

Curricular Needs of Students with Specific Learning Disabilities in Illinois Secondary Agricultural Education Programs

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Abstract

The purpose of this descriptive census survey of secondary agricultural education teachers was to describe the curricular and classroom needs of students with specific learning disabilities (SLD) in their programs. The study found students with SLD make up 23% of the students enrolled in Illinois secondary agricultural education programs. Agricultural education teachers perceived resources for students with SLD as inadequate. Half of the respondents (51%) indicated a need to revise the state core curriculum for agriculture to better serve these students. Although respondents noted that students with SLD fell behind in class and caused delays for other students, they welcomed their presence in the classroom and acknowledged the importance of students with SLD to the agricultural workforce.

Introduction

The number of students with learning disabilities in the United States has increased dramatically in recent years, from 0.75 million in 1976 to 2.41 million in 2002 (Biddle, 2006; Swanson, 1999; U.S. Department of Education, 2004). Overall, learning disabled students currently encompass almost half of the special education population in schools, 2.9 million in 2003 (National Center for Learning Disabilities, 2003). This trend indicates a growing need for innovative approaches in teaching of secondary students with specific learning disabilities (SLD). Given the high percentage of students with SLD aspiring to obtain postsecondary vocational training and/or a college education (U.S. Department of Education), it is also imperative that curricular needs of learning disabled students in secondary agricultural education programs be identified and the types of curriculum or curriculum redesign for the learning disabled students in these programs be determined.

It is thought that serious socioeconomic problems in rural areas (Bajema, Miller, & Williams, 2002) have translated to greater percentages of students with SLD in these regions. Specific learning disabilities are varied, manifesting in behavioral characteristics that hinder academic progress including disorders such as dyslexia, dysgraphia, dyscalculia, dyspraxia, attention deficit, visual perception problems, and auditory discrimination problems (University of Illinois Extension, 2003). Overall, the types of students categorized as learning disabled and the complexities affecting them are copious.

To assist in defining the needs of these students, the acronym SLD was created to indicate students with specific learning disabilities (Students with Learning Disabilities, 2002). These students are not mentally retarded and not normally low in their intelligence quotient (IQ). For students with SLD, messages to the brain often become jumbled, and they may have difficulty with one or more academic areas (University of Illinois Extension, 2003).

Dormody and Torres (2002) found that special needs students, of which SLD is a subset, were low in both at-graduation and current ability scores. Thus, a need existed for follow-up research to determine the challenges teachers experience with special needs students in the instructional process. In another study (Sorenson, Tarpley, & Warnick, 2005), Utah teachers rated their ability to teach students with SLD as lowest among 31 core competencies. And yet those same teachers indicated the need for teacher inservice for instructing special needs students. In a later study,

Andreasen, Seevers, Dormody, and VanLeeuwen (2007) ranked teachers' perceived level of importance and competence on New Mexico Board of Education competencies related to inclusion. Those competencies most in need of strengthening included "understanding special education regulations, understanding difference levels of special education services, understanding difference levels of disabilities, and understanding the social needs of special education students (p. 126).

Elbert and Baggett (2003) established five competencies for teachers working with students with SLD including the completion of individual vocational plans, understanding laws that apply to special needs students, completing individual education plans (IEP), helping students to recognize their assets and limitations, and actively involving special needs students in vocational organizations.

It is still unclear exactly which teaching strategies may best help students with learning disabilities to improve academically (Swanson, 1999), but given the dramatic increases of students with SLD in the classroom and the conclusions reached in the previously mentioned studies for other states, as well as the potential contributions students with SLD can make to the workforce, a needs assessment was needed to determine the number of students with SLD in Illinois secondary agricultural education programs, topics and areas of need for students with SLD, resources currently available, and curricular methodology most suited to each student with SLD. This can then assist in effecting the improvement of education for students with learning disabilities through the development of curricular materials in agricultural education. In turn, this can help train an overlooked segment of the future agricultural workforce in Illinois.

Theoretical Framework

As suggested by Elbert and Baggett (2003), the theoretical framework for this study was based on the concept of "inclusion." According to Bloom, Perlmutter, and Burrell (1999), inclusion is a philosophy that draws students, families, educators and schools together to foster an environment that incorporates acceptance, belonging and community. Elbert and Baggett quote Salend (2001) 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 other's individual differences" (p. 5).

Inclusion is built upon four major principles: diversity, individual needs, reflective practice, and collaboration (Elbert & Baggett, 2003). Diversity is reflected when students are mainstreamed into the traditional agricultural education classroom, and benefits may then result from the interactions between the student with SLD and the traditional student. Individual needs are stressed in an agriculture classroom depending on various career pathways selected by the traditional students and also by adaptation to the special needs of the student with SLD. According to Dormody, Seevers, Andreasen, and VanLeeuwen (2006), reflective practice would be critical for the teacher who must develop "competency in working with disabled students" (p. 94). And finally, collaboration would be addressed both when the teacher works with parents, specialists, and the community; and when interaction takes place between the student with SLD and his/her non-disabled peers.

Purpose/Objectives

The purpose of this project was threefold:

1. To develop baseline data that may be used in future curriculum redesign of secondary agricultural education programs for students with SLD
2. To ascertain the curricular needs of students with SLD in Illinois secondary agricultural

- education programs
3. To determine which curriculum designs would meet the needs of students with SLD in Illinois secondary agricultural education programs

Objectives that guided the study were:

1. Develop a demographic profile of the schools and students where students with SLD are enrolled in Illinois secondary agricultural education programs.
2. Determine the percentage of students with SLD in Illinois secondary agricultural education programs.
3. Identify the needs of students with SLD in Illinois secondary agricultural education programs.
4. Determine types of curriculum or curriculum redesigns that would meet the needs of students with SLD in Illinois secondary agricultural education programs.

Methods/Procedures

This descriptive census study of all secondary agricultural education teachers in Illinois was conducted during spring of 2006 ($N = 372$). A mail questionnaire, based on the tailored design method of Dillman (2000), was developed by a panel of experts consisting of graduate students, secondary teachers and teacher educators in agricultural education during fall of 2005.

Face and content validity of the questionnaire was evaluated by a panel of teachers and teacher educators representing diverse disciplines in education. According to Wiersma and Jurs (1990), such a validation process helps ensure items contain appropriate language and content. The instrument contained seven parts: demographic information on the schools and students, information on students with SLD in each respondent's classes, resources available for students with SLD, teacher perceptions of problems/solutions with SLD student learning, students with SLD involvement in supervised agricultural experience (SAE), SLD student involvement in career development events (CDE), and the benefits of the state core curriculum in agriculture to students with SLD.

The survey instrument was pilot tested in December 2005 with agricultural education teachers in an adjacent state ($N = 12$). Teachers were randomly selected for the pilot test from a comprehensive list of agricultural education teachers provided by the agricultural education division of Illinois's Department of Elementary and Secondary Education. The teachers were then contacted by telephone and sent the questionnaire by e-mail. Completed questionnaires were returned via e-mail, and an item analysis was performed. Questions were then revised or eliminated according to a panel review of each item. The finalized instrument contained 32 items; 26 items were formatted with either multiple choice answers or 5-point Likert-type scale responses with the following descriptors: 1 = disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = agree; six items of the survey were open-ended questions.

Wiersma and Jurs (1990) provide eight general factors through which a researcher may enhance the reliability of an instrument. Using a modification of the following factors, the researcher addressed reliability during instrument development:

Homogeneous items: Criterion-referenced items emanated from a specific item form or objective, and therefore written in a similar content and format.

Discriminating items: Items underwent item analysis and were found to be positively discriminating and thus increased the test's reliability.

Enough items: The reliability was directly affected by instrument length. More items resulted

in greater reliability.

High-quality copying and format: Items were legible and not too crowded on the page. *Clear directions to the respondent:* Clear directions helped respondents know how to respond to the questions, thus avoiding ambiguity and inconsistencies.

A controlled setting: The researcher sought to ensure an optimal setting that eliminated confounding factors.

Motivating introduction: The respondents responded more consistently and were more involved in the task when each understood that the teacher considered the survey to be important and understood how the results would be used.

Clear directions to the scorer: Inconsistency in the scoring of responses was avoided by giving the scorer clear directions and raising the test's reliability (Wiersma & Jurs, p. 264).

Prior to initiating the study, both the instrument and the cover letter were approved by Southern Illinois University's Institutional Review Board for research with human subjects. The survey instrument was mailed April 21, 2006, to all agricultural education teachers listed in the 2005-2006 *Illinois Association of Vocational Agriculture Teachers Membership Directory* ($N = 372$). A cover letter detailing a short overview of the project and a stamped, self-addressed return envelope were enclosed.

A 30% response rate was initially obtained through 115 completed surveys. Two follow-up listserv messages were then sent to all of the state's agricultural education teachers on April 28 and May 15, 2006, to encourage nonrespondents to complete the survey. An additional 28 late respondents returned surveys, bringing the total response rate to 38% (143). A limitation of the study was that only three contacts were made with the target population.

To account for nonresponse error, a *t*-test (Table 1) showed no significant differences existed between early and late respondents on selected key variables at the 95% confidence level ($t(123) = .759$; $t(121) = 1.772$; $t(124) = 1.200$; $t(123) = .771$). Clausen and Ford (1947) reported research showing that late respondents are similar to nonrespondents. It was concluded that no difference existed between respondents and nonrespondents in the study.

Table 1

Results of Selected Questionnaire Variables for Early and Late Respondents

Questionnaire variable	Early Respond.			Late Respond.			Sig. difference		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Behaviors helped identify	103	4.23	.78	22	4.09	.87	.76	123	.450
Learning inventory used	101	2.88	1.30	22	2.41	1.10	1.77	121	.079
Core curriculum needs modification	104	3.44	1.08	22	3.14	1.13	1.20	124	.232
Learning disabled students do SAE	103	3.83	1.23	22	4.05	1.13	.77	123	.442

Results/Findings

Objective 1: Develop a Demographic Profile of the Schools and Students where Students with SLD are Enrolled in Illinois Secondary Agricultural Education Programs

Three geographic locations were identified for schools included in this study; 71.4% of the respondents were from rural schools, 23.8% of the respondents taught in suburban settings, and only 4.8% of the respondents were from urban schools (Table 2). Rural students included those students who attend schools in small towns with populations of 5,000 or less, whereas urban students were defined as those students who attend school within the boundaries of a city with a population of 90,000 or more, and suburban students were those students who attend school in communities adjacent to but outside the boundaries of an urban population (Pense, 2002).

Of the 143 respondents, 114 reported 5% or more of their students were economically depressed (measured by those qualifying for free lunches). Half of those respondents (58) reported 30% or more of the students in their programs were economically depressed. Twenty respondents indicated that more than 40% of their students were economically depressed.

Sixty percent of the five urban schools indicated more than 40% of their students were economically depressed (Table 3), whereas 14% of the 92 respondents from rural school settings reported that more than 40% of their students were economically depressed, and more than 54% reported that more than 30% of their students were economically depressed.

Objective 2: Determine the Percentage of Students with SLD in Illinois Secondary Agricultural Education Programs

Approximately 23% of the students enrolled in agricultural education classes in Illinois were classified by their teachers as learning disabled (Table 4).

Table 2
Summary of School and Student Demographics

Characteristic	<i>f</i>	%
School location (<i>n</i> = 126)		
Urban	6	4.8
Suburban	30	23.8
Rural	90	71.4
Students economically depressed (<i>n</i> = 114)		
5%	13	11.4
10%	26	22.8
20%	17	14.9
30%	28	24.6
40%	10	8.8
More than 40%	20	17.5

Table 3

Percentage of Economically Depressed Students by School Location

Location	Economically depressed					
	5%	10%	20%	30%	40%	>40%
Urban (<i>n</i> = 5)	40.0	0.0	0.0	0.0	0.0	60.0
Suburban (<i>n</i> = 30)	20.0	30.0	13.3	13.3	3.3	20.0
Rural (<i>n</i> = 92)	6.5	21.7	17.4	29.3	10.9	14.1

Table 4

Number of Students with SLD in Class and Percentage of Total by Class Period

Responding programs (<i>f</i>)	SLD students (<i>f</i>)	Total students (<i>f</i>)	%
146	2,311	9,955	23.21

Objective 3: Understand the Needs of Students with SLD in Illinois Secondary Agricultural Education Programs

Ninety four percent (*n* = 131) of the agricultural education teachers surveyed indicated that they are typically notified of the academic needs of their students with SLD. Approximately 43% (*n* = 61 and 60) indicated they are informed of the social and behavioral needs of their students with SLD. Six (4.32%) said they are not informed of any learning disabled student needs (Table 5). The vast majority of agricultural education teachers (*n* = 113) indicated their source of information on students with SLD in their classes were their special education departments. Teachers were asked to cite the degree to which other methods were used to identify SLD student needs by using a Likert-type scale of 1 to 5 (1 = disagree, 2 = somewhat disagree, 3 = neutral, 4 = somewhat agree, 5 = agree; Table 6). Of those obtaining their information from informal sources, 29.1% “somewhat agreed” to this source of information, whereas 17% “agreed” that they relied on informal sources. The largest percentage of teachers (62.7%) agreed their information came from IEP. More than 40% of teachers indicated they obtained needed information by observation of student behavior.

Table 5

Teacher Notification of Each Type of SLD Student Needs (n = 139)

	f	%
Type of SLD student needs teacher notified		
Academic needs ^a	131	94.0
Social needs ^a	61	43.9
Behavioral needs ^a	60	43.2
Not informed of any SLD student needs	6	4.3
Notifying individual or office		
Administration office ^b	1	0.7
School counselor ^b	5	3.5
Special education department ^b	113	79.0
Students' parents ^b	1	0.7

^aRespondents could select multiple responses. ^bSome respondents failed to reply to the question.

Table 6

Other Methods Used to Identify SLD Student Needs (n = 143)

Identification method	Response (%)				
	1 Disagree	2 Somewhat disagree	3 Neutral	4 Somewhat agree	5 Agree
Informal sources	22.0	13.5	18.4	29.1	17.0
IEP	4.2	2.8	5.6	24.6	62.7
Student behaviors	0.7	3.5	10.6	45.1	40.1

Objective 4: Determine Types of Curriculum or Curriculum Redesign that Would Meet the Needs of Students with SLD in Illinois Secondary Agricultural Education Programs

As seen in Table 7, the two resources currently available and used most frequently in teaching students with SLD were peer mentoring (somewhat agree – 35%, agree – 17.9%) and learning inventories (somewhat agree – 30.2%, agree – 10.8%). The least available or used resource was daily assessment (somewhat agree – 12.1%, agree – 2.1%). Overall, resources for the agricultural education instructor for teaching students with SLD were viewed as in short supply, with less than one third of the teachers even somewhat agreeing to their availability.

Table 7

Resources Currently Available for Students with SLD (n = 143)

Resource	Response (%)				
	1 Disagree	2 Somewhat disagree	3 Neutral	4 Somewhat agree	5 Agree
Specialized books	37.6	21.3	17.0	20.6	3.5
Donations/grants	22.5	13.1	36.2	21.7	6.5
Learning inventory	23.0	7.2	28.8	30.2	10.8
Individual instruction	27.3	19.4	17.3	28.1	7.9
Peer mentoring	10.7	19.3	17.1	35.0	17.9
Daily assessment	41.5	22.2	22.1	12.1	2.1

Although they acknowledged the difficulty a student with SLD had in keeping up with daily instruction (Table 8), a large percentage of teachers (somewhat agree – 41.8%, agree – 17.1%) felt that agricultural education was suitable for students with SLD. More than 50% either somewhat agreed or agreed that they liked having students with SLD in class. The two resources that had the lowest endorsement by teachers were the state curriculum in agriculture (somewhat agree – 21.3%, agree – 5.0%) and block scheduling (somewhat agree – 21.7%, agree – 14.7%). However, the general consensus regarding the state curriculum providing “special help” to the student with SLD in secondary agricultural education classes was neutral; nearly the same percentage of teachers agreed and disagreed as to its benefit, and 45% of the teachers responded with 3 = neutral on the Likert-type scale (Table 8).

Table 8

Problems/Solutions for the SLD student in the Agricultural Education Classroom (n = 143)

Resource	Response (%)				
	1 Disagree	2 Somewhat disagree	3 Neutral	4 Somewhat agree	5 Agree
Ag ed suitable for SLD	10.6	12.1	18.4	41.8	17.1
Likes SLD in ag class	7.7	9.9	30.3	31.0	21.1
SLD can't keep up	6.3	17.0	18.3	37.5	20.6
SLD cause delays	9.9	24.9	17.7	30.5	17.0
State curriculum helps	7.8	21.3	44.6	21.3	5.0
Need to modify state curriculum	6.3	15.4	33.5	28.0	16.8
Block scheduling helps	23.1	11.2	29.3	21.7	14.7

When asked what type of modifications teachers would like to see changed in the Illinois core curriculum, teachers acknowledged that the core curriculum was very good in presenting

information in an understandable way. Suggested modifications for students with SLD included:

- modified worksheets
- more transparencies and visuals
- guided notes and worksheets
- modified lessons for inclusive classes
- skeleton notes/outline of units
- align power points to sample tests
- study guides
- pictorial diagrams which are printable
- hands-on activities for multiple intelligences

More than 72% of the teachers surveyed said their students with SLD were engaged in SAE programs; and of the eight types of CDE, placement (75.4%) was clearly identified over all others as being most suitable for students with SLD (Table 9).

When asked about competing in CDE, teachers indicated nearly 80% of their students with SLD competed in CDE (Table 10). However, a majority (65%) said special accommodations would not benefit their students with SLD in CDE competitions.

Table 9

Types of SAE Deemed by Ag Ed Teachers as Suitable for Students with SLD

Suitable SAE (<i>n</i> = 138)	Yes		No	
	<i>f</i>	%	<i>f</i>	%
Entrepreneurial	53	37.1	85	59.4
Placement	104	72.7	34	23.8
Research	13	9.1	125	87.4
Exploratory	44	30.8	94	65.7
Service learning	24	16.8	114	79.7
Improvement	26	18.2	112	78.3
Supplemental	14	9.8	124	86.7
Directed school lab	51	35.7	87	60.8

Note: Respondents could select multiple responses.

Table 10

Students with SLD in SAE Programs and CDE

Question	Response (%)				
	1 Disagree	2 Somewhat disagree	3 Neutral	4 Somewhat agree	5 Agree
SLD in SAE (<i>n</i> = 138)	10.6	5.0	12.1	35.5	36.8
SLD in CDE (<i>n</i> = 139)	6.4	7.2	6.5	28.1	51.8
CDE accomm. (<i>n</i> = 139)	44.6	20.9	23.7	6.5	4.3

When asked what accommodations should be made for the student with SLD at CDE, many teachers said none should be made because it would change the competition level or would require two simultaneous contests. One respondent indicated that with the many types of learning disabilities requiring special accommodation, the result would be a “contest nightmare.”

Teachers indicated the Illinois core curriculum for agriculture was “helpful” (45% agreed or somewhat agreed, Table 11). Twice in the survey (Tables 8 and 11), they indicated a need for modification of the core curriculum to better serve students with SLD in agriculture (combined responses of those who somewhat agree and agree: 45% and 51%, respectively).

Table 11

The Illinois Core Curriculum in Agricultural Education and Students with SLD (n = 141)

Question	Response (%)				
	1 Disagree	2 Somewhat disagree	3 Neutral	4 Somewhat agree	5 Agree
Core helpful to SLD	3.5	14.2	36.9	34.8	10.6
SLD modif. to core	6.4	6.4	36.2	34.8	16.3

Implications/Recommendations

The findings of this study should not be generalized beyond the population of this census survey. Although a low response rate of 38% would suggest not to generalize to the population under study, Lindner, Murphy, and Briers (2001) agree that “results from procedures used to address nonresponse error provide evidence that early/late comparison...are defensible and are generally accepted procedures for handling nonresponse error as a threat to external validity of research findings” (p.51). Whether generalizing to all Illinois secondary agricultural education programs or not, the amount of data generated carries implications for the entire state.

According to 143 respondents, 23% of students enrolled in their secondary agricultural education courses were learning disabled; the vast majority of these students were in rural schools (71%). And of these, half of the teachers said more than 30% of the students were economically depressed.

With a large majority of students with SLD planning on vocational school or college after high school (U.S. Department of Education, 2004), agricultural education teachers in this study (59%) have identified their programs as suitable for students with SLD. Acknowledging many problems (lack of resources, student inability to keep pace with lessons, and the Illinois curriculum requiring modifications for students with SLD), agricultural teachers (79%) also recognized their special education departments as having provided them with required information concerning

students with SLD. Although this collaboration and service provided by the special education departments is commendable, less than 50% of respondents obtained complete information about students' social or behavioral needs. Most teachers agreed (63%) that an IEP was a useful tool for identifying SLD student needs. However, with such gaps in the information provided to agricultural teachers, further work should be done to facilitate cooperation between the special education departments and the agricultural education departments. New or revised tools are needed to bridge the informational gap.

Further research is recommended to:

1. Identify specific ways to increase or improve current teaching/learning resources for students with SLD in the various specializations of agricultural education.
2. Identify avenues for channeling additional funding to rural schools to meet special needs of students with SLD in secondary agricultural education programs.
3. Investigate ways to modify and further develop the state curriculum in agricultural education to better educate and train students with SLD.
4. Identify potential inservice training which will help secondary agricultural education teachers understand the value of students with SLD in their programs.
5. Describe the challenges secondary agricultural education teachers may experience by including students with SLD in their programs.
6. Explore curriculum redesign for students with SLD in secondary agricultural education.

Conclusions

With nearly one fourth (23%) of Illinois secondary agricultural education programs instructing students with special needs, we risk losing that amount of our future workforce in the agriculture industry, and safety and political ramifications loom in the future as well. If classrooms and laboratories are not properly equipped and the curriculum developed to accommodate the learning disabled student, lawsuits may be filed against many of our institutions. With a renewed focus on the needs of students with SLD, funding opportunities may exist through special grants and governmental programs. Facilities may be upgraded and equipment purchased, which will aid all students in secondary agricultural education programs.

In keeping with the concept of "inclusion," a synergy may exist through the interactions of our students with SLD and their non-disabled peers. When the non-disabled peers provide assistance and as service learning projects become better developed, all students in the agricultural education classroom will benefit. Other benefits of peer interaction between students with SLD and non-disabled students may include the development of leadership and citizenship skills. Students with SLD may also find academic and job skill benefits through full participation in SAE Programs and CDE. Hands-on SAE were identified as most suitable for students with SLD, with the preferred area for SAE being placement (75%). This category of SAE may be most suitable because it provides the immediate reward of paid wages and also would likely provide for greater supervision than other types of SAE.

Perhaps the greatest implication in this study for Illinois secondary agricultural education is the opportunity to further develop the Illinois core curriculum. Modifications can be made to the core curriculum including those elements needed to assist agricultural educators and their students with SLD.

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