

Early Career Agriculture Teachers' Efficacy Toward Teaching Students with Special Needs

Mollie S. Aschenbrener, Instructor
California State University, Chico

Bryan L. Garton, Professor and Associate Dean
University of Missouri

Amanda L. Ross, Agriculture Instructor
Salisbury High School

This study sought to assess the perceptions of early career agriculture teachers' ability to teach students with special needs. Agriculture teachers in the first five years of their careers indicated that administrative support contributed the most to their success in working with students with special needs, while in-service activities that focused on students with special needs contributed little. Self-efficacy was the strongest predictor of self-perceived success of teaching students with special needs. Self-efficacy, combined with administrator support, in-service and teacher preparation, accounted for 27% of the variance in early career agriculture teachers' self-perceived success of teaching students with special needs.

Keywords: teacher efficacy, teaching students with special needs

Introduction

Mainstreaming of students with special needs has been mandated since 1975 when legislation specified students should be educated in the least restrictive environment (Tredler, Morse, & Ferron, 2000). The Education for all Handicapped Children Act, now known as the Individuals with Disabilities Education Act (Public law 94-142), addressed students with special needs. Students with special needs battle not only the normal challenges associated with adolescence, but also the ones created by their individual disabilities (Lerner, 2003). Students with special needs often possess personal characteristics that make learning difficult and teaching a challenge. To compound these issues, students with special needs may lack the attention span necessary for a majority of secondary classes. Although subject specific teachers receive preparation on teaching adolescent children, they may not acquire teaching strategies and techniques for specific learning deficits of students with special needs (Mims, Harper, Armstrong, & Savage, 1991).

Regardless of the teaching method, most students with special needs will need modifications and/or adaptations (Mastropieri & Scruggs, 1995). Individualized Education Plans (IEPs) provide teachers with clear statements on the type of modifications and services the student with special needs should receive (Algozzine, Ysseldyke, & Campbell, 1994). Subject specific teachers must recognize their role in implementing IEPs (Sharpe & Hawes, 2003). However, this is often challenging, as instructions on each plan “represent philosophies of what should be taught rather than illustrations of how it should happen” (Algozzine et al., p. 34).

Students with special needs have been the topic of research in agricultural education (Elbert & Baggett, 2003; Kessell et al., 2006a, 2006b). Secondary agriculture instructors experience a number of challenges when students with special needs are incorporated into their classroom (Elbert & Baggett, 2003). Modifications required for special needs students can become even more challenging in technical classes. Special education teachers

often have limited experience working in technical classrooms, making it challenging for them to assist technical teachers (Evers & Bursuck, 1995). In addition, safety can be a concern in technical laboratory courses. Some students with special needs become overwhelmed when they are required to complete tasks that involve numerous steps and specialized equipment. These students could find class and individual projects difficult and often will work much slower than their peers (Campbell & Olsen, 1994). Evers & Bursuck found students with special needs enrolled in career and technical education classes experience challenges similar to those in “core” academic subjects. Consequently, agriculture teachers may teach students with special needs who face academic and technical challenges. However, how do secondary agriculture teachers perceive their ability to teach and meet the educational needs of students with special needs? What factors contribute to their feeling of efficacy toward working with these students?

Theoretical Framework

Self-efficacy describes a person’s confidence in his or her ability to accomplish tasks in a specific domain. In addition, self-efficacy influences a person’s acquisition of specific skill development and demonstration of behaviors related to that domain (Bandura, 1997; Ormrod, 2004). Further, self-efficacy is the connection between knowledge and action that is a strong determinant in an individual’s accomplishments (Plourde, 2002; Soto & Goetz, 1998). Those who doubt their capability in a particular domain will often shy away from the difficult task in that domain (Bandura, 1997). Low self-efficacy leads one to believe situations are more difficult than they really are and promotes an increase in stress and depression (Soto & Goetz, 1998). A teacher’s self-efficacy can impact his/her teaching and ultimately student learning.

The perceived efficacy of teachers has been the topic of considerable research (Ashton &

Webb, 1986; Bandura, 1997; Brownell & Pajares, 1999). Teacher efficacy is the conviction held by the teacher that the desired learning outcome could be achieved (Soto & Goetz, 1998). A high personal teaching efficacy indicates teachers’ confidence in their ability to make a difference with students (DiBella-McCarthy, McDaniel, & Miller, 1995). A teacher with a high sense of self-efficacy will devote more time to academic pursuits and provide students the guidance they need to succeed (Bandura, 1997). Classroom practices, such as praise instead of criticism, enthusiasm, and acceptance of students’ opinions are influenced by the level of teacher efficacy (Soto & Goetz, 1998). Colardarci (1994) found teaching efficacy was the greatest predictor of a teacher’s commitment to the profession. Further, Midgley, Feldlaufer, and Eccles (1989) concluded students’ achievement and attitude toward learning were affected by the level of their teacher’s efficacy. Students of efficacious teachers believed they were performing better and the subject was less difficult than those students who had teachers with low levels of efficacy. Not surprisingly, both discipline specific and special education teachers with a high sense of teacher efficacy are more likely to recommend a student with special needs be placed in a regular classroom than a teacher with low teacher efficacy (Soodak & Podell, 1993).

Raundenbush, Rowan, and Cheong (1992) investigated 315 high school teachers in an attempt to identify predictors of teacher efficacy. They found vocational and discipline specific teachers were less efficacious than teachers instructing honors classes. While academic achievement has been found to play a role in teacher efficacy, Watson (2006) did not find a relationship between teachers’ years of experience and their level of efficacy. Brownell and Pajares (1999) described factors affecting a teacher’s self-efficacy when working with students with disabilities. These factors included pre-service preparation, in-service participation, and administrative support (Figure 1).

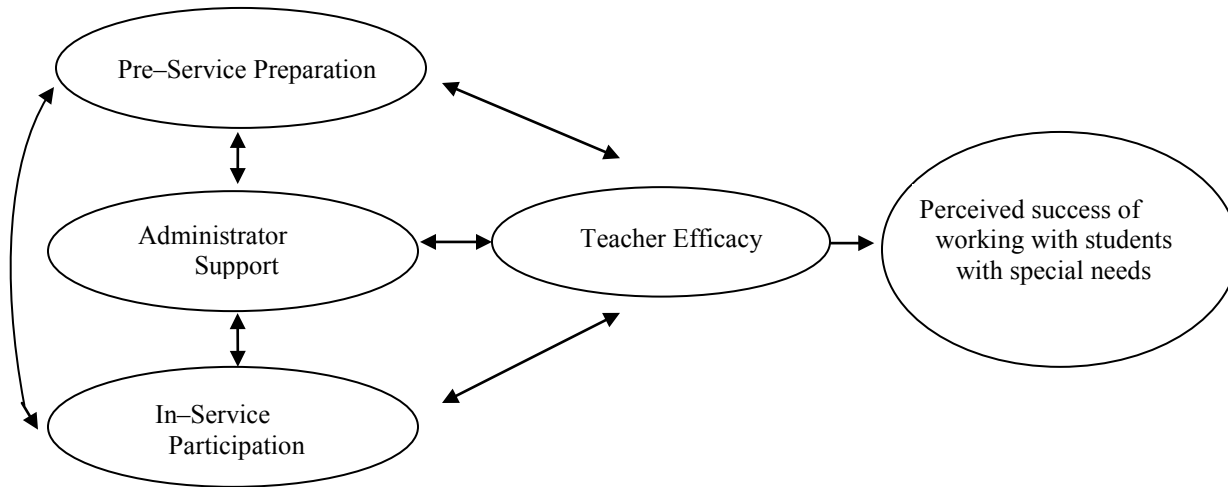


Figure 1. Conceptual Model of Factors Affecting Self-Perceived Success
Adapted from Brownell and Pajares (1999).

Regarding pre-service teacher preparation, the student teaching experience places a student in a teaching/learning setting under the supervision of a university supervisor and an experienced teacher. This field-based learning experience provides an opportunity for modeling to occur. According to Bandura (1997), a person's self-efficacy can be enhanced through modeling and "seeing or visualizing people similar to oneself perform successfully typically raises efficacy beliefs" (p. 87). In addition, Brownell and Pajares (1999) found the pre-service experience to be a direct indicator of a teacher's self-efficacy and self-perceived success when working with students with special needs. Student teachers who developed a high sense of self-efficacy have been shown to behave in a manner that made them more efficacious teachers (Plourde, 2002). Interestingly, teachers prepared in teacher education programs have been suggested to feel significantly more prepared than those who choose alternative certification programs (Darling-Hammond, Chung, & Frelow, 2002). In addition, teachers' opinion of their preparedness varies and this level of preparedness was significantly correlated with their self-efficacy. The self-efficacy of teachers, including student teachers, has also been the subject of research in subject specific areas such

as agricultural education (Joerger & Boettcher, 2000; Knobloch & Whittington, 2002, 2003).

Knobloch and Whittington (2002) found teacher preparation quality, collective efficacy, and student teaching experience were associated with teacher efficacy of novice and student teachers. In addition, results suggested student teachers and novice teachers may need to believe they contribute to an efficacious group of teachers. Self-confidence and personal satisfaction has been shown to impact teaching of beginning agriculture teachers (Joerger & Boettcher, 2000). Knobloch and Whittington (2003) found pre-service and novice teachers possessing a greater commitment to their careers were more efficacious after applied teaching experiences in the classroom. More specifically, early teaching experiences may determine commitment to the teaching profession and contributes to helping students learn and develop (Knobloch & Whittington, 2003).

In-service education enhances teachers' knowledge and skills in an effort to improve their effectiveness (Garton & Chung, 1996) and provides opportunities to improve their teaching abilities (Telljohann, Everett, Durgin, & Price, 1996). Research indicates in-service participation increases the self-efficacy of teachers (Telljohann et. al., 1996; Watson, 2006). Not surprisingly, in-service participation

was found to directly affect a teacher's self-efficacy and self-perceived success when working with students with special needs (Brownell & Pajares, 1999).

One factor in a teacher's commitment to the profession is the educational leadership and support of school administration (Colardarci, 1994). Brownell & Pajares (1999) suggested supportive administrators increase teacher's efficacious beliefs, which may increase teacher perseverance (Bandura, 1997).

Administrative support may help agriculture teachers include students with special needs into secondary agriculture classes. Elbert and Baggett (2003) suggested agriculture teachers need increased training to teach students with special needs, which can be provided by administrators (Elbert & Baggett, 2003). Although the hands-on nature of agriculture courses may allow secondary agriculture teachers to accommodate students with special needs, teachers do not always possess the desired competence for special needs instruction (Elbert & Baggett). Although secondary agriculture teachers face the challenge of teaching students with special needs and diverse student learners, do these teachers feel prepared to teach students with special needs? While self-efficacy suggests the level of confidence teachers hold in their ability to teach students with special needs, self-perceived success suggests the level of success teachers have experienced while working with students with special needs. Do teacher efficacy levels suggest secondary agriculture teachers are more successful in teaching students with special needs? Addressing these questions may shed light on a topic with limited research in agricultural education.

Purpose and Research Objectives

The purpose of this study was to determine early career teachers self-perceptions of their teacher preparation program, professional in-service experience and administrator support toward working with students with special needs. In addition, this research sought to explain the variance in the self-perceived success in working with students with special needs of early career agriculture teachers in Missouri. The following research objectives guided the study:

1. Describe the personal and professional characteristics of teachers (age, sex, teaching experience, teacher licensure, and level of education).
2. Assess teachers' self-perception of their teacher preparation program, in-service participation, and administrator's general support toward working with students with special needs.
3. Describe teacher efficacy toward the competencies necessary for working with students with special needs.
4. Describe the self-perceived success of teachers when working with students with special needs.
5. Explain the variance in self-perceived success of working with students with special needs accounted for by teacher efficacy while controlling for teacher preparation, administrative support, and in-service participation.

Methods and Procedures

The population of all early career agriculture teachers in Missouri was utilized ($N = 123$) for this study. The frame was developed using the 2006–07 *State Agricultural Education Directory*. Early career teachers were identified as teachers with five or less years of teaching experience. However, the population was considered representative of past and future populations of early career agriculture teachers. According to Oliver and Hinkle (1982), this justified the use of a time and place sample. The time and place sample resulted in 123 secondary instructors who met the criteria. Because all members of the population were included in the study, sampling procedures were not imposed. As a result, the threat of sampling error was not a consideration in this study.

The data collection instrument was a modified version of *Working with Diverse Students: The General Educator's Perspective* (Brownell & Pajares, 1999). Modification of the instrument removed only demographic questions not pertinent to the purpose of this study. The questionnaire was validated through prior research (Morvant & Gersten, 1995; Rosenholtz, 1989) and was assessed for reliability (Brownell & Pajares, 1999). Cronbach's alpha coefficients were reported for each section of the questionnaire and ranged from .81 to .96. A post

hoc Cronbach's alpha for this study was found to be .93.

The questionnaire was administered through an on-line survey tool. Teachers received an invitation to participate in the study and the survey link through electronic mail. After three follow-up requests, as recommended by Dillman (2007), 81 of the 123 (66%) teachers returned useable questionnaires.

Non response error was addressed by comparing on-time and late respondents for statistical differences (Miller & Smith, 1983; Ary, Jacobs, & Razavieh, 2002). Late respondents were considered those who responded following a third request to complete the on-line instrument. The variances were assumed equal after calculating Levene's test for equality of variances ($p > .05$). Independent samples t -tests showed no significant difference between on-time ($n = 48$) and late respondents ($n = 25$) for teacher preparation ($t = .04$; $p > .05$), in-service ($t = -1.65$; $p > .05$), administrative support ($t = -1.76$; $p > .05$), self-efficacy ($t = -1.82$; $p > .05$) and perceived success ($t = -.02$; $p > .05$).

Descriptive statistics were used to simplify and characterize the data. Pearson product correlation coefficients were calculated between variables and interpreted using Bartz's (1999) descriptors. Hierarchical multiple linear regression was used to explain the variance in early career agriculture teachers' self-perceived success of working with students with special needs, while controlling for the variables of interest. Prior to conducting the regression analysis bivariate correlations between the three

control variables were calculated to reveal the presence of multicollinearity, a potential violation of the assumptions in using multiple linear regression. Following guidelines offered by Berry and Feldman (1985), none of the bivariate correlations approached the threshold of .80; therefore, were not considered threats to multicollinearity and remained in the analysis.

Results and Findings

The purpose of the first research objective was to describe the personal and professional characteristics of teachers. The respondents were found to be equally split between male ($n = 42$) and female ($n = 39$) (see Table 1). In addition, the most frequent level of education was found to be a bachelor's degree. On average, respondents had 2.71 years of teaching experience ($SD = 1.48$) and were approximately 26 years of age ($SD = 4.02$), ranging from 22 to 48.

The second research objective sought to assess teachers' self-perception of their teacher preparation program, in-service participation, and administrator's general support toward working with students with special needs. Early career agriculture teachers' overall (summed) assessment of their pre-service coursework regarding working with students with special needs was 3.57 ($SD = 1.22$) (see Table 2). Knowledge of the different needs of students with disabilities was the highest rated individual item ($M = 3.78$, $SD = 1.30$), while the lowest was the ability to adapt curriculum for students with disabilities ($M = 3.33$, $SD = 1.36$).

Table 1
Demographic Characteristics of Early Career Agriculture Teachers (n = 81)

Construct Items:	<i>F</i>	<i>%</i>	Mean	<i>SD</i>
Age			26.08	4.02
Years of Teaching			2.71	1.48
Sex				
Female	39	48		
Male	42	52		
Teacher Licensure				
University preparation	77	95.10		
Temporary certificate	4	4.90		
Educational Level				
Bachelors	65	80.20		
Masters	16	19.80		

Table 2
Assessment of Teacher Preparation Concerning Working with Students with Special Needs (n = 81)

Construct Items:	Mean	SD
Knowledge of different needs of students with disabilities.	3.78	1.30
Ability to adapt curriculum for students with disabilities.	3.60	1.39
Ability to adapt instruction for students with disabilities.	3.58	1.37
Ability to manage behavioral difficulties of students with disabilities.	3.33	1.36
Teacher Preparation (Summated Score)	3.57	1.22

Note. Scale: 1 = disagree, 6 = agree

Descriptive statistics were calculated for perceptions of special needs in-service participation for the items that comprised the construct, followed by a summated score. The overall assessment of the in-service available for early career agriculture teachers was 3.36

($SD = 1.45$) (see Table 3). With an average of 3.48 ($SD = 1.54$), in-service programs that focused on the needs of students with disabilities had the highest level of participation. Special education in-services had the least participation ($M = 3.22$, $SD = 1.51$).

Table 3
Participation in In-Service Concerning Working with Students with Special Needs (n = 81)

Construct Items:	Mean	SD
The needs of students with disabilities.	3.48	1.54
Adapting instruction for students with disabilities.	3.35	1.55
Managing behavioral difficulties of students with disabilities.	3.35	1.50
Adapting curriculum for students with disabilities.	3.22	1.51
Special Needs In-Service (Summated Score)	3.36	1.45

Note. Scale: 1 = disagree, 6 = agree

The summated score for general administrative support was 4.66 ($SD = 1.16$) (see Table 4). With a mean score of 5.10 ($SD = 1.22$), the administrator “supports me in my interaction with parents” was the highest rated individual

item. Ranking the lowest of the individual items was “assist general educators in successfully including students with disabilities in the mainstream” ($M = 4.36$, $SD = 1.45$).

Table 4
Teachers' Assessment of Administrative General Support (n = 81)

Construct Items:	Mean	SD
Supports me in my interaction with parents.	5.10	1.22
Supports my actions and ideas.	5.05	1.16
Has my respect and trust.	4.98	1.31
Understands my program and what I do.	4.73	1.38
Informs me about school/district policies.	4.68	1.24
Provides leadership for what I am trying to achieve.	4.64	1.52
Helps me solve problems.	4.58	1.47
Supports mainstreaming students with disabilities	4.56	1.33
Explains reasons behind programs and practices	4.51	1.44
Provides current teaching/learning information	4.38	1.45
Attends to my feelings and needs	4.37	1.45
Assists in mainstreaming students with disabilities	4.36	1.45
Administrative Support (Summated Score)	4.66	1.16

Note. Scale: 1 = disagree, 6 = agree

Research objective three sought to determine the teacher efficacy of early career agriculture teachers toward working with students with special needs. Teachers were asked to respond to the question, "considering your current instructional situation and teaching responsibilities, how much can you do to..." The teacher efficacy of agriculture teachers'

summated score was 4.31 ($SD = .72$) (see Table 5). The individual indicator of self-efficacy that ranked the highest was "manage disruptive behavior in the classroom," ($M = 4.84$, $SD = .89$). The individual indicator that ranked the lowest was "keep students with behavior problems on task with difficult assignments" ($M = 3.94$, $SD = 1.10$).

Table 5
Self-Efficacy of Working with Students with Special Needs (n = 81)

Construct Items:	Mean	SD
How much you can do to:		
Manage disruptive behavior in the classroom.	4.84	.89
Get children to follow classroom rules.	4.79	.88
Prevent problem behavior on school grounds.	4.63	.93
Help special education students learn in a regular classroom.	4.53	.94
Reach students with the most learning problems.	4.31	.87
Reach students with the most behavior problems.	4.12	1.08
Overcome the influence of environment on learning and behavior problems.	4.11	1.04
Individualize learning for students with learning problems.	4.09	1.10
Keep students with learning problems on task with difficult assignments.	4.06	.89
Individualize learning for students with behavior problems.	4.02	1.15
Keep students with behavior problems on task with difficult assignments.	3.94	1.10
Teachers' Self-Efficacy (Summated Score)	4.31	.72

Note. Scale: 1 = nothing, 6 = a great deal

Describing the self-perceived success of early career agriculture teachers' ability to teach students with special needs was the purpose of the fourth research objective. Early career agriculture teachers in this study reported their self-perceived success toward teaching students who possess special needs ($M = 4.72$, $SD = .90$)

(see Table 6). The item ranked the highest was "successfully teaching students with learning problems" with a mean of 4.85 ($SD = 1.01$). Working with special education teachers to include students with disabilities in the classroom ranked the lowest ($M = 4.58$, $SD = 1.27$).

Table 6

Self-Perceived Success of Early Career Agriculture Teachers When Working with Students with Special Needs (n = 81)

Construct Items:	Mean	SD
Successfully taught students with learning problems	4.85	1.01
Successfully included special education students	4.84	1.16
Successfully worked with special education teachers to include students with disabilities in my classes	4.62	1.24
Successfully taught behavior problem students	4.58	1.27
Self-Perceived Success (Summated Score)	4.72	.90

Note. Scale: 1 = disagree, 6 = agree

To address research objective five, a hierarchical regression analysis was calculated. The control variables of administrative support, pre-service preparation, and in-service programs were entered simultaneously and accounted for 13% of the variance in self-perceived success of working with students with special needs (see Table 7). When the variable

of interest, teacher efficacy, was added, 27% of the variance in self-perceived success of working with students with special needs could be explained. Teacher efficacy accounted for an additional 14% of the variance beyond the contribution of teacher preparation, administrator support, and in-service participation.

Table 7

Summary of Hierarchical Regression Analysis for Variables Predicting Teacher Efficacy

Variable	ΔR^2	β
Step 1	.13	
Administrator Support		-.01
Teacher Preparation		.30
In-service Programs		.12
Step 2	.14	
Administrator Support		-.02
Teacher Preparation		.13
In-service Programs		-.02
Teacher Efficacy		.46*
Total R^2	.27	
n	81	

Note. ^aControl variables included administrator support, teacher preparation, and in-service programs.

* $p < .05$

Conclusions and Recommendations

Results from this study are limited to the population for which data were collected and should not be generalized beyond this population. Despite teacher preparation programs addressing the topic of teaching students with special needs, differences in teacher efficacy and self-perceived success suggest early career teachers may lack self-perceived preparedness for the classroom. Agriculture teachers in the state of Missouri with five years or less of experience were nearly evenly split between male and female. Ninety-five percent of teachers in this study certified to teach through a university teacher preparation program. This population of teachers predominately held a bachelor's degree. These teachers also reported lower mean scores for university preparation than their self perceived success or self efficacy. Although universities often require special education requirements, findings suggest university preparation may not be successful in the eyes of early career teachers. What activities or instruction should be included in university preparation of pre-service teachers? Is it possible that university preparation is adequate, yet lacks felt need until pre-service teachers enter the classroom? Would additional experiences increase teacher efficacy?

Four teacher perception areas were examined, including perceptions of their teacher preparation, in-service participation focused on special needs, administrative support, and self-efficacy. These findings suggest early career agriculture teachers perceive administrators as generally supportive of their efforts to address students with special needs. In addition, the findings for administrative support approached the findings of Brownell and Pajares (1999), yet yielded higher results than Ross's (2006) findings. These findings also support the recommendations of Knobloch and Whittington (2002), which suggested teacher educators and instructional leaders should promote a sense of belonging to an efficacious team for novice teachers. Perhaps teacher educators should incorporate more coursework designed to prepare future teachers for building positive relationships with administrators. It would appear beneficial for teacher educators to encourage interaction between pre-service teachers and administrators.

Although participants perceived supportive administration, they had a much lower level of agreement on the in-service construct. The findings of the study may suggest limited in-service activities address students with special needs. This finding supports the research by Ross (2006) and Brownell and Pajares (1999). Telljohann et al. (1996) found health education in-service programs increased teachers' efficacy. Could this also be found in agricultural education? If agriculture teachers were able to access additional in-service activities focusing specifically on working with students with special needs, would their teacher efficacy increase? Does the hands-on nature of agriculture suggest a need for specific in-service training to increase interactive curriculum for students with special needs? Teacher educators should examine the specific components within agriculture education, such as supervised agriculture experience (SAE) program, which may necessitate additional in-service training focused on accommodating students with special needs.

Teachers vary in their perceptions of teacher preparation program's ability to address teaching students with special needs. Previous research by Ross (2006) and Brownell and Pajares (1999) found less level of agreement of teachers' perceived pre-service preparation for teaching students with special needs.

Overall, early career teachers reported some success in teaching students with special needs, illustrated by their perceived self-efficacy and self-perceived success. Findings indicated higher self-efficacy than the previous research of Ross (2006) and Brownell and Pajares (1999). It appears teachers have a moderate level of confidence in their ability to teach students with special needs, as indicated by their self-efficacy. Similarly, teachers suggest moderate levels of success instructing this group of students. According to the theoretical framework provided by Brownell and Pajares, teachers holding higher levels of efficacy towards working with students with special needs should demonstrate more success with this student population.

Findings from this study suggest efficacy of early career teachers parallels their reported success teaching students with special needs. Further, this finding supports a study of student teachers in the southeastern United States that found teachers to be adequately confident when

teaching students with special needs (Kessell et al., 2006). Can self-perceived success of teaching students with special needs be correlated to actual competence in the classroom? What specific areas of special needs instruction would benefit the efficacy and self-perceived success of secondary agriculture teachers?

Twenty-seven percent of the variance in self-perceived success of teaching students with special needs could be accounted for by teacher preparation, administrator's general support, in-service programs, and teacher efficacy. What other factors might account for additional variance in self-perceived success of teaching students with special needs? The variables of teacher preparation, administrator support, and in-service programs accounted for a limited amount (13%) of the variance in early career agriculture teachers' self-perceived success of working with students with special needs. However, self-efficacy accounted for an additional 14 % of the variance in self-perceived success. This finding supports prior research where teacher efficacy had a pronounced effect on teacher's self-perceived success (Brownell & Pajares, 1999).

Much of the variance in self-perceived success of working with students with special

needs is still unknown and should be the goal of future research efforts if we are to effectively teach all agricultural education students. The hands-on, practical experience students in agricultural education programs may be a factor for enrollment in agriculture classes by students with special needs. Agriculture teachers must be equipped to teach these diverse learners. The variance in self-perceived success of early career agriculture teachers when working with students with special needs should be examined in other states. Further research should address the apparent gap in perceived competencies need to teach students with special needs. What specific skills or strategies do secondary teachers lack? Research should be conducted to determine effective methods to increase teacher efficacy for instructors of students with special needs. In addition, the self-perceived success of experienced agriculture teachers when working with students with special needs may also be the subject of future research. Early career agriculture teachers may need additional in-service opportunities focused on teaching students with special needs. Finally, self-perceptions of success when teaching students with special needs should be compared to perceptions of teachers credentialed in the area of special needs students.

References

- Algozzine, B., Ysseldyke, J.E., & Campbell, P. (1994). Strategies and tactics for effective instruction. *Teaching Exceptional Children*, 26(3), 34–36.
- Ary, D., Jacobs, L. C., & Razavieh, A. (2002). *Introduction to research in education* (6th ed.). City, CA: Wadsworth Group.
- Ashton, P., & Webb, R. (1986). *Making a difference: Teachers' sense of efficacy and student achievement*. New York, NY: Longman.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman and Company.
- Bartz, A. E. (1999). *Basic statistical concepts* (4th ed.). Upper Saddle River, NJ: Prentice Hall.
- Berry, W. D., & Feldman, S. (1985). *Multiple regression in practice*. Series: Quantitative applications in the social sciences. Newbury Park, CA: SAGE Publications.
- Brownell, M. T., & Pajares, F. (1999). Teacher efficacy and perceived success in mainstreaming students with learning and behavior problems. *Teacher Education and Special Education Journal*, 22, 154–164. doi:10.1177/088840649902200303

- Campbell, P., & Olsen, G. R. (1994). Improving instruction in secondary schools. *Teaching Exceptional Children, 26*(3), 51–54.
- Colardarci, T. (1994). Teachers' sense of efficacy and commitment to teaching. *Journal of Experimental Education, 60*, 323–337.
- Darling–Hammond, L., Chung, R., & Frelow, F., (2002). Variation in teacher preparation. *Journal of Teacher Education, 53*(4), 286–302. doi:[10.1177/0022487102053004002](https://doi.org/10.1177/0022487102053004002)
- Di–Bella–McCarthy H., McDaniel, E. A., & Miller, R. (1995). How efficacious are you. *Teaching Exceptional Children, 27*(3), 68–72.
- Dillman, D. A. (2007). *Mail and Internet surveys: The Tailored design method* (2nd ed.). City, NJ: John Wiley & Sons, Inc.
- Education for all Handicapped Children Act, 20 U.S.C., §14000 *et seq.* (1975).
- Elbert, C. D., & Bagget, C. D. (2003). Teacher competence for working with disabled students as perceived by secondary level agricultural instructors in Pennsylvania. *Journal of Agricultural Education, 44*(1), 105–115. doi: [10.5032/jae.2003.01105](https://doi.org/10.5032/jae.2003.01105)
- Evers, R. B., & Bursuck, W. D. (1995). Helping students succeed in technical classes: Using learning strategies and study skills. *Teaching Exceptional Children, 27*(4), 22–27.
- Garton, B. L., & Chung, N. (1996). The inservice needs of beginning teachers of agriculture as perceived by beginning teachers, teacher educators, and state supervisors. *Journal of Agriculture Education, 37*(3), 52–58. doi: [10.5032/jae.1996.03052](https://doi.org/10.5032/jae.1996.03052)
- Joerger, R., & Boettcher, G. (2000). A description of the nature and impact of teaching events and forms of beginning teacher assistance as experienced by Minnesota agricultural education teachers. *Journal of Agricultural Education, 41*(4), 104–115. doi: [10.5032/jae.2000.04104](https://doi.org/10.5032/jae.2000.04104)
- Kessell, J., Wingenbach, G., Burley, H., Lawver, D., Frazee, S., & Davis, C. (2006a). Relationships between special education knowledge, confidence, and selected demographics. *Proceedings of the American Association for Agriculture Education National Research Conference, 343–353*.
- Kessell, J., Wingenbach, G., Burley, H., Lawver, D., Frazee, S., & Davis, C. (2006b). Student teacher's confidence in teaching special needs students in agricultural education classrooms and laboratories. *Proceedings of the American Association for Agriculture Education National Research Conference, 332–342*.
- Knobloch, N. A., & Whittington, M. S. (2002). Novice teachers' perception of support, teacher preparation quality and student teaching experience related to teacher efficacy. *Journal of Vocational Education Research, 27*(3), 331–334.
- Knobloch, N. A., & Whittington, M. S. (2003). Differences in teacher efficacy related to career commitment of novice agriculture teachers. *Journal of Career and Technical Education, 20*(1), 87–98.
- Lerner, J. (2003). *Learning disabilities: Theories, diagnosis, and teaching strategies* (9th ed.). Boston, MA: Houghton Mifflin.

- Mastropieri, M. A., & Scruggs, T. E. (1995). Teaching science to students with disabilities in general education settings: Practical and proven strategies. *Teaching Exceptional Children*, 27(4), 10–13.
- Midgley, C., Feldlaufer, H., & Eccles, J. S. (1989). Change in teacher efficacy and student self- and task-related beliefs in mathematics during the transition to junior high school. *Journal of Educational Psychology*, 81, 247–258. doi:[10.1037//0022-0663.81.2.247](https://doi.org/10.1037//0022-0663.81.2.247)
- Miller, L. E., & Smith, K. L. (1983). Handling nonresponse issues. *Journal of Extension*, 21, 45–50.
- Mims, A., Harper, C., Armstrong, S. W., & Savage, S. (1991). Effective instruction in homework for students with disabilities. *Teaching Exceptional Children*, 24(1), 42–44.
- Morvant, M., & Gersten, R. (1995). *Attrition/Retention of urban special education teachers: Multi-faceted research and strategic action planning*. (Publication No. H023Q10001). Washington, DC: Office of Special Education Programs.
- Oliver, J., & Hinkle, D. (1982). Occupational educational research: Selecting statistical procedures. *Journal of Studies in Technical Careers*, 4(3), 199 – 207.
- Ormrod, J. E. (2004). *Human learning* (4th ed.). Upper Saddle River, NJ: Pearson Education, Inc.
- Plourde, L. A. (2002). The influence of student teaching on preservice elementary teachers' science self-efficacy and outcome expectancy beliefs. *Journal of Instructional Psychology*, 29(4), 245–253.
- Rosenholtz, S. J. (1989). *Teachers' workplace: The social organization of schools*. New York, NY: Longman.
- Ross, A. L. (2006). *The influence of teacher efficacy on North Carolina agriculture teachers' perceived success in working with students with special needs* (Unpublished master's thesis). University of Missouri, Columbia.
- Sharpe, M. N., & Hawes, M. E. (2003). Collaboration between general and special education: Making it work. *Issue Brief: Examining Current Challenges in Secondary Education and Transition*. Minneapolis, MN: University of Minnesota, Institute on Community Integration. (ERIC Document Reproduction Service No. ED481548)
- Soodak, L. C., & Podell, D. M. (1993). Teacher efficacy and student problem as factors in special education referral. *Journal of Special Education*, 27, 66–81.
- Soto, G., & Goetz, L. (1998). Self-efficacy beliefs and the education of students with severe disabilities. *The Journal of the Association for Persons with Severe Handicaps*, 23(2), 134–143. doi:[10.2511/rpsd.23.2.134](https://doi.org/10.2511/rpsd.23.2.134)
- Telljohann, S. K., Everett, S. A., Durgin, J., & Price, J. H. (1996). Effects of an inservice workshop on the health teaching self-efficacy of elementary school teachers. *The Journal of School Health*, 66, 261–265. doi:[10.1111/j.1746-1561.1996.tb06282.x](https://doi.org/10.1111/j.1746-1561.1996.tb06282.x)
- Treder, D. W., Morse, W. C., & Ferron, J. M. (2000). The relationship between teacher effectiveness and teacher attitudes toward issues related to inclusion. *Teacher Education and Special Education Journal*, 23, 202–210.
- Watson, G. (2006). Technology professional development: Long-term effects on teacher self-efficacy. *Journal of Technology and Teacher Education*, 14(1), 151–165. doi:[10.1177/088840640002300303](https://doi.org/10.1177/088840640002300303)

MOLLIE S. ASCHENBRENER is an Instructor of Agriculture at California State University, California State University, Chico, 95929-0310, maschenbrener@csuchico.edu

BRYAN L. GARTON is a Professor and Associate Dean of Academic Programs for the College of Agriculture, Food and Natural Resources at the University of Missouri, 2-64 Agriculture Building, Columbia, MO, 65211, GartonB@missouri.edu

AMANDA L. ROSS is an Agriculture Instructor at Salisbury High School, Salisbury R-IV Schools 1000 S. Maple Ave., Salisbury, MO 65281, aross@salisbury.k12.mo.us