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Assessment of Egyptian Agricultural Technical School Instructors' Ability to Implement Experiential Learning Activities

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The purpose of this study was to assess the perceptions of ATS instructors in Egypt related to implementing experiential learning in the form of internships. In July 2007, 90 ATS instructors attended workshops focused on conducting internship experiences. Self–perceived competency of ATS instructors to implement internships was assessed immediately following inservice training. Approximately a year later (June 2008), ATS instructors' self–perceived importance and application of internship competencies were assessed. A discrepancy score (Borich, 1980) was also calculated. Results indicated that: (a) at the conclusion of the initial workshop, ATS instructors felt competent to implement internship activities with their students; (b) a year later, ATS instructors felt that all the competencies had high importance, but their ability to apply the competencies was slightly lower; and (c) there were discrepancies on all competencies, with the largest discrepancies focused on explaining internships.

Keywords: experiential learning, internships

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Introduction

The United States Agency for International Development (USAID) funded a project to the Midwest Universities Consortium for International Activities (MUCIA) to establish professional development programs for Agricultural Technical Schools (ATS) instructors in Upper Egypt. The intent of the program is to provide workshops to educate ATS instructors on how best to deliver the agricultural curriculum to students, with the end result being a well–trained agricultural workforce in Egypt.

Agricultural Technical Schools in Upper Egypt include 130 secondary schools, with an average of 154 instructors and 2,750 students at each facility. USAID funded the value–chain training program through MUCIA to provide inservice training to agriculture instructors in the Agricultural Technical Schools. The purpose of the funding is to ensure that instructors are conducting programs that meet the workforce

needs of the agricultural industry in the country (Thoron, Barrick, Roberts, & Samy, 2008).

Inservice training is crucial to the development of agricultural education professionals. Application of skills learned through training requires assessment to understand the utilization and effectiveness of the training. Roberts and Dyer (2004) found that agricultural education teachers have a desire and need for inservice training. Developing better educators requires understanding in psychology, principles, techniques, and basic pedagogical understanding of the teaching and learning process (Abolaji & Reneau, 1988). Roberts and Dyer noted that inservice training was a key component to developing high quality agriscience teachers in the United States.

It is theorized that educational principles transcend the borders of the United States and are therefore applicable in the ATS system in the Arab Republic of Egypt, which was the focus of this study. Experiential learning has long been a central feature in agricultural education programs in the United States (Roberts & Harlin, 2007). However, this pedagogy had not been adopted by ATS instructors in Egypt. If ATS instructors were provided inservice training, would they be able to implement experiential learning activities?

Experiential learning is relevant for teaching career skills to students. Osborne (1994) stated that experiential learning made students better able to transfer knowledge, understand problems in agriculture, develop their self confidence, connect practice and principle, improve psychomotor skills, develop problem solving skills, retain more knowledge, and become interested in learning. "Students learn through real–life experiences and experience influences how they learn because experiences shape a persons' schema by building knowledge and past experiences to influences future experiences" (Knobloch, 2003, p. 25). A need exists for including experiential based programs in all program areas of the ATS's. Workshops provide training for the ATS instructors so that they can fulfill their need for inservice training and ultimately provide better instruction to their students. Content in the ATS programs typically lack real–life experiences outside of school, not utilizing the local resources necessary to conduct experiential learning activities (MUCIA, n.d.). The agricultural concepts and business skills that students need to learn cannot be synthesized from books, but require active participation (Roberts, 2006).

Theoretical Framework

The foundation for the work conducted as a part of this project was grounded in the theory of Teacher Adaptive Expertise (Hammerness et al., 2005). This theory proposes that teacher expertise is developed along two dimensions: efficiency and innovation. Expertise in efficiency leads to the ability to accomplish a task with little attention, while expertise in innovation leads to trying new things and changing current practices. Adaptive expertise includes efficiency and innovation. Effective workshops for teachers should improve adaptive expertise.

Teacher expertise has been examined by numerous scholars in agricultural education. Birkenholz and Harbstreit (1986) found the most important topics for inservice workshops for beginning teachers included skill development, program development, and Supervised Agricultural Experience Program (SAE) supervision. Roberts and Dyer (2004) found that developing supervised agricultural experience opportunities and supervising SAE programs were important competencies to teach during inservice training. Many of these findings should be transferrable across international borders.

DeLay and Washburn (2008) stated that building program relations with community, parents and volunteers is important. In their Delphi study, DeLay and Washburn also found that building program relations with community, parents, administration, and prospective students was rated high by instructors. Building a network of instructors, administration, and community and parent members is important for competency success. Edwards and Briers (1999) found that using support groups ranked high on a list of instructor competencies.

Garton and Chung (1997) found that teaching agriscience, utilizing a local advisory committee, developing SAE opportunities for students, and supervising students' SAE programs all ranked equally important by teachers in a study that utilized the Borich (1980) model in Missouri. In a similar study, Garton and Chung (1996) found that developing SAE opportunities for students and supervising

students' SAE programs ranked in the top ten on the competency needs list rated by teachers.

Inservice training should provide instruction based on appropriate topics. Identifying relevant topics can be a difficult process. The most applicable topics for inservice training are those that are needed by the instructors (Barrick, Ladewig, & Hedges, 1983). It is also essential that the individuals providing the workshop to the instructors are able to offer expertise on identified topics. A model developed by Borich (1980) provides a method for identifying important competencies from a pre–determined list. The Borich model compares the individual's self–rating of the importance, knowledge and ability to perform each competency. The model is functional due to its ability to account for the importance of the competency separate from the capacity of the teacher to teach the competency. The model factors importance with participant reported ability to perform the required task. If an individual rates a task high in importance but also rates the ability to apply the task high, then the performance discrepancy will be relatively low and additional inservice education may not be needed. A low discrepancy score indicates less of a need for inservice training on that competency. If a task reveals a high importance and low ability, future inservice training should focus on that topic (Barrick et al., 1983). Since the concepts of supervised experiences and internships are new to ATS instructors, the need exists to determine how those instructors can be assisted in learning and applying those new competencies.

Purpose & Objectives

The purpose of this study was to assess the perceptions of ATS instructors in Egypt related to implementing experiential learning in the form of internships. The following objectives were used to guide the study:

1. Identify self–perceived competency of ATS instructors to implement internships immediately following inservice training.
2. Identify ATS instructors' self–perceived importance and application of internship competencies eleven months after inservice training.
3. Identify discrepancies between the importance of internship competencies and the ability of ATS instructors to apply the competencies.

Methods

A series of workshops was developed and delivered in July 2007 to address the needs of Egyptian ATS instructors based on their perceived needs as well as the needs identified by industry experts (Thoron et al., 2008). It was determined *a priori* that placement projects, or internships, were the most appropriate form of experiential learning for ATS instructors to implement. Consequently, the workshops only addressed this pedagogy. The following year (June 2008) ATS participants in the initial workshops were asked to indicate the importance and their ability to apply internship competencies. The ultimate goal for the workshops was to increase the employability of the ATS graduates in agricultural industries through providing the students with an opportunity to participate in a suitable internship experience. An evaluation of the workshop identified potential areas of concern.

A total of 90 ATS instructors received the inservice training, through a three session train–the–trainer format. Workshop I was taught by the MUCIA team in English to Egyptian university faculty. The Egyptian faculty, from agricultural universities, were selected by the project coordinator based on their ability to deliver content that utilized active learning strategies. Workshop II was co–taught by the MUCIA team and the agricultural university faculty, with the content translated into Arabic for ATS instructors. Forty–five ATS instructors participated in Workshop II and were selected by the project coordinator and ATS headmasters. Workshop III was taught by the Egyptian agricultural faculty in Arabic. Forty–five additional ATS instructors participated in the inservice workshop on the same topics as Workshop II. ATS instructors were again selected by the project coordinator. ATS school headmasters were present during Workshop II and III but were excluded from the data due to their lack of direct instruction to ATS students (Thoron et al., 2008).

At the conclusion of the workshop conducted in July 2007, a workshop evaluation instrument was administered to the participants (Thoron et al., 2008). The individual

competencies were organized based on Israel's (2006) factor analysis. Learning environment, workshop design, and quality of instruction were the focus for the design of an effective inservice evaluation. A total of 83 ATS instructors completed the July 2007 workshop evaluation instrument.

In June 2008 a follow–up survey was conducted with the ATS instructors who attended the 2007 workshop and were still teaching. The survey utilized the Borich (1980) scale to determine the extent to which participants had adopted the competencies learned. The participants were asked to rate (a) the importance and (b) their ability to apply the competencies from the 2007 workshop. The respondents rated each competency on a scale of 1 to 5, low to high respectively, for the two attributes. For importance, respondents were asked to rate the importance (1 to 5) of the competency for success in teaching and student learning. For ability to apply the competency, respondents were asked to rate their ability (1 to 5) to successfully use the competency in their teaching (Borich, 1980).

The instrument was translated into Arabic by faculty of Egyptian universities. Subsequently, the Arabic version was translated into English by a third party, native Arabic–speaking faculty member in the United States for a blind comparison to the original English version. It was determined that the Arabic version replicated the original English version of the survey instrument. The instrument consisted of the twenty–three competencies that were included in the original workshop evaluations. The follow up survey had a response rate of 88.9% (n = 80) of the original 90 participants. The survey was administered by staff of the USAID MUCIA project in Cairo.

A *weighted discrepancy score* was obtained by first determining the *discrepancy score* by subtracting the individual response on the application scale from the individual response on the importance scale. That number was then multiplied by the *mean importance score* of all respondents in order to obtain the *weighted discrepancy score*. The competencies were then ranked based on their *mean weighted discrepancy score* (Barrick et al. 1983; Borich, 1980; Edwards & Briers, 1999).

Results

Objective One: Identify self–perceived competency of ATS instructors to implement internships immediately following inservice training.

Reponses from the post workshop survey administered in 2007 were completed by 83 participants in the workshop, resulting in a response rate of 92.2%. Responses from Workshop II and Workshop III were compared and found to be consistent. Ninety–seven percent (n = 81) of participants rated organization of training and meeting room size and comfort as good to very good on a five point scale. Ninety six percent (n = 80) of the participants rated the length of the workshop as average or better. Four of the five learning environment items were rated as good or very good by 94% (n = 78) to 98% (n = 82) of respondents. All four items related to instruction rated good and very good by at least 94% of the ATS instructors.

The instrument completed upon the conclusion of the workshop addressed the degree to which the workshop increased ATS instructor competency on a four–point scale (not at all to a lot). As depicted in Table 1, the ATS instructors indicated their level of competency increased "a lot" in three areas: educating their students about internships (86%), use workshop activities into their classroom teaching (82%), and educating others in a workshop setting (81%). The two lowest scoring items (with less than 70% of the participants responding that their competency increased "a lot") included instructors working with the local agri–businesses (65%) and working with families and employers (64%) (Thoron et al., 2008) (See Table 1).

Table 1
Competency Development, July 2007 (N = 83)

	% Responses				
Survey Item	Not at all	A little	Some	A lot	Not Sure
Ability to teach students on this topic	0	1	5	86	8
Use workshop activities in my own teaching	0	0	6	82	10
Design and lead a workshop on this topic	0	0	5	81	14
Effectively evaluate internship	0	0	10	74	17
Understanding the roles of the student, teacher, employer, parents, and community have regarding internships	0	1	10	74	15
Ability to design internships with students	0	0	10	71	18
Design an award recognition system for successful internships	0	1	15	70	14
Collaborate with local businesses	0	1	26	65	8
Ability to work with families and employees on this topic	0	3	23	64	10

Objective Two: Identify ATS instructors' self–perceived importance and application of internship competencies twelve months after inservice training.

The data used to analyze the individual competencies using the Borich model were collected in June, 2008, one year after the initial workshop. The numbers reflect those participants still involved in direct instruction of students one year after the workshops. Eighty participants completed this questionnaire, which is a mortality rate of 11.1% of the original participants.

As depicted in Table 2, the competencies that were rated high in importance were explain learning by doing, (M = 4.45) followed by identify the role of teachers in planning and conducting internships (M = 4.31) and describe the benefits of internships for students (M = 4.28). Establish a record–keeping system (M = 4.24) and define experience programs (M = 4.24) were moderately important. The least important items were creating an internship plan for students (M = 3.28) and identifying parents and students role in conducting internships (M = 3.94 and M = 3.98 respectively) (See Table 2).

The competencies that ATS instructors could apply were establish a record–keeping system for internships (M = 3.83) and explain the process of doing by learning (M = 3.79). Define supervised internships (M = 3.77) and identify the steps to establish a Technical Internship Center (M = 3.74) also ranked highly. The competencies that ATS instructors felt least comfortable in applying were identify the community's role in internships (M = 3.37) followed by identify the parents' role in internships (M = 3.47). Explain the relationship between internships and classroom instruction (M = 3.53) and describe the benefits and outcomes of internships for the school (M = 3.54) were also rated low (See Table 2).

Table 2
Competency rank based on Weighted Discrepancy Score, June 2008 (N = 80)

Competency	Importance Mean	Application Mean	Weighted Discrepancy score	*N*
Explain the relationship between internship and classroom instruction	4.23	3.53	2.96	80
Identify the role of teachers in planning and conducting internships	4.31	3.62	2.93	78
Explain the process of learning by doing	4.45	3.79	2.93	76
Define the types of experience programs for ATS students	4.24	3.56	2.86	80
Identify the role of the community in planning and conducting internships	4.08	3.37	2.84	79
Describe the benefits and outcomes of internships for students	4.28	3.65	2.68	80
Create on internship plan for students in my ATS program	3.28	3.68	2.65	79
Describe the benefits and outcomes of internships for the community	4.18	3.59	2.46	80
Describe the evolution of supervised experience.	4.17	3.62	2.25	78
Describe the benefits and outcomes of internships for employers.	4.13	3.58	2.22	78
Establish requirements for growth and success of internships	4.10	3.61	2.10	78
Describe the benefits and outcomes of internships for teachers	4.13	3.65	2.04	79
Identify strategies for supervision (individual on–site and group)	4.18	3.71	2.04	76
Identify suitable internship sites (strategies for working with business and industry)	4.10	3.63	1.97	77
Create a system for evaluating internships and recognizing achievement	4.11	3.65	1.92	79
Describe the benefits and outcomes of internships for the school.	4.01	3.54	1.90	80
Identify the role of employers in planning and conducting internships	4.15	3.68	1.89	79
Identify the role of parents in planning and conducting internships	3.94	3.47	1.80	79
Establish a record–keeping system for internships	4.24	3.83	1.74	78
Identify examples of potential agricultural internship experiences	4.08	3.70	1.56	76
Define supervised agricultural experience internships	4.15	3.77	1.52	79
Identify the steps needed to establish a Technical Internship Center	4.08	3.74	1.45	79
Identify the role of students in planning and conducting internships	3.98	3.60	1.40	77

Note. Scale: Importance 1 – low to 5 – high; Application 1 – low to 5 – high

Objective Three: Identify discrepancies between the importance of internship competencies and the ability of ATS instructors to apply the competencies.

A weighted discrepancy score was computed to represent the difference between the importance rated by the instructors and their perceived ability to apply the competency (See Table 2). Those competencies with the highest weighted discrepancy scores represent the competencies with the greatest need for additional professional development.

The competency with the highest weighted discrepancy score was explain the relationship of internship and classroom instruction (2.96). The next two highest were identify the role of teachers in internships (2.93), and explain the process of learning by doing (2.93). The competencies with the lowest weighted discrepancy score were identify the role of students in conducting internships (1.40), identify the steps to establish a Technical Internship Center (1.45), and define internships (1.52) (Table 2).

Conclusions and Recommendations

Based on the results of this study, the following conclusions were made: (a) at the conclusion of the initial workshop, ATS instructors felt competent to implement internship activities with their students; (b) a year later, ATS instructors felt that all the competencies had high importance, but their ability to apply the competencies was slightly lower; and (c) there were discrepancies on all competencies, with the largest discrepancies focused on explaining internships. These conclusions indicate that Egyptian ATS instructors have not yet reached a level of adaptive expertise on implementing internships (Hammerness et al., 2005).

ATS instructors had the greatest discrepancies in the following competencies: (a) explain the relationship of internship and classroom instruction, (b) identify the role of teachers in internships, and (c) explain the process of learning by doing. Future workshops should focus on these competencies. The responses of ATS instructors are consistent with Knobloch's (2003) findings that real life experiences are important to the learning process. The results also corresponded with the findings of Garton and Chung (1997), which highlighted the importance of the agriscience teacher and the local advisory committee in developing an internship for students. A high amount of emphasis should be placed on these competencies in future ATS workshops.

Conversely, low emphasis should be placed on the competencies identify internship examples, define internships, identify how to establish a Technical Internship Center, and identify the students role in internships. While the competency define supervised agricultural experience was rated as moderate by the instructors for importance, they rated their ability to apply as high, which means that they are confident with their ability to teach that competency to students. The remaining competencies that ranked low for Weighted Discrepancy were also rated low for Importance Mean. Those competencies that ranked low for their Weighted Discrepancy score should not be emphasized in future ATS workshops because the instructors either do not believe that they are important or they are confident in their ability to apply the competency.

Future studies using the Borich (1980) model should be conducted after ATS workshops in Egypt to determine if the needs of the educators change after the competencies have been addressed. Furthermore, the needs could change based on factors influencing instruction in agriculture and supervised agricultural experience internships in Egypt. These external factors, which could include parental involvement in the local ATS, employer involvement in internships, and advisory councils for the internship programs, should be identified and be included in the ATS content decision making process.

Thoron et al. (2008) found providing examples of supervised experience and the concept of supervised experience ranked the lowest in ATS instructors' understanding. Providing examples of supervised experience is also ranked lowest in application mean, such as describe the evolution of supervised experience, and identify the role of community/parents in conducting internships. When the two instruments are compared, instructors indicated that they lack the ability to conceptualize supervised experience as well as integrating the

community and parents into planning and conducting internships.

Thoron et al. (2008) found that ability to work with families and employers rated the lowest of the other competencies, which concurred with the relatively low self–perceived ability to identify parents' role in internships and identify employer's role in internships found in this study. Integrating parents and employers into the internship process should be considered in future ATS workshops. During the workshops, modeling could be used to demonstrate the parents' role in supervised experience through role play. Another option is to have the MUCIA team visit schools and learn of potential supervised experience projects and incorporate them into the workshops or the MUCIA team model working with parents through an on–site presentation to parents.

According to Roberts and Dyer (2004) agricultural teachers have a desire and need for inservice training in their development to become better educators. The ATS instructors have access to a quality inservice training program which has been tailored to their needs through survey instrumentation and analysis using the Borich (1980) model.

Future ATS workshops should focus on drawing connections between internship and classroom instruction, identifying the role of teachers and community in planning internships, articulating the process of learning by doing to students, and defining specific examples of internship programs being conducted by students. These competencies could be improved by spending time in the ATS programs identifying successful internship programs and documenting them for other teachers to use. Research should be done on how ATS instructors share information; perhaps a website could be developed were the instructors shared internship ideas across the ATS system. Programs should also be encouraged to persuade students to complete internships through an award system similar to the star program and proficiency awards in FFA in the United States.

Future research should be conducted to determine if the MUCIA inservice workshops in Upper Egypt are meeting the needs of instructors and students. Additional data are needed to determine how many ATS students are participating in internships and what type of internships the students are doing. Longitudinal data of internship participation and student career selection will provide outcomes for the newly established internship program.

References

Abolaji, G., & Reneau, F. W. (1988). Inservice needs and problems of agricultural science teachers in Krara State, Nigeria. *Journal of the American Association of Teacher Educators in Agriculture, 29*(3), 43–49. doi:10.5032/jaatea.1988.0343

Barrick, R. K., Ladewig, H. L., & Hedges, L. E. (1983). Development of a systematic approach to identifying technical inservice needs of teachers. *Journal of the American Association of Teacher Educators in Agriculture, 24*(1), 13–19. doi:10.5032/jaatea.1983.0103

Birkenholz, J. R., & Harbstreit, S. R. (1986). Analysis of the inservice needs of beginning vocational agriculture teachers. *Journal of the American Association of Teacher Educators in Agriculture, 28*(1), 41–49. doi:10.5032/jaatea.1987.0141

Borich, G. D. (1980). A needs assessment model for conducting follow–up studies. *Journal of Teacher Education, 31*(3), 39–42. doi:10.1177/00224878003100310

DeLay, A. M., & Washburn, S. G. (2008). Identifying early career secondary agriculture teachers' needs and preferences of support. *2008 AAAE Southern Agricultural Education Conference–Proceedings,* 117–130.

Edwards, M. C., & Briers, G. E. (1999). Assessing the inservice needs of entry–phase agriculture teachers in Texas: A discrepancy model verses direct assessment. *Journal of Agricultural Education, 40*(30), 40–49. doi:10.5032/jae.1999.03040

Garton, B. L., & Chung. (1996). The inservice needs of beginning teachers of agriculture as perceived by beginning teachers, teacher educators, and state supervisors. *Journal of Agricultural Education, 37*(3), 52–58. doi:10.5032/jae.1996.03052

Garton, B. L., & Chung, N. (1997). An assessment of the inservice needs of beginning teachers of agriculture using two assessment models. *Journal of Agricultural Education, 38*(3), 51–58. doi:10.5032/jae.1997.03051

Hammerness, K., Darling–Hammond, L., Bransford, J., Berliner, D., Cochran–Smith, M., McDonald, M., & Zeichner, K. (2005). How teachers learn and develop. In L. Darling–Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world* (pp. 40–87). San Francisco, CA: Jossey–Bass.

Israel, G. D. (2006). *Administering the inservice training evaluation.* Unpublished manuscript.

Knobloch, N. A. (2003). Is experiential learning authentic? *Journal of Agricultural Education, 44*(4), 22–34. doi:10.5032/jae.2003.04022

MUCIA (n.d.). *Request for second amendment to the AERI linkage project.* Unpublished manuscript.

Osborne, E. (1994). Completing the cycle. *The Agricultural Education Magazine*, *67*(3), 3, 11.

Roberts, T. G. (2006). A philosophical examination of experiential learning theory for agricultural educators. *Journal of Agricultural Education, 47*(1), 17–29. doi:10.5032/jae.2006.01017

Roberts, T. G., & Dyer, J. E. (2004). Inservice needs of traditionally and alternatively certified agriculture teachers. *Journal of Agricultural Education, 45*(4), 57–70. doi:10.5032/jae.2004.04057

Roberts, T. G., & Harlin, J. F. (2007). The project method in agricultural education: Then and now. *Journal of Agricultural Education, 48*(3), 46–56. doi:10.5032/jae.2007.03046

Thoron, A. C., Barrick, R. K., Roberts, T. G., & Samy, M. M. (March, 2008). *Establishing technical internship programs for agricultural technical school students Egypt*. Paper presented at the annual conference, Association for International Agricultural and Extension Education, E. A. R. T. H. University, Costa Rica.

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