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International Agricultural Education from 1975 to Present: A Research Synthesis

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Abstract

With the increasing interdependence of international agriculture, agricultural education has, and will, continue to play a significant role in the success of all nations' agriculture. The purpose of this research synthesis was to examine the literature on international agricultural education since 1975 to identify major research themes and determine if the transformative learning process is present. Inclusion criteria for this synthesis included a) publish date after 1975 in a peer- reviewed journal, b) address international agricultural education, c) demonstrate at least one stage of transformative learning, and d) be identified through search strategies. Seventy-one articles were identified. Themes in current research included studies on education abroad, explorations of other nations' agricultural education systems, globalization of American curriculum, and extension efforts abroad. The most common stage of transformative learning present in articles was the critical assessment of assumptions. Recommendations include further research on the impact of international experiences on secondary agriculture teachers and to increase the use of the transformative learning theory (Mezirow, 1991) as a theoretical lens in international agricultural education research.

Keywords: international agricultural education; research synthesis; transformational leadership; literature synthesis.

Introduction

Many factors impact the progress of developing nations, including economics, infrastructure, political volatility, and perhaps most importantly, agriculture (Tugendhat & Alemu, 2016). Long recognized as the foundation of developing nations, agriculture provides food, fiber, natural resources, and a livelihood for many citizens (Csaki, 1999). American agriculture is connected to international agriculture "through social, cultural, political, and economic integration" (National Research Council, 2009, p. 15). Furthermore, in 1972, the United States Congress mandated that the U.S. Agency for International Development (USAID) establish and foster programs to assist developing nations in improving and expanding upon agriculture (Irwin). Today, however, the agricultural practices and technology of developing nations still lag far behind that of developed countries, thus preventing agriculture from supporting national growth to its fullest potential (Xu, Li, Tang, & Mukwereza, 2016).

According to Dadush (2015), the overwhelmingly unskilled and uneducated workforce of developing nations further adds to the lag; therefore, education plays a significant role in the

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progress and success of developing nations. Without education, economies could stagnate, leading to both domestic and international struggles for developing countries (Inglehart & Welzel, 2009). Vocational education is especially important for the development of new markets, jobs, and the general prosperity of developing nations as it takes the uneducated workforces and molds them into skilled workers (Spielman, Ekboir, Davis, & Ochieng, 2008). Agricultural education specifically is vital for the growth of developing nations as it is the foundation of livelihoods, dietary sustenance, and economic progress (Csaki, 1999; Lindley, Van Crowder, & Doron, 1996; Xu et al., 2016). However, the Food and Agriculture Organization (FAO) (1997) emphasized the failure of agricultural education in many developing nations to assist in adapting to the changing world. In the most recent International Food Security Assessment completed by the United States Department of Agriculture (2017), it reported, "In 2017, nearly twenty percent of the population in the 76 [developing] countries are estimated to be food insecure; thus 646 million people out of a population of 3.5 billion are estimated to not have access to a daily caloric target of 2,100 calories" (p. 1). Estimated to reach 9.1 billion by 2050, the world population continues to grow but at a much slower rate, with the majority of growth occurring in developing nations. Within the next two decades, researchers estimate the population growth will result in a 50% increase in demand for food (Hazell & Wood, 2007) and 70-100% increase in demand by 2050 (Godfray, Beddington, Crute, Haddad, Lawrence, Muir, & Toulmin, 2010). Thus, agricultural education is needed in those nations to address current and future food insecurity. To achieve this, agricultural education must be a focus of developing nations' strategic plans for improvement (Miller & Madou-Bangurah, 1993).

Just as developing nations receive assistance in economic and political development, so must these nations also receive assistance in the development of agricultural education (Miller & Madou-Bangurah, 1993; Tugendhat & Alemu, 2016). As leaders in both American and international agricultural education strive for improved knowledge and understanding of the global impact of agricultural education, the first step should be examining what has already been researched in international agricultural education. The purpose of this study is to synthesize research on international agriculture in order to conceptualize the relationship between international agricultural education and transformation.

Theoretical and Review of Literature

According to the National Research Council (2009), societies across the world are interdependent, thus necessitating citizens to develop the skills required for successful participation in an ever-changing global climate. Global mindedness is defined as the degree to which a person seeks to learn about other cultures and the people that live in them (Mendenhall, Stevens, Bird, Oddou, & Osland, 2012). Many professionals, scholars, and administrators agree that in order to increase global mindedness, involvement in international education is needed (Bruening & Frick, 2004). Because "agricultural education, not only for professionals in the agricultural sector but for the general public and those in the political arena, is more important in this interdependent, global-market world" (Meaders, 1994), it is essential to understand how learners can change their perspective to one of global mindedness.

This study is informed by Mezirow's (1991) Transformative Learning Theory. An adult learning theory, transformative learning occurs when a perspective is changed (Mezirow, 1991). Mezirow expanded the definition of transformative learning to include the ability to explicitly state, elaborate, contextualize, and validate the new perspective in such a way that the learner can take action on the new learning in the real world. While a changed perspective is the product of transformative learning, it must be acknowledged that transformative learning is also a process. According to Taylor (2009, p. 17), "core elements [of transformative learning] include individual

experience, critical reflection, dialogue, engaging in other ways of knowing and awareness of context". Mezirow (1994) describes the ten-stage process, which includes these elements, as:

1. "A disorienting dilemma
2. Self-examination with feelings of guilt or shame
3. A critical assessment of assumptions
4. Recognition that one's discontent and process of transformation are shared and that others have negotiated a similar change
5. Exploration of options for new roles, relationships, and actions
6. Planning a course of action
7. Acquisition of knowledge and skills for implementing one's plans
8. Provisionally trying out new roles
9. Building of competence and self-confidence in new roles and relationships
10. A reintegration into one's life on the basis of conditions dictated by one's new perspective" (p. 225).

After progressing through each of these steps, a learner's perspective can change in four ways: 1) elaboration of perspective, 2) establishment of a new perspective, 3) alteration of point of view to include aspects of the initial point of view and the revised point of view, and 4) revision of habits due to critical analysis of a person's assumptions (Mezirow, 1997). While most research using the transformative learning theory focuses on adult learning in the post-secondary setting (Taylor, 2009), the theory can also be appropriately used in non-formal learning, such as in research on agricultural extension programs. In non-formal educational settings, transformative learning practices can "help identify important pedagogical practices, such as the application of problem-solving strategies, the promotion of reflection and group dialogue, engagement of active pedagogy rooted in the cultural practices and the need for fostering initiative among participants through learner-centered teaching" (Taylor, Duveskog, & Friis-Hansen, 2012, p. 726). Furthermore, transformative learning in a non-formal setting is well suited to education in developing nations as it allows for flexibility in immediate action, direct application of learning opportunities, and proximity to those in need (Brembeck, 1973; Rogers, 2005).

Purpose and Objectives

Syntheses of published literature are essential for, "the progression of a particular field of research because they are a collection of past research that is necessary for the systematic construction of knowledge" (Thieman, Henry, & Kitchel, 2012, p. 84). Furthermore, this research synthesis aligned with the National Research Agenda of the American Association for Agricultural Education priority *Sufficient Scientific and Professional Workforce that Addresses the Challenges of the 21st Century* (Roberts, Harder, & Brashears, 2016). The purpose of this research synthesis was to examine the literature on international agricultural education from 1975 to the present for exploration of major topics and the presence of the transformative learning process. The objectives included:

1. Identify major focus areas of international agricultural education research.
2. Identify a conceptual relationship between international agricultural education and transformation.

Procedures

A rigorous research synthesis requires identifying search strategies, inclusion criteria, and coding are necessary (Cooper, 2010). Search strategies included a comprehensive investigation of

reference and citation databases using Academic Search Complete, Agricola, EBSCOhost, ERIC, PsycINFO, and Google Scholar. Reference lists of all studies considered for the synthesis were also searched. Keywords and phrases used in the search process included "agricultur* teacher abroad", "international agriculture* education", and "transformat* agricultural education".

All identified articles from the search were evaluated through an initial screening to determine relevance to the research question based on the inclusion criteria (Cooper, 2010). The inclusion criteria required all articles to be published after 1975 in a peer- reviewed journal, cover the topic of international agricultural education, demonstrate at least one stage of the transformative learning process described above, and be identified through the search strategies. Because no references to international agricultural education were found prior to 1975, it was chosen as the beginning year for inclusion (Wingenbach, Chmielewski, Smith, & Piña, 2006). Articles selected for further analysis were digitally saved and articles not identified through the search strategies were not included in the synthesis.

Selected articles were analyzed and coded using a coding matrix (Cooper, 2010). The matrix included author(s), year published, purpose, participants, context of international agricultural education, indicators of transformation, and results. Following the initial search, identification of themes occurred, and articles were further organized into the emergent themes based upon their predominant findings and conclusions. An outside colleague, knowledgeable in research synthesis methodology, provided member checks. Two of the researchers coded the articles separately and then established inter-rater reliability (K = 0.94), which was considered "substantial agreement" by Viera and Garrett (2005, p. 362). For Objective 2, additional analysis was completed. Each article's methodology and findings were assessed for the presence of any of the ten stages of transformational learning as listed above.

Findings

The search strategies revealed 71 studies that followed the selection criteria. The majority of research methods used to explore international agricultural education were descriptive and based upon perceptions of a variety of stakeholders, including faculty, students, extension agents, and secondary agriculture teachers. The most common data collection method was a survey instrument (n = 41). Mixed methods and qualitative studies were also identified.

Objective 1: Major Focus Areas of International Agricultural Education Research

Objective 1 sought to identify major focus areas of international agricultural education research. Four themes emerged from this synthesis: 1) study abroad experiences, 2) exploration of other nations' agricultural education systems, 3) globalization of American agricultural education curriculum, and 4) extension efforts abroad (Figure 1).

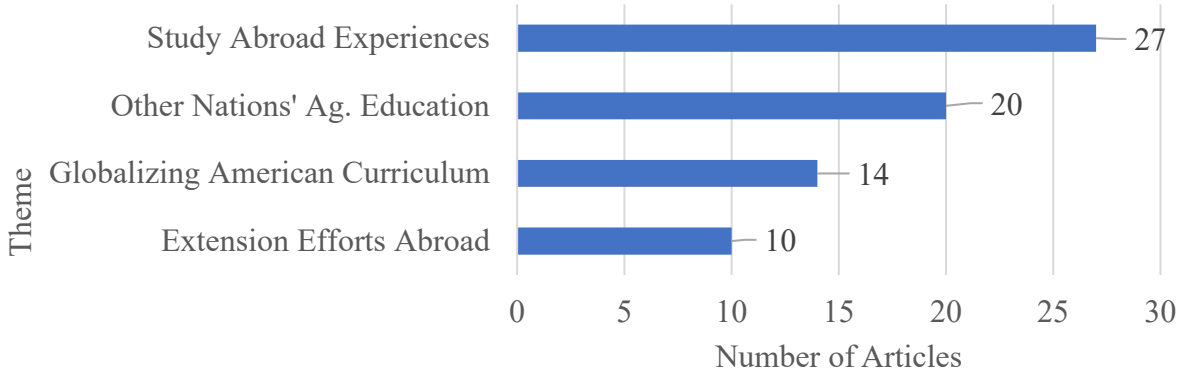

Figure 1. Theme occurrence of international agricultural education articles, 1975-present.

Study abroad experiences.

Many studies tout the need for agriculture students to have international experiences in order to understand the global world in which they live (Connors, 2004; Harder, Lamm, Roberts, Navarro, & Ricketts, 2012; Wingenbach, Boyd, Lindner, Dick, Arispe, & Haba, 2003; Zhai & Scheer, 2004). In an effort to prepare post-secondary students for careers in a globalized world, colleges and universities have emphasized developing international experiences for their pupils (National Research Council, 2009). Both students and faculty members were subjects of the research in this theme.

Several studies identified ways in which international experiences may impact and benefit students and faculty members, including increased confidence, cultural sensitivity, cultural awareness, respect and acceptance of differences between cultures, and personal growth (Conners & Roberts, 2015; Ingram, Smith-Hollins, & Radhakrishna, 2009; Place, Evans, Andrews, & Crago, 2000; Stephens & Little, 2008). Furthermore, Bruening, Lopez, McCormick, and Dominguez (2002) found that study abroad experiences may increase students' interest in working internationally and their understanding of the variety of problems in international agriculture, which is similar to the findings from a qualitative case study by Edgar and Edgar (2009). Although faculty members value international experiences and recognize the need for global education, some findings indicate very few faculty with experiences abroad include international content in the courses they teach (Thuemmel & Welton, 1983). In contrast, in a longitudinal study on the impacts of a Faculty Abroad Seminar, Dooley and Rouse (2009) found international experiences for faculty had a more lasting impact on teaching than in research. The findings of Dooley and Rouse (2009) were similar to those of Roberts, et al. (2016) in a longitudinal study on the impacts of professional development experience in Ecuador.

Additional researchers sought to evaluate how those students who studied abroad impacted the communities in which they lived. In a qualitative case study by Bunch, Stephens, and Hart (2011), researchers identified benefits for community members who interacted with students as increased cultural awareness, pedagogical awareness of different teaching methods, and community unification. Unfortunately, a negative impact of the students studying abroad was that "while some preconceived stereotypes were altered, some individuals developed new incorrect stereotypes" (Bunch et al., 2011, p. 91).

In order for these benefits to be felt by students, faculty, and communities, they must first commit to an international experience. Researchers agree that funding is a barrier to undergraduate

and graduate students' desire and commitment to study abroad (Briers, Shinn, & Nguyen, 2010; Bunch, Cater, & Rampold, 2017; Bunch, Lamm, Israel, & Edwards, 2013; Murphrey, Lane, Harlin, & Cherry, 2016). Motivations for undergraduate students to study abroad include enhancing overall life experiences, opportunity to experience other cultures, and increased employability potential (Briers et al., 2010). Students are also strongly motivated by the design of the study abroad program. For example, in a mixed- methods sequential explanatory study, by Murphrey et al. (2016), findings indicate that undergraduate pre-service agricultural educators preferred to study in developed countries in programs that last between one and six weeks. This is corroborated with similar findings by Parr, Peake, and Riley (2013) and Briers et al. (2010). Parr et al. (2013) additionally found a significant relationship between students' desire to study abroad and their current GPA, as well as gender. In a survey of all Oklahoma State University undergraduates enrolled in a college of agriculture during the 2010-2011 academic year, Bunch et al. (2013) also found that females were significantly more likely to seek international experiences.

Once students and faculty have committed to an international experience, the design and teaching practices used within the program can be quite impactful. Program design begins as early as the development of the promotional items students see during the recruitment phase. Onyenekwu, Angeli, Pinto, and Douglas (2017) found in a document analysis the images used for promotional materials for educational experiences in Africa did not accurately represent the content being taught. For example, in a program designed for pre-service teachers, only four of 27 photos included teaching. The majority of photos showed one white female surrounded by African children, holding an African child, or standing in a jungle, which was not representative of the program's pedagogical goals (Onyenekwu et al., 2017). When researchers explored teaching methodologies used in education abroad programs, several effective methods emerged. In a case study of 50 undergraduate students, Wingenbach et al. (2006) identified one pedagogical method that was effective in changing the perspectives of those studying abroad: the practice of preflection. "Preflection exercises played a crucial role in helping students identify and later compare their perspectives, attitudes, and barriers to participation in international experiential activities" (Wingenhach et al., 2006, p. 87). Dooley, Dooley, and Carranza (2008) found similar results in a qualitative case study of nine faculty who participated in a Faculty Abroad Seminar. Klein and Lawver (2007) describe the benefits of embedding a service-learning component into a study abroad program as leading to collaborative projects, increased cultural awareness, and personal growth. Many studies agree on effective practices used in education abroad programs, including planning specific content to be gained, providing concrete experiences that allow students to experience the culture of the host country, frequent debriefing, personal logging of experiences, and continuous self-reflection (Lockett, Moore, & Wingenbach, 2014; Ricketts & Morgan, 2009).

Faculty who teach international students should be aware of differences in learning and educational background. Through participant observations of 39 Nigerian students studying agricultural mechanics at an Illinois community college, Peuse (1983) identified several differences in the educational background which impacted the success of the international students, including the American value of an independent problem-solving approach clashing with the Nigerian teacher-centered approach to education. Roberts, Thoron, Barrick, and Samy (2008) found similar results when evaluating the effectiveness of workshops presented by American faculty to Egyptian secondary teachers: "Prior to working in an international setting, immerse yourself in the culture of the country in which the work will occur. The temptation is always to 'Americanize' others, imposing the values and structures that are common in the United States upon them" (p. 87). Similar findings on the need of the learner context were echoed by Thoron, Barrick, Roberts, Gunderson, and Samy (2010) in their study of effective teaching strategies when working with Egyptian faculty members. Navarro (2009) asserts that one way to address contextual differences in international agricultural education is to utilize participatory methods, which are used to engage people with

different perspectives, experiences, needs, knowledge, and opinions in collaborative learning scenarios.

Other nations' agricultural education.

Nineteen studies centered on other nations' agricultural education systems, with focuses in three major areas: 1) competencies and professional development needs of educators and students, 2) program and curriculum development, and 3) impacts of agricultural education.

As much aid is given to developing nations to improve their agriculture in an effort to impact their economy, it is essential that the agricultural systems and education of the developing countries are explored in order to better serve their needs. Therefore research has revolved around identifying the competencies and professional development needs of international educators. Parr, Edwards, and Duncan (2008) found that secondary agriculture teachers from the country of Georgia had positive perceptions about the growth of agricultural education, a sentiment echoed by Ikeoji, Agwubike, and Ideh (2007). Several studies identified the challenges faced by international agricultural educators, including a lack of funding and instructional materials (Abolaji & Reneau, 1988; Alabi, 2016; Ikeoji et al., 2007). Additionally, teachers reported the needs for in-service training included increasing and updates of content knowledge in agriculture (Abolaji & Reneau, 1988; Ede, 1987). Ede (1987) further described the need for in-service training as many secondary instructors in Nigeria recognize various competencies important for the success of their students, yet do not have the knowledge or skillset to teach the competencies. However, identifying the needs of teachers can be challenging, as the opinions may vary. For example, Okatahi and Welton (1985) found college instructors in Nigeria and their administrators had significantly different views on the need for developing student objectives and curriculum and providing experiential opportunities for students, resulting in the teachers' overall feelings of incompetency. This is especially troublesome when considering the findings of Mwangi and McCaslin's (1994) descriptive and correlational study in Kenya, which indicated the most important factor in agricultural extension agents' motivation was dependable supervisors. In-service trainings can be beneficial because those who attend the training could potentially share what they have learned with colleagues, as was the case in Costa Rica in a study by Brooks and Williams, (2001) in which the majority of secondary teachers who participated in the training had shared workshop content with colleagues within two months of completing the training. However, positive outcomes are not always sustainable, as was the case in a study by Barrick, Samy, Roberts, Thoron, and Easterly (2011) in which they discovered a year after an in-service training, Egyptian teachers who participated in a workshop felt less competent in the content areas covered and presented discrepancies on all competencies covered in the training.

To overcome the numerous issues, programmatic and curriculum development has also been at the forefront of research on international agricultural education. Unfortunately, there is no cookie cutter, the best model that can be implemented in each country; context determines the practices that will be most successful in each culture (Davis, 2008). Barrick, Samy, Gunderson, and Thoron (2009) described the necessity of completing an assessment of the nation's agricultural industry needs in order to determine the content to be taught and the process through which educators could best teach it. This was echoed in a descriptive study in which Wettayaprasit and Birkenholz (1995) found in a survey of 290 secondary agriculture teachers in Thailand, the majority identified an industry assessment as a goal of their programs. However, in a qualitative case study by Yildirim and Simsek (2001), findings indicated there is a lack of guidelines for school personnel to complete a needs assessment in Turkey. This lead to outdated curriculum and labs which do not match the content taught in lecture. A disconnect between industry and communities was also noted

in Trinidad and Tobago (Hurst, Conner, Stripling, Blythe, Girogi, Rubenstein, Futrell, Jenkins, & Roberts, 2015) and in Afghanistan (Ebner, McNamara, Deering, Oliver, Rahimi, & Fuisal, 2017).

As researchers have evaluated the current status and needs of international agricultural education programs, they have also sought to determine the impact of programs on students. In a longitudinal study by Okiror, Matsiko, and Oonyu (2011), the Supervised Agricultural Experience approach was used by primary agriculture teachers in Uganda, resulting in increased learning through an application by those students who participated in the home program, although parent perceptions were not significantly changed. While those are promising results, parents play a significant role in determining career paths (Anamuah-Mensah, Asabere-Ameyaw, & Dennis, 2007). This can be seen in a descriptive case study by Mukembo, Edwards, Ramsey, and Henneberry (2015) where the majority of 102 secondary students who participated in a Youth Farmers Club reported that their parents encouraged them to join the club and as a result of being in the club, the pupils considered agriculture for a career. Furthermore, the majority of the students reported they will continue their education in a post-secondary institution and will most likely pursue ag-related career preparation experiences (Mukembo et al., 2015). In addition to participation in extra-curricular activities, several other factors were found to determine the likelihood of secondary students to pursue agriculture as a career, including sex, post-secondary school location, and students' residential area (Ramdwar & Ganpat, 2010).

Globalizing American curriculum.

While education abroad experiences are great ways for students to expand their global knowledge, not everyone will travel abroad. According to the Institute of International Education (2013), the number of agriculture students who partake in international experiences is decreasing. In recognition of the need for international curriculum, the Association of Governing Boards of Universities and Colleges emphasized research and teaching with a global emphasis is needed (Jenkins, 2002). This belief is echoed by many agricultural educators in America, both at the secondary, post-secondary, and extension levels (Hurst, Roberts, & Harder, 2017; Hossain, Moore, & Elliot, 1995; King & Martin, 1995; McCracken, 1995), as well as by agricultural leaders (Ludwig, 1994). A study by Smith, Jayaratne, Moore, Kistler, and Smith (2010) indicated the level of global mindedness of extension agents varies with age, level of education, gender, experience abroad, and length of time spent abroad. A study by Morales and Brashears (2016) indicates this is also true for collegiate students in a causal-comparative study in which 1,218 undergraduate students took global agriculture knowledge tests and a significant difference was found between freshmen and sophomore students' knowledge and that of juniors and seniors (upperclassmen scored at a higher competency level).

Beyond the broad generalization that American agricultural curriculum should be globalized for the benefits of secondary and post-secondary students, as well as extension agents, many studies have addressed what competencies and skills should be taught. In a survey of 86 Iowa Young Farmers, findings indicated livestock production, crop production, horticulture, and general agriculture at the international level were perceived to be important to learn (Martin & Elbasher, 1994). Similar results were found in two separate Delphi studies on international agricultural education curriculum (Conner, Gates, & Stripling, 2017; Shinn, Wingenbach, Briers, & Baker, 2009). For non-formal agricultural education, two innovative methods have been evaluated for effectiveness in disseminating curriculum on global agriculture. One is the use of a Reusable Learning Objective, which is a digital recording of a mini-lesson found to be effective in increasing learner knowledge on the covered topic (Gouldthorpe & Harder, 2013). However, in a study where 237 Texas extension agents were asked to share their perceptions on the worldwide eXtension system, which is an online teaching and curriculum database for countries beyond the United States

to use, most reported negative perceptions. Findings indicated the following barriers to the eXtension system could render it ineffective: time constraint in learning to use the program, lack of incentives to use the program, financial concerns, and technology concerns (Harder & Lindner, 2008).

Extension efforts abroad.

While many nations have their own extension services, many extension programs in the United States have partaken in international efforts to increase education surrounding agriculture. Programs commonly taught abroad by extension agents include food science and agricultural and food industry development (Weir & Maredia, 2006). According to Rivera (2008), the purpose of extension efforts abroad is "educating producers and establishing a climate where they begin to organize themselves for profitable purposes" (p. 19) through the fostering of an open learning environment in the workplace in which information can be freely shared (Okorley, Gray, & Reed, 2009). Similar to Barrick et al.'s (2008) findings on formal education practices abroad, research on extension abroad has emphasized the need of understanding the context of the country in which extension work is completed (Etling, 1994; Pezeshki-Raad, Yoder, & Diamond, 1994). Furthermore, Pezeshki-Raad et al. (1994) emphasized the need to assess the administrative competencies of learners in other countries, as skills such as program planning and execution, program evaluation, and administrative duties play an important role in the success of extension efforts abroad.

By respecting indigenous knowledge and skills and using active participation of the local population, extension programs can be run in such a way that is beneficial to the learner population (Etling, 1994; Kitinoja, 1988; Rajasekaran, Martin, & Warren, 1994). Using these strategies when educating abroad in an extension role which impacted the changes in behavior and attitude of 15 American extension agents who participated in the Internationalizing Extension Training Project. Findings indicated those participating in the program increased their ability to work with others (especially minority populations), gained a greater understanding of the need to work locally and internationally to address global issues, increased awareness of the impact of extension, and gained a broader international perspective (Place, Vergot, Dragon, & Hightower, 2008). When assessing the effectiveness of an extension program on natives in a program that utilized the contextual nature of their international work, Taylor, Duveskog, and Eriis-Hansen (2012) found in East Africa Farm to Field School graduates that transformative learning occurred because of the hands-on activities, collaborative learning, and having an external facilitator. The use of an external facilitator was also emphasized by Amin and Stewart (1994).

Objective 2: Relationship with Transformative Learning

Objective 2 sought to identify a conceptual relationship between international agricultural education and transformation. This was achieved by assessing each article for the presence of transformative learning stages. All articles had at least one aspect of transformative learning per the search inclusion criteria. The total number of stages identified in each article was calculated. Most commonly, articles had only one stage of transformative learning present (N = 22). The second highest number of articles had two stages of transformative learning, with approximately 16% of articles (N = 11). Nine stages of transformative learning were the least common (N = 1). However, three articles were found to have all 10 stages of transformative learning (Figure 2).

Despite each article having at least one stage of transformative learning, and 28 articles having five or more stages present, only two articles referenced the transformative learning theory in passing or as a part of a theoretical framework (Foster et al., 2014; Taylor et al., 2012). The third

stage, critical assessment of assumptions, was the most commonly identified stage and was found in approximately 89% of articles. The second most common stage was the fifth, or the exploration of options for new roles, relationships, and actions, found in 48 articles. The ninth stage, the building of competencies and self-confidence in new roles and relationships, was the third most common, found in approximately 39% of articles. Found in only seven articles, the least commonly seen stage was the reintegration of lessons learned into one's life on the basis of conditions dictated by one's new perspective. Figure 2 shows the number of times each stage in transformative learning was found in all 70 articles.

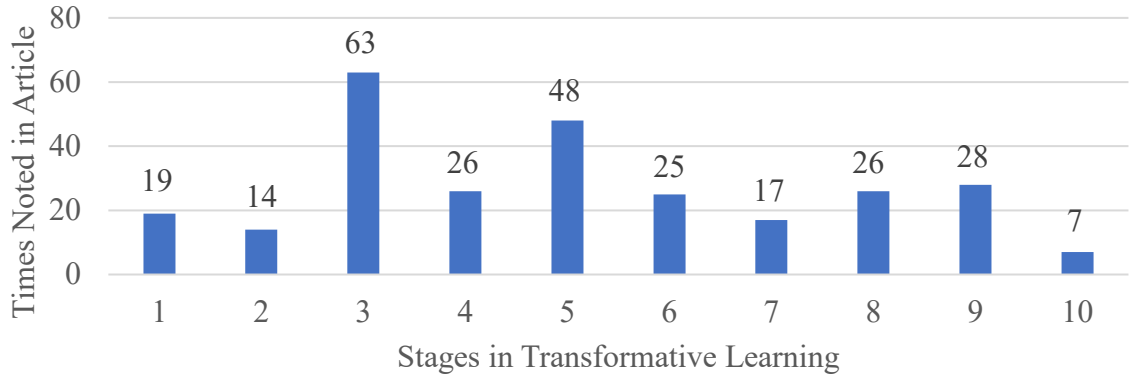

Figure 2. Stages in transformative learning identified within the 70 articles

The research themes identified in objective one varied in the prevalence of transformative stages. The articles in the Study Abroad theme overwhelmingly showed the greatest number of transformative learning stages and is followed by those articles in the Extension Efforts Abroad theme. The articles in Other Nations' Ag Ed theme showed the fewest number of transformative stages. Figure 3 depicts the prevalence of each stage of transformative learning found in each theme.

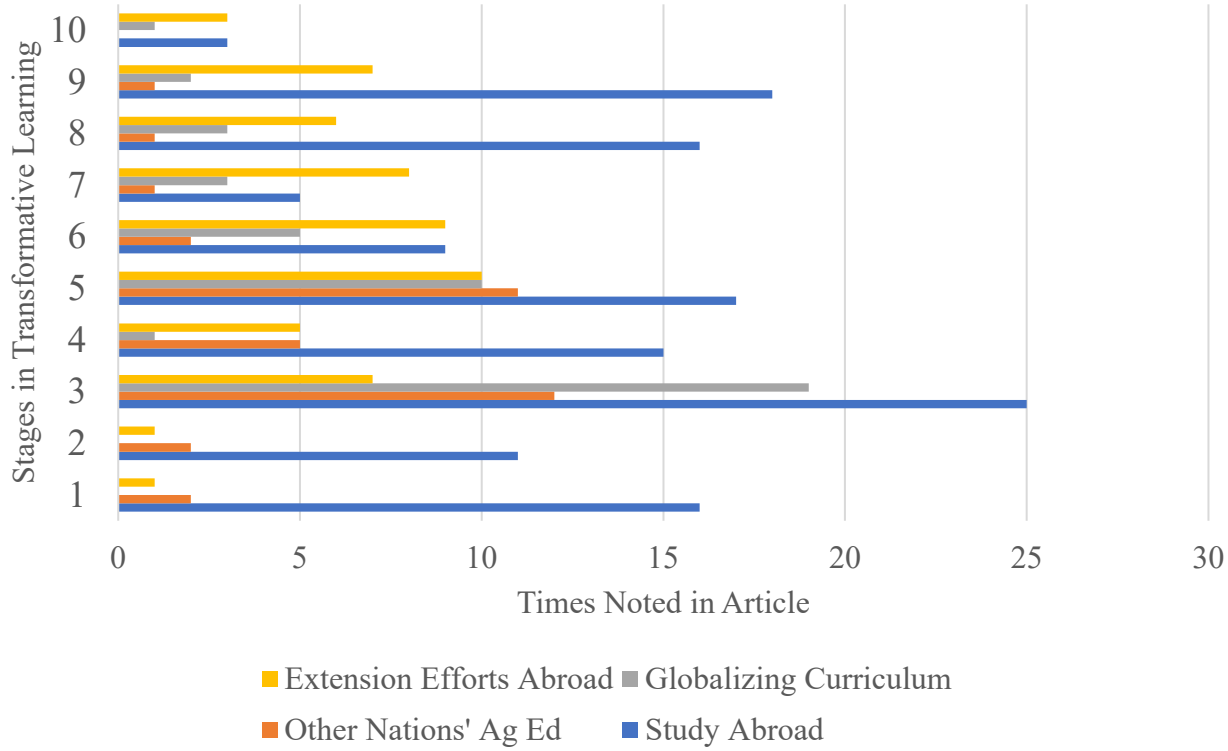

Figure 3. Stages in transformative learning identified, based upon research theme and frequency.

Conclusions and Recommendations

Since international agricultural education research began to appear in peer-reviewed journals for agricultural education around 1975, education abroad, international agricultural education systems, the globalization of American curriculum, and extension efforts abroad have been the dominant topics. However, many gaps exist. Of the 27 articles reporting research on study abroad, not a single study evaluated the impact of -international experience on a secondary agriculture teacher. The majority of studies focused on post-secondary students (n=26), followed by studies on university faculty (n=8). Secondary agriculture teachers are expected to globalize their curriculum, but none of the research identified in this synthesis evaluates their perceptions, experiences, or global competency. In addition, only one article evaluated secondary students' experiences abroad (Ingram et al., 2009). Furthermore, none of the 27 articles on education abroad assessed a long-term international experience. While research agrees that short-term programs are beneficial to students and faculty (e.g., Klein & Lawver, 2007; Roberts et al., 2008; Wingenbach et al., 2006), the potential benefits of a long-term program should also be evaluated. Therefore, it is recommended that future research focus on these under-researched populations and on long-term study abroad programs.

While many researchers recognized the need to understand the context of other nations' agricultural education when researching their programs (Navarro, 2009; Roberts et al., 2008; Thoron et al., 2010), only one of 20 studies in this theme evaluated pedagogical practices within formal classrooms abroad. Further research should be conducted on common teaching practices of secondary, post-secondary, and extension agricultural education programs abroad, as well as on determining methods through which educators can build their ability to evaluate and understand international contexts.

Research reflects an agreeance on the importance of globalizing American curriculum in both secondary, post-secondary, and extension settings (e.g., Ludwig, 1994; Martin & Elbasher, 1994; Smith et al., 2010). However, none of the research articles identified in this synthesis evaluated how global competencies were being included in secondary, post-secondary, or extension settings, nor did any of the articles address the effectiveness of the globalization of American agriculture curriculum. Therefore, methodologies of globalization in curriculum and their effectiveness should be further researched.

Further research should also reflect how Mezirow's theory is the starting point for transformative learning. This should include evaluations of the contextual applications, needs assessments, design, and delivery of the experience, as well as the culture and climate of the international experience. Viewing the experience through the lens of Mezirow could lead to a much better understanding and a richer body of knowledge in the research.

Extension efforts abroad were the least researched theme of this synthesis. With only 10 articles, the majority of research focused on the methodologies with which extension agents teach at an international level (n=9). Only one article addressed the impact and benefits of working abroad for extension agents. While further research is needed in all facets of extension efforts abroad, priority should be given to evaluating the impact on extension agents.

The stages of transformative learning can easily be identified in the research within the focus areas of study abroad programs and extension efforts abroad. It is not surprising that the transformative process was found least in research on other nations' agricultural education, as the studies in that focus area tended to be descriptive in nature, nor is it surprising that it was less prominent in globalization research, as those articles focused on the development of curriculum rather than the learning of people. Furthermore, the small number of steps found in the majority of articles is not surprising due to the design of the studies. Because most studies utilized surveys (n = 41), no opportunities for the evaluation of many of the stages of transformative learning existed, even if stages did occur. Therefore, it recommended that future research employ a transformative learning theory lens and methodology when evaluating international agricultural education to explore this learning process. Methodologies that would be conducive to this type of study could include qualitative designs which allow for probing and understanding of the situational context and individual learners.

There is little doubt a global perspective is an important facet of agricultural education in the U.S. and abroad. Domestically, increasing global competence is necessary to prepare students for a successful career in an interconnected world. Abroad, increasing knowledge about agriculture through education is vital for not only feeding the world's steadily growing population but also for stimulating economies in developing nations. Agricultural educators, both as researchers and practitioners, have an opportunity to impact these issues (Yahya & Moore, 1988).

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