

Evaluating an Undergraduate Program Using Outcomes-Based Assessments

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Abstract

Pre-service Agricultural Education departments should evaluate their academic programs to determine if the courses being taught and the instruction in these courses are adequately preparing their students to be able to perform desired program outcomes. The purpose of this study was to examine the performance of recent graduates (previous five years) related to the stated objectives of the Agricultural Education program from the perspective of the graduates as they exited the program, from the perspective of the school administrators in their initial employment as teachers, and from the perspective of the alumni after they had been teaching. The data collected and presented in this review show that, on the whole, recent graduates of the undergraduate Agricultural Education program in this study were well prepared to enter teaching careers in the secondary schools. Graduates of the program show strengths in pedagogical skills overall, with less confidence in the areas of teaching students with special needs, managing student behavior in the classroom and performing written communication. Program revisions were made based on these findings. The iterative cycle of program review using outcome-based assessments in pre-service Agricultural Education should continue to be a priority of the profession.

Introduction

In recent years, there has been a nationwide call for the accountability of educational programs at all educational levels. In the past, accountability measures have typically consisted of a review of program inputs and processes; however, recent federal legislation such as the Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 have emphasized the assessment of the outcomes or products of educational programs (Belcher, 1996).

Outcomes-based assessments primarily focus on what students should be able to do when they leave an educational program (McNeir, 1993). In the agricultural education community, discussion and research centered on outcomes-based assessment has accelerated as a response to this movement toward outcomes-based assessments.

The creation of national teaching and program standards has also provided an impetus for the adoption of outcomes-based assessments as an accountability tool. These standards provide the pre-service Agricultural Education program with defined skills needed by an effective high school agricultural educator by which to base program outcomes. Newly developed teaching and program standards for beginning agricultural educators can be found in The Interstate New Teacher Assessment and Support Consortium (1992) Model Core Standards for Beginning Teacher Licensing, Assessment and Development, the National Council for Accreditation of Teacher Education (2000) Standards and the American Association for Agricultural Education (2001) National Standards for Teacher Education in Agriculture.

The pre-service Agricultural Education profession should embrace the current shift in assessment of programs to outcomes-based assessment (McCaslin, 1990). Weber and Stewart (2001) emphasized that we should be more concerned about what high school agriculture students could do than what they could write on a test. Teacher educators should likewise be most concerned with what their graduates can do once they have completed their undergraduate education. Pre-service programs should prepare beginning teachers to perform effective teaching skills before they exit the program. We should go beyond simply examining the grades our students earn in courses, and evaluate their level of performance in specific areas.

Pre-service Agricultural Education departments should evaluate their academic programs to determine if the courses being taught and the instruction in these courses are adequately preparing their students to be able to perform desired program outcomes. Dormody and Torres (2002) focused on outcome measures of New Mexico State University agricultural education graduates to assess their level of teaching competence and concluded their 2000-01 graduates had satisfactory levels of teacher competence at graduation. If students are not being adequately prepared, then schools should be held accountable by making necessary program revisions as evidenced by the program review (O'Neil, 1994). The program review process at the undergraduate

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level is an effective tool for examining student outcomes and redesigning the program if desired student outcomes are not being met.

The Context, Input, Process and Product (CIPP) model for program evaluation developed by Stufflebeam, et al (1971) provided the theoretical framework for our ascribed evaluation of a pre-service Agricultural Education program. Stufflebeam's systems oriented approach to evaluation breaks down the evaluation process into four primary components. These components include: Context- identify target audiences and determine needs to be met, Input-determine available resources, possible alternative strategies and how to meet needs identified above, Process- examine how well the plan was implemented and Product- examine results obtained, whether needs were met, what planning for future required. While all of the components of the CIPP model are important in evaluation of an educational program, this study focused on the Product, or outcome component with some emphasis on the processes by which the graduates obtained their skills. The product or desired outcome of a pre-service Agricultural Education program is a beginning teacher who can perform the standards of an effective teacher.

Administrators, alumni and students can provide the necessary information to determine if the outcome of producing an effective teacher has been met. School administrators' perceptions of beginning teachers are important because they determine if beginning teachers receive career status licensure and tenure. Graduating seniors and alumni perceptions provide excellent measures of program outcomes, as they are the most direct customers of the program. Al-Khafaji (1999) stated that each of these constituents should be surveyed, as they may each possess different perceptions due to their own needs, desires and outcomes.

High school administrators and alumni also provide excellent measures of program outcomes because of their experience in using effective teaching performance evaluation tools. In the state in which the study was conducted, high school administrators evaluate beginning teachers using teacher appraisal performance instruments that measure the performance of effective teacher standards. In addition, beginning teachers participate in a self-reflection process by developing an individual professional growth plan based on their identified weaknesses.

Methods

Our department conducted a study to determine the outcomes or products of our pre-service Agricultural Education program and our overall program quality. Departmental goals in the form of learning objectives were derived from our departmental mission, state teaching licensure requirements for Agricultural Education, program stan-

dards of the National Council for Accreditation of Teacher Education (NCATE) and the American Association for Agricultural Education (2001) National Standards for Teacher Education in Agriculture. The effectiveness of our Agricultural Education curriculum was examined by an assessment of a graduate's ability to perform the following objectives:

1. Demonstrate appropriate pedagogical skills in the classroom.
 - a. Select appropriate teaching techniques for specific situations.
 - b. Motivate students to learn.
 - c. Adapt instruction to students with varying learning styles, academic abilities, and cultural backgrounds.
 - d. Evaluate learning and provide appropriate feedback to students.
 - e. Manage student behavior and solve discipline problems in the classroom.
2. Plan and conduct a total Agricultural Education program in their school.
 - a. Provide experiential learning opportunities for students.
 - b. Provide appropriate FFA activities consistent with Agricultural Education program objectives.
 - c. Provide Agricultural Education programs that meet the needs of the local community.
3. Develop a broad base of agricultural knowledge to be communicated to learners.
 - a. Ability to lead students in the solution of agricultural problems.
 - b. Communicate agricultural information to learners.
4. Apply appropriate instructional technology for specific learning situations.
 - a. Use of a variety of instructional tools to communicate agricultural information.
 - b. Use of state-of-the-art instructional technology to aid instruction to students of various abilities.
 - c. Use of appropriate technology in the agricultural discipline.
5. Apply critical thinking to solving educational and agricultural problems.
 - a. Synthesize information from courses and educational experiences to arrive at appropriate solutions to problems.
 - b. Develop learning activities that develop problem-solving skills in students.
6. Demonstrate professional dispositions in education.
 - a. Demonstrate fair and ethical treatment of students in educational settings.

- b. Contribute to the overall welfare of the school.
- c. Participate in professional development and professional improvement activities.
- d. Become involved in professional education organizations.

In order to collect data related to Agricultural Education program outcomes, survey research techniques were employed. The study was classified as a descriptive study. Data were collected from the following three groups in an effort to triangulate the results: (a) graduating seniors over the past five years, (b) school administrators who employed graduates during the last five years, and (c) alumni of the program over the past 5 years. The entire population of each of these groups was surveyed (N = 50).

Instruments used to collect data included a department-developed exit survey administered to graduating seniors, a departmental-developed questionnaire sent to school administrators, and a university-developed alumni survey. The same questionnaire was not used for each group, but similar items were used in all three surveys. Items on the instrument were mutually exclusive, so internal consistency as a measure of instrument reliability was not a concern. Content validity of the instruments was determined by university faculty in within related disciplines in this case, teacher education faculty.

Data were collected from graduating seniors using an on-line university-developed questionnaire that contained items for all teacher education graduates. This questionnaire was completed by all student teachers during their final student teaching conference and submitted to the Office of University Planning and Analysis. The data were summarized and reported to the department the following fall semester. Data were collected from school administrators using a mailed questionnaire. All principals of the graduates of the department who entered teaching during the past five years were surveyed (N=50). Responses were received from 35 principals (70% response).

Due to the high response rate, nonresponse error was not considered a threat to the validity of these data. The alumni survey is administered by the university on five-year intervals (last survey in 2003). Data are collected by mailed questionnaire from the previous five years of graduates. Eighteen of the 50 graduates who entered teaching

responded to the alumni survey (36% response rate). Since this is a university-administered survey, there was no opportunity to follow up nonrespondents. The alumni data should not be generalized beyond the respondents. Descriptive statistics were utilized to analyze the data.

Results and Discussion

Objective 1. To determine the effectiveness of the Agricultural Education program in producing teachers who could demonstrate effective pedagogical skills in the classroom.

Alumni were asked to rate their preparation related to several pedagogical tasks. Alumni perceived that had received good or excellent preparation in demonstrating all the effective pedagogical skills measured. They felt they were most prepared in instructional strategies and least prepared in managing student behavior.

Table 1 Mean scores of alumni respondents regarding their ability to demonstrate pedagogical skills in the classroom.

Item	Mean
Knowledge of a variety of instructional strategies for representing content in my teaching field.	4.65
Ability to design assessment and evaluation instruments of student learning	4.60
Ability to present a lesson with organization and clarity	4.50
Ability to compose long range, unit and daily plans for instruction	4.31
Knowledge of classroom management and organization	4.15
Knowledge of strategies for meeting the needs of diverse learners	4.05
Managing student behavior in the classroom	3.65

Note. Ratings were based on a five-point scale (1 = poor preparation, 5 = excellent preparation)

School administrators in schools that employed recent graduates did an average to good job in demonstrating pedagogical skills in the classroom. They also felt graduates were the most prepared in instructional strategies and least prepared in managing student behavior. See Table 2.

Table 2 Mean scores of employers regarding the ability of alumni to demonstrate pedagogical skills in the classroom

Item	Mean
Preparing and using lesson plans	3.94
Classroom Instruction	3.86
Evaluating student performance	3.81
Teaching students with diverse academic abilities	3.66
Maintaining discipline of students	3.40

Note. Ratings were based on a five-point scale (1 = poor, 5 = excellent)

Graduating seniors who had just completed student teaching were asked to rate their preparation in the area of pedagogical skills. Overall they perceived that had received good preparation in demonstrating effective pedagogical skills. They too were most confident in instructional strategies but rated their preparation as well above average in the other pedagogical areas. See Table 3 for the mean scores of items related to pedagogy.

Table 3 Mean scores of graduating senior respondents regarding their ability to demonstrate pedagogical skills in the classroom.

Item	Mean
Classroom Instruction	4.41
Preparing and using lesson plans	3.94
Maintaining discipline of students	3.87
Teaching students with diverse academic abilities	3.67

Note. Ratings were based on a five-point scale (1 = poor, 5 = excellent)

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Objective 2. To determine the effectiveness of the Agricultural Education program in producing teachers who could plan and implement a comprehensive Agricultural Education program based upon community needs.

Data collected from the employer survey and graduating senior survey were analyzed to ascertain the readiness of beginning teachers to plan and conduct a comprehensive Agricultural Education program. Employers of Agricultural Education graduates reported that preparation in the area of FFA advising was excellent (M = 4.56). Employers also reported that graduates did a good job in supervising the agricultural experience programs of students (M = 4.41). Graduating seniors who had just completed student teaching reported lower scores on these items than employers, but these graduating seniors indicated that their level of preparation was good in both FFA advising (M = 4.18) and SAE (3.94). Table 4 displays the mean scores of the items related to FFA and SAE. Graduating seniors were also asked to conduct a community needs assessment during their student teaching experience. Evaluations of this assignment by faculty in the department confirmed that graduates could effectively conduct community needs assessments required for effective planning for agricultural education programs.

Table 4 Mean scores of employer and graduating senior respondents as to the effectiveness of instruction in FFA advisement and SAE supervision.

Items	Employer Survey	Graduating Senior Survey
Advising the FFA	4.56	4.18
Supervising SAE Programs	4.41	3.94

Note. Ratings were based on a five-point scale (1 = poor, 5 = excellent)

Objective 3. To determine the effectiveness of the Agricultural Education program in producing teachers who had a strong knowledge of their subject matter and the ability to communicate that knowledge to their students.

The alumni survey provided the data for measuring the effectiveness of the Agricultural Education program in preparing teachers to effectively teach the content of an Agricultural Education curriculum. Respondents reported that overall preparation the content area was excellent (M = 4.50), and that their ability to understand current literature in the agricultural sciences was also excellent (M = 4.50). Graduates also reported having excellent public speaking and presentation skills (M = 4.50). Overall, their self-assessment of communication skills yielded a good response (M = 4.40).

Respondents reported their in-depth knowledge of content was good (M = 4.45). They also indicated a good level of knowledge of curricular goals (4.40). The

lowest scored item was in the area of written communication skills (M = 3.80), which yielded average scores among the respondents. Table 5 reports the means scores of respondents regarding content area knowledge.

Table 5 Mean scores of alumni respondents regarding content area knowledge.

Items	Means
Overall technical knowledge	4.50
Ability to understand current literature in the field	4.50
Public speaking and presentation skills	4.50
In-depth knowledge of content	4.45
Communication skills overall	4.40
Knowledge of curricular goals	4.40
Written communication skills	3.80

Note. Ratings were based on a five-point scale (1 = poor preparation, 5 = excellent preparation)

Objective 4. To determine the effectiveness of the Agricultural Education program in producing teachers who could use technology effectively in teaching agriculture.

The alumni survey had specific questions for teacher education graduates. Recent graduates reported an excellent degree of knowledge in using instructional technology (M = 4.60), specifically in the areas of computer applications (M = 4.50) and basic computer skills (4.40). Graduates indicated a good knowledge of software applications (M=4.00) pertinent to the agricultural sciences. Table 6 reports the mean scores of respondents in the area of instructional technology.

Employers were asked how well prepared the students were in using technology in teaching. The respondents indicated that recent graduates were good at using technology in teaching (M = 4.09).

Objective 5. To determine the effectiveness of the Agricultural

Table 6 Mean scores of alumni respondents on instructional technology items.

Item	Mean
Knowledge of the use of technology as an instructional tool	4.60
Overall knowledge of computer applications	4.50
Basic Computer Skills	4.40
Knowledge of computer software specific to my teaching field	4.00

Note. Ratings were based on a five-point scale (1 = poor preparation, 5 = excellent preparation)

Education program in producing teachers who could solve agricultural and educational problems arising in their classrooms.

Alumni indicated they perceived themselves to have an excellent ability to think critically (M = 4.50), and a good ability to use knowledge to solve problems (M = 4.40). Respondents also rated themselves as having a good ability to gather information (M = 4.40), think creatively (M = 4.20), define and solve problems (M = 4.10, M = 4.20), and plan projects (M = 4.10). Table 7 reports the mean scores of respondents on items related to critical thinking.

Objective 6. To determine the effectiveness of the Agricultural Education program in producing teachers who demonstrated professional dispositions in dealing with students, other faculty, administra-

Table 7 Mean scores of alumni respondents on items related to critical thinking.

Item	Mean
Ability to critically analyze ideas and information	4.50
Using knowledge to solve problems overall	4.40
Bringing information/ideas together from different areas	4.40
Thinking creatively	4.20
Solving problems	4.20
Planning projects	4.10
Defining problems	4.10

Note. Ratings were based on a five-point scale (1 = poor preparation, 5 = excellent preparation)

tors, and their own professional improvement.

Alumni reported their highest level of preparation in the areas of leadership and management skills (M = 4.50), professional development overall (M = 4.50), professionalism on the job (M = 4.50), and life long learning (M = 4.50). Recent graduates who completed the survey also reported a good degree of preparation for growth on the job (M = 4.40), teamwork skills (M = 4.4), public service (M = 4.40), ethical conduct (M = 4.40), and diversity (M = 4.40). Although they were the lowest scores among this group of items, respondents still rated their work attitudes and their knowledge of

Table 10 Mean scores of alumni respondents on items related to academic advising and state certification requirements.

Item	Mean
Experience as student teacher.	4.95
Teacher preparation in general.	4.80
Academic advising in your department.	4.75
Senior internship or clinical experience (other than student teaching).	4.67
Academic information and services relating to, progress in, and completion of the teacher education program.	4.53
Sophomore course: introduction to teaching (teacher aide experience).	4.39
Junior course/field experience: Tutoring adolescents or comparable course.	3.62

Note. Ratings were based on a five-point scale (1 = poor preparation, 5 = excellent preparation)

reported good preparation for meeting certification requirements (M = 4.53). Table 10 reports the mean scores of respondents on items related to academic advising and state certification requirements.

Graduating seniors were asked to rate the quality of specific course components. Course content and the quality of instruction and availability of instructors received at least a good rating and were in most instances rated excellent by respondents. The appropriateness of assignments was rated as good. The quality of advising and faculty interest in students was rated excellent. Table 11 reports the means scores of respondents regarding overall program quality on the student teachers survey.

Table 8 Mean scores of alumni survey respondents on items related to professional development.

Item	Mean
Leadership and management skills	4.50
Professional development overall	4.50
Professionalism	4.50
Viewing learning as a lifelong process	4.50
Ability to grow on the job	4.40
Ability to work in teams	4.40
Ability to work with other educational professionals in classroom and/or school settings.	4.40
Being involved in public and community affairs	4.40
Conducting work activities in an ethical manner	4.40
Having tolerance for different points of views	4.40
Work attitudes and skills overall	4.20
Knowledge of schools and their relationship to society	4.05

Note. Ratings were based on a five-point scale (1 = poor preparation, 5 = excellent preparation)

schools as good. Table 8 reports the mean scores of respondents on items related to professional development.

Employers rated beginning teachers as having good preparation for non-instructional activities (M = 4.27), professional development activities (M = 4.19), appropriate faculty and staff interaction (M =

Table 9 Mean scores of employer respondents on items related to professional development.

Item	Mean
Willingness to participate in non-instruction duties	4.27
Participation in appropriate professional activities	4.19
Interactions with other faculty and staff are appropriate	4.18
Following school rules and regulations	4.18

Note. Ratings were based on a five-point scale (1 = poor, 5 = excellent)

4.18) and school rules and procedures (M = 4.18). Table 9 reports the mean scores of employer respondents on items related to professional development.

Table 11 Mean scores of alumni respondents regarding overall program quality on the student teachers survey.

Item	2001	2002	2003
Content of agricultural education course	4.4	4.0	4.7
Quality of instruction	4.6	4.3	4.7
Appropriateness of assignments	4.1	3.7	4.2
Availability of instructors	4.6	4.6	4.5
Quality of advising	4.5	4.9	4.3
Faculty interest in individual students	4.4	4.5	4.7

Note. Ratings were based on a five-point scale (1 = poor, 5 = excellent)

Effectiveness of Program Components

The alumni survey asked students to rate their experiences with the specific program components of academic advising and state-mandated certification requirements. Respondents reported excellent preparation for student teaching (M = 4.95), general preparation for teaching (M = 4.8), academic advising (M = 4.75), and internships (M = 4.67, M = 4.39). Respondents also

reported good preparation for meeting certification requirements (M = 4.53). Table 10 reports the mean scores of respondents on items related to academic advising and state certification requirements.

Graduating seniors were asked to rate the quality of specific course components. Course content and the quality of instruction and availability of instructors received at least a good rating and were in most instances rated excellent by respondents. The appropriateness of assignments was rated as good. The quality of advising and faculty interest in students was rated excellent. Table 11 reports the means scores of respondents regarding overall program quality on the student teachers survey.

Summary

The data collected and presented in this review show that, on the whole, recent graduates of the undergraduate Agricultural Education program in this study were well prepared to enter teaching careers in the secondary schools. Graduates of the program show strengths in pedagog-

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ical skills overall, with less confidence in the areas of teaching students with special needs and managing student behavior in the classroom. Their knowledge of the subject matter they will teach is strong, considering that agriculture is a very diverse area, encompassing a large number of disciplines. Graduates possess the least confidence in their ability to carry out written communication. A particular strength noted was their ability to plan and implement effective programs in the student organization (FFA) and in conducting supervised agricultural experience programs (SAE) for students. The data show that students have a solid foundation in instructional technology, solving agricultural and educational problems using critical thinking skills, and in dealing professionally with students in the classroom.

After this program review, the undergraduate Agricultural Education program was amended by having faculty integrate more instruction dealing with student behavior management and special needs students into the existing sophomore and methods course. Faculty also attended a forty-hour seminar to develop instructional activities for integrating writing into the curriculum.

The iterative cycle of program review using outcome-based assessments in pre-service Agricultural Education should continue to be a priority of the department. By assessing the customers of our programs we must continue to determine if our program outcomes are being met. It is recommended that school administrators of beginning teachers continue to be surveyed and that alumni be encouraged to respond to the surveys sent by the university in order to provide more comprehensive data. Due to the emphasis on outcomes-based assessment, all teacher education programs should focus on student outcomes, or what they are able to actually do without neglecting the processes used in teacher education. Our profession has the responsibility of making sure we are producing effective beginning teachers by evaluating our processes as well as our products.

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