
A Model for Developing a Well-Prepared Agricultural Workforce in an International Setting

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Abstract

Agriculture is an important sector of the economy of Egypt and other North African and Middle Eastern countries. While a system of Agricultural Technical Schools (ATS) is in place in Upper Egypt, there has not been a comprehensive effort to help ensure that students in those programs are adequately prepared to enter the workforce and be productive. The model that was developed begins with the needs of agricultural business and industry and the perceived preparedness of ATS graduates to enter the workforce. The differences between need and preparedness generate a skill-gap that serves as the basis for curriculum design. Curricular change based on student ability and guided by an external advisory council includes technical skill development, internships, decision-making and leadership. Coupled with curricular improvement, the model allows for faculty development to assist ATS instructors in active learning, competency assessment, leadership activities and internship supervision. A train-the-trainer model utilized agriculture faculty members from Egyptian universities to provide on-going instruction. Since other nations of the North African and Middle-Eastern regions share similar needs and concerns, the model is proposed to be applicable in those settings as well.

Keywords: model development, secondary schools, Egypt, agricultural education, train-the-trainer

Introduction

As the population of the world continues to increase and the available land for food production decreases, the need for highly successful agricultural production and marketing becomes even more important. For example, since 1952 the Arab Republic of Egypt has been faced with a rapidly expanding population that has placed extraordinary demands on its agricultural resources. Following the 1973 Arab-Israeli war, the government introduced a more open economy that decentralized decision-making and removed government restraints on the private sector. The five-year plan of 1982-87 provided fixed investments in development projects, with 16 percent of the funding going to agriculture. While federal control of heavy industry continued, agriculture was mainly in private hands and mostly deregulated (Nationsencyclopedia, 2009).

Agriculture remains an important sector of the North African and Middle East economies. With three percent or less of the total area of the country classified as arable land (although highly fertile) in countries such as Egypt, Saudi Arabia, Algeria and Jordan, agriculture contributes up to one-sixth of the Gross Domestic Product (GDP) in Egypt and Morocco, employs a tenth to one-third of the labor force, and provides the countries with an important part of foreign exchange (Nationsencyclopedia, 2009). Morocco is essentially self-sufficient in food production, while others are dependent upon food imports. In addition, the food processing industry contributes heavily to the GDP (Britannica.com, 2008; fita.org, 2008).

In order to feed growing populations, agriculture in many areas is geared more toward commercial rather than subsistence production, creating a need for a labor force that can contribute to the large-scale production enterprises as well as maintain small family-oriented farms (fita.org, 2008). With two or three growing seasons per year in climates near the equator, agriculture can

be highly productive in field crops and specialty crops as well as livestock production (Britannica.com, 2008). As agriculture continues to intensify, the need for well-prepared agricultural workers and managers in production as well as agribusiness continues to grow (Samy, 2003).

In 2003, the U. S. Agency for International Development (USAID) funded a development project through an Institutional Linkage Cooperative Agreement with the Midwest Universities Consortium for International Activities (MUCIA) entitled *Agricultural Export for Rural Income (AERI)*. The project included three major components: capacity building, public-private partnership development, and biotechnology (Samy, 2003). The Capacity Building Component was designed around three objectives: develop competency-based curricula in participating universities that better match agricultural sector workforce needs; develop new and updated courses in horticulture, animal production, and agribusiness management, and improve instruction; and develop internship programs to provide real-life experiences working with farmers, exporters and other agribusiness firms for college graduates (Samy, 2003).

As part of the linkage project, a highly successful and innovative program brought dynamic changes in the teaching and curricula in the Agricultural Technical Secondary Schools in Upper Egypt. In 2007, a new project was funded by USAID through MUCIA to expand the effort (Samy, n.d.).

The new project, *Value-Chain Training for the Agricultural Technical School Program in Upper Egypt*, included the following components:

- Conduct a skill-gap analysis;
- Transform the curricula;
- Update technical course content;
- Improve teaching methods;
- Develop supplemental instructional materials;
- Provide a train-the-trainer approach;
- Improve experiential learning;
- Conduct overseas study tours for headmasters and outstanding instructors; and
- Promote student involvement and growth.

The end goal of the new project was to improve the employability of ATS graduates by better meeting the skill requirements of the agricultural industry in Egypt. The target population included approximately 8,000 ATS instructors in the 50 agricultural schools in Upper Egypt, which serve approximately 100,000 students (Samy, n.d.). The project serves as a model for adaption and expansion into other areas of the region, including Algeria, Morocco, the Sinai Peninsula and Lebanon (M.M. Samy, personal communication, July 2009).

Purpose

The success of such a major undertaking relies upon the understanding and cooperation of a number of key players.

For this project, those key groups include USAID, MUCIA, Egyptian university faculty and administrators, ATS instructors and headmasters, external advisory committees, U.S. faculty, Egyptian business and industry, and the Ministries of Education and Higher Education of Egypt. To facilitate that understanding and cooperation, a model was developed to show schematically how the groups that are central to the project participate in developing and carrying out the various components for the Egyptian situation. The model shows that change in the agricultural workforce begins with private industry. The private sector is represented by successful farmers and agribusinessmen through advisory councils. They are important to the success of the adoption of the model and the infusion of new technical content into the curricula. After change is made in terms of content and process, the new members of the agricultural workforce provide feedback to the agricultural industry in terms of the success of the program and the implementation of the model.

Theoretical Theme – The Model

The model for value-chain training programs in the agricultural technical schools of Egypt (Figure 1) includes three areas: Assessment, Content and Process. Each of these areas is described in the follow sections.

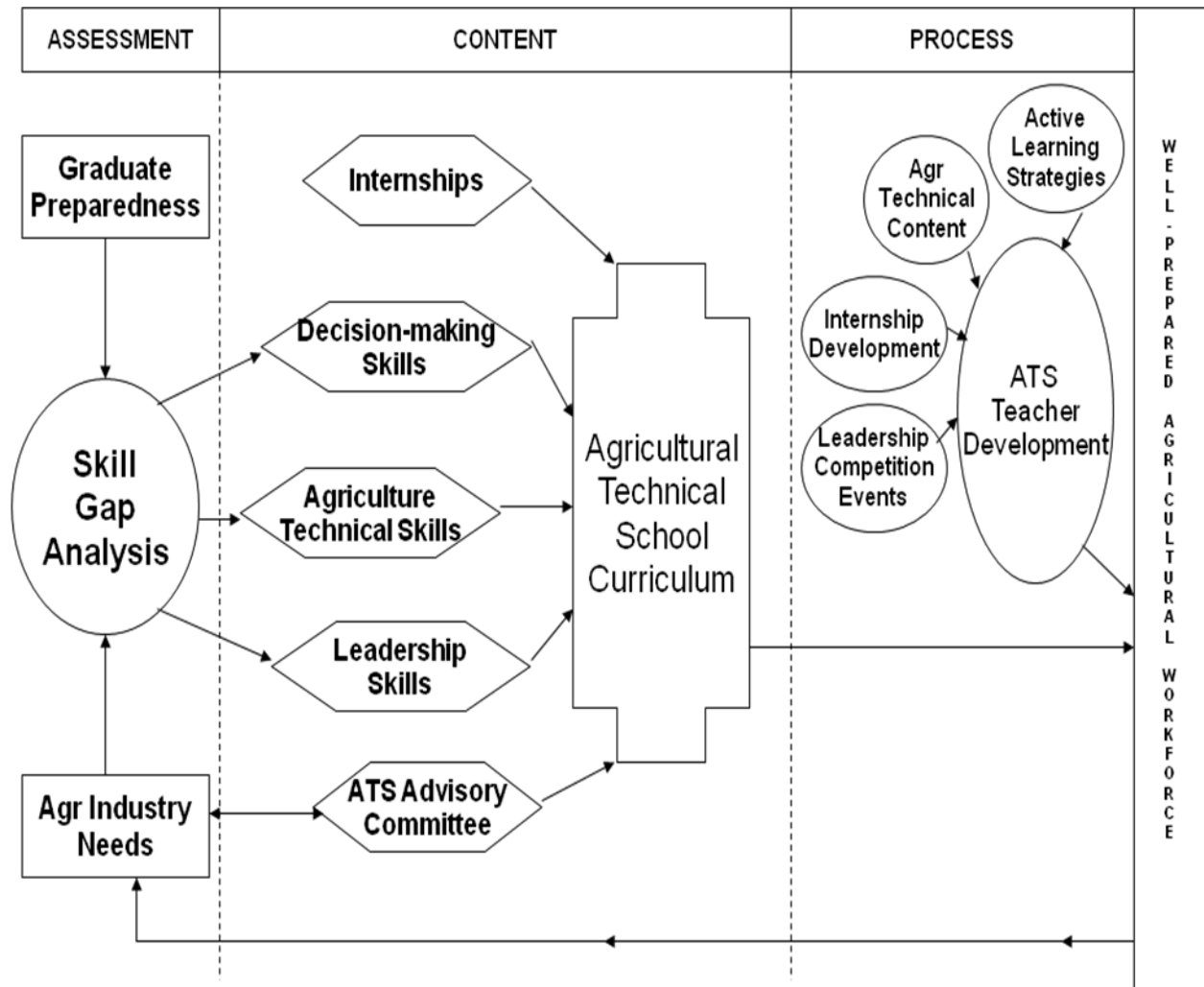


Figure 1. Developing Well-Prepared Agricultural Workers in International Settings

Assessment

Agricultural industry needs. The first step in developing curricula that are responsive to industry needs is to survey key industry leaders regarding their perceptions of skills needed by ATS graduates. Lists of potential skill competencies were developed which centered on the major agricultural enterprises in Egypt and the programmatic areas of the schools. The external advisory committee for the project assisted in developing the skill lists. In addition, each ATS established an external advisory council to provide local input and direction for the programs.

Graduate preparedness. Coinciding with determining industry needs, graduates

of the ATS programs were surveyed to determine their self-perceived preparedness in being able to perform each of the skills within the programmatic area of their ATS experience. The lists of skills were developed by the project team in consultation with industry leaders.

Skill-gap analysis. To assist in identifying needed changes in the curricula, a comparison of industry needs and graduates' preparedness was made. ATS graduates completed a survey instrument that asked them to rate their preparedness in being able to perform skills related to their ATS instructional program. Agribusiness industry representatives were asked to rate

the importance of the skills and competencies in their specific agricultural business. Skill competencies where industry needs scores were higher than graduate preparedness scores (the skill-gap) were identified as key in curricular revision for the ATS programs.

Content

The curricula for the secondary school programs are typically monitored closely by the Ministry of Education. Essentially there is a state-mandated curriculum for all programs in the schools. Therefore, significant change must be made within the parameters of the state curricula. Three components of the curricula were identified for enhancement, namely agricultural technical skills, decision-making skills, and leadership skills. The concept of establishing internships for students, beyond the typical summer experience at the school site, was introduced, and industry involvement was included through the establishment of local advisory councils.

Agricultural technical skills. Skills to be developed and enhanced in the major agricultural program areas in the ATSS were identified through the skill-gap analysis. Instructors prepared or revised courses to reflect the changes needed by industry while also satisfying state requirements. Curriculum materials, including visuals, were identified and translated into Arabic for use by the ATS instructors.

Decision-making/problem-solving skills. During the identification of technical skills and competencies, several non-technical competencies were identified that were not particular to a programmatic area. These skills are generally recognized as being able to make decisions and solve problems. Although they are not specifically taught, the goal of the model is to create ways that decision-making skills are developed within the agricultural program curricula.

Leadership and personal skills. Similar to decision-making and problem-

solving, the state-approved curricula in Egypt do not provide an opportunity to teach leadership development skills. Youth organizations similar to those in the U.S. are not a part of the ATS programs. Again, the goal of the model is to create ways for students to develop and enhance these personal skills of leadership within the context of learning agriculture.

Internships. Historically, the ATSS have provided summer field experiences for at least some students on the school farms. This approach has been helpful for students to develop practical skills, but the school situation does not mirror real-life farms and agribusinesses. The addition of internships away from the school should complement the other parts of the curricula.

External advisory input. From the beginning, agricultural industry leaders have played an important role in guiding the project. The local schools, however, did not have external advisory committees in place. The model provides the opportunity for local agricultural leaders to assist in making needed changes in the ATS programs and can also add value to a continued effort of identifying industry needs for the agricultural workforce.

These five content components of the model should result in an up-to-date curriculum for each ATS program area. The next part of the model addresses the process for creating change.

Process

As noted above, the first USAID and MUCIA project focused on university curricula development and teaching enhancement. For the ATS continuation, faculty from the universities partnered with U.S. faculty in conducting workshops for ATS instructors. The expertise of the Egyptian faculty and their knowledge of teaching and curriculum from earlier workshops complemented the expertise of the U.S. teaching team (Roberts, Thoron, Barrick & Samy, 2008). Further, the Egyptian faculty members conduct

workshops for additional ATS instructors after the teaching team returns to the United States. Four process components are included in the teacher development part of the model.

Active learning strategies. Typical instruction in the universities and secondary schools has been through teacher-centered delivery strategies. The model incorporates the development of active learning strategies for the ATS classrooms. Instruction is provided to the ATS instructors through content-specific workshops that demonstrate a variety of active teaching and learning techniques. Examples of active learning strategies and techniques were shared and demonstrated during the workshops.

Agricultural technical content. Egyptian university faculty are utilized to teach the agricultural content, since crops and growing methods can differ considerably from practices in the western hemisphere. ATS instructors are encouraged to revise courses and lesson plans to utilize well-written behavioral objectives to improve teaching and to appropriately assess student competency development. Course syllabi were written and revised by the instructors under the leadership and guidance of Egyptian and U.S. university faculty.

Internship development. ATS instructors have not been familiar with the concept of supervised experience programs for their students (Thoron, Barrick, Roberts & Samy, 2008). Workshops have been held to assist instructors in developing suitable internship experiences, from planning and conducting to involving agribusinesses and families in carrying out successful internships. An assessment of workshops that address experiential learning revealed that ATS instructors did not have experience in or knowledge of working with students, families and local agricultural businesses and farmers in preparing for and conducting internships (Thoron et al, 2008).

Leadership competition events. The state curriculum guidelines do not provide

for instruction in leadership and personal development skills like in the U.S., and there is no student organization that can be utilized as a means to apply those skills. Therefore, skills such as oral expression, team building and goal setting are taught within the context of agriculture, with the focus on technical skill development while using leadership skills as a strategy to teach agricultural content. This area remains under development as a part of instructional workshops for ATS instructors.

Application of the Model

The value-chain training program in the agricultural technical schools of Egypt is a revolutionary concept for Egyptian education. From identifying the real needs of the industry to advancing curricula and teaching strategies, the instructors in the Agricultural Technical Schools have participated in a series of workshops taught by Egyptian and U.S. university faculty. The initial programmatic areas that were addressed in the USAID MUCIA projects were horticulture, animal science and agribusiness management. More recently, the model has been utilized for conducting programs for ATS instructors in agricultural mechanization and food science and food safety. Early in the project, a separate series of workshops was conducted to address experiential learning and internships. Following the model, that concept area is now included in all workshops for the instructors. The last segment of the model to be addressed is leadership development. The plan is to assist instructors in incorporating these skill areas into the agricultural curricula without having to create a youth development organization as in the U.S. Since the train-the-trainer approach is utilized, the value-chain training program can continue to expand without the presence of the U.S. team and hopefully beyond the end of the USAID funding. While the model may seem commonplace in North America (Hughes & Barrick, 1993), the concept is very new for the Egyptian school culture,

and the model will serve as a basis for program development in other African and Middle-Eastern countries as funding is expanded.

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