

Preparing Future Secondary Agricultural Education Teachers To Work With Students With Learning Disabilities: Reports from Teacher Educators

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Secondary agricultural education programs are enrolling increasing numbers of students with various disabilities. One consequence is that pre-service teachers are expressing a need for additional preparation to work with such students. This study was conducted to examine the preparation that pre-service teachers receive to work with students with learning disabilities in secondary agricultural education programs. The target population for the study was agricultural teacher educators who plan and in some situations, deliver such preparation. An instrument was mailed to a purposive sample of 84 teacher educators in the fall of 2006. As a result, 63 were returned for a 75% response rate. The respondents reported the cooperative pairs/groups teaching technique and the extra/extended time accommodation as most covered in their teacher education programs. The No Child Left Behind Act of 2001 was the federal legislation pre-service teachers felt was most covered in their program to prepare them to implement in the secondary setting. A majority (73%) of the respondents indicated that their pre-service teachers must complete at least one special education course. It is recommended that when a special education course is not offered by another department, agricultural teacher education programs should offer a course within the department.

Keywords: teacher education, secondary education, agricultural education, teacher educators, disabilities

Introduction

Over the years, agricultural education has evolved from a “strictly for farmers and rural persons” program to one that is more diverse, multicultural, inclusive, and mainstream. The opportunity for students to enroll in agricultural education at the secondary level is an evolving process (Newcomb, McCracken, Warmbrod, & Whittington, 2004). Through agricultural education, students from diverse backgrounds are afforded opportunities to experience agriculture in environments that are conducive for learning.

Agricultural education instruction is delivered through three components: classroom and laboratory instruction (contextual learning), supervised agricultural experience programs (work-based learning), and the student leadership organization (i.e., the FFA). Agricultural education’s primary purpose is to

offer instructional programs to prepare students, including those with disabilities, to acquire an education and employment skills (Bottoms, Pucel, & Phillips, 1997; Kessell, 2006; Lynch, 2000). Techniques that increase student learning, especially those with learning disabilities, are expected to be used in secondary agricultural education programs.

Gagnon and Keith (1988) professed that the traditional approach to teaching agriculture has been and is problem solving. This approach encourages the application of principles and concepts to actual situations. As students transition from secondary to postsecondary settings, this approach proves to be beneficial, especially for students with learning disabilities.

Even though enrollments in agricultural education have fluctuated over the years (Soloninka, 2003), the number of students with disabilities in agricultural education programs continues to increase (Ross, 2006). For

instance, in New Mexico agricultural education programs approximately 19% of the students are classified as special education students (Dormody, Seevers, Andreasen, & VanLeeuwen, 2006). In Illinois, 23% of the students in agricultural education programs are students with special needs (Pense, 2008).

In addition, The National Center for Educational Statistics (2005) reported public high school graduates from the class of 2005 in grade 12 who had a disability earned an average of .37 credit hours in agriculture and natural resources (U.S. Department of Education, 2008).

This situation is understandable since more than 2.9 million school-aged children in the United States—approximately 5% of all school-aged children are diagnosed with learning disabilities (LDOnline, 2008; National Dissemination Center for Children with Disabilities, 2009). Furthermore, LDOnline (2008) provided the following description of students with learning disabilities:

Students with learning disabilities are as smart or smarter than their peers. But they may have difficulty reading, writing, spelling, reasoning, recalling and/or organizing information if left to figure things out by themselves or if taught in conventional ways. Students with attention disorders, such as Attention Deficit/Hyperactivity Disorder (ADHD) and learning disabilities often occur at the same time. (p. 1)

Theoretical Framework

The theoretical framework for this study was based on the concept of inclusion. Elbert and Baggett (2003) quoted Salend (2001, p. 5) in describing inclusion as seeking to “establish collaborative, supportive and nurturing communities of learners that are based on giving all students the services and accommodations they need to learn, as well as respecting and learning from each others’ individual differences.”

As a result of mainstreaming and other inclusionary practices, the number of students with disabilities who enroll in agricultural education programs have increased (Cotton, 2000; Gagnon & Keith, 1988; Kessell, 2005; Schwager & White, 1994). Also, in 1988

Gagnon and Keith reported that during the last two decades, there had been an increasing awareness of the legal mandate for special needs students to participate in regular agricultural education programs. According to Andreasen, Seevers, Dormody and VanLeeuwen (2007) Agricultural education teachers can expect students with special needs to represent a sizable proportion of the total population of students in their program. These realities mean that agricultural teacher educators who effectively prepare pre-service teachers to work with students who have learning disabilities are vital to the profession. Thus, additional research on this topic is imperative as supported by Richardson (2006) who stated, “There is little research associated with agricultural education and students who have learning disabilities” (p. 12). In addition, Kessell (2005) called for more applied research relative to students with learning disabilities by stating, “Agricultural education is one form of vocational teacher education that could benefit from improved instruction and practice regarding inclusion techniques and strategies” (p. 2).

Over the years, several studies have examined the expressed needs agricultural education pre-service teachers have to teach students with learning disabilities (Farrington, 1981; Garton & Chung, 1996; Joerger, 2002; Kessell, Wingenbach, Burley, Lawver, Frazee, & Davis, 2006; Layfield & Dobbins, 2002; Veenman, 1984) and students with special needs (Andreason et al., 2007; Covington & Dobbins, 2004; Harvey, 1999; Kleinle, 1988; Pense, 2008; Roberts & Dyer, 2004; Ross, 2006; Ruhland & Bremer, 2002). For instance, Dormody & Torres (2002) conducted a study that examined secondary agriculture teachers’ self perceptions of competence level for teaching special needs students. The study found that at graduation the teachers’ ability scores regarding the inclusion of exceptional students in the instructional process to be relatively low. Giffing (2009) conducted a study to assess Utah’s agricultural teachers’ attitudes toward and ability for including students with disabilities. She found that the majority of teachers reported that they were not receiving adequate support, education, or professional development regarding the inclusion and teaching of students with disabilities. Collectively, these studies reveal pre-service teachers need additional preparation

to work effectively with students with learning disabilities in secondary agricultural education programs.

Many different methods and teaching techniques have been developed to remediate problems of teaching students with disabilities (Lloyd, Forness, & Kavale, 1998). Agriculture teachers' decisions for selecting teaching techniques are significant; this is especially true as it pertains to the audience being taught. A meta-analysis and review of research were conducted to identify the teaching techniques and accommodations most effective for working with students with learning disabilities.

Purpose and Objectives

The purpose of this study was to examine the approaches, techniques, and preparation that teacher educators report their pre-service teachers receive to work with students with learning disabilities. To guide the study, three research questions were developed:

1. What preparation will pre-service teachers receive to enable them to use appropriate teaching techniques students with learning disabilities in secondary agricultural education programs?
2. What preparation will pre-service teachers receive to enable them to use appropriate accommodations with students with learning disabilities in secondary agricultural education programs?
3. What preparation will pre-service teachers receive regarding federal legislation that governs the education for students with disabilities in secondary settings?

Methods and Procedures

This descriptive study examined the preparation that teacher educators reported their pre-service teachers received to work with students with learning disabilities enrolled in secondary agricultural education programs. The target population for the study consisted of teacher educators ($N = 84$). The American Association for Agricultural Education (AAAE) Directory of University Faculty in Agricultural Education (Dyer, Myers, & Washburn, 2005) and the American Association of State Colleges of Agriculture and Renewable Resources, 2004

(Food and Agricultural Education Information System, 2006) were used to identify the teacher educators for the study. One teacher educator from each of the 86 four-year institutions with active teacher education programs was asked to participate in the study. Two institutions subsequently indicated their teacher education programs were inactive; thus, 84 teacher educators were asked to participate in the study.

Instrumentation

A survey instrument was developed to collect the needed data. The instrument included items modified from the Kessell (2005) instrument that investigated and measured student confidence in regard to teaching students with disabilities in agricultural education programs and laboratories and other related studies and materials. Once the survey instrument was constructed for this study, the instrument was reviewed for content and face validity by a panel of experts consisting of agricultural education faculty and graduate students and special education faculty.

Section one of the instrument focused on teaching techniques found to be best used for teaching students with learning disabilities. The items included teaching techniques, such as mnemonic devices/memory tools, direct instruction, and cooperative pairs and groups. These items assessed the extent to which teaching techniques were covered in teacher education programs to prepare their pre-service teachers to work with students with learning disabilities. The 12 items were measured on a 4-point Likert-type scale ranging from 1=not covered, 2=partially covered, 3=mostly covered to 4=completely covered.

Section two of the instrument focused on accommodations such as extra/extended time and alternative assignments. Eight items assessed the extent to which accommodations were covered in teacher education programs to prepare pre-service teachers to work with students with learning disabilities. The items were measured on a 4-point Likert-type scale ranging from 1=not covered, 2=partially covered, 3=mostly covered to 4=completely covered.

Section three of the instrument focused on federal legislation such as The No Child Left Behind Act of 2001 and the Individuals with Disabilities Education Act (IDEA) of 1997.

Four items assessed the extent to which federal legislation that governs students with disabilities in secondary school settings were covered in the teacher education programs. The items were measured on a 4-point Likert-type scale ranging from 1=not covered, 2=partially covered, 3=mostly covered to 4=completely covered.

The three Likert scales included on the instrument were checked for reliability using the survey responses. Cronbach's alpha coefficients indicated that each of the scales were reliable (see Table 1).

Table 1
Reliability for the Three Scales on the Survey Instrument

Dependent Variable	# of Items	Alpha
Teaching Techniques	12	.83
Accommodations	8	.82
Federal Legislation	4	.84

Data Collection

Data were collected during the fall semester of 2006. Cover letters with a specified response date, coded survey instruments, and prepaid return self-addressed envelopes were mailed on November 3, 2006. Two weeks after the first mailing, 13 teacher educators had responded. On November 17, a second mailing was sent to all non-responding teacher educators stressing the importance of their participation and 13 additional instruments were received by December 1. To improve the response rate, a

web version of the instrument was developed and communicated to the non-responding teacher educators on December 4. Twenty additional instruments were received as a result of this electronic contact. All non-responding teacher educators were then contacted by telephone and 17 additional instruments were returned. As shown in Table 2, at the end of the data collection period on January 15, 2007, 63 useable instruments had been received (a 75% response rate).

Table 2
Number and Percentage of Returns from Teacher Educators (n=63)

Time and Date of Mailing	n	% Returns
First Mailing November 3, 2006 – November 15, 2006	13	15.5%
Second Mailing November 17, 2006 – December 1, 2006	13	15.5%
Third Mailing December 4, 2006 – January 15, 2007	37	44.0%
Total Returns	63	75.0%

Note: Percent return was based upon N=84. Two institutions were removed from the study because their teacher education programs were reported as inactive.

To address the issue of nonresponse bias, a comparison was made between early and late respondents (Miller & Smith, 1983). Early respondents ($n = 26$) were those teacher educators who responded within two weeks after the questionnaires were mailed and late respondents ($n = 37$) were those teacher educators that responded two weeks after the initial mailing. The Chi square analysis

procedure was used to assess whether there was an association between respondent group (early or late respondent) and the responses (nominal data) with each of the items of the dependent variables (teaching techniques, accommodations, and federal legislative acts) in the study. There were no statistically significant associations ($p > .05$) found between being an early or late respondent in the study

and their responses. Therefore the early and late respondent groups were consolidated for data analysis. The Chi square analysis procedure was used to compare teacher educator mail survey respondents and teacher educator web survey respondents with each of the dependent variables (teaching techniques, accommodations, and federal legislative acts) in the study. There were no statistically significant differences ($p > .05$) found between teacher educator mail survey respondents and teacher educator web survey respondents.

Data Analysis

The data were analyzed using the Statistical Package for the Social Science (SPSS, version 15.0). Descriptive statistics were used to analyze and report the data. The scale of measurement used for all of the analyses were 1=not covered, 2=partially covered, 3=mostly covered, and 4=completely covered.

Findings

Most of the teacher educators who responded (90.3%) were males and almost two-thirds (68.2%) were either assistant or associate professors. Over half (54%) of the teacher educators serve as pre-service coordinators for their teacher education programs. Also, both the male and female respondents reported that their programs covered teaching techniques, accommodations, and federal legislation similarly in teacher education programs to prepare their pre-service teachers to work with students with learning disabilities. Over one-third (34.9%) of the respondents reported that

they had completed 1–2 workshops related to teaching students with learning disabilities. Also, 46 (73%) of the respondents reported that special education credits were required by their accreditation agencies. Meanwhile, 15 (23.8%) of the respondents reported that special education credits were not required by their accreditation agencies. Also, 22 (34.9%) of the teacher educators reported that their pre-service teachers received preparation through courses offered by the special education department in their universities.

For research question one, the teacher educators were asked what preparation their pre-service teachers receive to use teaching techniques in secondary agricultural education programs for students with learning disabilities. Of the 12 teaching techniques, the respondents reported nine techniques were being *Mostly Covered* in their teacher education programs. No teaching techniques were reported to be *Not Covered* or *Completely Covered*.

The respondents reported that cooperative pairs/groups ($M = 3.38$) and differentiated instruction ($M = 3.26$) were the “*Mostly Covered*” teaching techniques in their teacher education programs. Also, in descending order, direct/explicit instruction and guided practice ($M = 3.14$), graphic organizers ($M = 2.83$), scaffolding ($M = 2.81$), task analysis ($M = 2.79$), and concept mastery routine and peer tutoring ($M = 2.53$) were also reported as “*Mostly Covered*.” Meanwhile, as shown in Table 3, strategy cues ($M = 2.46$), mnemonic device ($M = 2.38$), and choral response ($M = 2.18$) were reported as “*Partially Covered*.”

Table 3
Frequencies, Means, and Standard Deviations for Teaching Techniques Covered in Teacher Education Programs as Reported by Teacher Educators

Teaching Technique	<i>f</i>	Mean	S.D.
Cooperative pairs/groups	62	3.38	.79
Differentiated Instruction	61	3.26	.79
Direct/Explicit Instruction	61	3.14	.89
Guided Practice	61	3.14	.81
Graphic Organizer	60	2.83	.90
Scaffolding	61	2.81	.82
Task Analysis	62	2.79	.88
Concept Mastery Routine	60	2.53	.94
Peer Tutoring	60	2.53	1.08
Strategy Cues	60	2.46	.99
Mnemonic Device	59	2.38	.92
Choral Response	61	2.18	.92

Note. 1 = Not Covered; 2 = Partially Covered; 3 = Mostly Covered; 4 = Completely Covered.

Research question two identified the preparation the teacher educators reported that their pre-service teachers received to be able to provide accommodations for students with learning disabilities in secondary agricultural education programs. Teacher educators reported extra/extended time ($M = 3.11$), preferential seating ($M = 2.90$), photocopies ($M = 2.88$), and

alternative assignments ($M = 2.82$) as “*Mostly Covered*.” Basic calculators ($M = 2.25$), scribe/note-taker ($M = 2.17$), graph/lined paper ($M = 1.94$), and tape-recorded materials/books on tape ($M = 1.80$) were reported as “*Partially Covered*” in teacher education programs (see Table 4).

Table 4
Frequencies, Means and Standard Deviations for Accommodations Covered in Teacher Education Programs as Reported by Teacher Educators

Accommodation	<i>f</i>	Mean	S.D.
Extra/Extended time	61	3.11	.87
Preferential seating	61	2.90	1.01
Photocopies	59	2.88	1.06
Alternative assignments	58	2.82	.93
Basic calculators	58	2.25	1.14
Scribe/Note-taker	57	2.17	.98
Graph/Lined paper	57	1.94	1.02
Tape-recorded materials/Books on Tape	61	1.80	.92

Note. 1 = Not Covered; 2 = Partially Covered; 3 = Mostly Covered; 4 = Completely Covered.

In response to research question three, the respondents reported the preparation their pre-service teachers received regarding federal legislation related to working with students with disabilities in secondary settings. Four federal acts were reported to be “*Mostly Covered*” in their teacher education programs: The No Child

Left Behind Act of 2001 of NCLB ($M = 3.11$), The Individuals with Disabilities Education Act of 1997 or IDEA ($M = 3.08$), The Individuals with Disabilities Education Improvement Act of 2004 or IDEIA ($M = 2.92$), and Section 504 of the Rehabilitation Act of 1973 or Section 504 ($M = 2.89$) (see Table 5).

Table 5
Frequencies, Means, and Standard Deviations for Federal Legislation Covered in Teacher Education Programs as Reported by Teacher Educators

Federal Legislation	<i>f</i>	Mean	S.D.
NCLB	57	3.11	.95
IDEA of 1997	57	3.08	.93
IDEIA of 2004	57	2.92	.97
Section 504	57	2.89	.95

Note. 1 = Not Covered; 2 = Partially Covered; 3 = Mostly Covered; 4 = Completely Covered. Federal Legislation: NCLB=The No Child Left Behind Act of 2001, IDEA of 1997=The Individuals with Disabilities Education Act of 1997, IDEIA Act of 2004=The Individuals with Disabilities and Improvement Act Of 2004, Section 504= Section 504 of the Rehabilitation Act of 1973.

Discussion, Conclusions, and Recommendations

The increasing number of students with disabilities in secondary agricultural education programs means that more emphasis should be placed on the most suitable approaches, techniques, and activities to meet the educational needs of these students. This should occur particularly due to legal ramifications that teachers, administrators, and school districts face when students with disabilities are not provided an appropriate education. This reality means teacher educators are encouraged to become aware of teaching techniques and accommodations best used for teaching students with disabilities as well as relevant federal legislation that govern these students so their pre-service teachers become secondary teachers best prepared to educate these students.

The self-reported demographic profile for the teacher educators participating in this study and their teacher education programs are described below. The vast majority of the teacher educators were males and most were either assistant or associate professors. About half were also the pre-service coordinator for their teacher education programs and slightly over half of the teacher educators had completed one special education course. Also, 73% of the teacher education programs required their pre-service teachers to complete a special education course. This finding supports the findings of Wakefield and Talbert (1999) who studied the degree to which agricultural education programs prepared faculty and students to work with diverse populations. Wakefield and Talbert found that 64% of the agricultural education

programs surveyed required their undergraduates take a special education course.

Using appropriate teaching techniques, providing accommodations for students with learning disabilities, and understanding relevant federal legislation that governs the education of students with disabilities will enhance pre-service teachers' careers when they become secondary teachers. Amid the increasing number of students with learning disabilities in secondary programs, it is vital that teacher education programs prepare their pre-service teachers to educate this population effectively. All students, including those with learning disabilities, are entitled to the best instruction that agricultural education teachers can provide.

The first research question examined the preparation that teacher educators reported their pre-service teachers received to provide teaching techniques for students with learning disabilities. The teacher educators said cooperative pairs/groups was the teaching technique most covered in teacher education programs. This finding was consistent with findings of other studies which indicated that cooperative learning and grouping methods are two of the most beneficial teaching techniques used to teach students with learning disabilities (Elbaum, Vaughn, Hughes, Moody & Schum, 2000; Ellis & Fouts, 1993; Hoerst & Whittington, 2009; Sileo & Prater, 2000; The Access Center, 2005; Wang & Haertel, 1995).

The second research question examined pre-service teachers' preparation for providing accommodations for students with learning disabilities. The teacher educators reported extra/extended time and preferential seating were the accommodations most covered in their teacher education programs. This finding

supports those of Koretz and Barton (2003); Newcomb et al. (2004); Thompson (2005); and Thurlow and Ysseldyke (1995) who found that extra/extended time was a beneficial accommodation for students with learning disabilities.

The third research question focused on the preparation that pre-service teachers received about federal legislation that governs students with disabilities in secondary settings. The respondents reported that each piece of federal legislation was covered, but none was reported as covered completely. Understanding the importance of relevant legislation is of great importance for all pre-service teachers because of the potential legal ramifications that result from school personnel not adhering to the educational conditions specified in the legislation. In a similar study conducted by Kessell et al. (2006) examined student teachers' confidence levels for teaching special needs students in agricultural education classrooms, they found that student teachers perceived they were adequately confident to understand education laws pertaining to students with special needs. However, just because student teachers perceive they can understand legislation does not mean that they can deliver the desired instruction in an appropriate manner. For instance, Kozleski, Pugach and Yinger (2002) stated, "the expectation that children with disabilities will be served in regular classrooms means general education teachers must have a command on much of the special education curriculum [federal legislation]" (p. 3).

Finally, another finding of this study supports those of Martin, Fritzsche, and Ball (2006). They identified the perceptions of secondary agriculture teachers and education professionals regarding the potential impacts of The No Child Left Behind (NCLB) Act on secondary programs. They found that agriculture teachers are in fact concerned about the impact of NCLB on secondary agricultural education programs in Illinois. Thus, the findings of this study revealed that agricultural teacher educators are somewhat familiar with the federal legislative acts that govern students with disabilities and the need for pre-service teachers to become familiar as well.

Based upon the findings of this study, the following recommendations were offered:

1. All agricultural teacher education programs should require pre-service teachers to complete at least one special education course even if such a course is not required by the university's accreditation agency.
2. When a special education course is not available from another department, agricultural teacher education programs should offer such a course within its department.
3. Pre-service teachers should be encouraged to participate in in-service workshops, courses, and related activities after they graduate from the teacher education program so they maintain and enhance their capacity to teach students with disabilities.
4. Agricultural teacher education programs should designate one faculty member to be the special education contact for the program. This person should work closely with the university's special education department personnel and with school districts that provide student teaching and other experiences for the program's pre-service students. The designated faculty member should ensure that pre-service students gain the knowledge, attitudes, and skills appropriate for teaching students with learning disabilities.

Recommendations for Future Research

1. Future research should utilize a longitudinal study of pre-service teachers once placed in the secondary agricultural education programs. Self-reports from pre-service teachers concerning the application of practices should be collected. The study could compare self-reported preparation received in pre-service programs versus the application of the actual teaching techniques, accommodations, and federal legislative acts for students with learning disabilities in the secondary school setting.
2. Future research should utilize an in-depth qualitative approach to identify other factors that may influence the practices teacher educators cover in pre-service programs.

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