability to pre-plan, lack of staff support (3) Abrams & Ziegler, 2016; Doyle et al., 2009; Orahood et al., 2008
9. Athletic expectations (2) Andrade et al., 2019; Coker & Porter, 2016
10. Potential loss of romantic relationship (2) Deviney et al., 2014; Wielkiewicz & Turkowski, 2010
11. Work/school obligations (2) Andrade et al., 2019; Edgar et al., 2018
12. Academic challenges/differences (1) Lovett, 2018
13. Participation in international activities domestically (1) Harder & Bruening, 2008
14. Poor study habits (1) Wielkiewicz & Turkowski, 2010

Does the research reveal guidance for those planning international experiences for students?

The reviewed literature provided a wide range of guidance for planning international experiences for students. This is likely because most studies were focused on implementation of one specific activity. We discovered best practices for programming as faculty develop international activities as well as evaluation techniques to measure activity quality and effectiveness. We also found guidance within the literature related to student recruitment and student preparation.

Research indicated that courses developed for on-campus instruction should not be taught the same way when used for study abroad. Table 6 provides a summary of the types of instruction used when conducting an international experience for students. The most cited activities included journal writing and reflection, lectures, presentations, seminars, and excursions.

Table 6
Types of Instruction Used in Conducting an International Experience

<table>
<thead>
<tr>
<th>Types of Instruction (number of citations)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lectures/presentations/seminars (13)</td>
<td>Bai et al., 2016; Bell et al., 2016; Bruening &amp; Frick, 2004; Bunch et al., 2013; Bunch et al., 2018; Conner et al., 2016; Core, 2017; Dolphin et al., 2019; Foronda &amp; Belknap, 2012; Hill &amp;</td>
</tr>
</tbody>
</table>
Information describing strategies for pre-departure preparation emerged from the literature. While not part of the overseas instruction, preparing students for their international experience was indicated as a component of a program’s success. Table 7 provides a summary of 20 elements found in the literature to prepare students for an international experience. The most frequently cited strategies included a pre-departure orientation or course, learning about the host country, discussing cultural differences and culture shock, understanding expectations, and attending a health and safety orientation.
### Table 7

**Steps to Prepare for an International Experience**

<table>
<thead>
<tr>
<th>Steps to prepare (number of citations)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Participate in pre-departure orientation or course (11)</td>
<td>Abrams &amp; Ziegler, 2016; Andrade et al., 2019; Arens et al., 2018; Core, 2017; Dolphin et al., 2019; Foronda &amp; Belknap, 2012; Jackson &amp; Nyoni, 2012; McCoy &amp; Holt, 2018; Shostya &amp; Morreale, 2017; Snyder et al., 2012; Wright, 2010</td>
</tr>
<tr>
<td>2. Learn about the host country, e.g., customs and laws (9)</td>
<td>Abrams &amp; Ziegler, 2016; Andrade et al., 2019; Arens et al., 2018; Core, 2017; Dolphin et al., 2019; Goldoni, 2002; Jackson &amp; Nyoni, 2012; Shostya &amp; Morreale, 2017; Wright, 2010</td>
</tr>
<tr>
<td>3. Discuss cultural differences and culture shock (6)</td>
<td>Andrade et al., 2019; Burns-Cusato &amp; Cusato, 2019; Foronda &amp; Belknap, 2002; Goldoni, 2013; McGowan, 2007; Shostya &amp; Morreale, 2017</td>
</tr>
<tr>
<td>4. Read assigned articles and reflect (6)</td>
<td>Andrade et al., 2019; Cotten &amp; Thompson, 2017; Dolphin et al., 2019; Hill &amp; Karlin, 2019; McCoy &amp; Holt, 2018; Shostya &amp; Morreale, 2017</td>
</tr>
<tr>
<td>5. Understand expectations (5)</td>
<td>Andrade et al., 2019; Dolphin et al., 2019; Foronda &amp; Belknap, 2012; Goldoni, 2012; Gouldthorpe et al., 2012</td>
</tr>
<tr>
<td>6. Attend health and safety orientation; determine medical requirements (4)</td>
<td>Abrams &amp; Ziegler, 2016; Burns-Cusato &amp; Cusato, 2019; McGowan, 2007; Wright, 2010</td>
</tr>
<tr>
<td>7. Get a passport/visa (3)</td>
<td>Andrade et al., 2019; McGowan, 2007; Wright, 2010</td>
</tr>
<tr>
<td>8. Get packing tips/advice (2)</td>
<td>Andrade et al., 2019; McGowan, 2007</td>
</tr>
<tr>
<td>9. Learn vocabulary, common phrases/expressions (2)</td>
<td>Goldoni, 2013; Shostya &amp; Morreale, 2017</td>
</tr>
<tr>
<td>11. Talk to students who went on program previously (2)</td>
<td>Foronda &amp; Belknap, 2012; McGowan, 2007</td>
</tr>
<tr>
<td>12. Understand perspectives and perceptions (2)</td>
<td>Goldoni, 2012; Gouldthorpe et al., 2012</td>
</tr>
<tr>
<td>13. Prepare family for less frequent communication (1)</td>
<td>Wright, 2010</td>
</tr>
<tr>
<td>14. Purchase travel insurance (1)</td>
<td>Burns-Cusato &amp; Cusato, 2019</td>
</tr>
</tbody>
</table>
15. Read newspapers, listen to TV/radio, or watch films from host country (1)  
Goldoni, 2012

16. Research how to access money abroad (1)  
Wright, 2010

17. Review safety and responsibility parameters (1)  
Burns-Cusato & Cusato, 2019

18. Role play what to do in difficult situations (1)  
Goldoni, 2012

19. Talk with hosts/natives (1)  
Jackson & Nyoni, 2012

20. Understand application process and deadlines (1)  
McGowan, 2007

Our review of literature uncovered a variety of methods used to attract students to participate in an international experience, both for a particular study abroad program as well as general recruitment to encourage participation in any international experience. These approaches are summarized in Table 8. The most cited recruitment method for a specific program was faculty promotion and student testimonials while the most cited approach for general recruitment included encouragement to participate from faculty and/or parents.

Table 8
Ways to Attract Students to Participate in an International Experience

<table>
<thead>
<tr>
<th>Ways to attract students (number of citations)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recruit for a particular study abroad program</strong></td>
<td></td>
</tr>
<tr>
<td>1. Faculty promotion (4)</td>
<td>Beseli et al., 2016; Coker &amp; Porter, 2016; Dolphin et al., 2019; Woodham et al., 2016</td>
</tr>
<tr>
<td>2. Testimonials from past study abroad students (3)</td>
<td>Coker &amp; Porter, 2016; Doyle et al., 2009; Zhai &amp; Scheer, 2002</td>
</tr>
<tr>
<td>4. Completion of credit (1)</td>
<td>Beseli et al., 2016</td>
</tr>
<tr>
<td>5. Guest speakers/seminars (1)</td>
<td>Harder &amp; Bruening, 2008</td>
</tr>
<tr>
<td>6. Online videos (1)</td>
<td>Harder &amp; Bruening, 2008</td>
</tr>
<tr>
<td>7. Use of social media (1)</td>
<td>Harder &amp; Bruening, 2008</td>
</tr>
<tr>
<td><strong>General recruitment to study abroad</strong></td>
<td></td>
</tr>
<tr>
<td>1. Encouragement from faculty and parents (5)</td>
<td>Beseli et al., 2016; Coker &amp; Porter, 2016; Estes et al., 2016; Paus &amp; Robinson, 2008; Woodham et al., 2016</td>
</tr>
<tr>
<td>2. Develop shorter programs (2)</td>
<td>Beseli et al., 2016; Harder &amp; Bruening, 2008</td>
</tr>
</tbody>
</table>
Evaluation methods for international experiences emerged as a distinct category within the literature. These methods included post program items to prepare for and coordinate future programs as well as assisting students with transitioning back to their home culture and sharing about their international experience. Table 9 summarizes methods documented to measure the quality of an international experience. Aspects included assessing the program’s objectives and health and safety records, the increase in functional knowledge for student participants, number of credit hours earned, interactions with the host community, and student satisfaction.

**Table 9**

*How to Measure the Quality of an International Experience*

<table>
<thead>
<tr>
<th>Measurements of quality (number of citations)</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Increase in students’ functional knowledge (2)</td>
<td>Anderson et al., 2006; Pedersen, 2010</td>
</tr>
<tr>
<td>2. Student satisfaction (2)</td>
<td>Pedersen, 2010; Sutton &amp; Rubin, 2004</td>
</tr>
<tr>
<td>3. Health and safety records (1)</td>
<td>Sutton &amp; Rubin, 2004</td>
</tr>
<tr>
<td>4. Number of credit hours (1)</td>
<td>Sutton &amp; Rubin, 2004</td>
</tr>
<tr>
<td>5. Objectives (1)</td>
<td>Anderson et al., 2006</td>
</tr>
<tr>
<td>6. Social interactions with the host community (1)</td>
<td>Goldoni, 2013</td>
</tr>
</tbody>
</table>

**Conclusions and Recommendations**

International experiences provide students and society as a whole with many benefits (Di Pietro, 2015). Study abroad participation helps students gain an international perspective through real-world application and exposure to diverse people and circumstances that they could not have received in the classroom (Kuh et al., 2013). Studies have revealed the benefits students derive from the time and effort invested in study abroad, including skills, knowledge, and competencies essential for global competence (Bunch et al., 2013; Kuh et al., 2013). The attributes students gain from an international experience include personal growth, international knowledge, and cross-cultural awareness, among many other workforce skills (Bender et al., 2009; Carley et al., 2011; Lumkes et al., 2012; McGowan, 2007). The summary of benefits from the literature
provides a benchmark for researchers to build upon and practitioners to utilize in program planning.

Based on findings, we conclude that research has documented specific benefits as a result of students’ participation in international experiences; however, many of these are based on studies conducted immediately following the experience rather than longitudinal data. While assessments of benefits such as career impact are important immediately following an international experience, assessment of these benefits five, 10, and 15 years following the experience would provide stronger evidence of sustained benefit. We recommend that longitudinal research be conducted that documents how the benefits gained translate into future, long-term success. Particularly, understanding the effect of a study abroad experience on a students’ career choice (Orahood et al., 2008) and data that documents skills for future employees (Trooboff et al., 2008) would be valuable.

While it is important to understand a student’s perceived value of participating in an international experience (Bunch et al., 2013) and understand their personality traits and attributes and how this may affect their experience (Goldoni, 2013), research is needed to document change in students’ attitudes, beliefs, and behaviors during and after an international experience (Farrell & Suvedi, 2002). Further, a comparison between types of international experiences would provide crucial data to guide the planning process for students choosing between types of international experiences and for faculty who are planning the experiences. Additionally, it is important for universities to help students communicate and demonstrate the skills gained or enhanced by their participation in an international experience to employers (White, 2016).

Increasing the number of students who choose to participate in a study abroad experience is a documented need that can be accomplished through an increase in the number of programs offered and the development of shorter programs (Harder & Bruening, 2008). Aggressive promotion through social media and additional funding also has the potential to positively impact recruitment. Research shows that promotion of international opportunities during freshman year and testimonials from past participants are extremely influential (Orahoo, et al., 2008; Zhai & Scheer, 2004). The recruitment process for international experiences deserves further study.

It is important to note that we specifically focused on articles related to benefits gained through international experiences. Even though our literature search did not specifically focus on barriers to participation, 14 barriers were identified that prevented participation in an international experience. The most well documented barrier related to the financial constraints associated with pursuing an international experience. Other frequently acknowledged obstacles included the inability to take classes abroad that were needed to maintain progress toward graduation (so as not to delay graduation) and a lack of familial support or encouragement. Both of these obstacles could potentially also be related to financial constraints, as an additional semester in college adds expense for a student and not having familial support can likely mean not having financial support to pursue an international experience.

Our literature review of benefits of international experiences also revealed significant findings related to program planning for international experiences. The studies we reviewed made clear the differences between teaching a course domestically versus the instruction and content variation needed in a course that is part of an international experience. Dominant components recommended for an internationally taught course included the use of experiential and hands-on learning experiences, the inclusion of journal writing, and lectures or presentations with content specific to the local environment. The information we identified related to program planning extended to include steps to prepare students for an international experience. First and
foremost, students need to participate in pre-departure orientations. This enables the instructor to prepare students on topics related to cultural differences, knowledge of the host country, and expectations in a foreign environment. Less literature was found related to recruitment of students to participate in an international experience and how to measure the quality of a study abroad program. We believe these areas warrant further investigation.

Implications

Research has emphasized the need for international experiences for students in agriculture (Dooley et al., 2008), so agricultural colleges are globalizing and internationalizing their curriculum to prepare their students for jobs in a global workforce (McGowan, 2007). Today’s agriculture graduates must be prepared to live and work in a global society (Harder et al., 2012). However, only 2.7% of the 341,751 students who participated in study abroad in 2017-2018 were from the field of agriculture (Institute for International Education, 2019). It is imperative that colleges of agriculture create effective international opportunities to address global issues in agriculture (Edgar & Edgar, 2009). More specifically, departments of agricultural education should continue to increase student opportunities for participation in international experiences and thus expand “Meaningful, Engaged Learning in All Environments” (Roberts et al., 2016). Our research provides a useful summary of benefits and program strategies that can be utilized by both researchers and practitioners as it synthesizes results across a multitude of studies, many of which were conducted with a focus on one program.

Future Research

A majority of the research we identified and reviewed focused on specific international experiences being studied. Program designs can be quite complex, so it is difficult to account for each factor that could affect a participant’s response. In addition to program location, type, and length, there are additional factors like housing in a dorm, in a private flat, or with a local family (Dewey, 2017). Another is the mixing of program types (e.g., study with intern or service-learning), as well as the level, quality, and frequency of engagement with the host culture (Varela, 2017). Our synthesis provides a benchmark that individual programs can use in conducting further research on specific programs. Further, we began our study with a focus on understanding benefits, but soon realized that topics such as barriers and program planning were intertwined with benefits and thus, reported in our findings. We recommend that a synthesis of literature on these topics may prove valuable to add to the findings presented. Finally, we concluded our synthesis of literature prior to the 2020 pandemic. We believe the findings presented are more important today than ever as we face both economic and cultural awareness challenges. The need to provide international experiences for our students is critical, and we must find ways to meet this need.

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Understanding the Perceptions of Secondary School Youth toward Agricultural Careers in Democratic Republic of Congo, Kenya and Nigeria

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Prince Bobo
Paul Lester Woomer
International Institute of Tropical Agriculture

Abstract

Youth are critical participants in the modernization of African agriculture but often their perception of farming is negative. A baseline survey of 1264 students from eight secondary schools in Democratic Republic (DR) of Congo, Kenya and Nigeria was conducted to assess their attitudes toward career pathways to agriculture and agribusiness. KoboToolBox was used to collect data online before compilation and inspection for errors in Microsoft Excel and exportation into STATA for analysis. Findings were presented as summary statistics, frequencies and multiple linear regression. A large majority (86%) of the students attended agricultural courses and 54% identified agriculture as having a place in their future, but often not as their highest career ambition. Livestock, field cropping, small animal production, and horticulture were the most viable enterprises for the youngsters. Nearly half (46%) that were averse to agriculture as a career path based their decision upon excessive labor requirements (30%), difficulties in securing land (25%), and low returns to effort (20%). Disparities from a country, area and gender perspective were recorded. Perceptions and career plans among the sexes differed; with females having less experience with machinery, and were more drawn to horticulture and agro-processing. Despite unfavorable attitudes toward agriculture, the study established that youth from these countries recognize that opportunity exists from adopting modern farming methods and commercial agricultural enterprises. The results of this study suggest several avenues for future Start Them Early Program activities intended to strengthen career pathways toward agriculture in African secondary schools.

Keywords: Africa, agricultural education, career pathways, Start Them Early Program, youth

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Introduction

The Start Them Early Program (STEP) is a youth empowerment intervention of the International Institute of Tropical Agriculture (IITA) that is based on the principle that agriculture is the necessary engine of future economic growth across Africa (Harsch, 2004; Rodin, 2016) and a next generation of modern farmers is needed to achieve that success. Agricultural education at the secondary school level is a means to develop enthusiasm and skill sets needed by young farmers (Okiror et al., 2011). At the same time, the program recognizes the lack of appeal to careers in agriculture among youth who associate it with poverty and drudgery (IITA, 2019; Yaboah et al., 2020). As a result, many youth do not prepare themselves to become modern farmers and agribusiness persons as they aspire for jobs in professional fields, government and business (White, 2012; Mukembo et al., 2014). Greater opportunities are perceived to exist in urban areas, sparking migration that deprives rural areas of their brightest and most ambitious youth (AGRA, 2015).

To better understand the perceptions and attraction of youth to career paths in agriculture, and the differences among gender groups and socio-economic settings, STEP conducted studies in DR Congo, Kenya and Nigeria. The objectives of the study were to form a baseline describing school and student characteristics and to determine students’ participation in agricultural courses, their career pathway plans and how they relate to their agricultural studies including participation in extracurricular young farmer clubs. This paper describes a baseline study conducted in eight secondary schools in these three countries between October and November 2019 and forms a basis for comparison as the STEP Program conducts its agricultural education backstopping activities into the future (Adefioye et al., 2019).

Literature Review

A diverse set of economic and socio-cultural factors influence youths’ aspirations toward engagement in agriculture and agribusiness (Betcherman & Khan, 2015). The economic factors include low level of agricultural productivity and earnings, causing the youth to form negative perceptions about agriculture as a career (Barratt et al., 2012; Sumberg & Okali, 2013; Daum & Birner, 2017). These perceptions are also influenced by household responsibilities; expectations of family members, friends, communities; and exposure to both conventional and social media (Flynn & Sumberg, 2017). At the same time, a large number of young people residing in the rural areas of Africa are and will inevitably be employed in small-scale farming and related family-based livelihood activities that are subject to low returns and poor marketing systems (Chianu et al., 2008; Onakuse, 2012; D’Alessandro et al., 2015). This results in a contradiction among rural youth seeking to escape agriculture as a lifestyle and the likelihood that they will depend upon it in the future. The challenge is to alter these negative perceptions of the potential for agricultural livelihoods in a manner that influences career path decisions by school-age rural youth (Mukembo et al., 2014), and then to see this potential realized through the transformation of agriculture and its increased productivity and profitability.

Career development is continuously shaped by various elements that strongly impact upon life choices and can be influenced and evolve over time. Career choices among school-age youth are particularly exploratory and influenced through extracurricular engagement but tend to stabilize as young adults enter the workforce (Super et al., 1996). Within the context of young Africans and their engagement with agriculture, career choices may be positively reinforced through membership in young farmer clubs (Adebo, 2009; Mukembo et al., 2015), a factor that warrants consideration in the design of agricultural curricula on secondary schools.
In a study of the perceptions of members of Young Farmers Clubs concerning their intent to pursue agriculture-related careers after graduating from two Ugandan secondary schools, Mukembo et al (2015) found that a high percentage (71%) were interested in agriculture-related fields. This proportion is considerably greater than in an earlier study among the general student population where animal and crop production were ranked as the 12th and 13th career interests (Mukembo et al., 2014) with far more students expressing interest in medical, engineering and business fields. In Nigeria, young farmers clubs were shown to encourage youth to learn about better farming techniques under the guidance of the agricultural mentors and through learning-by-doing (Adebo, 2009). In Uganda, it was established that students engaged in supervised agricultural programs pass useful information on to their families and communities (Okiror et al., 2011). Clearly, an important element to modernizing agriculture in Africa rests with directing youth toward profitable career pathways in farming and agribusiness, but at the same time requires that their skill sets be raised compared to the current farming generation.

**Theoretical Framework**

Theories relating to social cognitive career choices (Lent et al., 2002) and experiential learning (Kolb, 1984) underlie this study. Social cognitive career theory addresses how basic career interests develop and may be shaped through education. Experiential learning theory focuses upon the role of practical experience in learning and suggests that knowledge results from the transformation of experience. Ord (2012), based upon earlier work of Dewey (1938), stressed that knowledge is not merely information passed to students for their direct future application, but instead provides experiential understandings that are interpretively applied to better inform new practices. Learners should be able to connect aspects of the new experience to what they already know, in addition to actively interacting with their environment and further testing ideas developed through interaction (Grady, 2003). Akella (2010) reflected that educators themselves should be able to assess individual student’s learning styles, that instructors must also undergo self-improvement, and that this feature is especially important in non-traditional learning situations.

These two theories relating to cognitive career choice and depth of experience converge at the critical point where all factors are considered when the learner makes the decision to pursue a particular career path and is confident, they possess the necessary starting skill sets to do so. In this way, agricultural curricula that provide strong elements of practical experience can nurture the career aspirations in learners and readjust career goals (Lent, 2005). Combining these theories in Africa within the context of secondary school courses, practicals and extracurricular activities, and linking these activities to proven agribusiness models suggests that the future engagement of youth in agriculture can be influenced in a constructive manner.

**Methods**

A baseline study was conducted to generate information on the attitudes of secondary school students toward agriculture as a candidate career choice. A formal survey was constructed that described the proportions of youth enrolled in agriculture courses, belong to young farmer clubs and practice different agricultural enterprises. The survey was developed in conjunction with the STEP teams in DR Congo, Kenya and Nigeria (Adefioye et al., 2019) to allow for comparability of results between countries and school systems.

A multistage sampling method was employed in selecting the sample. The first stage involved purposive selection of eight secondary schools located in contrasting areas of the three
countries using selection criteria developed by a cross-section of STEP program collaborators (Adefioye et al., 2019). Three schools were selected in both Nigeria and DR Congo and two in Kenya. The second stage involved use of simple random sampling to select the student respondents whose parental consent was then obtained through the school administrators. Comprehension of the informed parental consent was assured using both verbal and written means. Barriers to language were overcome using both the national and local languages.

The data collection tool contained 75 closed and open-ended queries segmented into five sections corresponding to the study objectives. These queries were phrased in English, translated into French and Kiswahili, and then field tested at Institut Weza in South Kivu Province, Eastern DR Congo; and later refined by STEP officers from all three countries. The structured questionnaire was loaded into android mobile devices using KoboToolbox software (Harvard Humanitarian Initiative, 2020). Enumerators were trained in the use of the application, and then the survey was conducted in DR Congo, Kenya and Nigeria between October and November 2019.

In DR Congo the survey was conducted in three public schools of South Kivu Province in Eastern DR Congo; Institut Weza, EDAP/ISP, and Institut Mushunguri. In Kenya our intention was to survey three public schools; Mwiki Secondary School (Nairobi County), Afraha High School (Nakuru County) and Muongoiya Secondary School (Kiambu County) but Muongoiya’s examination schedule (and then the emergence of the COVID-19 pandemic) conflicted with the survey so only the first two schools are included. In Nigeria, the survey was conducted in three schools in the south-western part of the country; Fasola Grammar School, Oluponna High School and Lead City International School. Data was aggregated in the kobotoolbox.org platform (Harvard Humanitarian Initiative, 2014) and compiled in Microsoft Excel, inspected for errors, exported to STATA for analysis (StataCorp, 2019), and results prepared as summary statistics, frequencies and regression models. To better partition and understand attitudes of youth and their preferences and practices, data was disaggregated by country, gender, and other parameters of interest.

Results

The attitudes of 1264 secondary school youth toward careers in agriculture were assessed across eight schools in three African countries. The average age of these youth was 16 years old, and in general the sample was drawn from students in their final three years of school. This age represents a critical time in determining career pathways following graduation, particularly for youth not destined for tertiary education. Of the three schools in DR Congo, EDAP/ISP is the largest (2026 students) and located in a mixed market farming setting, while the other two schools are in more subsistence farming areas. Weza has a student body of 904 and is the only institute that is both a primary and secondary school. Mushunguri is the smallest, with only 320 students. Secondary schools in DR Congo introduce agriculture in year two as an optional subject, in year 3 subject specialization begins and agriculture becomes optional, students may wish to continue or drop the subject. Agricultural instruction is provided at least three times in a week and offered over several grades. All the schools have field area for course practicals in crops but rely on rainfed agriculture and lack irrigation systems. Two schools include practical training in the rearing of small animals, but marketing and value-addition are underrepresented in the curriculum. There are few computers in these schools but when available are shared between teachers and students for agricultural instruction. Extracurricular agricultural clubs have been in existence for the past two years in Weza and EDAP but are not available in Mushunguri.
Of the two schools in Kenya, Afraha Secondary School has a student population of 1202 and is located adjacent to a large commercial farming area within Nakuru and the Great Rift Valley. It has adequate land and irrigation for field activities with facilities also available for food processing, operates a computer laboratory but lacks animal enterprise facilities and small-scale farm equipment. Mwiki Secondary School has 501 students and is located on the outskirts of Nairobi but is near mixed highland farming systems, has modest field space, water for irrigation, and ongoing animal enterprises, but lacks a computer laboratory and food processing facilities. Both schools have neighboring schools that could replicate the STEP approaches and require assistance with farm inputs, new crop varieties, mechanized tools, and modest renovation. Secondary schools in Kenya have agriculture as an optional subject in all the four years. At the end of year 2 subject selection and specialization begins, those already in the agriculture course may choose to proceed with the subject or drop the same for a preferred elective course. The COVID-19 pandemic prompted school closure in early-2020 so we had no opportunity to survey Muongoiya School or to conduct follow up activities as first intended.

Two of the Nigerian schools are in Oyo State (Fasola and Lead City) and have student bodies of 326 and 274, respectively. Oluponna School is in Ogun State and has 993 students. Two of these schools (Fasola and Oluponna) have sufficient land for agricultural practice on crop production and horticulture, while opportunities in value addition are emphasized in Lead City. Secondary schools in Nigeria have compulsory agricultural training during the junior year, and then offer it as an elective during the senior year. Fasola School is located close to Fasola Farms, a government farm settlement operated by the Ministry of Agriculture. Oluponna High School is adjacent the Ogun Agricultural Center that provides farmer training in agriculture.

Sample sizes were similar but not identical across countries. Of the 1264 students surveyed, 382 were in DR Congo (30%), 451 in Kenya (36%) and 431 in Nigeria (34%). In terms of gender, 41% of the respondents were female and 59% were male with near parity in Nigeria (51% female) but only 33% and 38% in DR Congo and Kenya, respectively. In terms of age, 70% of the students were between 14 and 17 years old with 16% younger and 14% older (data not presented). A substantial majority (86%) of the students from the eight secondary schools in the three countries were studying agriculture at the time of the survey although in some cases that participation is mandatory (Table 1). Half of the schools are based in rural areas, and the other half evenly distributed between urban and peri-urban areas, although only 30% of the students identified themselves as originating from farming households.

Table 1
Summary results of a survey among secondary students concerning attitudes toward agricultural career pathways

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>±</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young women</td>
<td>41%</td>
<td>± 1.4%</td>
<td></td>
</tr>
<tr>
<td>From a farming background?</td>
<td>30%</td>
<td>± 1.3%</td>
<td></td>
</tr>
<tr>
<td>Future plans for farming</td>
<td>54%</td>
<td>± 1.4%</td>
<td></td>
</tr>
<tr>
<td>If yes: future plan involves field crops</td>
<td>30%</td>
<td>± 1.5%</td>
<td></td>
</tr>
<tr>
<td>If yes: future plan involves animals</td>
<td>42%</td>
<td>± 1.6%</td>
<td></td>
</tr>
<tr>
<td>If yes: future plan involves processing</td>
<td>15%</td>
<td>± 1.2%</td>
<td></td>
</tr>
<tr>
<td>No future plans for farming</td>
<td>46%</td>
<td>± 1.4%</td>
<td></td>
</tr>
<tr>
<td>Currently study agriculture in school</td>
<td>86%</td>
<td>± 1.0%</td>
<td></td>
</tr>
<tr>
<td>Member of young farmer club</td>
<td>9%</td>
<td>± 0.8%</td>
<td></td>
</tr>
</tbody>
</table>
Currently involved in agriculture & ± 1.3%
  If yes: grow field crops & 58% ± 1.7%
  If yes: raise animals and livestock & 37% ± 1.7%
  If yes: practice horticulture & 24% ± 1.9%
Not currently involved in agriculture & 31% ± 1.3%

A slight majority of these students (54%) imagined agriculture playing some role in their future, with animal enterprise (42% of them), field cropping (30%) and food processing (15%) being the most attractive options. At the same time, 46% of those surveyed had no attraction to agriculture for a variety of reasons (Figure 1) including its requirement for excessively hard labor (30%) while offering reduced returns to effort (20%) and an overall unfavorable image of farmers (21%). At the same time, 25% of these youth stated that they lack the land or facilities needed to practice farming and this excluded it as an option in their career planning.

**Figure 1**
*Reasons stated for lack of interest in agriculture*

It is important to note that most of these students attended courses in agriculture (86%) and that in many cases it was a required course. For the most part (81%) these courses included practicals and field work (data not presented). Very few of these students (6%) expressed a strong dislike for their agricultural courses. Also, very few of these students (9%) were members of extracurricular young farmer clubs for a variety of reasons, mostly because schools outside of DR Congo do not offer such clubs, and where offered many youth did not have time to participate. Disinterest in these clubs does not mean, however, that students are not presently engaged in agriculture. Indeed, 69% of those surveyed are involved in farming, mostly as part of family enterprise with field cropping (58%), animal rearing (37%) and vegetable horticulture (24%) the most common activities.

Students were also asked what a project such as STEP could do to assist them to successfully pursue careers in agriculture, and again a wide variety of responses were collected including help to better access inputs (26%) or new agricultural technologies (22%), finance for
their new enterprises (20%), support for improved instruction (14%) and assistance in securing access to land or facilities (12%). These results were then disaggregated by country and gender.

Strong trends and differences were expressed between the countries (Table 2). Slightly younger students were surveyed in Nigeria and fewer girls surveyed in DR Congo and Kenya (data not presented). Large differences in farm family backgrounds exist with nearly half from farms in Nigeria and <10% from farms in Kenya. Fewest future plans for agriculture are made in Nigeria (29%), most in DR Congo (91%). Field cropping is least attractive among students in DR Congo, maybe due to the area’s steep terrain. Animal enterprise is more appealing than field crops across all countries. Aquaculture is most attractive in Nigeria (24% of respondents), much less so in Kenya (2% of respondents). Results related to horticultural ambitions suggest that Nigerians do not understand horticultural enterprise, and do not distinguish it from field cropping. Value-added processing was most attractive in DR Congo, suggesting stronger opportunity for cottage and small-scale processing enterprises but across all countries, youth appear to under-recognize marketing and agro-industrial career opportunities.

Table 2

Students’ future plans toward agriculture in DR Congo, Kenya and Nigeria

<table>
<thead>
<tr>
<th></th>
<th>DR Congo (± SEM)</th>
<th>Kenya (± SEM)</th>
<th>Nigeria (± SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>From a farming background</td>
<td>34% ± 2.4%</td>
<td>9% ± 1.4%</td>
<td>46% ± 2.3%</td>
</tr>
<tr>
<td>Future plans involve farming</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes: future plan involves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>field crops</td>
<td>21% ± 2.2%</td>
<td>31% ± 3.2%</td>
<td>39% ± 2.6%</td>
</tr>
<tr>
<td>If yes: future plan involves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fish farming</td>
<td>10% ± 1.6%</td>
<td>2.0% ± 1.0%</td>
<td>24% ± 2.3%</td>
</tr>
<tr>
<td>If yes: future plan involves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>horticulture</td>
<td>19% ± 2.1%</td>
<td>13% ± 2.3%</td>
<td>&lt;1% ± &lt;1%</td>
</tr>
<tr>
<td>If yes: future plan involves</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>business</td>
<td>35% ± 2.4%</td>
<td>24% ± 1.9%</td>
<td>15% ± 1.5%</td>
</tr>
<tr>
<td>No future plans for farming</td>
<td>8.6% ± 1.4%</td>
<td>52% ± 2.4%</td>
<td>71% ± 2.1%</td>
</tr>
<tr>
<td>If not, why: no land or</td>
<td>22% ± 7.4%</td>
<td>33% ± 3.2%</td>
<td>6.9% ± 2.7%</td>
</tr>
<tr>
<td>facilities are available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If not, why: farming offers</td>
<td>13% ± 5.9%</td>
<td>26% ± 3.0%</td>
<td>9.2% ± 3.1%</td>
</tr>
<tr>
<td>poor opportunity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If not, why: unfavorable image</td>
<td>9.4% ± 0.05%</td>
<td>23% ± 2.9%</td>
<td>23% ± 4.5%</td>
</tr>
<tr>
<td>of farmers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Aversion to agriculture appears strongest in Kenya and Nigeria and farming is widely viewed to involve drudgery across all countries. The potential profitability of farming is recognized least in Nigeria (9% of respondents) and most in Kenya (26% of respondents). Availability of land poses a problem to many youth in DR Congo (22%) and Kenya (33%). Many youth, but not most, have no interest in agriculture, but have difficulty in articulating their reasons.

Career ambitions toward agriculture are very low in Kenya (8% of respondents) but remain high in DR Congo and Nigeria (71% to 80%, respectively). Fewest students in Kenya attend agricultural courses (62%) where it is handled as an elective against other vocational
fields; in contrast to the schools in DR Congo and Nigeria where it is a core course. All courses involve classroom lectures but slightly fewer courses include field practicals (data not presented). Very few students in DR Congo and Kenya strongly dislike their course (3% and 10%, respectively, data not presented). Many of these results appear to reflect the level of agricultural development within the survey area and the presence and strength of alternative economic sectors within their communities and countries.

Young farmer clubs were in widespread operation only in DR Congo but well attended there (24% of respondents). Nigerian youth are least familiar with farming equipment (only 8%) as opposed to Kenya (20%). A large majority of students remain involved in farming enterprises across all three countries (69%), mostly through home enterprises, but fewest in Kenya (53%). In Nigeria, animal enterprises were not differentiated between small animal rearing (e.g. poultry) and livestock. Fish farming is most common in Nigeria (12%), least in Kenya (<1%) suggesting differences in diets, water resources and available infrastructure. Horticulture appeals to many youth in DR Congo and Kenya (between 20 to 28% of respondents) but was not understood as a separate enterprise opportunity in Nigeria. To a large extent, opportunities for food processing are not widely appreciated among youth in Kenya, likely because of its more advanced food industry. Youth are seldom involved in marketing (<3%) within home enterprises, suggesting that these activities are intended for household needs or that older family members assume this responsibility.

A more nuanced understanding of differences between countries with regard to agricultural opportunities appears in Table 3. Relatively few students are not currently involved in some form of agricultural enterprise, with disinterest greatest in Kenya and Nigeria (25% and 32%, respectively). Many of the disinterested youth in Nigeria claim to have no time for outside enterprise (45%), presumably so that they can concentrate more on their studies, less so in DR Congo and Kenya (10% and 14%, respectively). Funding poses a smaller obstacle to outside enterprise than might be expected, but the availability of land and facilities appears to pose a major barrier in DR Congo and Kenya (72% on average). Relatively few students are forbidden permission to practice outside farming enterprises by their parents (1% to 13% in different countries), in part because a majority of them are already doing so (Table 2).

Table 3

<table>
<thead>
<tr>
<th>Student participation in agriculture in DR Congo, Kenya and Nigeria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>DR Congo (± SEM)</td>
</tr>
<tr>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Currently study agriculture in school</td>
</tr>
<tr>
<td>Member of young farmer club</td>
</tr>
<tr>
<td>Use machinery in club (or elsewhere)</td>
</tr>
<tr>
<td>Currently involved in agriculture</td>
</tr>
<tr>
<td>How can STEP best assist you?</td>
</tr>
<tr>
<td>Help to better access inputs</td>
</tr>
<tr>
<td>Help to provide finance</td>
</tr>
<tr>
<td>Help to provide better training</td>
</tr>
</tbody>
</table>

69
The survey solicited students’ opinions on better advancing career pathways in agriculture, and some important differences are revealed between countries (Figure 2). When asked how their instruction can be improved, few students ask for better agricultural training except in Kenya (27%), suggesting that courses are either adequate or viewed through a less critical lens in DR Congo and Nigeria. Proportionately greater demand exists for better access to inputs and new technologies, particularly in DR Congo (42% and 28% of respondents, respectively). Students fail to distinguish between new technologies and the need for training in their application in DR Congo and Nigeria, again suggesting a lack of technical sophistication. It is important that farming clubs provide land and facilities to its members, a need identified by between 18% and 28% of respondents in different countries. Practicals should include labor-saving technologies in its approach. Finance concerns must be addressed but are secondary, although the very low perceived need for investment opportunity in DR Congo (only 4% of respondents) may actually be related to its reduced level of agricultural commercialization compared to Kenya and Nigeria (22% and 32% of respondents, respectively). Note that concerns over food security are reduced among these students across all countries (between <1% in Kenya to <7% in Nigeria), suggesting that educational efforts should focus upon higher-value and value-added crops in addition to basic food commodities.

**Figure 2**

*Students’ opinions on better advancing career pathways in agriculture*

Of the students surveyed in three countries and eight schools, 41% were girls, allowing for strong gender comparisons (Table 4). Fewer girls profess to originate from farming backgrounds (-12%) or to have future plans involving farming (-28%). Both of these factors imply a gender basis for stigma associated with agricultural careers. Of those girls attracted to careers in agriculture, fewer are attracted to field cropping (-16%), animal rearing (-31%) and fish farming (-20%); but girls are far more attracted to opportunities involving food processing (+36%) and marketing (+46%). More girls than boys are discouraged from farming because it involves drudgery (+43%), but fewer girls believe that agriculture offers reduced opportunity (-3%).
### Differences in relationship, attitudes and plans for career paths toward agriculture among secondary school male and female students

<table>
<thead>
<tr>
<th>Relationship to agriculture</th>
<th>Females (± SEM)</th>
<th>Males (± SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future plans for farming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes: future plan involves animals</td>
<td>45.3% ± 2.2%</td>
<td>60.7% ± 1.8%</td>
</tr>
<tr>
<td>If yes: future plan involves marketing</td>
<td>34.3% ± 2.5%</td>
<td>47.3% ± 2.1%</td>
</tr>
<tr>
<td>If not, farming is too labor intensive</td>
<td>12.2% ± 1.7%</td>
<td>7.8% ± 1.1%</td>
</tr>
<tr>
<td>Member of young farmer club</td>
<td>6.7% ± 1.1%</td>
<td>11.2% ± 1.2%</td>
</tr>
<tr>
<td>Use machinery in club (or elsewhere)</td>
<td>9.0% ± 1.3%</td>
<td>19.8% ± 1.5%</td>
</tr>
<tr>
<td>Currently involved in agricultural enterprise</td>
<td>66.2% ± 2.1%</td>
<td>70.7% ± 1.7%</td>
</tr>
<tr>
<td>If not, no time for outside enterprise</td>
<td>21.6% ± 3.2%</td>
<td>17.9% ± 2.7%</td>
</tr>
<tr>
<td>If not, lack funds to invest</td>
<td>17.3% ± 3.0%</td>
<td>22.4% ± 2.9%</td>
</tr>
<tr>
<td>If not, land or facilities are not available</td>
<td>55.6% ± 3.9%</td>
<td>60.7% ± 3.5%</td>
</tr>
</tbody>
</table>

In general, equal proportions of girls and boys study agriculture and participate in field practicals (±2%) although slightly more girls strongly dislike agriculture as a subject (+8%). Girl’s attitudes toward agriculture are further illustrated by their reduced involvement in extracurricular agricultural clubs (-48%) and experience in the use of small-scale farming machinery (-78%). However, about equal proportions of girls and boys continue to be engaged in agriculture (±7%), usually through their family farms and enterprises, but with much fewer girls involved in animal and fish rearing (average -26%) while remaining far more active in food processing and marketing (average +78%).

Several other findings reflect upon students’ appreciation of agricultural opportunities. Of youth engaged in agriculture at home, 58% grew field crops and 37% raised animals, suggesting that rearing animals warrants attention in the schools as well. At the same time, insufficient access to land resources may account for the popularity of small animal enterprises (e.g. poultry). When asked why students were not practicing agriculture, 59% cited lack of facilities, 21% were simply not interested and very few (5%) lacked parental permission (Figure 2); suggesting that more students would become involved with experiential learning of agriculture if provided resources and time to do so. Very few of the students had experience with any type of farm machinery (15%), likely reinforcing their associations with excessive labor. Results related to horticultural ambitions suggest that few Nigerians (1%) distinguish it from field cropping while 39% of Kenyan students are specifically attracted to horticultural enterprises; likely the result of horticulture as a major export industry in Kenya. Value-added processing was most attractive in DR Congo (26%), suggesting stronger opportunity for cottage and small-scale processing enterprises within its economy. Across all countries few youth (10%) appear to recognize marketing and agro-industrial career opportunities; likely because they imagine start-up to be beyond their economic reach, or do not recognize employment opportunities within that sector (Fox et al. 2020). Clearly, these students relate to the stage of agricultural development within their societies, and the best means to make it a more attractive career pathway is to increase agriculture’s prestige and profitability.
When the database across all schools and students was analyzed, a simple three-component model emerged that identifies students’ attraction to agriculture as a career choice: 

\[ \text{Choice} = 0.20 + 0.47 \text{Study} + 0.20 \text{Engage} + 0.07 \text{Background} \quad (p < 0.05, R^2 = 0.25) \]

where \( \text{Study} \) = current enrollment in an agricultural course, \( \text{Engage} \) = engagement in a current agricultural enterprise, and \( \text{Background} \) = originating from a farming background and parents’ primary occupation being agriculture. The intercept value indicates that 20% of youth remain attracted to agriculture as a career choice regardless of changes in education but then increases in response to curricular improvement and opportunities for more direct participation in this field. While this model is relatively simplistic, it provides insight into how agricultural curriculum can be shaped, and the weight of its coefficients suggests that careers in agriculture are not only for those from farming households.

**Discussion**

This study reinforces many widely held assumptions about African youth concerning their attitudes and orientation toward career pathways in agriculture (Fox et al., 2020; Mukembo et al., 2014; Okiror et al., 2011), but also illustrates important differences among these youth between countries, socio-economic settings and gender. Many unfavorable attitudes toward agriculture are held by youth (Sumberg & Okali, 2013); including those originating from farming families, but at the same time these youth recognize that opportunity exists from adopting modern farming methods and commercial agricultural enterprises (Mukembo et al. 2014; Okiror et al. 2011). These youth regard agricultural enterprises as much more than just involving field cropping, but also consider animal enterprises, horticulture and food processing as attractive options. At the same time, opportunities related to marketing remain under-appreciated and food processing appears viewed more as a cottage industry than an agro-industrial entry point and employment opportunity. Less progressive attitudes concerning agricultural opportunities are held in more subsistence-type settings, particularly in DR Congo. Despite reduced agricultural intensification involving the strong transition from traditional to commercial farming as is driving agriculture elsewhere, many youth in DR Congo remain committed to becoming successful farmers, perhaps for lack of better options.

A large majority of secondary students include agriculture as part of their studies, and most regard this course in a positive light; even where these courses are handled as an elective offered against other vocational fields. That agriculture courses are so well attended, and are generally regarded in good standing, provides an important foundation upon which career pathways may be reinforced. Field practicals are less appreciated, in part because tasks of land preparation and weeding may be assigned or perceived as a punishment. Introducing mechanization as a component of these practicals is an important means to altering these negative attitudes. So too is the role of introducing Information and Communication Technologies that are reliant upon both instructional computer workstations and personal mobile devices as a means to obtain planning information, diagnostics and market intelligence. Unfortunately, computer studies are too seldom offered within the public secondary schools, and even fewer of them link computer access to agricultural studies. Indeed, it is very important that improved agricultural courses include stronger components of both small-scale mechanization and information technologies within efforts to improve how agriculture is taught and how many students grow committed toward it.

Too few schools appear to sponsor extracurricular young farmer clubs, but the cause for this shortcoming was not examined across our study. Nonetheless, designing these clubs and
offering incentives for their success emerges as another important task in educational improvement (Adebo, 2009; Mukembo et al., 2015). At the same time, differences in how girls and boys aspire to careers in agriculture emerge. Girls are particularly adverse to the excessive labor required in farming, and this drudgery conditions their unfavorable attitudes to the field as a whole. This aversion may be well founded in that across rural areas women often bear the brunt of this hard labor, and may be seen doing so on a daily basis. At the same time, girls appear to be more aware of the benefits of agricultural intensification, and the need for investment in modern technologies. This awareness is particularly strong toward horticulture, rearing of small animals and value-added processing. One concern among girls that tempers their attitude toward farming is that they will have less access to land and facilities following graduation, and explaining their tenure rights may be important in many settings (FAO, 2011). While the access to small-scale farming machines is limited across all schools, a trend emerged that girls have an aversion to using and learning about these equipment as well. For these reasons, presenting agriculture as a profitable family business built upon joint decision making and fair allocation of labor responsibilities (Acosta et al., 2020) must be better presented in agricultural education. Other elements necessary for career pathway attraction were also identified. Students recognize the need for new technologies; particularly better understanding and access to production inputs such as fertilizer and improved seed in less developed settings, and the provision of higher-value and value-added ones in more developed ones. Also among student needs are greater access to land, improved facilities and credit; although this situation varies strongly between countries (Figure 2).

The results of this study provide insight into the proportions of students formulating plans involving agriculture and how their interests can be stimulated and serviced (Figure 3). A large majority of these students from selected schools in DR Congo, Kenya and Nigeria are enrolled in agricultural courses (86%), in large part because it is either a required course or is one of relatively few elective vocational subjects. A surprisingly large proportion of these students are currently engaged in an agricultural enterprise (69%), mostly through commitments to family household wellbeing, as well as by providing realistic commercial perspectives to those 17% of students who are not actively practicing agriculture activities. Opportunity exists for their agricultural education to augment the commercial potential of these enterprises, rather than to see them as a form of involuntary obligation to household wellbeing, as well as by providing realistic commercial perspectives to those 17% of students who are not actively practicing agriculture.

A large proportion of these students have future plans that involve agriculture (54%) although most of them aspire for other fields as their main careers (see Table 5). Note that in Kenya, attraction to the agriculture and veterinary field ranked sixth in popularity behind several well-known white collar professions, but ahead of education. This broadening of interest presents opportunity to make more profitable use of family lands, or to practice modern agriculture as a side business, with either option contributing to incomes and job creation. School can also provide the perspectives allowing the 15% of students that practice agriculture now, but do not intend to do so in the future a chance to change their perspective. We also note that many students who do not originate from farming backgrounds claim to have future plans that include
agriculture (46% vs 30%, respectively), suggesting that demand will exist for incentives that provide services to these 16% of youth entering agriculture for a first time (Figure 3).

**Figure 3**
*Entry points for secondary school students considering careers in agriculture*

![Figure 3](image)

**Table 5**
The distribution of student’s career ambitions in Kenya

<table>
<thead>
<tr>
<th>Career ambition</th>
<th>Preference among students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>25%</td>
</tr>
<tr>
<td>Science and engineering</td>
<td>19%</td>
</tr>
<tr>
<td>Entertainment and media</td>
<td>11%</td>
</tr>
<tr>
<td>Travel and hospitality</td>
<td>11%</td>
</tr>
<tr>
<td>Business and commerce</td>
<td>10%</td>
</tr>
<tr>
<td>Agriculture and veterinary</td>
<td>9%</td>
</tr>
<tr>
<td>Law</td>
<td>8%</td>
</tr>
<tr>
<td>Education</td>
<td>5%</td>
</tr>
<tr>
<td>Other fields</td>
<td>2%</td>
</tr>
</tbody>
</table>

Another benefit of agricultural education exists through participation in extracurricular young farmer clubs (Mukembo et al., 2014). While participation in such clubs is infrequent (9%), this is because the clubs are not in place, not that there is no demand for them. Indeed, if club membership were more widely available, 21% of the students would be in a better position to take modern farming technologies home to their family farms. In this way we see the improvement of agricultural courses, particularly through improved field practicals and
participation in young farmer clubs, as offering a sequence of opportunities through developing and applying more commercial agricultural perspectives, attracting additional youth to agricultural enterprises, and applying the skills they develop to their family farming (Okior et al., 2011).

The results of this survey shed important light on the way forward for agricultural education in DR Congo, Kenya and Nigeria. Career ambitions of the students interviewed in Kenya appear in Table 5. These choices are expectedly skewed toward more prestigious, white collar professions as they aspire for better lives away from rural areas. Achieving these careers in the proportions as specified is unlikely, as with 25% attraction to the field of medicine. While youth planning careers in agriculture remain in a minority (9%), we note that 49% of those interviewed in Kenya (data not presented) included agriculture in their future plans (compared to 54% overall, see Table 1). Together these students seeking careers in agriculture as well as those intending agricultural sidelines are positioned to benefit from better understanding of modern agriculture and agribusiness through their secondary school education and extracurricular participation.

Modern farming is a primary driver of Africa’s economic growth, and youth can be readied to adjust to the realities of opportunity by preparing for careers in agriculture, even when it is not their first choice. At the same time, agribusiness need not be organized by full time farmers, as those who find success in other professions can then commit savings to invest in actions by other family members. Indeed, for every youth committed to agriculture as a primary career path, there are four others who envisage future engagement with agriculture despite their stated preference for other fields of employment. Furthermore, it is important that agriculture not be presented to students in rural areas in a fatalistic manner that precludes wider opportunities, because it is important that youth have dreams and strive to achieve them as reflected in Table 5.

Conclusions and Recommendations

Opportunity exists to improve approaches to agricultural education among secondary school students in Africa by reinforcing career choices in a manner that meets expectations of agricultural modernization and rural economic growth, but these improvements must be adjusted to specific schools and settings. These improvements involve coursework, practicals and extracurricular activities. Courses must better cast agriculture as an economic frontier and modern farmers as pioneers rather than forgotten victims of poverty. Greater reliance upon electronic instructional tools and digital agriculture is required to stimulate students’ interests. Practicals must be based upon solid agribusiness models with schools offering experiential learning in proven enterprises. At the same time, this learning must be open-ended and gender-differentiated in that imparted skill sets can be applied to other related enterprises and assist in securing decent employment within agribusiness. These skill sets can be further developed through participation in extracurricular young farmer clubs, and such clubs appear to be offered too infrequently. Furthermore, the activities of these clubs can also be built upon profitable enterprises that provide modest incentives to club members and benefits to the farming households from which they arise. This study casts insight into how these improvements may be achieved.
References


Applying a Needs Assessment Model for Improving Agricultural Education in Guinea

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Abstract
Extension education is considered an essential component of improving agricultural sustainability by diffusing innovations that increase crop yield and alleviate poverty in Guinea, Africa. To accomplish learning outcomes, extension agents must be confident and competent in their instructional abilities. This is achieved by self-evaluation of their training needs. The objective of this quantitative research was to conduct a needs assessment with leaders of the Farmer-to-Farmer educational program to identify their training needs. A purposive sample of thirteen higher-education leaders of the Farmer-to-Farmer program were asked to identify their educational needs and prioritize items contributing to the knowledge gap following their participation in a ten-day training. The Borich Needs Assessment Model was used to calculate the mean weighted discrepancy score (MWDS) of all items. The top five content areas with the greatest reported needs were: Power Point presentations (MWDS = 5.72), teaching financial management (MWDS = 5.51), using SWOT analysis (MWDS = 4.5), teaching marketing concepts (MWDS = 4.36) and incorporating stakeholders (MWDS = 4.35). Following a Pre/Post-Test, the top five content knowledge improvement areas and percent increase in reported knowledge were utilizing strategic planning (176%), using Borich (1970) for program needs assessment (153%), using SWOT analysis (122%), analyzing external influences in educational programs (115%) and strategies to conduct farm trials (67%). Respondents reported increased confidence in seeking stakeholder needs and building resources to increase program value. The results have implications to build education equity and sustainability in Guinea.

Keywords: Borich needs assessment, agricultural extension education, Guinea agriculture, program planning, strategic planning, Farmer-to-Farmer

Acknowledgements: This research is based on work funded by Winrock International and USAID. Winrock International has been instrumental in assisting agricultural communities in Guinea by providing educational opportunities in natural resource management, the protection of local biodiversity, and improving economic conditions. USAID aims to support economic growth programs in Guinea by forging extension partnerships that improve agricultural productivity and sustainability.
Introduction

Hunger is an important real-world issue. Many farmers in Guinea, Africa, rely on subsistence agriculture for survival (FAO, n.d.). Areas that use subsistence agriculture are prone to food insecurity, malnutrition, and nutrition-related diseases, which are all commonplace in Guinea, particularly in the southwestern region (FAO, n.d.). A recent “increase in crop production in response to strong global demand and higher prices” has created the additional challenge of ensuring that Guinea farmers use practices that do not negatively impact biodiversity (Monteiro et al., 2017, p. 1). The “need for sustainable alternatives to industrial farming has led to a revival of interest in traditional agro-ecosystems,” necessitating an understanding of the social and physical–technical communication systems that allow for the intergenerational transmission of sustainable agriculture practices (Fraser et al., 2015, p. 1). Lack of access to both new technology and improved farming methods limit potential yield and sustainable agriculture practices (FAO, n.d.).

Guinea lies in what is collectively known as Sub-Saharan Africa (SSA), which is one of the world’s most food-insecure regions with nearly a third of its inhabitants suffering from malnutrition at a rate as high as 31.5% in some areas (FAO, 2016). Agriculture in Guinea is largely subsistence based, thus negatively impacting economic, social, and environmental sectors by creating issues such as poverty, food insecurity, and lack of biodiversity (Monteiro et al., 2017). A recent increase in cash crop production in SSA, due to global demand and higher prices, has illuminated the knowledge gap between local farmers and the sustainable practices that would give them economic and social stability (Havik et al., 2018).

The Farmer-to-Farmer extension program, which was designed to “support farmers and agribusiness professionals in developing countries to improve their livelihoods and food security” (Farmer-to-Farmer, n.d, Home section, para. 1), has recently been reintroduced to SSA with the aim of reaching more farmers within a shorter time frame and making it more affordable for participants (Kiptot & Franzel, 2015). The program uses lead farmers to disseminate information to those in their communities where the bond of trust is highest (Mulwafu & Krishnankutty, 2016). This format allows for greater consistency in sharing feedback within the farmer-extension relationship (Kiptot & Franzel, 2015). Furthermore, because SSA suffers from a shortage of trained extension agents and limited travel budgets, using lead farmers alleviates some of the demand for trained program leaders (Amudavi et al., 2009). Farmer-to-Farmer deploys U.S.-based volunteers with experience in the agricultural industry to over 30 countries around the world, providing local farmers with hands-on training to improve the country’s agricultural sustainability.

At the basis of the educational model was a Borich Needs Assessment, which is a comprehensive model that assesses the competency of extension agents and recognizes their training needs (Conklin et al., 2003). The purpose of a needs assessment is to identify the gap between current extension program practices and what is ideally required or anticipated for the learning outcomes (Borich, 1980). Borich refers to these “gaps” as discrepancies (Borich, 1980). A needs assessment is accomplished by allowing extension agents to indirectly express their training needs through “self-assessment and professional judgement to point out the areas of [discrepancy] that need to be filled” (Olorunfemi et al., 2020, p. 63).

A discrepancy analysis of the mean weight discrepancy scores (MWDS) of those high need areas can give an accurate determination of the level of competency as extension agents rank the importance of each of their need areas (Borich, 1980; Goli et al., 2013; Olorunfemi et al., 2020). This measure is achieved by computing the difference “between the level of...
importance rating of the extension agents (relevance of each competency item to the job function) and the ability to perform (level of attainment of each competency)” (Olorunfemi et al., 2020, p. 64).

It is important to note that needs evolve over time and are influenced by cultural norms, community traditions, and educational levels. There are several issues that influence needs including physical, social, psychological, economic, and political factors. Extension agents should take these considerations into account when planning and designing programs that best meet the needs of their target audience (Waddington et al., 2014). The results from our needs assessment analysis can better direct agricultural extension agents on the methods and strategies most successful in accomplishing learning outcomes in professional development training.

Jack Mezirow’s theory for transformative learning is an adult learning theory that combines both instrumental and communicative learning (Mezirow, 2000). Mezirow believed that the first step in overcoming distorted communication is practicing radical discourse through collaboration, leading to self-determination and ownership of the learning environment (Mezirow, 2000). Information transfer within the theory follows the concepts of solidarity, empathy, trust, and self-emancipation through self-understanding. Research by Vygotsky (1978) found that collaborative learning uses small groups with heterogeneous and interdependent members to build new knowledge by formulating connections to existing knowledge. Collaboration allows individuals to achieve consensus on new material and become student-teachers, disseminating information among their peers (Bruffee, 1999). Because collaborative learning groups often focus on a small number of individuals, the learning environment becomes a safe place “for learners to challenge and reshape each other’s thinking through meaningful connections with the content” (Smith, 2008, p. 326).

To apply Mezirow’s transformative learning theory within extension program design, a needs assessment must first be conducted to establish the program goals. Identifying the target population social, economic, and environmental condition characteristics, as well as funding and resources available to make the program run smoothly, is a key first step in performing a needs assessment (Diaz et al., 2018). After identifying the target population characteristics, the program planner should pinpoint the intended outcomes such as the knowledge, attitudes, skills, and aspirations (KASA) the program will impact (Diaz et al., 2018). Setting progressive and sequential objectives and building relevant content are essential to achieving intended outcomes. Last, following implementation of the program, Boyle (1981) recommends assessing specific and measurable outcomes through group assessments, observations, and end of program surveys; pre and post-test results are useful in measuring the program’s economic or social impact.

Purpose and Objectives

The purpose of the study described herein was to identify educational program leader planning needs to increase the likelihood of future Farmer-to-Farmer program participants achieving educational outcomes. Three objectives guided the study:

1. Identify program participants training needs on essential extension program aspects; and
2. Identify knowledge gained from delivery of a customized program to address educational priorities; and
3. Identify program participants perceived post-workshop training needs on essential extension program aspects to improve future trainings.
Methods

Needs assessments assist program leaders in establishing needs that will be addressed by the program. According to Moore and Rudd (2004), organizations that identify their core competencies can tailor professional development training to those specific needs, leading to improved outcomes. The finding was corroborated by Liles (2004), who discovered that customizing programs to organization or participant needs leads to quality outcomes. Developing countries face an additional challenge in identifying extension program needs for program leaders and farmers in their regions (Strong, 2011). Therefore, it is essential international agricultural educators use needs assessments to identify competencies that direct their extension program activities (Ghimire et al., 2017; Lamm et al., 2017). Using the Borich (1980) Model for Needs Assessment can assist program planners with defining priorities that maximize learning outcomes (Barrick et al., 1983; Garton & Chung, 1995; Layfield & Dobbins, 2002). It is crucial to the success of the organization that local educational leaders are involved in the process of identifying potential educational strategies as such a measure may play a positive role in achieving intended outcomes (Waters & Haskell, 1989).

Sample

In November 2016, 13 leaders of higher-education programs in Guinea took part in an on-site educational program to enhance program planning and improve educational outcomes provided through the Farmer-to-Farmer program. Winrock International facilitated the training with the United States Agency for International Development (USAID) sponsoring it and the Ecole National D’Agriculture Et D’elevage (ENAE) De Macenta hosting it. Participants in the program represented the four main universities in Guinea: the Université Kofi Annan de Guinee, the Université Utad-Guinée, the Université Mercure Internationale, and the Université Général Lansana Conté de Sonfonia. The Université Kofi Annan de Guinee is the only multidisciplinary higher education institution in Guinea. The guiding principle that drives instruction at this university is an emphasis on providing educational opportunity for all to help fight poverty and improve sustainability. The Université Utad-Guinée is a private university located in Conakry, the capital of Guinea. It offers eight bachelor’s programs in the areas of business administration, economics and management, legal and political sciences, computer science, mines and geology, sociology, logistics, and transportation. The Université Mercure Internationale “aims to train versatile executives capable of implementing the basic tools to ensure, control and optimize the quality and safety of food, biotechnology and health products (design, manufacture, control and distribution), [as well as] management of the environment and the safety of people” in Guinea (Guide Orientation, 2020, Hygiéne et Environment section, para. 1). The Université Général Lansana Conté de Sonfonia has four colleges that focus on legal and political sciences, economics and management, social and human sciences, and letters and language sciences.

We purposely sampled all the higher-education program leaders of the Farmer-to-Farmer program in Guinea (N = 13), some of whom were employed by the same university. The program was composed of all male participants, which is common for the culture given the predominantly Muslim religion and the practice that women are not commonly involved in leadership roles. However, the small sample size allowed the researchers to build an environment of collaborative inquiry that fostered inclusion and open dialogue.
Data Collection

Although it was a 10-day educational program, research was collected using the first two days to identify the participants’ educational needs, then utilizing the remaining days to prioritize educational content to fill the identified gaps that surfaced from the initial assessment. These educational sessions offered interactive activities to share curriculum and support developing agricultural extension programs. Questions for the pre and post assessment were drawn from a training module used by the United States Agency for International Development (USAID) project, which is identified as Modernizing Extension and Advisory Services (MEAS), and served as the content base of this project while also addressing validity and reliability (Strong, 2011). This training module was originally tested on extension programs in the Caribbean Region to great effect and success; although initially tested in that region, the “module was developed to be functional and applicable to farmer-driven extension systems” across the globe (Strong, 2011, p. 2). The module included 29 items of content knowledge, but participants also responded with interest in overall program comprehension and teaching with PowerPoint to reach a total of 31 content areas. All thirteen participants fully contributed data, leading to a response rate of 100%.

The collaborative learning approach in delivering the content and collecting the data was utilized to fulfill the purpose of this research because it was determined to yield the most valid results. Individuals in developing countries who rely primarily on traditional agricultural practices can be skeptical of receiving instruction from those with whom a foundation of trust and mutual respect has not been cultivated (Cranton, 2006; Fraser et al., 2015; Smith, 2008). Collaborative inquiry fosters community building through reciprocal dialogue, involving program participants in planning and evaluating their educational needs, and building relevance by relating curriculum to real life experiences (Knowles et al., 2015). When adult learners take ownership of their own learning experiences in an environment where open and honest dialogue is encouraged, they are more willing to answer fully and truthfully, thus providing researchers with an accurate understanding of their viewpoints and the reasoning behind those perspectives (Karmelita, 2017). Finally, collaborative instruction facilitates the formulation of Value Creation Networks, in which program participants reflect on a learning outcome’s immediate, potential, applied, realized, and transformative values. Recognizing these values can improve a learning outcome’s long-term practice and potential for innovation adoption (Whisler et al., 2017).

Data Analysis

We chose the Borich Needs Assessment Model for data analysis and used the MWDS to calculate each item in the instrument (McKim & Saucier, 2011). The MWDS model calculates the program participants’ levels of importance for each of the evaluated items, which allowed us to rank the resulting ordinal data clearly. Ranking the data was essential for extension agents to establish future educational program priorities that meet the needs of their participants (Conklin et al., 2002). To use MWDS to analyze the data and determine where gaps in educational competency occurred, we collected two ratings for each content area (Olorunfemi et al., 2020). We calculated a discrepancy score by subtracting the ability rating from the importance rating in each of the content areas for each participant, and a weighted discrepancy score by multiplying the discrepancy score by its mean importance rating (Olorunfemi et al., 2020). Finally, we calculated MWDS by adding the weighted discrepancy scores for each content area and dividing it by the number of participants (Saucier et al., 2014). After calculating MWDS, we prioritized the content areas to address the areas of greatest training need. We ranked the MWDS from high...
to low and calculated the mean of the MWDS (xMWDS) for each content area. Then, using the xMWDS, we ranked the content areas from high to low. To identify the educational areas with the greatest training needs, we identified content areas with a high MWDS or high xMWDS (Saucier et al., 2014).

Limitations
Our study had three limitations. The first was threats to internal validity, which can include subject characteristics such as participant age, gender, ethnicity, attitude, socioeconomic status, and political and religious beliefs. Despite that factor, the subject characteristics provided an in-depth view of the challenges facing Farmer-to-Farmer educational leaders in rural Guinea. A second limitation was the small, all male sample. However, given that males are the predominant gender employed in higher agricultural education occupations in Guinea, this aspect was not altogether unexpected. Additionally, the small sample size allowed us to spend quality time with each participant. Last, the study also had the potential to suffer from researcher bias. We took every effort to monitor subjectivity and allow for naturalistic inquiry. Having background knowledge of the subject gave us the advantage of being able to deduce which research methods would be most beneficial to accomplish the research objectives.

Results
To address the first objective, the Borich Model for Needs Assessment (Borich, 1980) was applied to the 31 educational content areas to measure participants educational needs (Table 1). Considering the MWDS for each strategic area, the top five areas with the greatest reported need included: (1) Power Point presentations (MWDS = 5.72), (2) teaching financial management (MWDS = 5.51), (3) using SWOT analysis (MWDS = 4.50), (4) teaching marketing concepts (MWDS = 4.36), and (5) incorporating stakeholders (MWDS = 4.35). One notable result was that the content areas of lecturing and conducting a workshop had the lowest MWDS and were likely not an area of focus for the training.

Table 1
Identified Needs Assessment of Attendees using the Borich Model Mean Weighted Discrepancy Score (MWDS) (N = 13).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Content Areas</th>
<th>MWDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teaching with PowerPoint presentations</td>
<td>5.72</td>
</tr>
<tr>
<td>2</td>
<td>Teaching financial management</td>
<td>5.51</td>
</tr>
<tr>
<td>3</td>
<td>Utilizing SWOT analysis to review or offer change / develop new programs</td>
<td>4.50</td>
</tr>
<tr>
<td>4</td>
<td>Teaching marketing and concepts of adding value</td>
<td>4.36</td>
</tr>
<tr>
<td>5</td>
<td>Including stakeholders in planning the program</td>
<td>4.35</td>
</tr>
<tr>
<td>6</td>
<td>Teaching the concepts of diversification through developing new programs</td>
<td>4.15</td>
</tr>
<tr>
<td>7</td>
<td>Importance of needs assessment</td>
<td>3.89</td>
</tr>
<tr>
<td>8</td>
<td>Clearly stating the intended results</td>
<td>3.69</td>
</tr>
<tr>
<td>9</td>
<td>Promoting educational programs through assessing stakeholder needs</td>
<td>3.68</td>
</tr>
<tr>
<td>10</td>
<td>Identifying target audiences for my programs</td>
<td>3.55</td>
</tr>
<tr>
<td>11</td>
<td>Using assessment results to quantify a program</td>
<td>3.38</td>
</tr>
<tr>
<td>12</td>
<td>Developing a work plan</td>
<td>3.25</td>
</tr>
</tbody>
</table>
The second objective was to measure the knowledge gained from the educational program, which included pre- and post-workshop knowledge-tests. The top five content knowledge improvement areas and percent change in reported knowledge were: (1) utilizing strategic planning to identify program value (176% increase), (2) using Borich (1980) for program needs assessment (153% increase), (3) using SWOT analysis (122% increase), (4) analyzing external influences in education programs (115% increase), and (5) strategies to conduct farm trials (67% increase). Table 2 illustrates that participants gained knowledge in all areas, predominantly in the top areas of knowledge attainment (ranks 1 through 11). The list of pre and post content knowledge followed the 29 core items outlined by Modernizing Extension and Advisory Services (MEAS) (Strong, 2011).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Content Areas</th>
<th>MWDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Using quantifiable objectives</td>
<td>3.23</td>
</tr>
<tr>
<td>14</td>
<td>Conducting on-farm trials and their importance in an educational program</td>
<td>3.15</td>
</tr>
<tr>
<td>15</td>
<td>Providing an alternative explanation when clientele is confused</td>
<td>3.02</td>
</tr>
<tr>
<td>16</td>
<td>Utilizing the SIVA model to define a program’s value and become strategic</td>
<td>2.97</td>
</tr>
<tr>
<td>17</td>
<td>Establishing and managing demonstration plots</td>
<td>2.96</td>
</tr>
<tr>
<td>18</td>
<td>Utilizing the Borich Model (gap analysis) to determine higher priority needs</td>
<td>2.88</td>
</tr>
<tr>
<td>19</td>
<td>Motivating clients to participate in programs</td>
<td>2.72</td>
</tr>
<tr>
<td>20</td>
<td>Developing lesson plans to prepare for a presentation</td>
<td>2.72</td>
</tr>
<tr>
<td>21</td>
<td>Brainstorming within a group to develop ideas</td>
<td>2.68</td>
</tr>
<tr>
<td>22</td>
<td>Facilitating group discussion</td>
<td>2.66</td>
</tr>
<tr>
<td>23</td>
<td>Conducting individual farm visits</td>
<td>2.60</td>
</tr>
<tr>
<td>24</td>
<td>Adjusting lessons to the proper level for individual clientele</td>
<td>2.50</td>
</tr>
<tr>
<td>25</td>
<td>Identifying necessary resources (e.g., money, time, materials) for my programs</td>
<td>2.40</td>
</tr>
<tr>
<td>26</td>
<td>Utilizing PESTEL analysis to review external influences and build collaborators</td>
<td>2.27</td>
</tr>
<tr>
<td>27</td>
<td>Conducting field days</td>
<td>1.23</td>
</tr>
<tr>
<td>28</td>
<td>How to evaluate comprehension of your program</td>
<td>0.89</td>
</tr>
<tr>
<td>29</td>
<td>Conducting workshops</td>
<td>0.44</td>
</tr>
<tr>
<td>30</td>
<td>Determining what content is needed to achieve intended program outcomes</td>
<td>0.00</td>
</tr>
<tr>
<td>31</td>
<td>Lecturing</td>
<td>(0.71)</td>
</tr>
<tr>
<td>Rank</td>
<td>Content Priorities for Educational Training</td>
<td>Pre-Knowledge</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>1</td>
<td>Utilizing the SIVA (Supporting Individuals through Valued Attachments) Model to define a program’s value and become more strategic</td>
<td>1.00</td>
</tr>
<tr>
<td>2</td>
<td>Utilizing the Borich Model (gap analysis) to determine higher priority needs</td>
<td>1.15</td>
</tr>
<tr>
<td>3</td>
<td>Utilizing SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis to review or offer change/develop new programs</td>
<td>1.38</td>
</tr>
<tr>
<td>4</td>
<td>Utilizing PESTEL (Political, Economic, Social, Technological, Environmental and Legal factors) analysis to review external influences and build collaborators</td>
<td>1.00</td>
</tr>
<tr>
<td>5</td>
<td>Conducting on-farm trials and their importance in an educational program</td>
<td>1.85</td>
</tr>
<tr>
<td>6</td>
<td>Teaching the concepts of diversification through developing new programs</td>
<td>1.62</td>
</tr>
<tr>
<td>7</td>
<td>Using quantifiable objectives in lesson planning</td>
<td>2.23</td>
</tr>
<tr>
<td>8</td>
<td>Promoting educational programs through assessing stakeholder needs</td>
<td>2.08</td>
</tr>
<tr>
<td>9</td>
<td>Teaching marketing and concepts of adding value</td>
<td>2.31</td>
</tr>
<tr>
<td>10</td>
<td>Conducting individual farm visits</td>
<td>2.23</td>
</tr>
<tr>
<td>11</td>
<td>Using assessment results to quantify a program</td>
<td>2.46</td>
</tr>
<tr>
<td>12</td>
<td>Brainstorming within a group to develop ideas</td>
<td>2.25</td>
</tr>
<tr>
<td>13</td>
<td>Including stakeholders in planning the program</td>
<td>2.62</td>
</tr>
<tr>
<td>14</td>
<td>Teaching financial management</td>
<td>2.31</td>
</tr>
<tr>
<td>15</td>
<td>Identifying target audiences for my programs</td>
<td>2.92</td>
</tr>
<tr>
<td>16</td>
<td>Establishing and managing demonstration plots</td>
<td>3.08</td>
</tr>
<tr>
<td>17</td>
<td>Conducting workshops</td>
<td>2.46</td>
</tr>
<tr>
<td>18</td>
<td>Importance of needs assessment</td>
<td>2.54</td>
</tr>
<tr>
<td>19</td>
<td>Determining what content is needed to achieve intended program outcomes</td>
<td>2.69</td>
</tr>
<tr>
<td>20</td>
<td>Identifying necessary resources (e.g., money, time, materials) for my programs</td>
<td>2.77</td>
</tr>
<tr>
<td>21</td>
<td>Adjusting lessons to the proper level for individual clientele</td>
<td>2.92</td>
</tr>
</tbody>
</table>
Rank | Content Priorities for Educational Training | Pre-Knowledge | Post-Knowledge | Percent Change |
--- | --- | --- | --- | --- |
22 | Providing an alternative explanation when clientele is confused | 3.15 | 3.46 | 9.8% |
23 | Motivating clients to participate in programs | 3.23 | 3.46 | 7.1% |
24 | Facilitating group discussion | 3.15 | 3.31 | 4.9% |
25 | Developing lesson plans to prepare for a presentation | 3.23 | 3.38 | 4.8% |
26 | Lecturing | 3.31 | 3.46 | 4.7% |
27 | Developing a work plan | 3.00 | 3.08 | 2.6% |
28 | Clearly stating the intended results | 3.08 | 3.15 | 2.5% |
29 | Conducting field days | 3.69 | 3.69 | 0.0% |

To address the third objective, we conducted a final needs assessment following program delivery and training completion for all 31 content areas. This additional assessment of needs represents continued training needs, which assist in future training plans. Table 3 provides the ranking of training needs post event. Teaching with PowerPoint presentations remained the top content area for reported need, which was not able to be achieved in this training based on the lack of access to electricity. The remaining four content areas of the top five needs identified in the pre-assessment decreased in rank after the training.

Table 3

Post-Workshop Needs Assessment of Attendees using the Borich Model Mean Weighted Discrepancy Score (MWDS) (N = 13)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Content Areas</th>
<th>MWDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teaching with PowerPoint presentations</td>
<td>5.99</td>
</tr>
<tr>
<td>2</td>
<td>Importance of needs assessment</td>
<td>4.22</td>
</tr>
<tr>
<td>3</td>
<td>Determining what content is needed to achieve intended program outcomes</td>
<td>3.77</td>
</tr>
<tr>
<td>4</td>
<td>Developing a work plan</td>
<td>3.69</td>
</tr>
<tr>
<td>5</td>
<td>Using assessment results to quantify a program</td>
<td>3.62</td>
</tr>
<tr>
<td>6</td>
<td>Teaching financial management</td>
<td>3.54</td>
</tr>
<tr>
<td>7</td>
<td>Promoting educational programs through assessing stakeholder needs</td>
<td>3.48</td>
</tr>
<tr>
<td>8</td>
<td>Teaching the concepts of diversification through developing new programs</td>
<td>3.10</td>
</tr>
<tr>
<td>9</td>
<td>Clearly stating the intended results</td>
<td>3.02</td>
</tr>
<tr>
<td>10</td>
<td>Including stakeholders in planning the program</td>
<td>2.96</td>
</tr>
<tr>
<td>11</td>
<td>Identifying target audiences for my programs</td>
<td>2.77</td>
</tr>
<tr>
<td>12</td>
<td>Conducting workshops</td>
<td>2.72</td>
</tr>
<tr>
<td>13</td>
<td>Developing lesson plans to prepare for a presentation</td>
<td>2.46</td>
</tr>
<tr>
<td>14</td>
<td>Utilizing PESTEL analysis to review external influences and build collaborators</td>
<td>2.44</td>
</tr>
<tr>
<td>15</td>
<td>Conducting individual farm visits</td>
<td>2.40</td>
</tr>
<tr>
<td>16</td>
<td>Identifying necessary resources (e.g., money, time, materials) for my programs</td>
<td>2.27</td>
</tr>
<tr>
<td>17</td>
<td>Teaching marketing and concepts of adding value</td>
<td>2.06</td>
</tr>
</tbody>
</table>
At the conclusion of the program, we asked the participants to rate their satisfaction with the training program informally. They reported satisfaction with the program and believed it was a valuable use of their time. They specifically noted that the concept of beginning with an assessment of their needs and developing content priorities based on their results was a valuable approach, which validates the previous research findings of Karmelita (2017) and Whisler et al., (2017).

Conclusions and Discussion

Needs assessment is a valuable tool in directing program expansion and curriculum development. Based on the results of the surveys, we determined that the areas in which Farmer-to-Farmer program leaders have the greatest training needs are teaching with PowerPoint presentations, teaching financial management, utilizing SWOT analysis to review or offer change to existing programs or develop new programs, teaching marketing and concepts of adding value, and including stakeholders in planning the program. They also expressed support needs in the areas of the importance of needs assessment, determining what content is needed to achieve intended program outcomes, developing a work plan, and using assessment results to quantify a program.

Following analysis of the data, we created a suggested model of program development. The model uses the results of our research to create an outline for successful agricultural extension program implementation in Guinea and other developing regions. It addresses key concepts from the assessments, including encouraging stakeholder involvement, using needs assessments to direct instruction, and program evaluation and is illustrated as Figure 1.
**Figure 1**  
*Model for Strategic Educational Design in Developing Regions*

<table>
<thead>
<tr>
<th>Strategic Planning</th>
<th>Refinement</th>
<th>Program Design</th>
<th>Implementation and Assessment</th>
</tr>
</thead>
</table>
| - Define Target Populations  
- Define SIVA aspects of a program  
- Complete SWOT analysis to better define strategy  
- Review Matching and Converting  
- Develop a “Strategic Plan for the Program” for further review | - Using Strategic Planning concept, test potential results  
- Complete Focus Group Analysis using Nominal Group Technique  
- Develop an Advisory Council for further implementation  
- Using results, develop a program proposal and define Advisory Council objectives | - Use ADDIE Model to develop a graphical program proposal  
- Define program mission statements and vision planning  
- Define program logo/branding  
- Define resources and stakeholders to target proposal sharing | - Deliver the program  
- Using Borich Needs Assessment Model, begin needs assessment  
- Refine programs and make needed adjustments  
- Using refined objectives, review program initiatives and branding |

*Note.* The proposed model shows the interactions between Borich, SIVA, ADDIE, and SWOT used to create effective program design for agricultural extension programs (Hanagriff, 2016).

The model emphasizes the importance of educational strategic planning through SWOT analysis to ascertain an organization’s strengths, weaknesses, opportunities, and threats. We also suggest using the SIVA Model as it places emphasis on “collaboration, goal-direction, self-management and healthy empowerment to strengthen relationships” that “inspire problem solving, decision-making and systemic change” (SIVA Training, 2014, Our Programs section, para. 2), which allows for refinement of the program to be applicable and relevant. The ADDIE Model, another essential component of the proposed model, accentuates factors such as “Analysis, Design, Development, Implementation, and Evaluation [to] represent a dynamic, flexible guideline for building effective training and performance support tools” (Culatta, 2020, ADDIE Model section, para. 1). The final aspect is to implement the program and complete an assessment to review results and make modifications. A summary review of the proposed improvement model for strategic educational design in developing regions is listed as Figure 1.

**Recommendations**  
Although the study was successful in achieving the research objectives, the following recommendations are suggested to improve similar programs of this nature in Guinea. Given the program’s location, access to electricity and internet technology was lacking and required us to think creatively and pre-plan accordingly to accomplish the research objectives. A location with better internet accessibility would facilitate increased access to support resources, leading to program improvement (Avci et al., 2020). We also recommend continuing the use of participants involvement in program planning to increase value and participation (Karmelita, 2017 and Whisler et al., 2017). We also recommend a follow up evaluation with the program participants.
to ascertain how they are using the knowledge acquired during the training. Potential areas of interest include:

1. Have the program participants developed any type of group analysis (such as focus groups) or developed an advisory council?
2. Have the program participants engaged with their colleagues in a SWOT analysis, a SIVA Model conversation, or a group meeting to better define their program?
3. Have the program participants altered their implementation of lesson planning?
4. Have the program participants completed or initiated a survey?
5. Have the program participants implemented a Borich Model for Needs Assessment?

A follow-up evaluation would hold program participants accountable for ownership of their Farmer-to-Farmer programs by encouraging them to think critically on how to engage in further strategic planning to define their programs, seek new partners, and obtain new funding sources (Halbleib & Jepson, 2015). This could also take the form of a larger longitudinal study to track program implementation strategies over time.

A final recommendation is to incorporate the use of capstone projects, internships, or other student-led projects that connect course content to real-world situations in the agricultural industry. Engaging in practical learning opportunities would increase the social capital of the universities, leading to improved socioeconomic conditions and revitalizing rural farming communities in Guinea and other regions in SSA (Havik et al., 2018; Martin & Henry, 2012).

**Implications**

Although the results are only generalizable to Farmer-to-Farmer leaders in Guinea, they may have implications for future research in other regions in SSA with similar agricultural practices (Havik et al., 2018). A major implication of our research is to better direct the focus on developing strategic programs that increase sustainability and resource funding (Liles, 2004). Participants reported increased confidence in their ability to be strategic in seeking stakeholder needs and developing programs to address those needs. We observed the program participants transitioning from a reactionary educational planning approach to developing programs based on the needs of their community and defining new stakeholders such as potential employers and other industry partners. This is essential to build resources and increase program value (Whisler et al., 2017). A further implication is that the research builds education equity and independence, which can in turn improve program relevance and sustainability (Liles, 2004; Waters & Haskell, 1989).

The results of this research also have implications to enable Farmer-to-Farmer program leaders to understand how the diffusion of innovations process works in Guinea; this knowledge can be utilized to foster successful interactions and adaptations of new technology (Mwololo, 2019). Making Farmer-to-Farmer programs in Guinea more efficient by not focusing time on pre-existing knowledge will also identify the information exchange methods that are the most impactful in producing meaningful exchange of new material (Nakanoa et al., 2018). This identification builds self-efficacy among Farmer-to-Farmer program leaders and provides them with strategies to market themselves and new agricultural innovations successfully (Bandura, 1997; Nakanoa et al., 2018). A long-term implication of this study is that the results can be used to minimize Farmer-To-Farmer program leader burnout and enhance retention (Kitchel et al., 2012). Last, results of this research can aid Farmer-to-Farmer program leaders in understanding how new technologies are disseminated through social and geographical networks (Fraser et al., 2015). It is essential to provide farmers in Guinea with learning opportunities that promote
sustainable agriculture. Educational leaders of the Farmer-to-Farmer program are a necessary component in successfully addressing this challenge.

References


Gatekeepers in Agricultural Extension Research: A Retrospective Analysis

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Abstract
Social science research plays an important role in transforming agriculture as it provides an invaluable source of information for policy formulation and implementation. Social scientists collecting data in rural communities, where the majority of agricultural production occurs, around the globe frequently pass through a layer of gatekeepers to access research communities and subjects. Gatekeepers serve a critical role in access to subjects but their influence on the research process in many countries and contexts has not been examined thoroughly. The findings of this phenomenology study, conducted in four Sub-Saharan Africa countries, indicated gatekeepers provide invaluable access to individuals and perspectives that may otherwise be inaccessible. However, the findings indicated gatekeepers may also have a vested interests in the research being conducted. Among others, gatekeepers may introduce selection bias to the research process. Therefore, it is important for social scientists working in countries where gatekeepers are involved in the research process to understand the limitations gatekeepers introduce when conducting social science research. Having such knowledge is necessary when interpreting research results and will help researchers be cognizant of the power dynamics that may exist between gatekeepers and those they represent as well as implications on the research process.

Keywords: Gatekeepers, social science research, objectivity, power structures, extension, access, research subjects

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Introduction

Social science research plays an important role in transforming agriculture as it provides an invaluable source of information for policy formulation and implementation (Glover et al., 2016). Moreover, the growing need to address societal challenges worldwide has necessitated the demand for social science research studies (Reio, 2016). Social scientists in agricultural extension have the potential to provide insights into farmers’ decision-making processes as well as their knowledge and experiences; information crucial for effective agricultural development (Muzari et al., 2012). Despite the importance of the recommendations that come from social science research-based studies, the research process is sometimes questioned; specifically, questions of objectivity in data collection and analysis are areas of major concern (Davis, 2013).

Social science research occurs in social contexts where various individuals frequently have vested interests (Reiss & Sprenger 2014). Social scientists need to gain access to social contexts, such as communities, to answer their research questions. However, sometimes access to communities can be a challenge, especially when researchers are not from the social context of interest and thus have no power, control, or entry points into the research environment (Greene, 2014). Gaining access to such communities or to specific individuals requires that the researcher go through gatekeepers (Greene, 2014). Gatekeepers are individuals, stakeholders or institutions that are responsible for granting or denying access to organizations, communities or individuals (Clark, 2011). Gatekeepers have the power to limit, grant or deny researchers access to research sites or individuals based on their evaluation or perceptions of the research outcomes or objectives (McFayden & Ranki, 2016). The ability of gatekeepers to influence who and how research subjects are accessed raises questions regarding the objectivity of social science research especially in cases where gatekeepers are involved in the data collection process.

For agricultural extension research, objectivity is a major challenge. Agricultural extension research is often conducted by stakeholders and organizations that are also involved in the generation of technologies and provision of agricultural extension services aimed at promoting the technologies (Glover et al., 2016). Moreover, the extension agents who work for these agricultural extension service provision organizations, perceive themselves as promoters of improved technologies and farmers as potential adopters or experiment sites (Biggs, 1990; Masangano et al., 2017; Schut et al., 2016); making it difficult to remain objective during the research process because of their vested interests in the research outcomes.

The implementation of pluralistic demand-driven extension services in countries like Malawi has led to the presence of multiple organizations in the provision of agricultural extension services (Chowa et al., 2013; Masangano, et al., 2016). The increased presence of stakeholders and organizations in the provision of extension services has resulted in an increased presence of stakeholders and organizations working across communities. Therefore, to ensure coordination and collaboration, measures have been put in place to ensure stakeholders (including social scientists) wishing to work in these areas get permission from relevant organizations who have jurisdiction over the communities (Greene, 2014). For example, as a result of the implementation of the pluralistic demand-driven extension service delivery, the Malawi Government established committees from the district to the village level to ensure coordination in the provision of extension services (Masangano, et al., 2016). Such committees are comprised of various actors in extension service provision and are designated to serve as gatekeepers at various levels. As a result, all stakeholders (including social scientists) must go through the chairperson or village leaders before gaining access to the communities (Masangano et al., 2016).
The growing need to transform extension service provision from promotion of innovations to innovation development (Rivera & Sulaiman, 2009) calls for the need for more objectivity in social science research. Historically, the issues of access to communities, and the role of gatekeepers serving as entry points to those communities, have been associated with qualitative research methods where snowball, purposive and convenience sampling techniques have been employed (e.g. Clark, 2011; Mulhall, 2003; Peticca-Harris et al., 2016; Sixsmith et al., 2003). Gatekeepers have also been known to impact quantitative social science data collection processes, especially when collecting data in hard to access communities (Crowhurst & Kennedy-Macfoy, 2013).

Gatekeepers facilitate researchers’ access to participants (Clark, 2011) and despite not always directly providing the information or materials needed to answer research questions themselves, their role should not be underestimated (De Laine, 2000; Miller & Bell, 2002). However, the level of influence that gatekeepers have on the research process, and the impact the level of influence has on resulting findings is largely unexplored; especially in international agricultural extension research contexts where access to communities and research subjects may depend on the presence of gatekeepers.

**Conceptual Framework**

For the purposes of this study, gatekeepers are defined as individuals, groups, organizations or institutions who are responsible for providing access to, gathering, and preserving information for their communities, organizations or institutions (Agada, 1999; Klobas & McGill, 1995; Metoyer-Duran, 1993; Sturges, 2001). Access, in this case, can either be physical or social (Cassel, 1988). Clark (2011) described physical access as the ability to get in contact with research subjects while social access refers to being accepted to work with prospective research subjects. Bouhnik and Giat (2015) further described gatekeepers as, members of an organization who initiate exposure to a wide variety of external information sources in the field of their expertise or in general; who filter information, obtain information, translate information into the organizations’ language, and distribute it among their colleagues with varying extent and frequency (p. 133).

Gatekeepers are, or can, serve as formal or informal institutions or representatives of groups of people (Kurtz, 1968; Reeves, 2010). In most rural communities, gatekeepers tend to comprise individuals who command respect and tend to be knowledgeable and well connected to various sources of information in the community (McAreavey & Das, 2013; McFayden & Rankin, 2016). In cases where gatekeepers are individuals, they are usually more educated and have higher incomes than the majority of the population and therefore, trusted by members of the community (Agada, 1999). Gatekeepers typically serve as opinion leaders and moderators for change within the community (Chatman, 1987). Kurtz (1968) described gatekeepers as facilitators for social change as they connect people from their communities or organizations with other people, organizations or institutions with different cultures and backgrounds. Gatekeepers serve as brokers of information and are responsible for linking the community with various resources and opportunities. However, gatekeepers’ perceptions regarding the impact of research activities, as well as their understanding of the people they have influence over, influences their behavior and whether or not they will support the data collection process (Reeves, 2010).

Gatekeepers also have the power to decide or choose members of the communities that should be involved in research activities, thereby influencing the selection of research participants (Clark, 2011; Corra & Willer, 2002). Gatekeepers have also been reported to control the type and amount of data collected during the research process (Reeves, 2010). A gatekeepers’
understanding of the research process, their expectations surrounding research outcomes and its impact on their work, positions or communities may influence their actions during the research process (McFayden & Rankin, 2016). For example, gatekeepers who believe the outcomes of a research project would negatively impact their current or future roles or reputation within their organizations may end up selecting potential subjects who they believe will provide information that will not have negative implications (Singh & Wassenar, 2016). The concept of gatekeeping has often been studied relative to the role gatekeepers serve with little focus on the impact gatekeepers have on those within the community (Barzilai-Nahon, 2008). Recognizing the power gatekeepers have over the data collection process necessitates the need for examining the impact of gatekeepers on the production and dissemination of knowledge (Crowhurst & Kennedy-Macfoy, 2013).

**Purpose and Research Questions**

The purpose of this study was to examine the role of gatekeepers in agricultural extension research within Sub-Saharan Africa. It was guided by the following research questions: 1) Who are the gatekeepers in agricultural extension research? 2) How do the gatekeepers influence agricultural extension research? 3) What is the impact of gatekeepers on the agricultural extension research process?

**Methods**

In this qualitative study, a phenomenological approach was used to answer the research questions. Phenomenology “is the study of conscious phenomena: that is, an analysis of the way in which things or experiences show themselves” (Sanders, 1982, p. 354). It is aimed at unveiling human experiences (Sanders, 1982). It involves the study of conscious experiences from an individual’s point of view or experiences (Smith, 2006). Phenomenological research requires the researcher withhold their understanding and knowledge of reality during the data collection process to study the phenomenon in its current state (Kleiman, 2004).

There are different types of phenomenological studies, in this study descriptive phenomenology, which involves the study of personal experiences, was used (Padilla-Diaz, 2015). Personal experiences can either be passive or active (Smith, 2006). This study used an account of two researchers’ experiences during the time they were involved in multiple research activities in different communities and countries. Wojnar and Swanson, (2007) discussed that through phenomenology the researcher “…uses several frames of reference including: the transcendental subjectivity (neutrality and openness to the reality of others), eidetic essences (universal truths), and the live-world plane of interaction (researcher and participants must interact) (p.174).”

In the present study, the researchers followed the requirements and directives of the gatekeepers during the data collection process which sometimes included modifying the originally proposed procedures for data collection such as recruitment of participants or subjects and sampling. In addition, the researchers followed traditions and norms identified by the gatekeepers, which meant sometimes modifying procedures such as format of requests for formal participant consent. As such, this study provides the descriptions of the processes as they occurred with limited researcher interference (Flood, 2010).

The research projects that the researchers were engaged in ranged from impact evaluation to exploratory research. During the impact evaluation projects, the researchers worked directly with institutions involved in the provision of extension services. The researchers were hired to evaluate the impact of the services provided. The impact evaluation research required that the
study participants included people who had benefitted and taken part in the project, with the research design calling for the need of a random sample of those beneficiaries to avoid potential bias. For the exploratory research projects, both purposive and random samples were proposed based on the objectives of the research to ensure the results were generalizable and representative of the communities.

Each researcher collected data independently through field notes, observations and personal experiences that were recorded in reflective journals. Data was collected over a period of four years, during which two researchers were working in four sub-Saharan African countries: Malawi, Tanzania, Kenya, and Uganda. The participants for all the studies were male and female small holder subsistence farmers. The majority of the participants, especially men, had some education qualification while few of them, especially the women, had formal education. The majority of the participants did not speak English. The gatekeepers recruited all the participants by either inviting them to engage in focus groups or interviews through word of mouth. For surveys, the gatekeepers directed the researchers to the homes of the respondents and recruited the respondents that were available in their homes at the time of the visit. As such, convenience sampling was employed when sampling the participants for all the studies upon guidance from the gatekeepers. This was applied even in cases where the original study design required random sampling due to participant access.

Data were examined ex post facto. Each researcher analyzed the data collected from field notes and reflective journals specific to their individual gatekeeper experience. Field notes and reflective journals were used because the researchers did not visit each country to collect data on the role of gatekeepers per se; however, after the data collection processes concluded the researchers reflected on their work and discovered they shared similar gatekeeper experiences necessitating the additional critical reflection analysis. Data analysis was conducted following Colaizzi’s, (1978) steps. As such peer debriefing was conducted during the first phase of the data analysis process (Wojnar & Swanson, 2007) to ensure rigor and trustworthiness.

A codebook that was developed based on the results of the debriefing was used when analyzing field notes and reflective journals. The codebook included themes such as: type of research conducted, research subjects selection process, data collection methods, access to the research population, individuals or organizations that facilitated access to research populations, benefits associated with the process for gaining access, limitations associated with the process for gaining access, general observations. Using the codebook, each researcher coded the data and identified themes. The researchers then came together to identify overlapping themes which informed the findings (Morrow, 2005). The themes that addressed research questions were identified using an axial coding approach (Strauss & Corbin, 1990). Axial coding involves “a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This is done by using a coding paradigm involving conditions, context, action/interactional strategies, and consequences” (Strauss & Corbin, 1990, p. 96).

Rigor and trustworthiness were achieved through triangulation by having two independent researchers collect and analyze the data by focusing in detail on the processes involved when collecting data in spaces where the researchers were considered outsiders (Henry, 2015; Lincoln & Guba, 1985). In addition, a third researcher unfamiliar with the data was asked to review the results and compare them with the raw data and themes as a form of peer debriefing (Lincoln & Guba, 1985). Consistent with qualitative methodology, the results are not generalizable but do provide a thorough analysis of a particular set of conceptually similar cases.
and thus establish sufficient contextual descriptions whereby individuals can evaluate the transferability of the findings to other contexts (Lincoln & Guba, 1985).

**Reflexivity Statement**

There is always a likelihood the researchers’ experience and knowledge may affect the data interpretation and analysis process. In this case, the primary researcher is an African and Malawian citizen who was working for the Ministry of Agriculture at the time of the research. Therefore, she had inside information regarding participant selection for research studies based on her experience working in Malawi that may have altered her perspective when coding data and developing themes. The secondary researcher was working on a multi-national project funded by an organization which had connections to officials and representatives from public and private organizations in Kenya, Malawi, and Uganda. Therefore, his perspectives when coding the data may be influenced by this professional context.

**Results**

**Identifying Gatekeepers in Agricultural Extension Research**

A major theme emerging during the analysis was regarding individuals or organizations that facilitated access to research populations. The results indicated public and private extension organizations, including extension agents and village leaders, frequently served as gatekeepers when researchers were accessing communities in all four countries. However, two sub themes emerged namely: *layers of gatekeepers at various levels* and *sex, education, and economic status of gatekeepers*.

**Layers of Gatekeepers at Various Levels**

Layers of gatekeepers were reported in each of the four countries. However, different individuals or organizations served as gatekeepers in each community or country. For example, in Tanzania the researcher had to seek permission from the principal secretary for the Ministry of Agriculture, followed by a regional agricultural extension coordinator. The regional agricultural extension coordinator represented the national and regional gatekeepers respectively. Following the approval from the regional coordinator, the researcher was then directed to village leaders who guided the researchers to different households in the village based on their experience and knowledge of the people.

In Malawi the researcher had to seek permission from the Director of Extension Services who served as a national level gatekeeper followed by a district coordinator, who served as the district level gatekeeper before resuming their research in the country. The researcher had to meet with these gatekeepers to explain the purpose of the research, proposed subjects, and the type of data that would be collected so they were granted permission to proceed with the research. However, the permission was only for the researcher to proceed and meet with the district coordinator and not the communities and research subjects directly. The district coordinator then determined which locations the researcher should visit based on their knowledge and experience working with the people in those areas. The district coordinator then contacted the extension agent for the areas that the coordinator felt were appropriate sites for the research.

At the community level, the extension agent then decided which community the researcher should visit based on their experience and interaction working with the people in those areas as well as the objective of the study. Once the community was identified by the
extension agent, they contacted village representatives who served as gatekeepers at village level. At the village level, the village leaders who were elected by community members to oversee development activities in their communities then decided and communicated with the researcher through the extension worker as to who should be included in the research or not. Once in the village, the extension worker and village leader would accompany the researcher and stay throughout the data collection process. However, there were differences from one district to another regarding the next level of gatekeepers.

In other cases, the researcher had to seek permission from a local coordinator before consulting a local development officer, who served as an extension agent for a group of villages. In some instances, the local development officer did not contact the farmers directly and instead had to go through the chairperson of the village agriculture committee who was responsible for informing the village headman who then mobilized the farmers.

An alternative experience regarding layers of gatekeepers was also noted. Specifically, in cases where the researchers had a single point of contact within each country to facilitate meetings and research while on-site. Although opaque to the researcher, the coordination of on-site visits and activities would have required the primary point of contact to work with additional gatekeepers to coordinate the research. For example, in Kenya and Uganda, focus groups and key informant interviews were conducted with farmers union representatives as well as other smallholder farmers. The scheduling and coordination of these activities were facilitated by the local primary point of contact. However, to schedule the focus groups and interviews point of contact would have needed to coordinate with the directors of the farmers’ unions to recruit individuals to participate in the focus group and interviews. Therefore, the layers of gatekeepers directly experienced by the researcher was inconsistent with the total number of gatekeepers that were likely involved overall.

**Sex, Education, and Economic Status of Gatekeepers**

In almost all the countries, the village level gatekeepers were primarily men who were generally provided deference and respect among represented community members. Moreover, most of the gatekeepers appeared to have some level of education as they were able to speak English. Furthermore, in other countries like Tanzania the gatekeepers, who were village leaders were paid a daily allowance for accompanying the researchers during the data collection process. While in Tanzania, Uganda, Malawi and Kenya the gatekeepers were not paid as they were normally extension agents and were perceived to be doing their job. Moreover, it was also observed that in cases where the gatekeepers were extension agents, they made sure that the field visits were done within normal working hours. As such, only sites that were close and easily accessible were selected as study sites. It was also observed that in cases where a central meeting place was chosen, only locations that were close and convenient to the gatekeepers were chosen. Selection of such places required that the participants travel long distances to meeting places which appeared to be a challenge to women participants in particular. Most of the women participants raised concerns that they wanted the interviews to finish on time so that they can get back to their homes and work on other household chores. Moreover, it was also observed that the gatekeepers would specifically ask for certain participants to be involved in the study because of their ability to speak clearly and fast so that the data collection process did not last for too long.
Influence of Gatekeepers on the Research Process

Upon analysis, the presence of gatekeepers did emerge as having an effect on both qualitative and quantitative data collection. Two themes emerged: sampling of research subjects and the data collection process.

**Sampling of Research Subjects**

Gatekeepers influence on the sampling of research subjects in Tanzania and Malawi emerged from the analysis. For example, in Tanzania, simple random sampling was the proposed sampling technique for selecting survey respondents. However, convenience sampling was used because when the researcher asked for a list of farming households in the community to draw the sample from, the gatekeeper, who was a village leader indicated that it was not possible for them to provide the list of the community members. This was the case despite the gatekeepers providing details of the number of farming households that were in the village and also mentioning to the researcher that they had a list of names of various households. In addition, the questionnaires were designed to be administered verbally to accommodate illiterate respondents, and as such required an in-person visit to respondents in their homes. Therefore, in order to continue with the process, the researchers allowed the gatekeepers to decide the households to include in the study. For each household, the gatekeeper decided the respondents that were included from each household based on their availability at the time of the visit. This was against the plans of the researcher because the original plan was to recruit a given number of respondents from specific households depending on their gender.

In Malawi during the data collection process for qualitative research, where purposive sampling was the proposed technique for selecting respondents, convenience sampling was used instead. A convenience sample was used because the gatekeeper who was an extension agent indicated that it was not possible for the researchers to visit the respondents in their homes. Therefore, the village level gatekeeper who was the chairperson of the Village Development Committee mobilized participants to a central location. As such only respondents that were available at that time and were able to make it to the central location were included in the study. However, in cases where convenience sampling was requested, gatekeepers were able to provide access to participants consistent with requested protocols. For example, in Uganda, Kenya, and Malawi the nature of the research required individuals that had directly worked with, or benefited from, a specific organization. Thus, a convenience sample research design was purposed. Based on the researcher’s request the gatekeeper was able to arrange opportunities to engage with specific groups and individuals that met the requested criteria.

**Data Collection Process**

Another emergent sub theme was that gatekeepers sometimes influenced the qualitative and quantitative data collection process. However, the extent to which the gatekeepers influenced the data collection process varied depending on whether or not the gatekeepers were present throughout the data collection process. For example, in Malawi the gatekeepers, who were mainly extension agents, accompanied the researcher to the location, staying at the venue until the interviews were over. The researcher observed the respondents were mindful not to provide any negative or contrary information in the presence of the extension agent. In several cases, the respondents would seek confirmation from the gatekeepers.

A similar observation was made in Tanzania during focus groups where the village leaders invited the participants to a central location for the focus groups and were present throughout the focus groups. In these cases, the village leaders (the gatekeepers) also served as
participants in the study. However, in Malawi, where the gatekeeper left the researchers to collect the data, the respondents were comfortable sharing their negative experiences accessing extension services. Furthermore, in Tanzania during the survey administration differences were observed in respondents’ responses in cases where the gatekeeper was present during the process and where the gatekeepers were absent.

**Impact of Gatekeepers on Research Process**

Four themes emerged regarding the influence of gatekeepers when conducting agricultural extension research: (1) facilitating access to research subject and communities, (2) research subjects’ right to voluntary participation, (3) type of data collected, and (4) selection bias.

**Facilitating Access to Research Subjects and Communities**

Gatekeepers providing access to community members facilitating the data collection process and was identified numerous times throughout the data analysis process. Moreover, the gatekeepers emerged as assisting the researchers in being accepted and welcomed. Accessing certain communities, especially in rural areas, with someone whom the people were familiar with and respected ensured participants trusted the researchers and engaged in the research process.

In Uganda an example included a key informant interview with entrepreneurial youth that had received educational training. The group associated with the training was unique in both their experience with the organization of interest, as well their insights regarding employment opportunities for the in the county. The gatekeeper was invaluable in locating and facilitating an opportunity to engage with the group which may otherwise be inaccessible to the researcher.

**Research Subjects’ Right to Voluntary Participation**

The presence of the gatekeepers was observed to contribute toward the inability for some of the subjects to exercise their right for voluntary participation. For example, in Tanzania even though the researcher could not understand the language, it was observed through the body languages of some of the participants during the survey administration that they were not interested in participating. However, the gatekeepers were observed pleading with participants and in some cases the researcher had to intervene so the individuals were not forced to participate.

In Malawi, during key informant interviews, one of the female participants expressed to the researcher that she was not ready for the interview. The woman indicated that she was heading to visit a sick relative and that the local gatekeeper met her on her way and persuaded her to take part in the interviews. Upon hearing this, the researcher allowed the participant to leave without completing the interview. However, the participant pleaded that the researcher not inform the gatekeeper that she refused to take part in the interview. Following this incident, the researcher had to keep information confidential because each time a participant left earlier than normal during the data collection process, the gatekeeper checked with the researcher to find out if they had finished answering all of the questions. Therefore, to ensure confidentiality, the researcher would opaquely respond that the potential participant had responded to all the necessary questions. However, this posed problems on the part of the researcher in cases where only a specified number of people were invited. To address the challenge, the researcher would concoct an excuse to have the gatekeeper recruit more people so the targeted sample size was
achieved. The approach was successful in some, but not all, cases. As a result, the researchers ended up having a smaller sample size than originally planned.

**Type of Data Collected**

Another sub theme that emerged was that in cases where gatekeepers were present respondents seemed reluctant to provide any negative feedback or insights. For example, some participants praised the extension personnel for teaching them about modern agricultural practices; however, only when asked whether they had adopted the practices did the farmers indicate they did not because they did not believe the technology would help them. When probed to explain why they had not indicated a lack of adoption initially the farmers indicated they were afraid that if they mention they did not adopt the technologies the extension agent may lose their job as they will be considered ineffective. The participants indicated they were aware the extension workers needed their jobs to survive. They would not want to label them as being ineffective. Such incidences took place in cases where the extension workers served as gatekeepers.

**Selection Bias**

The gatekeepers were found to influence inclusion and exclusion of specific people from taking part in the research studies. In countries where convenience sampling was employed gatekeepers had specific individuals they believed should, and should not, be included in the study. For example, in Tanzania, the researcher had asked the gatekeeper if they could include one of the potential respondents when they were passing by their house, but the gatekeeper indicated that the potential participants was not knowledgeable enough. A similar incident was encountered in Malawi where the gatekeeper did not allow the researcher to interview a participant because they were not actively involved in agricultural extension activities in the community. Moreover, it was also observed that in all the countries where the gatekeepers were extension agents, they preferred taking the researchers to nearby communities.

**Conclusion and Recommendations**

It is well established that gatekeepers play an important role in preserving information for various communities and organizations (Kurtz, 1968). Across a variety of independently conducted quantitative and qualitative studies within four different Sub-Saharan African countries, the researchers found gatekeepers as being crucial in ensuring they gained access to communities in places they would not have had access otherwise, thus confirming previous research (McFayden & Ranki, 2016). Additionally, the presence of gatekeepers ensured there was coordination and collaboration among various extension service providers, especially based on the increased number of providers working in these communities.

Implementation of pluralistic demand-driven extension approaches in countries like Malawi and Kenya has led to increased availability of extension service providers in the community. As such presence of community level gatekeepers ensured that the various activities implemented by stakeholders do not coincide with each other. This is consistent with results of other studies where it has been reported that most communities are overwhelmed due to the increased numbers of organizations that work with these communities (Chowa et al., 2013). Consequently, the results of the current study reinforce the important role for gatekeepers in these communities. However, the position and authority of these gatekeepers in relation to the gated is worthy of further examination.
In this study, gatekeepers were viewed as opinion leaders within their communities in most cases, which aligns with previous research findings indicating they were able to exercise some sort of authority over the gated (e.g. MacFayden & Rankin, 2016; McAreavey & Das, 2013). Therefore, having gatekeepers physically present during the data collection process where they had authority to decide or select study participants or respondents introduced potential sources of bias to the research process. The amount of power gatekeepers had, especially in selection of research subjects and during the actual data collection process, is worth exploring as it illuminates the potential for selection bias.

The tendency of the gatekeepers to persuade research subjects to take part in research even when they were not interested in doing so has the potential to diminish the research integrity due to Hawthorne effect. The Hawthorne effect refers to the “research participants’ alteration of behavior when observed” (Paradis & Sutkin, 2017, p. 32). Differences in participants’ and respondents’ responses when the gatekeepers were present or absent is an indication that the presence of the gatekeepers, especially extension agents, have potential to influence the type of data collected.

The findings of this study are consistent with other studies which have reported gatekeepers with a vested interest in a particular outcome may suffer from motivation bias (Hammersley, 2005; Hammersley & Gomm, 1997) thereby contributing to the impression that social science research is more subjective than objective. This was particularly evident when extension agents, who have vested interests, served as gatekeepers when choosing communities where research was conducted. In some cases, extension agents are evaluated based on the extent to which farmers are able to adopt technologies (Anderson & Feder, 2004), therefore, this may have motivated extension agents to only identify or approach communities or individuals who successfully adopted an improved technology (Singh & Wassenar, 2016). It is important for social scientists conducting research in agricultural extension settings aimed at evaluating the impact of extension programs review their indicators for assessing effectiveness. The results of the present study indicate that evaluating effectiveness based on the number of people who have adopted technologies, or number of technologies adopted, may contribute to motivation bias especially in cases where the responsible organizations or individuals are gatekeepers. Perhaps indicators such as the ability of the individuals to express their concerns regarding new technologies without fear or bias would be a better measure. Using such indicators may make the extension agents comfortable and allow individuals who have different views to take part in research activities.

Based on the results of the study, a model for conducting research within gatekeeper contexts is proposed (Figure 1).
Once a research project has been initiated, researchers need to take time to understand the research context (Figure 1; 1.0). This can be through literature reviews or consultations with people or other researchers who have worked in such contexts so that they establish whether access to those communities or research subjects will require approval of gatekeepers or not. It is important for social science researchers working in developing countries to understand the role gatekeepers play as well as the benefits and obstacles they bring to the research process (Flyvberg, 2006).

Once it has been established that gatekeeper’s permission will be required to gain access (Figure 1; 2.0), the researchers should identify the types and levels of the gatekeepers and establish the potential impact that their presence might bring to the research (Figure 1; 2.1 and
Doing so will help researchers to ensure that relevant to logistics are put in place. Moreover, such an understanding will help the researchers identify potential areas for disconnect. For example, in most rural areas African women have time constraints due to many parallel responsibilities (domestically, socially, etc.). These obligations may limit their participation or deter them from participating in research activities scheduled during times or in locations that are not convenient (Hyder et al., 2005). The problem is exacerbated in areas where mobility is a problem, making it hard for people who reside in hard to reach areas to be included in research projects. Therefore, gatekeepers may want to save time and energy by taking researchers to areas which are easy to reach. In cases where gatekeepers are extension agents, the time spent in assisting the researchers is often considered outside their work routine and they may not be getting paid. As a result of time constraints gatekeepers may deliberately avoid selecting participants or respondents whom they know will take a long time to finish the specified research activities. Being considerate of a gatekeeper’s needs and schedules is important and clarifying logistical expectations and issues up front can reduce miscommunication.

Once the types, levels and potential impact of the gatekeepers has been identified, the researchers need to revisit their research objectives (Figure 1; 2.3) to ensure that the presence of gatekeepers will not have any negative impacts towards achievement of the research objectives. Social researchers working within gatekeeper contexts should ensure they incorporate measures aimed at minimizing bias as a result of their presence. In cases where potential areas of conflict or bias are identified, the researchers need to revise their research objectives to ensure that achievement of the objectives will not be compromised due to the presence of the gatekeepers. Following the revision, the researchers should determine the appropriate research design (Figure 1; 3.0) for collecting the data. Researchers should choose research designs that will minimize the ability of gatekeepers to introduce bias. In addition, measures should be undertaken to minimize such bias. For example, the measures may include selection of research designs that will allow for multiple data collection from different settings and also using mixed methods research designs.

During the data collection (Figure 1; 4.0) researchers need to provide detailed clarification regarding the impact of the research findings to the gatekeepers’ positions or organizations. Providing clarity will ensure the gatekeepers do not feel threatened that the research may reveal something that may jeopardize their positions or institutions. Clarity in research objectives and methodologies should also be emphasized, especially in relation to the research outcomes and implications. The researchers need to spend time educating the gatekeepers on the research and its potential impact as well as how collecting data in a particular way will assist them achieve the research objectives.

Researchers also need to emphasize to the gatekeepers that individuals selected, or identified, to participate must be provided the option to do so of their own volition. On top of this, the researchers should clearly specify to the gatekeepers that a subject’s refusal in a research activity does not speak poorly of the gatekeeper but that it is their way of expressing their right and freedom to participate. This recommendation is particularly relevant in contexts where gender roles and perceptions may differ from those of the researcher. Throughout the data collection process, the researchers should look out for potential sources of bias (Figure 1; 4.1 and 4.2) and make sure that these biases are reported. In cases where, the researchers feel the biases may compromise the results, efforts should be made to replicate such studies in different settings.

During data analysis and reporting (Figure 1; 5.0) of any research conducted within the contexts of gatekeepers, researchers should provide detailed accounts of the research process as
opposed to just reporting the acceptable and standard research procedures (McAreavey & Das, 2013). The detailed accounts should include honest reporting of the data collection process as well as areas for potential bias. Provision of such details will assist the readers to understand the complexities that may exist as well as inform the application of research recommendations and conclusions.

Individuals preparing or conducting research within the context of gatekeepers should be alert to where results may be biased, or perhaps not fully representative. If nothing else, asking for assistance in reaching certain groups may yield better results as opposed to simply hoping for the best. An additional recommendation is for more purposive gatekeeper research to be conducted in the future. For example, an analysis of similarities and differences across multiple cultural contexts may help provide an even more robust framework for researchers to conduct studies in the future.

The results of the present study provided a unique set of considerations for individuals wishing to conduct, or conducting, social science research where gatekeepers are necessary to accessing an otherwise inaccessible population. Nevertheless, it is important to preemptively establish the noteworthy limitations associated with the study. First, the emergence of the study occurred post hoc from the original research projects. Therefore, the data collected throughout the original projects were not specifically oriented towards examining the role of gatekeepers, thus reducing the credibility and confirmability of the present results. For example, the absence of informant statements and purposive field observations makes the current study more of a quasi-secondary data analysis rather than a primary investigation (e.g. Johnston, 2017).

Nevertheless, triangulation of independent experiences and the involvement of an objective third-party as part of the coding and thematic analysis process were conducted to minimize this limitation and establish more dependability in the findings (Lincoln & Guba, 1985). A second primary limitation is the limited number of projects included in the analysis. Although care was taken to try and establish a representative number of projects within different contexts and countries, it is certainly possible the consistencies observed are due to randomness and not an underlying explanation. While there is no way to control for this potential beyond observing all possible project experiences, the themes across projects indicated some level of consistency that may help to inform both practice and the need for additional research.

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Development of Livelihood Skills through School-Based, Agripreneurship Projects Integrating Youth-Adult Partnerships: The Experiences of Youth Partners in Uganda

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Abstract
Equipping young people with livelihood skills is essential for positive youth development and empowerment as they transition into adulthood to become productive and engaged members of their communities. In Uganda, which may be the case in other nations of Sub-Saharan Africa, and elsewhere, even though many youth are becoming better educated and graduating from high schools and colleges, a majority of these graduates remain either unemployed or underemployed. Many have not acquired the necessary skills to transition from school to becoming employable and self-reliant. This phenomenon has been attributed to an outdated curriculum that does not meet the needs of contemporary times. Further, the mode of instruction in most of Uganda’s schools is teacher-centered and provides little room for student engagement and creativity to generate new knowledge, to have authentic learning experiences, or to reflect. Such challenges may be overcome through student-centered learning approaches involving School-Based, Agripreneurship Projects (SAPs) that integrate Youth-Adult Partnerships (Y-APs), as were explored in this study. Evaluation of the students’ experiences through deductive and inductive thematic analysis indicated that they acquired knowledge in poultry science, business, agripreneurship, and life skills, including better communication, leadership, and conflict resolution practices. Longitudinal studies should be conducted to determine the long-term effectiveness and impact of SAPs facilitated by Y-APs on improving youth livelihoods, especially that prepare them with the life skills necessary to be productive citizens. Such research could involve cohort or panel investigations.

Keywords: entrepreneurship; positive youth development (PYD); project-based learning (PjBL)
Introduction/Review of Literature

Equipping young people with livelihood skills, including cognitive, socio-emotional, and technical competencies, is crucial to building their self-efficacy and empowerment, and stimulating positive youth development [PYD] (Brewer, 2013; Lorenzo et al., 2019; Mueller et al., 2011). Such skills help youth to navigate the challenges they encounter while transitioning into adulthood and becoming productive members of society, including contributing to the economic sustainability and resilience of their communities (Tukundane et al., 2015; Zeldin, 2004). Youth are a community’s future and by equipping them with livelihood skills, society is building an asset base to ensure its vitality over time (James-Wilson, 2008).

PYD encompasses both “childhood and adolescent development experiences that provide optimal life preparation for the attainment of adult potential and well-being” (Catalano et al., 2014, p. 423). Catalano et al. (2014) outlined five areas of PYD, including behavioral, cognitive, emotional, moral, and social competence. Youth can be empowered through active participation in community affairs while working with adults of different ages through Youth-Adult Partnerships (Y-APs) to address the needs of their communities (Akiva & Petrokubi, 2016; Mukembo & Edwards, 2020; Zeldin et al., 2013). For example, through youth organizations such as 4-H, Distributive Education Clubs of America (DECA), and Young Farmers Clubs (YFCs), young people engage in leadership and entrepreneurial projects in communities while working alongside adults to find innovative solutions to society’s needs (Christens & Dolan, 2011; Mukembo et al., 2014, 2015; Mukembo, 2017). Also, through Y-APs, youth learn to work in teams, develop social and problem-solving skills, hone leadership and communication skills, and acquire technical skills relevant to the projects in which they are involved, and can use these skills to improve their livelihoods and communities (Mukembo, 2017; Mukembo & Edwards, 2020).

However, in spite of the increasing number of youth completing secondary and post-secondary education (Africa Economic Outlook, 2012), many developing nations, including Uganda, experience challenges on how to best prepare youth with livelihood skills to mitigate their high levels of unemployment (Mukembo, 2017; Mukembo et al., 2020; Mukembo & Edwards, 2020). In Uganda, only one-in-four college graduates are employed (Arinaitwe, 2014; National Curriculum Development Center [NCDC], 2013, 2016). This condition has been attributed to a mismatch between the skills acquired by youth at the post-secondary level and the needs of the labor market (Mukembo et al., 2020), which exacerbates the problem of unemployment (NCDC, 2020).

To combat the high joblessness rate among secondary school and college graduates, the Government of Uganda embarked on various initiatives, such as Skilling Uganda and curriculum reforms at the lower secondary school level (Ministry of Education and Sports, 2011; Namuli-Tamale, 2014; NCDC, 2020; Tukundane et al., 2015), to equip graduates with entrepreneurial skills for self-employment and job creation. The curriculum reforms aim to provide learners with more student-centered/-centric instruction, including opportunities for experiential learning (NCDC, 2020). Further, in the proposed reforms, the current number of 18 subjects taught in secondary schools at the Ordinary level would be reduced to eight learning areas (NCDC, 2013, 2014, 2016). Career and technical education subjects, such as agriculture and entrepreneurship, would be merged into one learning area called technology and enterprise (NCDC, 2013). As such, the integration of career and technical subjects, including entrepreneurship and agriculture, could be achieved through School-Based, Agripreneurship Projects (SAPs) involving Y-APs to prepare youth with livelihood skills and contribute to community economic development.
(Mukembo, 2017; Mukembo & Edwards, 2020). Through SAPs and YFCs, Ugandan youth can become aware of various career opportunities in the agricultural sector beyond the farm gate (Mukembo et al., 2014, 2015); for instance, careers involving value-addition such as food processing and marketing. Mukembo and Edwards (2015) defined agripreneurship as “the application of entrepreneurial principles to identify, develop, and manage viable agricultural enterprises/projects optimally and sustainably for profit and/or improved livelihoods” (p. 5). However, effective ways for youth to learn agripreneurship warranted additional investigation.

**Purpose of the Study**

This qualitative study sought to explore the impact of SAPs facilitated by Y-APs on the development of livelihood skills among youth, including the potential of such to improve agricultural practices and livelihoods. As part of a larger mixed method investigation, this portion of the study examined what students experienced and perceived learning from their participation in SAPs that involved partnering with adults in local communities.

**Theoretical Lens**

The theoretical underpinning of this study was Kolb’s model of experiential learning theory (Kolb, 1981, 1984, 2014). In the learning process, ideas are organic and transformed as individuals encounter new experiences, and they reflect on their experiences to make abstractions leading to the creation of new knowledge and understanding (Baker et al., 2012; Corbett, 2005, 2007; Kolb, 2014; Kolb & Kolb, 2009). Experiential learning embodies a hands-on, minds-on, learning by doing approach as advocated by many scholars, including John Dewey (1938). The acquisition of new knowledge and skills occurs when learners have concrete experiences that lead to self-reflection, abstraction, and active experimentation (see Figure 1; Baker et al., 2012; Kolb, 1984, 2014). Kolb and Kolb (2005) asserted that knowledge is constructed through “creative tension among the four learning modes that is responsive to contextual demands” (p. 194). Each learner, however, has a preferred learning style (Kolb, 1984, 2014), and the learning process can occur under the guidance or mentorship of a teacher or any person designated to facilitate or guide the experience. Learning is a continuous process (Kolb & Kolb, 2005) [see Figure 1] involving the reconstruction of learners’ understanding as they undergo new experiences (Dewey, 1929; Kolb, 1984, 2014).

**Methodology**

The study was approved by Oklahoma State University’s Institutional Review Board to conduct research with human subjects. We employed inductive and deductive thematic analysis to explore the impact of SAPs involving Y-APs on the development of livelihood skills among youth, including the potential of such to improve agricultural and entrepreneurial practices. Inductive thematic analysis involves the development of themes based on the data set, and deductive thematic analysis incorporates the researchers’ theoretical perspective (Braun & Clarke, 2012, 2018; Guest et al., 2012; Joffe, 2012), with the latter to likely bring more bias to the interpretation of data (Joffe, 2012). For this reason, researchers ought to be aware of the preconceived biases that may influence their objective analysis of findings. However, despite the shortcomings of deductive thematic analysis, Joffe (2012) urged researchers to employ both analytic approaches in developing themes to ensure high quality research results.
Thematic analysis involves the identification and examination of emerging patterns in a data set (Braun & Clarke, 2006, 2012; Joffe, 2012), with the ultimate goal of reporting the “most salient constellations of meanings present” (Joffe, 2012, p. 209) in the form of themes and a related essence (Maguire & Delahunt, 2017). It may be descriptive and exploratory (Braun & Clarke, 2012; Guest et al., 2012), which permits researchers the opportunity to “see and make sense of collective or shared meanings and experiences” (Braun & Clarke, 2012, p. 57). Such analysis is flexible and can be used to provide an in-depth account of a phenomenon (Braun & Clarke, 2018; Maguire & Delahunt, 2017), and it allows investigators to analyze and comprehend their data to determine emergent themes. Moreover, thematic analysis “is still the most useful [approach] in capturing the complexities of meaning within a textual data set” (Guest et al., 2012, p. 10). According to Joffe (2012), thematic analysis “is among the most systematic and transparent forms of such work [qualitative research], partly because it holds the prevalence of themes to be so important, without sacrificing depth of analysis” (p. 210). Themes may be developed from both implicit and explicit patterns during data analysis (Guest et al., 2012).

We employed a six-step framework for thematic analysis (Braun & Clarke, 2006, 2012) to examine multiple sources of information, i.e., a data corpus was derived from exploring the phenomenon and analyzed for recurring patterns to develop themes: (i) first, we familiarized ourselves with the data set and took time to deeply understand it; (ii) next, we identified and generated the relevant codes and patterns from the data set; (iii) we searched and assembled related codes to develop themes; (iv) we then reviewed and compared the themes to ensure that such aligned with the data; (v) afterward, we defined and named the themes; and (vi) we developed a write-up of the themes (Braun & Clarke, 2012). However, this was not a linear process (Braun & Clarke, 2006) because of the amount of data, i.e., we went back and forth while analyzing the various data sets to establish emerging themes (Maguire & Delahunt, 2017).
The study’s data set included students’ journal entries about their SAPs, as well as student-produced short videos and photographs, student work samples such as word puzzles, and transcripts from follow-up focus group interviews with students.

We reviewed and took the time to read, view, and comprehend the content of all the data sources (Braun & Clarke, 2006; Nowelli et al., 2017). The data were part of a large collection that we gathered from youth who attended two single-sex, boarding secondary schools in Uganda, one girls’ school and one boys’ school, and had participated in SAPs involving the raising of broiler chickens. The students received instruction on poultry science integrated with entrepreneurship concepts for eight weeks from their agriculture and entrepreneurship teachers. During this period, the students had opportunities to apply the knowledge and skills learned in the classroom to the real-world in the context of their SAPs. They kept broiler chickens and collaborated with farmers in their schools’ surrounding communities who were poultry producers to learn from one another and to share experiences about raising poultry; this was the study’s Y-AP. The students documented their experiences during the SAPs, including interactions with the adult partners, i.e., agriculture and entrepreneurship teachers, poultry farmers, and extension agents (Mukembo & Edwards, 2020). In addition, they recorded visual images and videos that we examined.

We also analyzed instructional artifacts, such as agripreneurship word puzzles, student-made posters, and the project’s training syllabus (Charmaz, 2014; Elo & Kyngas, 2008; Nowell et al., 2017). Further, as a follow-up procedure, we conducted two focus group interviews with 22 students, including 10 boys and 12 girls from their respective boarding schools (Groenewald, 2004; Padilla-Díaz, 2015). We conducted the interviews using Skype (Deakin & Wakefield, 2014) and asked open-ended questions (Patton, 2015) about the students’ experiences with their SAPs.

As an open coding procedure (Corbin & Strauss, 2014), we used NVivo 11 analysis software (QSR International, 2013, 2016) to identify and organize various codes; statements that conveyed related meanings were grouped together. During this process, we suspended (bracketed) our preconceived ideas about the phenomenon to mitigate potential bias (Moustakas, 1994). We acknowledge such bracketing is not always entirely possible (Kafle, 2011). However, through collaboration, we were able to mitigate biases, which brought multivocality to our analysis and interpretation of the data (Tracy, 2010). In the write-up of the themes, we provided a rich, detailed description with participants’ quotes and visual images to enhance the readers’ understanding of the phenomenon, as expressed by the youth, which may enhance the transferability of our findings (De Lay & Swan, 2014). Transferability “is achieved when readers feel as though the story of the research overlaps with their own situation and they intuitively transfer the research to their own action[s]” (Tracy, 2010, p. 845).

**Reflexivity statement**

In qualitative research, the researcher is the instrument (Guba, 1981; Merriam, 1998, 2009); therefore, it is very important to be ethical, truthful, and dependable when conducting and analyzing data to ensure credibility (Lincoln & Guba, 1985; Nowelli et al., 2017; Tracy, 2010). For this reason, because of the principal investigator’s background and experience teaching agriculture in Uganda and publications about youth and agricultural development, personal bias could be a factor in this study. Another investigator is an American with experience involving youth and agricultural development, including entrepreneurship, and he had traveled to Uganda with projects that involved adult entrepreneurs. The third researcher is also an American and had
worked on various projects to empower aspiring entrepreneurs in Sub-Saharan Africa. He had also traveled to Uganda to work with adult entrepreneurs. However, through collaboration and by following the six steps supported by Braun and Clarke (2006) and documenting our procedures during data analysis, we ensured that our process is traceable and replicable and could be audited for credibility and trustworthiness (Beck, 1993; Lincoln & Guba, 1985; Nowelli et al., 2017; Tobin & Begley, 2004). In addition, we took time to become deeply familiar with the data, evaluated multiple data sets, and consulted among ourselves during the process of data analysis and theme development, which also helped mitigate potential bias and threats to credibility.

**Results**

**Theme #1: Understanding poultry science and related management practices**

Students indicated that they had acquired knowledge, skills, and better understanding of poultry keeping through their hands-on activities and classroom instruction under the guidance and mentorship of the adult partners, including agricultural and entrepreneurship teachers, extension agents, and poultry farmers. The students explained that in the process of raising their broilers, they were able to learn from the adult partners how to properly conduct management practices, such as brooding, feeding, sanitation and disease prevention, and record keeping. During the focus group interviews, one student explained:

We learned to care for one-day-old chicks like the first day when we received chicks; our teacher informed us that when a chick has just been received, we had to give them glucose mixed with water in order to clear up their digestive system. . . . We have learned how to prepare brooders for the chicks, we have learned that these chicks that are in the brooding stage need warmth . . . and that very cold conditions can make the chicks to chill and die (see Figure 2).

**Figure 2**

*Photograph of a Brooder and Broiler Chicks with a Charcoal Pot as the Heat Source*

Another student wrote about this experience in her journal: “We cleaned the drinkers, put food and fresh water; we also vaccinated the chicks against Newcastle disease since the chicks were seven days old.” The practice of vaccination was supported by another focus group participant who shared: “I learned to vaccinate the birds. I did not know that you put a drop on eye, so they told us to draw vaccine in the syringe and put a single drop on the eyes which was quite interesting” (see Figure 3).
Figure 3
*Students Vaccinating their Broiler Chickens*

*Note.* Photograph used with permission of the students pictured and their school’s administration.

**Theme #2: Awareness about agripreneurship and entrepreneurship, including opportunity recognition and idea-generation related to agriculture, as well as the role of agripreneurship in community economic development**

Based on our analysis of the data set, we noted that students expressed an increased understanding of the concepts of *agripreneurship* and *entrepreneurship*. In addition, the students described various roles of agripreneurship in community economic development, including related challenges, as explicated by four subthemes.

**Descriptions of entrepreneurship, agripreneurship, and agripreneurs**

A student wrote in his journal: “Entrepreneurship is a practice of identifying a business opportunity, mobilizing resources required and taking the initiative to exploit the opportunity while bearing risks and uncertainties.” Students also differentiated between entrepreneurship and agripreneurship in that the former focuses on exploitation of any business opportunities, while the latter is associated with opportunities found in the agricultural and food sector.

*Personal characteristics and roles played by entrepreneurs/agripreneurs.* In their journal writings, the students described several characteristics associated with an entrepreneur/agripreneur (see Figure 4). One student listed 10 attributes in his journal:

(a) Must have self-confidence; (b) must be disciplined; (c) must be opportunity seeking; (d) must be courageous at taking risks; (e) should seek information; (f) must have commitment; (g) must be good at setting goals; (h) must be persistent; (i) should be persuasive; and (j) must have planning and monitoring skills.

Another student journaled about various skills of agripreneurs such as “search for markets for the goods, keeping records . . . market research, [and] customer care.” This finding was supported by other students who wrote similar journal entries.

**Role of agripreneurship in community economic development**

The students shared that agripreneurship creates employment opportunities for community members through the establishment of agro-processing units and other value chain-related enterprises, as they witnessed at the adult partners’ farms. Further, the students realized that agripreneurship created opportunities for relationship building, collaboration, and networking among community members, which promoted peaceful co-existence and civic engagement. They
experienced such collaboration and networking through the relationships developed with their adult partners during the project. In support, a student wrote in his journal that agripreneurship is a “source of employment, . . . source of income, . . . leads to development, . . . unites farmers, provides food, promotes working together, . . . [and is a] source of raw materials.” Another student’s journal entry elaborated on this point: “. . . it leads to self-reliance, leads to diversification and industrial development, rural electrification, [and] promotes unity through trade.”

Figure 4
A Collage of Student Journal Entries, Word Puzzle, Business Plan, and Poster

Challenges and hindrances to agripreneurship
The students outlined a number of challenges impacting agripreneurship development in local communities: bad weather; climate change; drought; high initial capital investment for startups; lack of collateral to secure loans; lack of ready market for their products; lack of skills; and price fluctuations, especially at the time of harvest. Regarding obstacles, a student wrote about “[l]imited funds, shortage of able-bodied young people in rural areas, price fluctuation, limited land, long process to register a business, . . . [and] poor transport service.” Another student listed other hindrances to successful agripreneurship in her journal: “Diseases, poor storage facilities, insecurity, poor quality seeds, taxation of agricultural inputs, . . . lack of mentors, [and] poor planning.” Other students also journaled about these challenges and discussed such during their focus group interviews.

Theme #3: Acquisition of technical skills related to business development and management
All students who submitted journals and those who participated in focus group interviews indicated that as a result of working with the adult partners and implementing their SAPs, they acquired technical skills, including the ability to recognize and evaluate business opportunities. They also described acquiring skills on creating marketing and financial plans, developing vision and mission statements, keeping good records, mitigating risks in agripreneurship, setting goals, and writing business plans. For instance, a student from the boys’ school shared that their project’s goal was “to increase the number of birds by 40% in two years;” and their vision was “to become the leading producers and suppliers of poultry products in Uganda.” In the case of the girls’ school, a student indicated that their business mission was “to provide quality broilers
to the public at pocket friendly [affordable] prices.” And their vision was “to be the leading broiler producers in Uganda.” The students also identified some of the risks likely to impact their SAPs such as accidents, disease, fire outbreaks, theft, and they developed strategies to ensure the projects were protected. Some of the strategies included adequate housing, ordering chicks from reputable, disease-free farms, proper feeding and sanitation procedures, and vaccination regimens. As a reflection of having learned from a direct experience (Kolb, 1984, 2014), after the students lost a few broiler chicks that jumped into their heat source, they put up barriers to prevent others from getting too close to it. A student described the experience:

Its feathers were burnt up, we had to bury it and later put bricks around pots to act as barriers so that other chicks do not jump in [the pot]. From that day, we never got any accident of a chick dying in the fire.

During a focus group interview, a student shared: “I have learned how to take care of business risks and losses and persevere in times of crisis.” And another student journaled: “I have learned a lot that when you are having a project, you don’t need to lose hope when you are caring for your birds and experience some losses. It is part and parcel of doing business.”

Theme #4: Learning life skills
The students indicated learning a variety of life skills, including better communication, conflict resolution, consultation, financial management, leadership, mobilization, networking, teamwork, as well as socializing and working with others and making new friends. They planned to use these skills to improve themselves and become better citizens in their communities. Some of these skills and intentions are evinced in three related subthemes.

Budgeting, financial management, and marketing skills
During the focus group interviews, a student shared that “we have learned budgeting skills; we would come up with a list of items needed for daily use on the project and [calculate] how much money was required for each and we would budget appropriately.” Another student added: “For me, as a treasurer for our project, I have learned how to manage and account for finances. I had to be frugal with [the] project’s money to ensure that we had enough money for feeds and drugs.” To this point, another student explained further during a focus group interview:

We have learned that we have to save. When we had any money that we have got from the birds we have sold, we had to take it to the teacher, and he banks it for us. . . . Good entrepreneurs always have to save [and] invest so that they can get more profits.

Ongoing application of agripreneurship skills to develop future projects
The students indicated that they would apply the agripreneurship skills learned from their partnerships with the adults, including further implementation of their SAPs, and start their own enterprises at home. For example, a student wrote in her journal: “I have benefitted from this project in that I can take care of my own birds; I know how to mix feeds and how to give medicine and vaccination to birds at different stages.” Another student added in a journal entry:

I have seen that agriculture is a business and at the same time a source of employment, in my vacation I can’t suffer, at least I have gained some knowledge and skills where I can start up my own project and take care of it well.

Further, another student, during a focus group interview, shared:

I managed to convince my mom to start her project and also helped her calculate how much income she will get at [the] end of the project. I learned how to look for market for
the birds, take care of them and how to prepare the deep litter system . . . I [also learned that] . . . you don’t need to lose hope when you are caring for your birds and some die.

**Development of leadership, teamwork, socialization, and conflict resolution skills, among other competencies**

The students explained that they participated in the election of leaders for their projects, including the chairperson, secretary, treasurer, project manager, and duty roster manager, among other leadership roles. The students worked together under the guidance of adult partners to ensure the success of their projects through teamwork. During a focus group interview, a student said that “when you work in a group as a team, your work is done easily and in a short time, also you get to learn new ideas through listening and sharing.” Through socializing, the students made new friends. For instance, a student journaled: “I also learned that when you have your project, it is good to socialize with other people . . . We need the help of other people.”

**Theme #5: Community engagement and outreach**

The students acknowledged participating in community outreach while partnering with extension agents and the farmers who conducted ventures related to their SAPs. The students and farmers learned about one another’s enterprises as illuminated by two subthemes.

**Inspiration, networking, and meeting adult role models**

The students were inspired when they visited farmers who were doing well with their ventures. The extension agents helped connect the students with poultry farmers and some students established contacts and followed up with them during their school holiday periods. The students were impressed by the output of a female farmer who kept more than 7,000 layers in a highly automated, battery cage system. Many of the female students viewed her as a role model. One student during a focus group interview said: “I made friends with the people we met at these farms . . . she became a role model to me and inspired me to go into agripreneurship.” And another student explained during an interview:

> When we went out of school to some farm, the entrepreneurial lady explained to us that she began with a small enterprise using a deep litter system and when she realized more profits, she increased on the number of birds. She changed to [a] battery cage system . . . I learned that with this system, you can . . . [raise] more birds than deep litter . . . These droppings can also be used as fertilizers in the garden.

**Advisory services to adult farmer partners**

The students indicated learning from their adult partners’ experiences about management practices and gave farmers advice on how to overcome some of the challenges they experienced. As such, a student wrote in her journal:

> When we visited farmers in Iganga and Njeru, their broilers were sick and passed out brownish diarrhea, we realized that this could be coccidiosis because we had seen it in our birds and the doctor told us to treat and improve hygiene in the poultry house. We advised the farmers to do the same to reduce losses and costs of treatment.

In addition, the students described that they observed differences in growth rates and weight gain between their birds and those of one adult farmer. Whereas the partner’s broilers were the same age as those of the students, they were emaciated and stunted. The students asked him where he had bought the chicks and what he was feeding his birds. The students realized that
the birds were in poor quality and the farmer was not properly mixing the feed. He was trying to save money by putting fewer ingredients in the feed which was affecting the growth rate of his birds. The students advised the farmer to improve his feeding regimen, and to also avoid improperly rationing ingredients if he wanted a good growth rate.

**Theme #6: Challenges related to implementation of their business ventures**
The students shared that they experienced some challenges while implementing their SAPs. These challenges are highlighted in two subthemes. *Lack of cooperation by some participants.* Some of the projects’ student leaders shared during focus group interviews that they had a challenge mobilizing other students to do the work allocated to them based on the duty rosters. These students were not enthusiastic about feeding the birds or doing other work at the farm but were eager to board the bus to visit the adult farmers, according to several of the interviewees. *Balancing time for classwork and their projects.* The students described that, at times, they were challenged in balancing other school activities, including classwork, with their projects’ activities. During a focus group interview, a student shared: “At times, it was hard to attend to the birds when you are needed by teachers to go to assembly.” Another student added: “Sometimes, the teachers would want us to do other activities on the weekends and yet we were expected to attend the training. We had to always explain to them before they would excuse us.”

**Theme #7: Advice on how to engage young people in agripreneurship and capacitate them with livelihood skills**
The students shared various initiatives that could be undertaken to engage more youth in agripreneurship and equip them with livelihood skills. Two subthemes elaborated this theme.

*Curriculum reform involving the integration of entrepreneurship and agriculture:* The students indicated the need to reform existing agricultural curriculum, which is mostly theory-based, to engage learners better by applying their learning (Baker et al., 2012; Dewey, 1938; Kolb, 1984, 2014). Further, they urged Uganda’s Government to integrate entrepreneurship in the teaching of agriculture so students can relate developing business ventures with the agriculture sector while learning practical skills. During a focus group interview, a student said: “There is need to make young people aware that agriculture is a business worthy pursuing and this can be done by helping students start their own projects in schools such as keeping birds or growing maize which they can sell.” This sentiment was echoed by another student who explained: “Young people love working on projects that will bring them income . . . when such opportunities are explained to students during teaching and they implement projects, they start to like the subject.” A different focus group participant added: “Instead of giving us a lot of notes in class, it’s better we do things practically. It helps us [to] not forget rather than cram notes.”

*Field trips, exposure to agricultural enterprise opportunities, and role models*
The students expressed that their peers could be motivated to learn about agripreneurship through field trips and partnerships with adult entrepreneurs working on ventures related to school projects. A focus group participant shared: “When I went and visited farmers, I saw there was money in agriculture. Such opportunities to visit farmers would open our eyes and see that there is money in agriculture and agriculture was a business.” In addition, a student asserted that “more exposure of young people to opportunities in agriculture will inspire and change their attitude toward agriculture.” This point was also stressed by another focus group participant who
mentioned: “When we earned [money] from our selling our birds, I felt good to start my projects at home . . . I think this is one way to motivate them [other youth].”

**Conclusions, Implications, and Recommendations**

Conclusions drawn from the students’ experiences involving SAPs that integrated YA-Ps include them learning cognitive and technical skills related to agripreneurship, business, poultry science, as well as social and other life skills. Most of these competencies were realized through their implementation of and direct participation in SAPs while interacting with adult partners, especially extension agents, poultry farmers, and teachers. Moreover, during their training, the students underwent concrete experiences, which led to reflecting on, observing, and introspectively examining such (see Figure 1) to derive meaning and understanding (Baker et al., 2012; Corbett, 2005; Kolb, 1984, 2014). Based on these conclusions, the essence distilled from our thematic analysis of the students’ experiences is *learning by doing*, as supported by John Dewey (1916, 1938) among many other scholars and teachers. Regarding this outcome of a learning experience, Dewey (1916) stated: “… give the pupils something to do, not something to learn; and the doing is of such a nature as to demand thinking, or the intentional noting of connections; learning naturally results” (p. 181).

The students in this study were able to transfer and apply the knowledge acquired from entrepreneurship and agricultural classes to their SAPs, and some indicated that they would use the learning to develop their own enterprises in the future. Therefore, a need exists for teachers of entrepreneurship and agriculture to continue to partner and integrate their curricula so students can use the concept of opportunity recognition (Mukembo, 2017; Mukembo et al., 2020) and other entrepreneurship skills to identify and evaluate agripreneurship ventures to pursue. After graduating, students can apply these skills to identify entrepreneurial opportunities in their communities to exploit for self-employment and job creation that improves livelihoods while enhancing their region’s economic prosperity (James-Wilson, 2008; Tukundane et al., 2015; Uscanga et al., 2019; Zeldin, 2004). Educational policy makers (NCDC, 2020), development partners, and school leaders in Uganda are encouraged to support the implementation of policies and to allocate commensurate resources that would capacitate students with these competencies.

Schools should continue to partner with farmers in their surrounding communities who are working on ventures related to those of students, as was the case in this study. This would create opportunities to build better relationships through outreach collaborations between schools and community members (Akiva & Petrokubi, 2016; Mukembo, 2017; Mukembo & Edwards, 2020; Zeldin et al., 2013). Moreover, such is an avenue by which students can be active learners who engage with adults in their communities to learn from those experiences and be motivated to pursue entrepreneurship and community economic development opportunities. Further, a need exists for teachers to continue to incorporate practical learning experiences that involve applying the concepts learned in classrooms to real-world contexts likely to foment reflection, abstraction, and new experiences (Baker et al., 2012; Kolb, 1984, 2014; Kolb & Kolb, 2009). That approach to learning not only helps students apply what they learned in class, but it also creates avenues for them to gain other life skills essential for continuous social development outside of school while leading to improved livelihoods and greater civic participation (Christens & Dolan, 2011; Zeldin et al., 2013).

The students in this study acquired a variety of skills, both technical and social, through their engagement with SAPs and partnerships with adults. Would other high impact, student-centered, teaching approaches, such as problem-based learning or the case method, create similar
results if used instead of or in conjunction with the SAPs, or would the outcomes differ? More research should examine those approaches for equipping youth with livelihood skills through agripreneurship projects involving Y-APs. A need also exists to conduct longitudinal studies to establish the long-term effectiveness and impact of SAPs facilitated by Y-APs, including the potential to contribute to community economic development and stimulate civic engagement over time. These investigations could involve cohort or panel studies (Creswell, 2012).

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Employability of Egyptian Agriculture University Graduates: Skills Gaps

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Abstract

Egypt’s Strategic Development plan calls for higher-education curricula that produce workforce-ready graduates. Creating such curricula requires strong understanding of the skills and attributes most valued in the economy. Toward this end, this study focused on Egyptian agriculture sectors and measured perspectives of Egyptian agriculture university professors, students and private-sector employers on areas for potential job opportunities for agriculture university graduates and the skills graduates need to obtain and excel in those jobs. Using a survey-based approach, the study included responses from 417, 974, and 92 professors, students, and employers, respectively. Employers and professors identified poultry production, food/beverage processing, and protected horticulture as sectors (among 24 choices) with the most employment opportunities for agriculture university graduates. The most valued skills in new employees from employers’ perspectives (among 35 choices) were identified by principle component analysis and included familiarity with technologies, ability to apply academic knowledge to real scenarios, ethical decision-making, teamwork and problem-solving skills, ability to work with others from diverse backgrounds, and motivation and ability to learn new things. The largest students’ skills gaps (difference between value of the skill in new employees and students’ competency level in the same skill as assessed by employers) included time management, ability to plan/organize, conflict management, knowledge of industry, and ability to manage tasks/projects. Taken together, these results can inform development of market-driven curricula in Egyptian agriculture universities by highlighting areas/attributes where students should focus to increase their employability and pedagogies that allow students to gain these skills during their university careers.

Keywords: Egypt, higher education, agriculture, skills gaps

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Introduction

Egypt’s higher education system has a long and rich history. Al Azhar University in Cairo, founded in 970, is considered the second oldest university in the world and Egyptian universities contribute significantly to life sciences and humanities. Today, education is a right for Egyptians enshrined in the country’s constitution and Egyptians passing secondary education exams are provided tuition-free enrollment at public universities through the undergraduate level.

Enrollment in Egyptian universities has increased significantly over the past two decades, coinciding with massive population growth in Egypt, which has almost doubled since 1990 (World Bank, 2019). Currently, there are 26 public universities and 31 private universities in Egypt (Mohamed et al., 2019). In 2018, just under 650,000 students completed the secondary education final exam and estimated 2.2 million students were enrolled in public universities in Egypt in 2017/2018, including Al Azhar University (Central Agency for Public Mobility and Statistics, 2019b). Although, there has been growth in both university seats and the general population, Egyptian higher education is not thought to be saturated at the university level and supply (university seats) still outpaces demand (Buckner, 2013). The employment market for university graduates, however, is not nearly as solvent as discussed in subsequent sections.

In 2017, over 125,000 Egyptians earned diplomas from Egyptian or foreign universities, compared to only 34,000 in 2009. Likewise, approximately 18,000 Egyptians earned master’s level degrees in 2017. This figure is slightly down from the approximately 21,500 master’s level degrees earned in 2015, but well above the steady 8,000 – 9,000 master’s level degrees earned in years 2009 to 2011. Finally, an estimated 8,000 – 9,000 Egyptians earn PhDs each year from both Egyptian and foreign universities. This is roughly double the number of earned PhDs from just 6 years ago (Central Agency for Public Mobility and Statistics, 2019a). For reference, US academic institutions issued 35,791 PhD degrees to US citizens or permanent residents in 2017 (National Science Foundation, National Center for Science and Engineering Statistics, 2018).

While data on university-level learning outcomes in Egypt are scarce, high unemployment rates among university graduates (34.0% vs. 12.6% overall unemployment; Ghafar, 2016) indicate a wide gap in university learning outcomes and labor market needs and the Global Competitiveness Report of the World Economic Forum (2018) ranks the “skillsets of university graduates” in Egypt as 136th among 140 countries. Similarly, the research and discovery capacity of Egyptian universities and their faculty is impeded by limited resources and financing for higher education (Ministry of Planning, Monitoring and Administrative Reform [MPMAR] 2016). Finally, likelihood of admission to the university, or programs within a university (e.g., engineering, medicine), can be impacted by inequalities at the primary and secondary education levels (e.g., weaker schools, access to supplementary education, etc.), which limit enrollment of students from rural, less-educated, and/or less wealthy households in Egyptian universities (Assaad & Krafft, 2015; Buckner, 2013). In turn, university students reportedly require an average of seven years to find meaningful employment once they graduate (Amin, 2014; Mohamed et al., 2019). Prospects for female university graduates are significantly lower than their male colleagues with unemployment levels in female university graduates up to five times those of males (Barsoum et al., 2014). It is critical to note, however, that Egypt has a considerable informal economy with some, including Egypt’s Central Bank, estimating that parallel economies contribute to 40% of the country’s GDP (Khalid, 2018). Thus, unemployment estimates may not be surveys of all individuals contributing to the whole economy.

Numerous factors likely contribute to low student success as gauged by employment rates among Egyptian university graduates. Chief among those factors, however, is the acknowledged
mismatch in skills needed in the labor market and what is taught to and learned by students in the university (Ghafar, 2016). Bridging this skills/knowledge gap in higher education is a priority of the Egyptian government and a focal point in Egypt’s development strategy as it pertains to higher education (MPMAR, 2016).

This mismatch may be rooted in the “massification” of Egyptian higher education that began in earnest decades ago, when increasing access to higher education was, at least in part, a reflection of the need for more university-educated public-sector workers. Indeed, until the early 1990s, all Egyptians graduating from university were guaranteed public sector employment (Barsoum, 2015). This guarantee no longer exists, but Egyptian higher education still remains on some levels focused on providing students credentials, which in the past, were necessary for public sector employment. This is reflected in “number of graduates” as a key metric to measure Egyptian higher education quality. Compounding the issue, job opportunities in Egypt’s public sector have decreased with the central government’s goal of significantly reducing public sector employment (Eman, 2018); it is probable that private sector labor markets seek employees with attributes beyond academic credentials.

Theoretical Framework

The challenges described above inform Egypt’s development strategy for higher education as described in the Sustainable Development Plan: Egypt’s Vision 2030 (MPMAR 2016), which outlines aims of a) improving quality of curricula and teaching and organizational structures to produce programs meeting global standards (primarily via national accreditation processes), b) ensuring accessibility and quality “classrooms in rural and urban areas, for males and females, and for all classes of society” (pg. 204), and c) integrating labor market needs into curricula in effort to develop “students that are able to seize market opportunities and even create such opportunities” (pg. 204).

As such, the research described here was guided by a conceptual framework of employability, with the aim of better defining skills, attributes, or other factors that determine the capacity of Egyptians studying agriculture at the tertiary level to find meaningful employment in their fields of study upon graduation. Employability is rooted in human capital theory (Becker, 1964) where an individual’s skills, knowledge, experience, or personality traits may collectively translate into economic value in a given labor market. For this research, employability was defined as the set of attributes that allow a graduate to “access a job, maintain it, or find another” (Hillage & Pollard, 1998; Suleman, 2018). Ultimately, the study aimed to measure the gaps in skills (technical, behavioral, or other) in Egyptian university graduates that limit their potential to find meaningful employment in their fields of study. These data would then allow educators to better shape curricular and other learning initiatives in agriculture education at the tertiary level to meet goals of increasing students’ post-graduation opportunities.

Methods

All protocols and questionnaires were reviewed by the Purdue University Institutional Review Board and deemed exempt (#1906022352). Individual questionnaires were developed for current Egyptian agriculture university students, current Egyptian agriculture university professors, and potential employers (Egyptian agriculture private sector) of agriculture university graduates. Questionnaires were initially created in English and reviewed by a panel of experts (US university faculty) for soundness and Egyptian nationals for cultural appropriateness and revised accordingly. Questionnaires were then translated to Arabic and revised by a panel of
Egyptian nationals. Revised Arabic versions were then reviewed by Egyptian university faculty, both for soundness and cultural appropriateness. Revised Arabic versions were then re-translated to English to ensure that Arabic versions of the questionnaires retained the spirit of the English versions. Digital Arabic versions of all questionnaires were created using Qualtrics XM software (Seattle, Washington). Both hard-copy and digital versions of each questionnaire were then piloted with Egyptian nationals to ensure mechanical soundness. Questionnaires were distributed to recipients as part of meetings aimed at introducing stakeholder groups to different university-led curriculum initiatives with the options of completing written forms available in either English or Arabic or the digital Arabic version.

Respondents were asked to provide (depending on respondent group) their major, university, year of study, gender, academic rank, number of university graduate employees, gender, frequency with which the respondent supervised/worked with recent agriculture university graduates, agriculture sector represented, among other descriptors. All groups were presented with 35 skills across different categories (critical thinking and problem-solving skills, integrative/creative thinking skills, analytical/technical skills, and communication skills) and were asked their opinions as to the value of each skill in new employees. Students were asked to self-assess their competency levels across the same 35 skills. Professors and employers were asked to assess competency levels of new agriculture university graduates across those skills. Professors and employers were also asked their opinions on employment opportunities across 24 agriculture disciplines or fields. The 24 fields were collected from employee recruiting sites targeting agriculture university graduates.

Identification of skills most valuable to employers and professors was done by factor analysis and tested for appropriateness using Bartlett’s Test of Sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling accuracy tests. Factors were extracted by principal component analysis and rotation matrices were generated using Varimax with Kaiser Normalization using SPSS software as were reliability coefficients for questions relating to skill values and competency levels (IBM, Inc., Armonk, NY). When statistically appropriate, data were analyzed and compared using two tailed t-test for pairwise comparisons or ANOVA with Tukey post-hoc separation of means or least square differences using SAS software (SAS Institute, Inc., Cary, NC). Values were considered statistically different at $P < 0.05$. Skills gaps were measured as (Vreyens & Shaker, 2005): 

$$\text{Skills gap} = \text{value of skill in new employees} - \text{students’ competency level in the same skill}.$$ 

Data from open-ended questions (e.g., What are the three areas in agriculture with most potential for job opportunities for university graduates?) were coded to identify major themes and sub-themes across responses (Saldaña, 2009).

Results

Paper survey and digital survey data obtained from students, professors, and employers were cleaned, merged, and compared for differences in responses. No significant differences were found in responses between the two platforms. A total of 1,483 questionnaires were received representing a) 974 student responses (64% female; 36% male), b) 417 professor responses (32% female; 68% male), and c) 92 employer responses (7% female; 93% male). Of the 974 student responses, 61.6%, 30.6%, 4.8%, and 3.1% were from Cairo University, Assiut University, Benha University, and Suez Canal University, respectively. Student responses represented 12 majors or fields of study with greatest representation from students studying Biotechnology – English Medium (21.5%) and Food Sciences (15.1%). Of the 417 professor responses, 30.7%, 26.5%, 20.8%, 19.5%, and 2.6% were from Ain Shams University, Suez
Canal University, Cairo University, Assiut University, and Benha University, respectively. Professor responses represented 19 fields of study with the greatest representation from animal production (14.3%) and agricultural microbiology (11.9%). While 72.2% of the employers indicated they had hiring responsibilities in their position, a slight majority (51.5%) indicated they hired 1 – 5 university graduates each year. Likewise, 94.9% of employers responded that they either “sometimes” (35.9%), “often” (35.9%), or “almost always” (23.1%) work directly with new university graduates.

Areas for Employment

We asked professors and employers which agriculture sectors they felt had the most potential job opportunities for university graduates in the next five years. Respondents were presented with a list of 24 agriculture sectors and asked to predict employment growth in each sector (1 = “definite growth”, 2 = “probable growth”, 3 = “neutral”, 4: “probably no growth”, and 5 = “definitely no growth”). Employers’ rankings of agriculture sectors with most potential for job growth along with corresponding professors’ ranking of the same sectors are presented in Table 1. In many cases, employers and professors shared similar opinions on the agriculture sectors with the most potential for job opportunities for new agriculture university graduates with both groups ranking poultry production and food/beverage processing highest numerically. Similarly, the two groups also ranked horticulture/protected cultivation and water resource management numerically high (Table 1).

Table 1

<table>
<thead>
<tr>
<th>Sector</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Professor Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal production – poultry</td>
<td>56</td>
<td>1.80</td>
<td>0.8</td>
<td>1</td>
</tr>
<tr>
<td>Food and beverage processing</td>
<td>60</td>
<td>1.82</td>
<td>0.9</td>
<td>2</td>
</tr>
<tr>
<td>Energy, biofuels, alternative energy</td>
<td>63</td>
<td>1.87</td>
<td>0.9</td>
<td>15</td>
</tr>
<tr>
<td>Chemicals, pesticides, fertilizers</td>
<td>57</td>
<td>1.89</td>
<td>0.9</td>
<td>20</td>
</tr>
<tr>
<td>Horticulture – protected cultivation</td>
<td>58</td>
<td>1.90</td>
<td>0.9</td>
<td>3</td>
</tr>
<tr>
<td>Water resource management</td>
<td>57</td>
<td>1.93</td>
<td>1.0</td>
<td>6</td>
</tr>
<tr>
<td>Agriculture sales and marketing</td>
<td>58</td>
<td>1.93</td>
<td>0.9</td>
<td>18</td>
</tr>
<tr>
<td>Horticulture – vegetables</td>
<td>53</td>
<td>1.98</td>
<td>0.9</td>
<td>7</td>
</tr>
<tr>
<td>Post-harvest processing</td>
<td>57</td>
<td>2.00</td>
<td>1.0</td>
<td>12</td>
</tr>
<tr>
<td>Agronomy</td>
<td>60</td>
<td>2.02</td>
<td>0.9</td>
<td>11</td>
</tr>
<tr>
<td>Horticulture – fruits</td>
<td>55</td>
<td>2.02</td>
<td>0.9</td>
<td>8</td>
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<tr>
<td>Feed production</td>
<td>57</td>
<td>2.05</td>
<td>0.9</td>
<td>13</td>
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<tr>
<td>Agriculture education and research</td>
<td>53</td>
<td>2.06</td>
<td>0.8</td>
<td>21</td>
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<tr>
<td>Agriculture communication/promotions/public relations</td>
<td>53</td>
<td>2.11</td>
<td>1.0</td>
<td>24</td>
</tr>
<tr>
<td>Animal production – dairy</td>
<td>54</td>
<td>2.13</td>
<td>1.0</td>
<td>10</td>
</tr>
<tr>
<td>Animal production – aquaculture</td>
<td>55</td>
<td>2.15</td>
<td>0.9</td>
<td>4</td>
</tr>
<tr>
<td>Agriculture engineering (equipment/machinery)</td>
<td>57</td>
<td>2.25</td>
<td>0.9</td>
<td>22</td>
</tr>
<tr>
<td>Seed production</td>
<td>55</td>
<td>2.25</td>
<td>1.1</td>
<td>17</td>
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<tr>
<td>Pest management</td>
<td>57</td>
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<td>1.0</td>
<td>14</td>
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<tr>
<td>Organic agriculture</td>
<td>56</td>
<td>2.29</td>
<td>1.1</td>
<td>9</td>
</tr>
<tr>
<td>Horticulture – ornamentals</td>
<td>54</td>
<td>2.31</td>
<td>1.0</td>
<td>19</td>
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</tbody>
</table>
Employers were also asked to list what they felt were the top three agriculture sectors for job growth in an open-ended question and their answers were coded to identify major themes and sub-themes (if present). Roughly equal percentages of employers identified animal production (24%) and horticulture (23%) as the top areas for potential jobs opportunities for university graduates in agriculture. Within animal production, sub-themes of poultry production (36%), general animal production (32%), and dairy production (14%) (other [e.g., fish, etc.] animal production: 27%) were identified. Within horticulture, fruit production (38%) and vegetable production (33%) were both identified as prominent sub-themes (other [e.g., general, ornamental] horticulture: 29%). Only a slightly lower percentage (18%) of employers identified food processing as a major area for growth, with sub-themes of general food processing (39%), post-harvest processing (22%), quality control/food safety (22%), and beverage processing (11%) (other [e.g., dairy, product development, etc.] food processing: 6%). Nine percent of employers’ responses were related to water management, with irrigation technology constituting 98% of those responses (general water management: 2%). Finally, 8% of employers’ responses were related to the areas of fertilizers, chemicals, and pest management (no sub-themes).

The majority of both employers (70.9%) and professors (70.2%) reported that students with bachelor’s degrees would be most competitive for jobs identified above. This was in contrast to master’s level degrees (employers: 21.7%; professors: 8.6%), PhD degrees (employers: 7.0%; professors: 2.5%), or other types of academic and technical qualifications (employers: 0.4%; professors: 8.6%).

Employers strongly agreed ($M = 1.4$, $1 = \text{strongly agree}$, $2 = \text{agree}$, $3 = \text{neither agree nor disagree}$, $4 = \text{disagree}$, and $5 = \text{strongly disagree}$) they would hire more graduates if those graduates possessed skills specific to the employers’ sectors. However, employers also agreed ($M = 2.1$, $1 = \text{strongly agree}$, $2 = \text{agree}$, $3 = \text{neither agree nor disagree}$, $4 = \text{disagree}$, and $5 = \text{strongly disagree}$) with the statement that they preferred to hire males for the types of jobs they offer. It should be noted, however, that our results could be influenced by the underrepresentation of female employers (6.6%) in our sample set. Likewise, our informal observations during surveying indicated that while some private sector employers clearly employ many more males than females, numerous private sector companies actively employ as many female university graduates as male university graduates.

### Skills Needed

Students, professors, and employers were presented with 35 skills and asked to rate value of each skill (1 = “high”, 2 = “average”, 3 = “low”, 4 = “very low”) in new employees. Reliability coefficients were 0.944, 0.971, and 0.976 for students, professors, and employers, respectively. With employers’ responses, factor analysis produced an initial KMO measure of 0.82 and chi-square ($X^2$), degrees of freedom ($df$), and significance values (Barret’s Test of Sphericity) of 1868.0, 595.0, and < 0.001, respectively. Principal Component Analysis of employers’ responses identified five components. The first component comprised of 11 skills (of 35) and explaining 59.0% of the variation in the analysis (Table 2). With professors’ responses, factor analysis produced an initial KMO measure of 0.82 and chi-square ($X^2$), degrees of freedom ($df$), and significance values (Barret’s Test of Sphericity) of 6580.0, 595.0, and < 0.001,
respectively. Principal Component Analysis identified four components. The first component comprised of 17 factors (skills; of 35 total) and explaining 52.0% of the variation in the analysis (Table 2). Our results mirrored those of other studies (Matturro, 2013; Naiem et al., 2015) in that the majority of skills valued by employers represented behavioral competencies (e.g., functioning as part of team, time management, ability to plan/organize, etc.).

### Table 2

Principal Component Analysis of Value of Different Skills in New Employees.

<table>
<thead>
<tr>
<th>Employers’ Perspective</th>
<th>Professors’ Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component One Factors</strong></td>
<td><strong>Component One Factors</strong></td>
</tr>
<tr>
<td>(59.0% of Variation)</td>
<td>(52.0% of Variation)</td>
</tr>
<tr>
<td>1. Ability to function in a team</td>
<td>1. Working with others from diverse backgrounds</td>
</tr>
<tr>
<td>2. Ability to access different resources for information</td>
<td>2. Ability to manage complex tasks/projects</td>
</tr>
<tr>
<td>3. Working with others from diverse backgrounds</td>
<td>3. Proactiveness to tasks</td>
</tr>
<tr>
<td>4. Self-motivation to learn new things and work</td>
<td>4. Knowledge of industry or potential employer</td>
</tr>
<tr>
<td>5. Ability to make ethical decisions</td>
<td>5. Adaptability to changes in the field or workplace</td>
</tr>
<tr>
<td>6. Knowledge of ethics and best practices in field</td>
<td>6. Knowledge of and ability to apply technical skills specific to job</td>
</tr>
<tr>
<td>7. Familiarity with the latest technologies</td>
<td>7. Self-motivation to learn new things and work</td>
</tr>
<tr>
<td>8. Adaptability to changes in the field or workplace</td>
<td>8. Ability to function as part of a team</td>
</tr>
<tr>
<td>10. Problem identification/solving</td>
<td>10. Ability to plan and organize</td>
</tr>
<tr>
<td>11. Ability to apply academic knowledge to real scenarios</td>
<td>11. Knowledge of and ability to apply technologies specific to job</td>
</tr>
<tr>
<td>12. Ability to access different resources for information (e.g., internet, databases, etc.)</td>
<td>12. Ability to access different resources for information (e.g., internet, databases, etc.)</td>
</tr>
<tr>
<td>14. Ability to make ethical decisions</td>
<td>14. Ability to make ethical decisions</td>
</tr>
<tr>
<td>15. Conflict management</td>
<td>15. Conflict management</td>
</tr>
<tr>
<td>16. Ability to work across disciplines</td>
<td>16. Ability to work across disciplines</td>
</tr>
<tr>
<td>17. Ability to work independently</td>
<td>17. Ability to work independently</td>
</tr>
</tbody>
</table>

*Note. Bold = factors found in components one of both employers and professors.*

Students, professors, and employers were asked to provide assessments of students’ competency levels across the same 35 skills. Reliability coefficients were 0.908, 0.971, and 0.976 for students, professors, and employers, respectively. Of note, professors assessed recent graduates’ competency levels significantly ($P < 0.05$) higher than employers assessed recent graduates’ competency levels across all 35 skills. Likewise, students’ self-assessed competency levels were significantly ($P < 0.05$) higher than employers’ assessment of recent university graduates across all 35 skills. Finally, students’ self-assessed competency levels were significantly ($P < 0.05$) higher than both professors’ and employers’ assessment of recent university graduates in 26 of the 35 skills presented (data not shown).

Nevertheless, according to employers, new agriculture graduates appear sufficiently skilled in traditional areas such as oral communication, written communication, and applied math skills. Employers also found the for the jobs the employers offer, students are sufficiently skilled in English. Likewise, employers did not express a preference for students completing English-
language bachelor’s programs over students in traditional Arabic-language programs. It should be noted that higher levels of proficiency in English may be of more value for students wishing to pursue advanced degrees, especially for graduate programs outside of Egypt. Employers indicated that skills levels of students were low in some key behavioral competencies, including time management, ability to plan and organize, conflict management, and ability to manage complex tasks.

Calculating the absolute difference between the value of various skills to employers and the perceived level of competency in recent graduates in those same skills illustrated skills gaps (Vreyens & Shaker, 2005; Table 3). This method for measuring skills gaps identified a) skills that are important to employers; and b) skills in which agriculture university students may need more development. Additionally, this method identified areas where students do not need development as a) they may already be highly competent in that area (e.g., ability to access different resources for information); and/or b) they may have a low level of competence, but the skill is not important to employers (e.g., proficiency in languages outside of English and Arabic). By this measurement, the five biggest skills gaps in new university graduates according to employers were time management, ability to plan and organize, conflict management, knowledge of industry or potential employer, and ability to manage complex tasks/projects (Table 3).

Table 3
Skills Gaps in New University Graduates According to Potential Employers

<table>
<thead>
<tr>
<th>Competency</th>
<th>Emp Value</th>
<th>Skill Level</th>
<th>Skills Gap</th>
<th>Emp Value Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time management</td>
<td>1.62</td>
<td>2.84</td>
<td>-1.22</td>
<td>11</td>
</tr>
<tr>
<td>Ability to plan and organize</td>
<td>1.61</td>
<td>2.76</td>
<td>-1.15</td>
<td>9</td>
</tr>
<tr>
<td>Conflict management</td>
<td>1.88</td>
<td>3.02</td>
<td>-1.14</td>
<td>29</td>
</tr>
<tr>
<td>Knowledge of industry/potential employer</td>
<td>1.74</td>
<td>2.84</td>
<td>-1.10</td>
<td>21</td>
</tr>
<tr>
<td>Ability to manage complex tasks/projects</td>
<td>1.80</td>
<td>2.89</td>
<td>-1.09</td>
<td>24</td>
</tr>
<tr>
<td>Knowledge of/ability to apply technologies specific to job</td>
<td>1.53</td>
<td>2.59</td>
<td>-1.06</td>
<td>5</td>
</tr>
<tr>
<td>Creativity</td>
<td>1.77</td>
<td>2.79</td>
<td>-1.02</td>
<td>22</td>
</tr>
<tr>
<td>Familiarity with latest technologies</td>
<td>1.68</td>
<td>2.70</td>
<td>-1.02</td>
<td>16</td>
</tr>
<tr>
<td>Human resource management</td>
<td>1.95</td>
<td>2.92</td>
<td>-0.97</td>
<td>31</td>
</tr>
<tr>
<td>Adaptability to changes in the field or workplace</td>
<td>1.58</td>
<td>2.52</td>
<td>-0.94</td>
<td>7</td>
</tr>
<tr>
<td>Ability to interpret data and make inferences</td>
<td>1.81</td>
<td>2.75</td>
<td>-0.94</td>
<td>25</td>
</tr>
<tr>
<td>Ability to apply academic knowledge to real scenarios</td>
<td>1.79</td>
<td>2.72</td>
<td>-0.93</td>
<td>23</td>
</tr>
<tr>
<td>Ability to work across disciplines</td>
<td>1.63</td>
<td>2.56</td>
<td>-0.93</td>
<td>13</td>
</tr>
<tr>
<td>Ability to function as part of a team</td>
<td>1.42</td>
<td>2.35</td>
<td>-0.93</td>
<td>1</td>
</tr>
<tr>
<td>Self-motivation to learn new things and work</td>
<td>1.42</td>
<td>2.34</td>
<td>-0.92</td>
<td>2</td>
</tr>
<tr>
<td>Proactivity to tasks</td>
<td>1.62</td>
<td>2.53</td>
<td>-0.91</td>
<td>12</td>
</tr>
<tr>
<td>Knowledge of/ability to apply technical skills specific to job</td>
<td>1.60</td>
<td>2.51</td>
<td>-0.91</td>
<td>8</td>
</tr>
<tr>
<td>Problem identification and solving skills</td>
<td>1.72</td>
<td>2.62</td>
<td>-0.90</td>
<td>19</td>
</tr>
<tr>
<td>Analytical skills</td>
<td>1.83</td>
<td>2.73</td>
<td>-0.90</td>
<td>26</td>
</tr>
<tr>
<td>Working with others from diverse backgrounds</td>
<td>1.66</td>
<td>2.56</td>
<td>-0.90</td>
<td>15</td>
</tr>
<tr>
<td>Customer service</td>
<td>1.73</td>
<td>2.62</td>
<td>-0.89</td>
<td>20</td>
</tr>
<tr>
<td>Organizational management</td>
<td>1.87</td>
<td>2.74</td>
<td>-0.87</td>
<td>28</td>
</tr>
<tr>
<td>Knowledge of subject matter</td>
<td>1.62</td>
<td>2.48</td>
<td>-0.86</td>
<td>10</td>
</tr>
<tr>
<td>Skill</td>
<td>Employer Average</td>
<td>Graduate Average</td>
<td>Gap</td>
<td>Employer Gaps</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------</td>
<td>------------------</td>
<td>-----------</td>
<td>---------------</td>
</tr>
<tr>
<td>Advanced computer programming skills</td>
<td>2.06</td>
<td>2.90</td>
<td>-0.84</td>
<td>32</td>
</tr>
<tr>
<td>Use of MS word, MS excel, email, internet</td>
<td>1.72</td>
<td>2.54</td>
<td>-0.82</td>
<td>18</td>
</tr>
<tr>
<td>Financial management</td>
<td>2.13</td>
<td>2.93</td>
<td>-0.80</td>
<td>34</td>
</tr>
<tr>
<td>Written communication</td>
<td>1.70</td>
<td>2.48</td>
<td>-0.78</td>
<td>17</td>
</tr>
<tr>
<td>Knowledge of ethics and best practices in field</td>
<td>1.57</td>
<td>2.34</td>
<td>-0.77</td>
<td>6</td>
</tr>
<tr>
<td>Ability to work independently</td>
<td>1.84</td>
<td>2.59</td>
<td>-0.75</td>
<td>27</td>
</tr>
<tr>
<td>Proficiency in English</td>
<td>1.89</td>
<td>2.62</td>
<td>-0.73</td>
<td>30</td>
</tr>
<tr>
<td>Oral communication</td>
<td>1.64</td>
<td>2.36</td>
<td>-0.72</td>
<td>14</td>
</tr>
<tr>
<td>Applied math skills</td>
<td>2.12</td>
<td>2.81</td>
<td>-0.69</td>
<td>33</td>
</tr>
<tr>
<td>Ability to make ethical decisions</td>
<td>1.51</td>
<td>2.19</td>
<td>-0.68</td>
<td>4</td>
</tr>
<tr>
<td>Proficiency in languages (excluding Arabic and English)</td>
<td>2.63</td>
<td>3.28</td>
<td>-0.65</td>
<td>35</td>
</tr>
<tr>
<td>Ability to access different resources for information</td>
<td>1.50</td>
<td>2.14</td>
<td>-0.64</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note.* Skills gap = value – skill level; lower values equate to larger gaps.

In a study similar to ours, Vreyens and Shaker (2005) characterized skills gaps among recent university agriculture graduates from Al-Azhar University, Cairo University – Giza, Cairo University – El Fayoum, Assiut University, and Minia University. The group surveyed 254 employers and 1,000 graduates of faculties of agriculture in Upper Egypt across three agriculture sectors (animal production, horticulture, and food technology/processing), asking each group to identify the most critical skills for graduates entering jobs in the private sector labor market and the level of competence (according to employers) or level of preparedness (graduates’ self-assessment) across the different skills. Responses from recent graduates and employers as to the importance of different skills were similar to one another in many cases, such as analyzing information and applying time management skills. Interestingly, however, the largest skills gaps (i.e., widest gap in importance of the skill to the job and the level of competence) according to employers were not sector-specific, but still somewhat technical, such as analyzing information, applying time management skills, developing a basic budget, and accessing the internet for resources/information. Unlike our study, Vreyens and Shaker asked new employees to identify skills they now find are important for employment, but for which they were ill-prepared upon graduating. According to the results from Vreyens and Shaker (2005), students’ top five responses included ability to “analyze information”, “speak effectively with a target audience”, “think creatively”, “apply problem-solving skills”, and “apply time management skills” (p. 232).

Other groups have quantitatively defined skills gaps as they exist in different sectors in Egypt, from accounting (Anis, 2017) to computer science (Naiem et al., 2015). Naiem et al. (2015) postulated that behavioral skills are neglected in science and engineering, making it difficult to incorporate into curricula, often because they are not considered during the grading process. In a survey of 136 computer and software engineering students, respondents were aware of the importance of soft skills and generally wanted to develop such skills but did not feel well-equipped in them (Naiem et al., 2015).

**Conclusions, Recommendations & Implications**

This research was in support of efforts to build agriculture curricula in Egyptian tertiary education that address current and emerging challenges in Egyptian agriculture. Central to these efforts is developing workforce-ready graduates able to make a more immediate impact in fields important to Egyptian agriculture and growth. Toward this end, this study was conducted to not
only identify areas of job growth for university graduates, but to also identify the skills and attributes that may increase graduates’ employability in these areas of agriculture.

In terms of Egyptian agriculture sectors with most potential for job opportunities for university graduates, professors’ perspectives largely mirrored employers’ perspectives in that both groups felt that poultry production and food/beverage processing were sectors for greatest job opportunities for university graduates. These assertions are supported by current trends and needs in food production in Egypt. As of 2019, poultry meat consumption in Egypt was 12.1 kg/capita and is expected to reach 13.8 kg/capita by 2028 (Organization for Economic Cooperation and Development, 2020). Expected increases in poultry consumption have to be coupled with improved processing capacities, efficiencies, and biosecurity (Shatokhin et al., 2017). Furthermore, the opinions of employers and professors are aligned with the goals of Egypt’s Vision 2030 sustainable development strategy, which includes improved poultry production as a component of economic development initiatives (MPMAR, 2016). Specifically, the strategy calls for improved control of avian influenza, facilitation of new operations in desert areas, and increases in slaughter/processing capacity, among others (MPMAR, 2016). Taken together, these data support the need for more highly trained poultry scientists to meet these demands and challenges.

While employers and professors each ranked poultry production as the sector with the most potential for employment opportunities for university graduates, they also each ranked food and beverage processing as second most important sector. Egypt possesses one of the fastest growing food markets in the world, in large part due to the surge in population growth and increased tourism. In 2017 there were over 7,000 food processing and manufacturing companies in Egypt responsible for 17 billion USD in sales (Al-Habbal & Beillard, 2018 and 2019). However, quality and variety of goods are limited, and Egypt’s strategic development plan calls for application of biotechnology to processing of foods sold both domestically and internationally (MPMAR, 2016). Although Egypt has trade deficits in agricultural products, the demand for domestic food and beverage products is increasing. As the country continues to experience more political and economic stability, Egyptian consumers may have more loyalty to domestic products, further driving demand for locally produced food and beverage products (The Food and Beverage Market Entry Handbook: Egypt, 2019).

Finally, both employers and professors identified protected horticulture (employers’ rank: #6/35; professors’ rank: #3/35) as having significant potential for job growth. Egypt recently implemented a mega-project consisting of 1,302 greenhouses across 100,000 feddans (1 feddan = 1.04 acre = 0.42 hectares) with the goal of achieving the production equivalent of one million feddans of conventional, unprotected farming (Egypt State Information Service, 2018). In August 2019, the Egyptian government initiated the project’s second phase, which includes 1,300 additional greenhouses (Egypt State Information Service, 2019) supporting respondents’ assessment of an increased need for graduates skilled in greenhouse management across Egypt.

Aggregating the factors (skills) that collectively contribute the majority of the variance in our model with results from similar studies described above allowed us to create a composite of an Egyptian agriculture university graduate with enhanced employability. Such a graduate would be “familiar” with the latest technologies, but able to apply academic knowledge to real scenarios. As important, the employable graduate would be highly ethical, skilled in teamwork and problem-solving, able to work with others from diverse backgrounds, and motivated to learn new things with the ability to identify resources to do so.
Thus, our data indicate that employability of new agriculture university graduates is heavily dependent on the graduate attaining enhanced behavioral competencies or skills. Behavioral competencies have been defined as “…abilities, and traits that pertain to personality, attitude, and behavior rather than to formal or technical knowledge” (Moss & Tilly, 1996). Behavioral and technical skills, however, are not mutually exclusive as behavioral competencies afford an employee the capacity to demonstrate and organize their technical skills more effectively (Rao, 2014). Thus, delivery of curricula aimed at increasing graduates’ employability should employ pedagogies that allow students to practice behavioral competencies in the process of learning course content and technical skills. Experiential learning (Kolb et al., 2014), authentic learning (Knobloch, 2003), or other pedagogies that encourage learning in context, active learning, teams, concrete experiences, and/or reflective observation would likely produce Egyptian university graduates with greater capacity to apply learning beyond the classroom.

Several groups have integrated experiential learning or similar pedagogies in Egyptian agriculture education and reported on their efficacy, primarily at the secondary education level. Barrick et al. (2011), in response to stakeholders’ assessment of the importance of internships/placement projects as employment determinants, developed a program where 90 Egyptian agriculture technical school (ATS) instructors incorporated student internship experiences into their curricula. Instructors self-assessment indicated some difficulties in implementing such pedagogies, namely ability to “explain the relationship between internship and classroom instruction”, “identify the role of teachers in planning and conducting internships”, and “explain the process of learning by doing” as well as the importance of continued training and availability of supplemental resources to ensure program success. Myers et al. (2012) surveyed 160 ATS instructors from 34 different schools in Upper Egypt who had received active learning training (e.g., case studies, field exercises, and concept maps) with the goal of identifying stages of concern among teachers implementing these programs. Teachers with less than three years of experience with active learning indicated needing more training or educational materials to more successfully implement active learning strategies. Teachers also expressed concerns about the value of active learning, which suggested a need for clearer understanding of the benefits of active learning among practitioners. The authors concluded that, along with improved teacher training, incentives for teachers using active learning methods could promote their use (Myers et al., 2012).

In effort to measure the benefits of experiential learning in the Egyptian context, Shoulders et al. (2011) conducted an assessment of the impact of ATS internship programs on students, parents, headmasters, teachers, and agribusiness owners. The authors identified various benefits, including increases in disposable income, better relationships between schools and families, ability to apply knowledge gained from internships in the home, and increased perceived value in education, among others (Shoulders et al., 2011). Finally, Swanson, Cano, Samy et al. (2007) introduced experiential learning in 25 agriculture technical secondary schools in Upper Egypt as a means to transition students’ skills beyond knowledge recall to more complicated cognitive skills like critical thinking and practical skill training. Experiential was introduced through training sessions, instructional materials, international study tours, and restructuring of school farms to promote better practical skills development (Swanson, Cano, Samy et al., 2007). After one year of implementation (and assessment and revision), 96% of professors were satisfied or very satisfied with the partnerships with many reporting the development of new courses, improved teaching, and increased

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perception of the value of public-private partnerships in Egyptian educational institutions (Swanson et al., 2007).

While studies examining the efficacy of experiential or student-centered learning in tertiary agriculture education are scarce, several groups have introduced such teaching strategies in other fields of study at the university level. El-Nachar and Eldeen (2003) used experiential-learning to introduce university architecture students to key concepts and practices in sustainability. The program provided students a practical knowledge base while also promoting interdisciplinary thinking (including scientific, critical, and metaphorical thinking) and student involvement in the community. The authors concluded that their results could be used as a framework for introducing students to other disciplines within architecture (El-Nachar & Eldeen, 2003). Lastly, El Bedawy (2017) used business simulations to introduce university students to realistic components of managing a business, including research and development, finance, marketing, and production. Students viewed the simulation to be an effective learning model, confirming its value as a business education tool. Students also reported improvements of behavioral competencies, such as working in a team and time management (El Bedawy, 2017).

It is important to note that according to employers’ responses, the composite university graduate with highest employability in agriculture would also be male. The higher unemployment rates among all female university graduates vs. male university graduates certainly indicate that gender is a determinant in securing post-graduation employment in Egypt, and there may be numerous sub-determinants influencing this bias. As an example, Egyptian female university students have traditionally been over-represented in fields that may not be as employable (e.g., some humanities) as other fields of study (e.g., engineering; Megahed, 2010). However, our results are the first to our knowledge that indicate that in the field of agriculture, all other attributes being equal, employers indicate that they prefer to hire male graduates over female graduates for the jobs they offer.

Yet our results could be influenced by the underrepresentation of female employers (6.6%) in our sample set. Likewise, our informal observations during surveying indicated that while some private sector employers clearly employ many more males than females, numerous private sector companies actively employ as many female university graduates as male university graduates. Thus, it would be of interest to compare characteristics of those companies hiring greater numbers of female graduates with those companies where male university graduates are overrepresented. It may be possible, through a positive deviance approach, to identify factors among businesses with more favorable hiring practices (e.g., education programs, types of employment, etc.) that lead to greater opportunities for female graduates within those companies.

Taken together, our results, along with those of previous groups, more clearly define the factors that increase the employability of agriculture university students upon graduation. Most of these factors fall outside of traditional knowledge of course content and extend into the application of that knowledge in the workplace, along with the motivation and ability to learn new areas. Agricultural education has always lent itself well to experiential learning platforms (Ebner et al., 2019; Thompson et al., 2019), which, if incorporated into tertiary level agriculture, could allow students to hone skills desired by employers while learning course content.

Experiential learning and similar pedagogies, however, are not yet widespread in Egyptian agriculture universities based on limited published material on their implementation. Experiential learning, however, is not without challenges. In the Egyptian context, challenges could include fitting assessment of learning into current grading structures, low incentivizes to incorporate such pedagogies into courses, and obtaining resources to allow sustainability.
Although outside the scope of this paper, our research also identified ways in which employers were willing to contribute to curriculum development and delivery, namely through provision of internships, short-term research projects, and mentorships. Given the interest employers demonstrate in hiring more graduates if they possessed specific skills and characteristics relevant to the position, some of these challenges could be overcome by leveraging relationships with private sector partners to provide such experiences and facilitating students’ participation in employment training opportunities. With such training, students can acquire job-oriented skills and competencies, build relationships with prospective employers, and expand their networks, which together can potentially increase their employability.

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Context, Challenges, and Prospects for Agricultural Extension in Nigeria

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Abstract
Agricultural extension programs have been implemented in Nigeria by governmental and non-governmental agencies from the colonial era to the present day as a means toward bolstering economic development, rural livelihoods, food security, and trade relations. Nevertheless, funding and staffing levels in agricultural extension remain low compared to Nigeria’s farming population. With a brief review of past initiatives, current challenges, and potential opportunities, this article gives recommendations in three focus areas for maximizing the effectiveness of Nigerian agricultural extension: (1) prioritize human education over input provisioning in the definition of agricultural extension’s primary purpose; (2) aim for household food security, not solely business expansion, to ensure the inclusion of the most vulnerable farmers; and (3) foster multidirectional communication among academic researchers, extension agents, and farmers. Overall, this article argues that taking a farmer-centric educational approach to agricultural extension, rather than a farm-centric business approach, will have the most profound and sustained impact on Nigerian agricultural development.

Keywords: Nigeria; agricultural extension; rural development; fertilizer subsidies; farmer education; household food security; agribusiness; research-farmer linkage

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Introduction

In the crook of Africa’s west coast, Nigeria is the most populous nation in Africa and the seventh-most populous in the world, with a 2019 population of 201 million (UNdata, 2019). Of the country’s 911,000 square kilometers of land area, 78% is dedicated to agriculture (including 33% permanent pasture), and 36% of the labor force is engaged in agriculture (Food and Agriculture Organization of the United Nations [FAO], 2019). Nigeria’s export economy is mainly based on petroleum (95%), while cocoa and rubber have the next largest shares (Central Intelligence Agency [CIA], 2019). Despite its export dominance, petroleum accounted for under 9% of national GDP in 2018, compared to agriculture’s 21% (National Bureau of Statistics [NBS], 2019). However, domestic agriculture is currently unable to support the growing population’s food needs; three to five billion dollars of food is imported per year, largely comprising staples such as wheat and rice (Federal Ministry of Agriculture and Rural Development [FMARD], 2016). Effective agricultural extension is a key component of agricultural development and thus critical to Nigerian prosperity. Yet, it faces many challenges.

Initiatives to expand agricultural extension in Nigeria must bridge diverse needs and perspectives due to the many demographic distinctions across the country (Sehu, 2018). Home to over 250 ethnic groups speaking more than 500 languages, Nigeria retained English as its official language after gaining independence from Great Britain in 1960 (CIA, 2019). The Nigerian population is split nearly in half in several ways: around 50% live in urban areas (FAO, 2019); 51.6% are Muslim and 46.9% Christian (CIA, 2019); and 59.6% are literate - 69.2% among males and 49.7% among females (CIA, 2019). Islam is the majority religion in the arid northern plains bordering the Sahel, with sharia (Islamic law) officially integrated in twelve states (Kendhammer, 2013; CIA, 2019). Inhabitants of the southern lowlands near the coast, by contrast, predominantly adhere to Christianity (Kendhammer, 2013; CIA, 2019). In between, hills and plateaus form a religiously mixed middle region (Kendhammer, 2013; CIA, 2019).

Besides facing unique challenges, agricultural development in Nigeria has minimal governmental financing compared to other African countries (Olomola et al., 2015). Despite the substantial portion of Nigeria’s land, labor force, and GDP associated with this sector, agriculture was allotted 5.5% of the national budget on average from 2008 to 2012 (Olomola et al., 2015). This fell to 2% in 2018 (Onyibe, 2019), although the Comprehensive Africa Agriculture Development Program recommends a 10% allocation (NEPAD Planning and Coordinating Agency et al., 2012). Furthermore, as a nation of lower-middle income, Nigeria regularly experiences low budget execution, where actual spending falls short of planned spending (Morgues et al., 2008; Olomola et al., 2015). Low availability of monetary resources increases the urgency that they be used to the highest efficiency.

In this article, the authors draw upon historical and current examples of agricultural extension in Nigeria to argue that its full potential to facilitate the country’s agricultural and national development has yet to be realized. Specifically, we focus on three areas where an agricultural extension system (and the Nigerian system especially) must advance to achieve long-term effectiveness for human development: (1) defining agricultural extension’s primary purpose, (2) reaching marginalized populations, and (3) mediating multidirectional communication among academic researchers, extension agents, and farmers. For each of these three areas, we describe relevant context, challenges, and future prospects for strengthening the agricultural extension system in Nigeria. This review article aims to stimulate local and international stakeholders in Nigerian agriculture toward reflection, dialogue, and constructive reprioritization, with implications for other countries’ agricultural extension systems as well.
Defining the Purpose of Agricultural Extension

The foundation of an effective and cohesive extension system lies in a dynamic response to the following question: what is the purpose of agricultural extension? Developmental progress is often measured by material indicators, e.g., productivity (Phillip et al., 2009), fertilizer use (Banful et al., 2010; Olomola et al., 2015), equipment acquisition (“Fadama III,” 2010), or adoption of recommended crop varieties (Phillip et al., 2009). However, these need not be considered the chief end of an agricultural extension system. For example, Liberty Hyde Bailey, a pioneer in founding agricultural extension programs in the U.S., most strongly emphasized its role in knowledge dissemination and human education, writing in 1898, “Its purpose is to improve the farmer, not the farm” (as cited in Peters, 2006, p. 192). He and his peers sought to promote practical learning throughout the farming population, rather than advanced classroom instruction for a scholarly few (Peters, 2006). From this standpoint, agricultural extension programs must not induce a dependency of farmers on expert instruction. Rather, they must increase farmers’ independent capacity to analyze and adapt to ever-changing environmental, market, and technological conditions. This article will refer to this emphasis on farmer education as a farmer-centric approach to agricultural extension.

In Nigeria, governmental bodies and international agencies often tend towards the contrasting farm-centric perspective. Their publications largely treat extension services as one means among many toward the end of economic development, defined by improvements in household income, imports and exports, agricultural productivity, and other quantitative farm indicators (FMARD, 2016). The transmission of intellectual and cultural capital is rarely recognized even as an intermediate success. Economic outcomes certainly hold meaning where agricultural extension aims to contribute to financial and food security. At the same time, however, these outcomes are also affected by civil strife, natural disasters, and other factors that agricultural extension can prepare for and respond to but not control (Davis, 2008; FMARD, 2016). A farm-centric agricultural extension system concerned primarily with technology adoption is inherently limited in relevance to where the technology it promotes is the best option (Davis, 2008). In contrast, a farmer-centric extension program can transcend changing and diverse conditions by building foundational knowledge and skills, promoting localized evaluation and adaptation, and facilitating farmer experimentation and decision making (Rhoades, 1989). Increased farmer resilience is an intangible benefit, even if circumstances prevent its immediate manifestation as monetary profit. For these reasons, a farmer-centric approach could serve well in an African context (David & Samuel, 2014). The remainder of this section discusses the context, challenges, and future prospects for strengthening a farmer-centric agricultural extension system in Nigeria.

Context: Linkage of Agricultural Extension and Input Provisioning

The first decades of Nigeria’s independence coincided with the global “Green Revolution” of explosive agricultural technology development. As a newly independent country, Nigeria emphasized modern agricultural objectives in its first national development plan (implemented 1962-1968), including expansion of cash crop production, technology, infrastructure, and extension services (Iwuagwu, 2008). In 1966, today’s Federal Ministry of Agriculture and Rural Development (FMARD) was established (under the name Federal Ministry of Agriculture) to oversee agricultural policy in Nigeria at the federal level (World Bank, 2008). State-level Agricultural Development Programs (ADPs) funded by the World Bank became the major implementers of agricultural extension in the seventies and eighties (Omoregbee & Ajayi, 2009), with the first pilot ADPs in 1975 (Phillip et al., 2009). Besides
delivering agricultural training, ADP extension agents became the primary distributors of fertilizers (Banful et al., 2010; Morgues et al., 2008). Private fertilizer businesses were not even permissible at the time, because the federal government of Nigeria enforced a monopoly on fertilizer procurement and distribution until 1996 (Morgues et al., 2008). This system distributed subsidized fertilizers to each state (Morgues et al., 2008), where additional subsidies were often applied (Banful et al., 2010). In released national budget expenditures, 43% of agricultural funds went towards procuring and distributing fertilizer from 2001 to 2005 (Morgues et al., 2008).

Applied research, extension programs, and farmer capacity building remain low budget priorities (Omotayo, 2010).

In 2011, FMARD initiated the Agricultural Transformation Agenda (ATA), a five-year strategy to revitalize Nigerian agriculture (FMARD, 2016). The ATA’s goals included bolstering production, reducing food import dependency, and fully liberalizing the government-administered input supply (“ATA-Nigeria,” n.d.; Olomola et al., 2015). Federal fertilizer subsidies continued under the Growth Enhancement Support Scheme (Olomola et al., 2015; Ejiogu, 2017). Restructuring the fertilizer procurement system, with private companies selling subsidized inputs directly to farmers since September 2011 (“ATA-Nigeria,” n.d.), resulted in an estimated 12 to 14 million farmers benefiting from fertilizer subsidies over five years (FMARD, 2016). This coincided with increases in average fertilizer use rates and farm revenue (Onyekuru et al., 2019). Thus, for much of Nigeria’s history, input provisioning has been tightly linked with agricultural extension in terms of government funding and staffing.

Challenges: Limitations of Farm-Centric Agricultural Extension

Despite the emphasis on fertilizers, Nigeria’s usage rates remain among the lowest in the world, with limited quality and quantity available in many areas (Banful et al., 2010; Onyekuru et al., 2019). Less than 50% of agricultural households were found to use any fertilizer whatsoever by a 2015/2016 survey (NBS, 2016). The government-dominated procurement system was criticized as narrowly targeting large-scale farming (Phillip et al., 2009) and being inefficient in quantity and timeliness of materials reaching farmers (Banful et al., 2010; FMARD, 2016; Morgues et al., 2008; Onyekuru et al., 2019). Thus, while Nigeria’s small agricultural budget has heavily leaned toward input provisioning and promotion (Morgues et al., 2008; Olomola et al., 2015; Onyibe, 2019), challenges in implementation have impeded its ability to benefit farmers.

Perhaps the more serious challenge is that if extension agents see their primary purpose as ensuring access to subsidies or inputs, the core educational component of extension is minimized. Further, a prioritization of farm technology over farmers’ communication, leadership, and organizational skills may leave program participants with limited capacity to pass on learned information to others, as observed under the World Bank’s “Training and Visit” approach used by the ADPs (Musa et al., 2016). In fact, agrochemical use tends to surpass organic fertilizers, irrigation, and soil erosion control as extension agents’ main emphasis across Nigeria (Banful et al., 2010). In Edo State in South-South Nigeria, a study found that over 98% of women cassava farmers were informed on fertilizer use, while under 32% knew about the recommended planting time, 35% about plant spacing, and under 30% about the recommended harvest time (Onemolease, 2002). In 2009, 40% of extension agents in Edo state supplied farm inputs, while less than 8% provided technical advice, and less than 2% offered training on agrochemical use (Onoegbube & Ajayi, 2009). A 2010 survey reported that 90% of extension agents across Nigeria had promoted fertilizer use in the past year, while their own knowledge
regarding fertilizers and usage recommendations was found to be shallow and inconsistent (Banful et al., 2010). Any newly circulating technology, including synthetic fertilizers and crop storage and others, requires sufficient accompanying instruction to be properly used and to actually benefit farmers (Faborode & Ajayi, 2015). Increasing fertilizer use has been a key goal of Nigeria’s development strategies for decades. However, any emphasis on technological adaptation would be complementary, not fundamental, to the core purpose of a farmer-centric agricultural extension system seeking to expand farmers’ knowledge and skills.

Prospects: Towards a Farmer-Centric Agricultural Extension System

The priorities of an extension system will be reflected in what it uses as indicators of success. If technology adoptions and productivity increases are the only outcomes measured, the intangible benefits of deepening farmer knowledge and analytical thinking remain unsung or unachieved. Farmer-centric evaluation of agricultural extension must include farmer-centric metrics, such as awareness of recommended agricultural practices, finance management, and marketing opportunities (Onemolease, 2002). For example, the Sasakawa Africa Association headquartered in Japan, which has partnered with FMARD and state ADPs in Nigeria since 1992, shifted its emphasis in 2009 from crop productivity to human education (Sasakawa Africa Association, n.d.). This international organization assesses and fulfills the training needs of Nigerian extension staff and farmers regarding current and advanced knowledge on agriculture, technology, and entrepreneurship (Donye et al., 2013). Future research on the impact of agricultural extension should not allow farm-centric indicators to overshadow the fulfillment of farmer-centric needs. The following section moves from the purpose of an agricultural extension system to the targeting of its content.

Reaching Marginalized Populations

Whether farm-centric or farmer-centric, agricultural extension programs face a variety of needs and preferences for educational content in a country as climactically and economically diverse as Nigeria. The issues faced by small-scale subsistence farmers growing staple foods will often differ from those on large plantations growing cash crops, and the environmental risks to and from agriculture will differ across climates. With agricultural extension staff low in numbers compared to the farming population (Banful et al., 2010; Omotayo, 2010), not all farmers’ concerns can be addressed concurrently. This section argues that the capacity of an agricultural extension system to benefit the economically poorest farmers is impacted by its instructional focus, largely based on whether agriculture is prevalingly viewed as a business sector or as a means toward household food security.

Context: Historical Targeting of Agricultural Extension

A business-oriented focus within agricultural extension in Nigeria can be traced back to the colonial era (1861-1960). Initially, agricultural extension was devised to expand export commodity production, rather than to improve food security (Forest, 1981; Omotayo, 2010). For example, the British Cotton Growing Association founded the Moor Plantation in Ibadan around the turn of the twentieth century to serve as an experimental station and distribute cotton seeds to farmers (Ekundare, 1973). Agricultural development efforts similarly promoted crops desirable for export in the latter twentieth century, while staple production for local consumption struggled to compete with low-priced imports (Forest, 1981). Under the structural adjustment policies of the
1980s, demand for tropical exports influenced cropping patterns in many developing countries like Nigeria away from staple grains and other necessities, undermining food security (Patnaik, 1996).

In the 1980s, some agricultural extension programs in Nigeria also began to focus on the production of domestic foods, especially maize, through capacity building and fertilizer promotion (Phillip et al., 2009). These included the ADPs, funded by the World Bank, which marked a localization of agricultural extension with state-level rather than national implementation (Omoregbee & Ajayi, 2009). Agricultural extension work further contributed to building domestic food security in the twenty-first century under the presidential initiatives on cassava, rice, and other food crops, which aimed to reduce dependency on imports and enable export of surplus (Phillip et al., 2009).

Beginning in 2011, FMARD’s ATA addressed both small- and large-scale agriculture through a focus on economics (FMARD, 2016). Motivated by the concept that “agriculture is a business,” the ATA’s explicit objectives emphasized financial gains, namely increased income for smallholder farmers and growth of private industry through integration in value chains and establishment of staple crop processing zones (FMARD, 2016). At the same time, the ATA’s Strategic Environmental and Social Assessment seemed lacking in ecological considerations, with neither soil health nor biodiversity concerns being mentioned in the summary (FMARD, 2013). Another environmental issue unaddressed by the ATA is the remediation of agricultural lands impacted by oil spills throughout the Niger Delta region (Ahmandu & Egbodion, 2013).

Challenges: Barriers to Agricultural Extension Access

In attempting to reach the most marginalized farmers, agricultural extension services in rural Nigeria face the compounding challenges of decaying infrastructure (FMARD, 2016), lack of transportation (FMARD, 2016), low farmer education levels (Phillip et al., 2009), retiring staff needing replacement (Banful et al., 2010), and limited staff numbers (Banful et al., 2010). Perhaps the major obstacles can be summarized under the interrelated themes of geographic access and socioeconomic status.

Geographic access was especially a challenge under FMARD’s “Training and Demonstration” strategy of the sixties, where large demonstration plots were established to showcase a farming practice or system (Omotatyo, 2010). The finite numbers of demonstration plots inherently limited geographic accessibility for farmers farther from the plots’ locations (Omotayo, 2010). Regardless of strategy, a short-staffed office has limited interaction capacity within its intended target area. Using Edo State to illustrate, 80 ADP extension agents were reported in the state by a 2009 paper (Omoregbee & Ajayi, 2009), serving a predominantly agricultural population of over three million. Even interacting with 650 farmers per year (Banful et al., 2010), the Edo ADP extension staff numbers fall short, which may contribute to uneven distribution of the beneficial impacts of ADP services (Inegbedion et al., 2018). In 2014, only one of 457 women farmers surveyed in Edo State had ever accessed extension-organized training (Ibrahimhokanhowa, 2016). The average extensionist-to-farmer ratio has been estimated to be as low as 1:3000 across Nigeria (Omotayo, 2010). Most Nigerian agricultural extension staff are spread too thinly to adequately serve their intended geographic areas using current strategies.

Besides low extension staff numbers, socioeconomic status can also be a barrier to farmers accessing relevant extension. With insufficient state funding, extension programs are proposing to charge service fees, which can exclude the poorest farmers (Banful et al., 2010). Farmers can also be marginalized or targeted by the selection of crops emphasized in agricultural extension programming. High-value crops tend to be opportunistically grown on small parcels of
land by richer households as an income supplement, whereas subsistence crops of low market value tend to be grown by households that remain poor, even with large family landholdings (World Bank, 2014). Thus, an extension program promoting high-value, marketable crops (such as pumpkins and yams) could disproportionately benefit non-poor households with greater market integration, although further research is needed in this area. The risk of excluding vulnerable populations was realized by public fertilizer subsidies from 2003 to 2008, which disproportionately benefited middle- and high-income households over the poorest ones (Olomola et al., 2014). In light of the challenges of geographic access and socioeconomic status, the following subsection discusses prospects rooted in successful past initiatives for agricultural extension to effectively reach the most easily marginalized farmers.

**Prospects: Toward Ensuring Inclusion**

To address the most pressing needs among the farming population, the Nigerian agricultural extension system must not allow income to bias its focus toward large-scale commercial farmers to the detriment of serving small-scale subsistence farmers. An example of specifically targeting smallholders, the third phase of the National Fadama Development Project (Fadama III) was implemented in 2008 in all 36 states with funding from the Nigerian government and the World Bank (Omobowale & Akinola, 2017). The Fadama projects promoted irrigation to decrease dependency on unreliable rains as a strategy to support crop productivity and increase smallholder farmers’ incomes (“Fadama III,” 2010). In Delta State, an evaluation of Fadama III found participant households to experience a larger increase in income compared to non-participants (Ike, 2012), with similar results in other states (Omobowale & Akinola, 2017). Rather than only considering states or the country in aggregate, future agricultural extension and research initiatives may similarly implement household-based evaluation strategies to ensure inclusion of marginalized farmers. Further, the distribution of observed benefits across farmer income level should also be analyzed.

More recently, an increasing prioritization of food security in agriculture is evident in government planning in Nigeria. In 2016, the ATA was succeeded by another five-year plan called Agricultural Promotion Policy (APP), also called the Green Alternative (“The Green Alternative,” n.d.). In some ways, the APP continued in the vein of the ATA by emphasizing agribusiness’s role in economic stability through reducing imports and increasing quality and profitability of exports (FMARD, 2016). Additionally, however, the APP adopts the language of food as a human right and names environmental sustainability as a priority (FMARD, 2016; “The Green Alternative,” n.d.). Overall, agriculture in Nigeria is still cast as a business enterprise in which the government can invest to build national economic stability and foreign exchange. Nevertheless, through programs targeting subsistence crop production and low-income households, agricultural extension can be more directly serve the needs of the most vulnerable segment of the population. The next section of this paper discusses multidirectional communication as the third and final key area of potential growth for the Nigerian agricultural extension system.

**Fostering Open Communication**

A successful farmer-centric agricultural extension system must not only inform farmers of the advances of scientific research but also inform researchers of the needs and insights of farmers. Farmer involvement in problem identification and project evaluation is critical to ensuring that agricultural research and extension remain applicable to practical issues in the field
To date, agricultural extension programs in Nigeria have tended towards a top-down flow of technical information (Alao, 1982; Musa et al., 2013), with dissemination of current research findings remaining low (Faborode & Ajayi, 2015). Further, women farmers face unique barriers to integration in agricultural extension systems staffed predominantly by men (Banful et al., 2010; Osaze, 2015). Here, we argue that fostering farmer involvement in agricultural research through multi-way communication and listening is critical to matching agricultural extension initiatives to farmers’ needs.

**Context: Research, Agricultural Extension, and Farmers**

Agricultural experimental stations were founded in Nigeria during the colonial era, such as the Moor Plantation in Ibadan, which focused on cotton for export (Ekundare, 1973). Through independence in the 1960s, federal research institutions continued to focus on commodity crops (Omotayo, 2010). The 2011-2015 ATA period saw the establishment of the Federal Department of Agricultural Extension and reform measures within the Agricultural Research Council of Nigeria (ARCN), which oversees Nigeria’s state-supported agricultural research institutions (FMARD, 2016). The Council supervises fifteen commodity-based research institutes, eleven Federal Colleges of Agriculture (one at Ibadan, established in 1921 in the location of the former Moor Plantation), the National Agricultural Extension Institute, three universities of agriculture, and more (FMARD, 2016).

Historically, the linkage between agricultural research and field extension services in Nigeria has remained tenuous (FMARD, 2016). The main purpose of agricultural extension in Nigeria has been characterized as unidirectional, conveying technical information from research agencies to farmers (Alao, 1982), without emphasis on communicating farmers’ knowledge to researchers (Rhoades, 1989). In the late twentieth century, the Research-Extension-Farmer-Input Linkage System (REFILS) model was developed to facilitate communication among diverse stakeholders in agriculture (Faborode & Ajayi, 2015; Koyenikan & Omoregbie, 2015), adapted from the Training and Visit approach introduced to Nigerian ADPs in 1986 (Omotayo, 2010; Musa et al., 2013). More recently, the ARCN began collaborating with the International Food Policy Research Institute to seek greater integration of the Federal Colleges of Agriculture in extension activities and village-level outreach to improve the translation of knowledge to practice (Babu, 2016). Further, the APP proposes strengthening coordination among federal and state agricultural institutions while adding up to 15,000 extension agents (FMARD, 2016). Despite these realized and proposed efforts, clear gaps persist between researchers and farmers in terms of technology transfer and communication of needs (Faborode & Ajayi, 2015). Communication among agricultural extension agents and farmers has evolved over time as well. Under the FMARD’s Training and Demonstration approach before REFILS, farmers tended to doubt their ability to replicate results from demonstration plots in their own fields (Omotayo, 2010). With the expansion of ADPs in each Nigerian state in the 1980s, interactions between extension agents and farmers were positive, although inefficient communication across national and state offices resulted in redundancy and rivalry among programs rather than a coordinated effort (Phillip et al., 2009). In the 1990s, dedicated Women in Agriculture programs were funded under every state’s ADP to particularly address women’s limited agricultural extension access and participation (Ibharhokanrhowa, 2016; Osaze, 2015). The following subsection discusses such challenges to mutual communication between farmers and researchers through agricultural extension.
Challenges: The Most Difficult Connections

There are countless opportunities for communication breakdown between researchers’ experiment-based knowledge and farmers’ practical decision making. For example, official fertilizer rates are listed in planting manuals as elemental nutrient weights, while farmers and extension agents prefer the practical unit of 50 kg bags of standard NPK fertilizer (Banful et al., 2010). Many Nigerian farmers will recognize different crop and livestock varieties based on physical characteristics without knowing formal names used in scientific research and communication (Phillip et al., 2009). Extension agents work to bridge the gap by explaining farmers’ perspectives to researchers, and in turn contextualizing recommendations (Cernea et al., 1985). The best recommendations must be both relevant and understandable.

In terms of gender, women tend to have less access than men to agricultural extension services, land rights, and credit, despite bearing core responsibilities for agricultural production (Ibharhokanrhowa, 2016; Osaze, 2015; Phillip et al., 2009). In 2010, extension staff from eight Nigerian states comprised less than 15% women (Banful et al., 2010). With few women among them, the homosocial tendency to interact with others of the same gender results in a dearth of agricultural extension reaching women farmers (Banful et al., 2010; Osaze, 2015). Gender roles also impact extension’s targeting capacity if training programs prioritize work carried out by men rather than women, or if women-targeted training programs are misaligned with women’s actual roles (Odebode, 2012). A homogeneity of gender (or another demographic variable) among extension agents, especially when their efforts are already spread thin, can be a barrier to participation for farmers who find themselves underrepresented—in this case, women. An extension system striving to integrate the perspectives of diverse farmers must address this.

Prospects: Toward Expanding Interconnected Agricultural Networks

Where the conventional agricultural extension pattern remains distinct from research institutions and finds difficulty transcending social barriers to reach marginalized farmers, more traditional avenues of communication may prove valuable. For example, while less than 9% of women cassava farmers in Igueben and Esan Northeast Local Government Areas of Edo State had received information through interaction with extension agents, 89% did through family and friends (Onemolease, 2002). Despite the limited numbers of extension agents, information naturally disseminates to farmers through other formal and informal channels. If educational programs target farmers with a high number and diversity of social connections and encourage participants to pass on what they learn, a larger segment of society can benefit beyond direct contact with extension agents. Opportunities for farmers to grow as communicators and innovators can be created through personal relationships with extension agents, partnerships with researchers to conduct on-farm research (Cernea et al., 1985), and building connections among farmers through local organization (Davis, 2008).

Modern technologies can also prove useful to facilitating networks among agricultural stakeholders (Faborode & Ajayi, 2015). Opportunities for enhancing communication and local connectivity include leveraging mobile phones as an accessible platform and increased coordination among federal, state, and local levels of government (Omotayo, 2010). Mobile phones have already been successfully integrated into fertilizer subsidy programs in Nigeria under the Growth Enhancement Support Scheme (Olomola et al., 2014); perhaps parallel advances can be made in applications of this technology in agricultural extension. Further research can illuminate how agricultural extension can best integrate traditional and modern modes of interaction to connect farmers, extension agents, and agricultural researchers more
strongly. A successful agricultural extension system requires not simply passive information dispensing but rather active multidirectional communication and navigation of social barriers.

Conclusions, Implications and Recommendations
In summary, three potential areas for increased efficiency and growth for agricultural extension in Nigeria include defining extension’s purpose, matching programs to the target population’s needs, and mediating linkages among researchers, extension agents, and farmers. Current and past initiatives have made advances in these regards; yet, financial support from the government remains insufficient to sustain and institutionalize successful activities nationwide. In some cases, private sector agencies and international NGOs have filled gaps where government funding was not available. Still, the full potential for agricultural extension services to enhance agricultural development remains unrealized in Nigeria.

This article has presented three core recommendations for an increasingly farmer-centric focus in Nigerian agricultural extension: (1) prioritize human education over resource provisioning, (2) aim for household food security and not solely business expansion, and (3) engage farmers’ practical concerns through listening and on-farm research. Moving in these directions could revitalize the role of agricultural extension in broader agricultural development and human flourishing in Nigeria, while setting an example for other countries in Africa and around the world with parallel challenges.

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