

## IN-SERVICE DELIVERY: METHODS PREFERRED BY GEORGIA AGRICULTURE TEACHERS

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### Abstract

*Agricultural education teachers need to have opportunities to become students again in order to learn new skills and knowledge that will benefit their agricultural education programs. The purpose of this descriptive study was to survey agriculture teachers (N=348) in Georgia to determine their preferences for how in-service training should be delivered. Sixty one percent of the teachers (n=212) completed the survey. Frequencies and percentages were calculated to indicate teachers' preferences for in-service delivery. Teachers' top-rated in-service delivery method was the training sessions held each year at the annual summer teachers' conference, followed by one week short courses held during the summer, a mentoring program with an experienced teacher, a two to three hour seminar/workshop, and web-based courses, workshops, and/or seminars. Years of teaching experience seemed to have a greater influence on the preferences of in-service training than did gender, type of community, or degree held. As a result of this study Georgia agricultural education leadership should design and develop in-service activities that can be delivered (a) via training sessions held during the annual summer conference, (b) through a one week training session held in conjunction with summer break, (c) using a mentoring program with experienced teachers, and (d) through short two to three hour seminars or workshops.*

## **Introduction**

Agricultural educators are constantly challenged to introduce updated content and technologies to the students they serve to better prepare these individuals to enter the workforce and/or postsecondary education. To accomplish this, agricultural education teachers need to have opportunities to become students again in order to learn new technologies, innovative methods for the delivery of materials, and management skills to benefit their programs. It is through in-service training that teachers are able to improve their skills while learning about the newest information and technologies that will help their students become successful.

According to The Committee on Agricultural Education in Secondary Schools Board on Agriculture of the National Research Council (1988), "Teacher preparation and in-service education programs must be revised and expanded to develop more competent teachers...in and about agriculture" (p. 7). Joerger (2002) also emphasized the need for appropriate and timely in-service activities for agricultural educators to ensure that teachers experience success, effectiveness, and growth. Garton and Chung (1996, 1997), Edwards and Briers (1999), Dobbins and Camp (2000), Joerger (2002), Layfield and Dobbins (2002), and Washburn, King, Garton, and Harbstreit (2001) have all identified an extensive list of constructs related to the in-service needs of agriculture teachers, but this study seeks to identify the methods of delivering effective in-service training that teachers will utilize to improve the entire agricultural education program.

## **Theoretical and Conceptual Framework**

According to Boser and Daugherty (1994), in order for the technology education profession to move forward, teachers "...require updated information on curriculum, methodology, and technology to allow them to make philosophical and programmatic changes that augment technology education" (p. 4). The same can be said for agricultural education. As agricultural technology advances, teachers are given the challenge to introduce these technologies to their students in order to prepare them for entering the workforce. In order to accomplish this task, in-service delivery methods need to provide meaningful training, while being convenient for teachers.

The theoretical framework for this study is based on Bandura's (1986) Social Cognitive Theory. Bandura (1978, 1982a, 1986) addresses behavior within a framework of "triadic reciprocity, or reciprocal interactions among behaviors, environmental variables, and personal factors such as cognitions" (Schunk, 2000, p. 80). According to Bandura (1982b) beliefs concerning one's ability to perform a task are influenced by a person's personal factors and the environment. The conceptual framework for this study positions teaching agriculture as the behavior; gender, years of teaching experience, level of education, and type of community as personal factors; and in-service delivery method as the environmental factor (See Figure 1). Notice how each of the three variables influence and are influenced by each other.

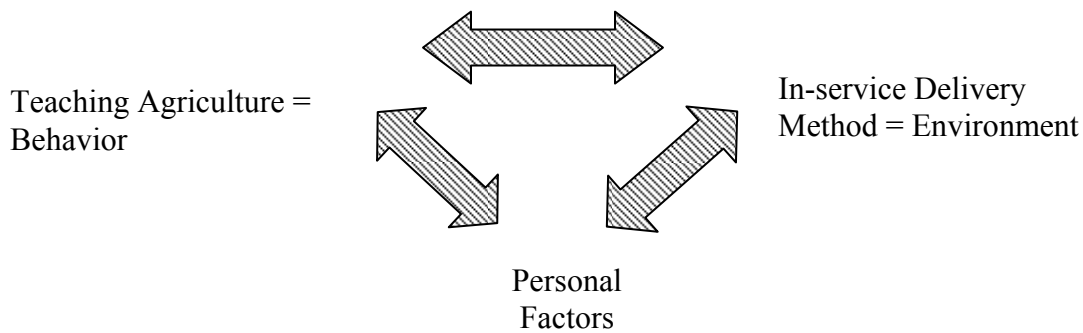


Figure 1. *Triadic reciprocity model as it relates to agriculture teacher behavior and in-service delivery method.* Note. Adapted from "Social Foundations of Thought and Action," by A. Bandura, 1986, p. 20.

According to Boser and Daugherty (1994), in order to conduct meaningful and effective in-service training, university and college faculty and state department of education leadership need to utilize extensive planning, careful delivery, and follow-up with the participants to determine teacher success in the classroom setting. The studies conducted by Borich (1980), Garton and Chung (1996, 1997) and Joerger (2002) have allowed researchers to determine the in-service needs of teachers of agriculture and begin the extensive planning stage of effective in-service training as well as determine the methods of delivery that agriculture teachers prefer for this training. According to Washburn, et al. (2001), to gain the greatest results from the amount of time and resources required to develop in-service activities in order to make these activities meaningful, teachers within the state should be involved in the process of identifying the most critical topics to be addressed. The second step, careful delivery, requires that university and college professors, along with state agricultural education staff, understand what teachers perceive as the most appropriate and effective in-service training environment.

Garton and Chung (1996), Layfield and Dobbins (2002), and Boser & Daugherty (1994) found that the majority of teachers in their studies preferred to have in-service training in the form of a workshop or seminar held during summer conference. Perhaps agriculture teachers in Georgia prefer a more technology-based approach because of its perceived level of convenience (Hiltz, 1998). Agricultural educators are incredibly busy, so the goal is to design in-service training that teachers feel is appropriately designed, timed, and offered.

### **Purpose and Objectives**

The purpose of this study was to survey agriculture teachers to determine their preferences for delivering in-service training. Specific objectives of this study were the following:

1. Describe the demographic characteristics of the agriculture teachers who participated in the study.
2. Describe agriculture teachers' preferences for delivery of in-service training.
3. Compare preferred methods of in-service delivery based on gender, years of teaching

experience, level of education, and the type of community in which the program is located.

### **Procedures**

The population of this descriptive census study included the 348 middle and/or high school agriculture teachers employed during the 2004-2005 school year in Georgia. Surveys were distributed and collected at the Georgia Vocational Agriculture Teachers Conference, regional agriculture teacher meetings, and via an online version of the instrument. Postcard follow-ups were mailed followed by an email that was sent via the agriculture teachers' listserv to encourage participation of those that had not completed the instrument.

A researcher-developed survey was used to determine the in-service delivery preferences of teachers. The instrument was deemed to have face and content validity by a panel of experts consisting of four University faculty, two graduate students, three regional coordinators of agricultural education, and four agriculture teachers. Individuals participating in the study were simply asked to check which forms of in-service delivery were preferred by teachers.

The data collected were entered into Microsoft Excel and then transferred into the Statistical Package for the Social Sciences (SPSS) 12.0™ to analyze the data. Frequencies and percentages were calculated to determine which methods of delivery that teachers preferred. Because all of the questions on the survey involved questions for which respondents had “an accurate, ready-made answer,” the questions did not elicit demands for considerable time, thought, nor variation; the items posed no considerable reliability risks (Dillman, 2000, p. 37).

There were 212 respondents out of 348 middle and/or high school agriculture teachers in the population, yielding a response rate of 61%. To address non-response early respondents ( $n = 121$ ) were compared to late respondents ( $n = 91$ ) on the key variables of interest (in-service delivery methods) using an independent samples t-test. Lindner, Murphy, and Briers (2001) and Miller and Smith (1983) reported that responses of late respondents are often similar to non-respondents, and reasoned that if there is not a difference between early respondents and late respondents, then there is little need to pursue additional efforts to increase responses from non-respondents. With the exception of one form of delivery of in-service training, no other significant differences were found between early and late responders. The one form of delivery, “In-service sessions at the summer Vocational Agriculture Teachers Association summer conference” was significantly different when early ( $M = .76, SD = .429$ ) respondents were compared to late ( $M = .60, SD = .492$ ) respondents,  $t(210) = .700, p < 0.05, d = 0.37$ . With this one exception taken into account, demographics and anecdotal evidence confirmed that the participant sample was largely representative of the population. Hence, this research team's position is in line with that of Gall, Gall, and Borg (2003, p. 176), who reported that, “inferential statistics can be used with data collected from a convenience sample if the sample is carefully conceptualized to represent a particular population.” Readers should examine the description of the sample and make their own determination about generalizing the findings to other populations.

## Findings

### *Objective One - Describe the Demographic Characteristics of Southern Agriculture Teachers*

Georgia agriculture teachers are mostly male ( $f=158$  or 74.5%), and are represented in each age category. Fifty-two percent of the agriculture teachers had ten years teaching experience or less, and thirty-five percent of agriculture teachers had five or less than five years of teaching experience. All of the respondents had at least a Bachelor's degree and over half (57.6%) had at least one graduate degree. In addition, over seventy percent (70.3%) of agriculture teachers are located in rural areas of the state (See Table 1).

Table 1  
*Selected Teacher Demographics*

Demographic Characteristics	<i>f</i>	%
Gender		
Male	158	74.5
Female	54	25.5
Age		
< 25	29	13.7
25-34	60	28.3
35-44	51	24.1
45-54	58	27.4
55-64	16	7.5
>65	2	0.9
Teaching Experience		
<5 years	74	34.9
6-10 years	36	17.0
11-15 years	26	12.3
16-20 years	20	9.4
21-25 years	26	12.3
26-30 years	25	11.8
> 30 years	5	2.4
Highest Degree Earned		
Bachelors	90	42.5
Masters	78	36.8
Specialist	32	15.1
Doctorate	12	5.7
Type of Community		
Rural	149	70.3
Suburban	47	22.2
Urban	16	7.5

*Objective Two - Describe Agriculture Teachers' Preferences for Delivery of In-service Training.*

Teachers were given the opportunity to choose multiple methods of in-service delivery in the study. According to these teachers, the most preferred form of in-service delivery was in-service sessions held at the summer Vocational Agriculture Teachers Association conference ( $f=147$ , 69.3%), followed by a one week short course during the summer ( $f=120$ , 56.6%) and a mentoring program with an experienced teacher ( $f=82$ , 38.7%). According to Table 2, a two to three hour seminar/workshop ( $f=72$ , 34.0%) and web-based courses, workshops, and/or seminars ( $f=72$ , 34.0%) complete the top five preferred methods of in-service delivery. Table 2 lists the in-service delivery methods from the most preferred to the least preferred.

Table 2  
*Georgia Agriculture Teachers' Preferred Form of In-Service Delivery*

In-Service Delivery Method	<i>f</i>	%
In-service Sessions at Summer Vocational Agriculture Teachers Association Conference	147	69.3
One Week Short Course (during summer)	120	56.6
Mentoring Program with Experienced Teacher	82	38.7
2-3 Hour Seminar/Workshop	72	34.0
Web-based Courses, Workshops, and/or Seminars	72	34.0
Course for Credit	60	28.3
Weekday Meeting (during summer)	56	26.4
District In-service Courses (4 meetings at 4 hours each)	46	21.7
Video Tapes	34	16.0
Interactive T.V. (providing your school or regional center could be connected)	32	15.1

*Note.* Respondents could have chosen more than one delivery method.

*Objective Three - Compare Preferred Methods of In-service Delivery Based on Gender, Years of Teaching Experience, Level of Education, and Type of Community in Which the Program is Located.*

Agriculture teachers in Georgia tend to prefer the same methods of delivery for in-service training regardless of gender, years of teaching experience, level of education, and type of community in which the program is located except in a few circumstances. The years of teaching experience had a tendency to influence the preferred forms of delivery more than gender, education, and type of community (See Table 3). Teachers with less than five years experience ( $f=46$ , 62.2%) and those with over thirty years experience ( $f=3$ , 60%) chose a mentoring program with an experienced teacher more often than did teachers who fell in the range of experience of five to thirty years. In addition, almost all teachers with more than thirty years experience ( $f=4$ , 80%) were more interested in a one week short course during the summer and teachers with more than ten years experience had a greater preference for in-service training sessions held during the summer conference.

Table 3  
*The Effect of Years of Teaching Experience on Preferred In-Service Delivery Method*

Form of Inservice Delivery	Years of Experience													
	0-5		6-10		11-15		16-20		21-25		26-30		Over 30	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Mentoring Program with Experienced Teacher	46	62.2	14	38.9	5	19.2	3	15.0	4	15.4	7	28.0	3	60.0
2-3 Hour Seminar/Workshop	25	33.8	13	36.1	7	26.9	6	30.0	10	38.5	9	36.0	2	40.0
One Week Short Course (during summer)	38	51.4	15	41.7	15	57.7	12	60.0	19	73.1	17	68.0	4	80.0
In-service Sessions at Summer Conference	41	55.4	21	58.3	23	88.5	15	75.0	21	80.8	22	88.0	4	80.0
District In-service Courses (4 meetings at 4 hours each)	14	18.9	9	25.0	5	19.2	2	10.0	5	19.2	8	32.0	3	60.0
Weekday Meeting (during summer)	12	16.2	12	33.3	4	15.4	6	30.0	11	42.3	8	32.0	3	60.0
Course for Credit	27	36.5	11	30.6	7	26.9	1	5.0	7	26.9	5	20.0	2	40.0
Videotapes	7	9.5	9	25.0	5	19.2	3	15.0	4	15.4	5	20.0	1	20.0
Interactive T.V.	14	18.9	3	8.3	3	11.5	3	15.0	4	15.4	4	16.0	1	20.0
Web-based Courses, Workshops, and/or Seminars	29	39.2	12	33.3	10	38.5	7	35.0	7	26.9	4	16.0	3	60.0

*Note.* Respondents could have chosen more than one delivery method.

According to Table 4, a larger percentage of female agriculture teachers ( $f = 30, 55.6\%$ ) preferred to be involved in a mentoring program with an experienced teacher than males ( $f = 52, 32.9\%$ ). In addition, suburban ( $f = 26, 55.3\%$ ) and urban ( $f = 8, 50.0\%$ ) teachers also preferred the mentoring program more than teachers located in more rural areas ( $f = 48, 32.2\%$ ). Teachers that held a doctorate degree ( $f = 1, 9.1\%$ ) least preferred to become involved in a mentoring program.

Female agriculture teachers ( $f = 21, 38.9\%$ ) preferred to take in-service training sessions for college credit more than males ( $f = 39, 24.7\%$ ). In addition, teachers who held a bachelor's degree ( $f = 40, 44.9\%$ ) had a greater tendency to prefer in-service training for credit than

teachers who held higher degrees (Refer to Table 4).

### **Conclusions**

Agriculture teachers in Georgia are mostly male and well educated, and a large majority of participants had no more than ten years experience. Teachers preferred to have in-service training held during the agriculture teacher summer conference or during a one-week short course held during the summer. Garton and Chung (1996) and Layfield and Dobbins (2002) also found that teachers preferred in-service training be held at these times. In addition, teachers also preferred a mentoring program with an experienced teacher, a two to three hour workshop or seminar, or a web-based course, workshop, or seminar. Therefore, it can be assumed that teachers feel that they are more likely to have time to dedicate to improving the behavior of teaching agriculture if in-service training does not interfere with student development.

Teachers least preferred to have in-service training delivered via videotape or interactive television. This finding was substantiated by Garton and Chung (1996) who also found that few teachers would choose to receive in-service training through videotape or interactive television – possibly because teachers are unfamiliar with the technology and its capability. However, as the number of teacher educators and state staff available to conduct in-service training decrease, alternative ways of providing this training must be explored (Garton & Chung, 1996). One such possibility, according to Layfield and Dobbins (2002), is the use of internet-based video-conferencing.

Years of teaching experience seemed to have a greater influence on teachers' preferences of in-service delivery methods than did gender, degree held, and type of community (rural, suburban, urban). Teachers with five years of experience or less and teachers with more than thirty years of experience ( $n = 5$ ) preferred utilizing a mentoring program with experienced teachers over the other groups. Beginning teachers realize that they have an excellent opportunity to learn from the experiences of veteran teachers, which is a possible reason that such a large percentage of them preferred the mentoring program. According to Eastman and Williams (1993), the emotional support gained through the mentoring process provides agriculture teachers with the security of having someone to turn to for advice and guidance which may result in the building of ones' confidence in their own competence and performance. It is also important to note that experienced teachers preferred a method of professional development that would call upon them to contribute to the learning process.

Table 4  
*The Effects of Gender, Type of Community, and Degree Earned on In-Service Delivery Method*

Form of Inservice Delivery	Gender		Type of Community						Highest Degree Earned									
	Male	Female	Rural	Suburban	Urban	Bachelors	Masters	Specialist	Doctorate									
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Mentoring Program with Experienced Teacher	52	32.9	30	55.6	48	32.2	26	55.3	8	50.0	38	42.7	31	39.7	11	33.3	1	9.1
2-3 Hour Seminar/Workshop	51	32.3	21	38.9	45	30.2	20	42.6	7	43.8	31	34.8	23	29.5	14	42.4	4	36.4
One Week Short Course (during summer)	94	59.5	26	48.1	83	55.7	27	57.4	10	62.5	48	53.9	40	51.3	24	72.7	8	72.7
In-service Sessions at Summer Conference	111	70.3	36	66.7	104	69.8	35	74.5	8	50.0	60	67.4	52	66.7	26	78.8	8	72.7
District In-service Courses (4 meetings at 4 hours each)	33	20.9	13	24.1	33	22.1	9	19.1	4	25.0	23	25.8	12	15.4	9	27.3	2	18.2
Weekday Meeting (during summer)	41	25.9	15	27.8	37	24.8	11	23.4	8	50.0	28	31.5	19	24.4	7	21.2	2	18.2
Course for Credit	39	24.7	21	38.9	40	26.8	15	31.9	5	31.3	40	44.9	13	16.7	7	21.2	0	0.0
Videotapes	25	15.8	9	16.7	24	16.1	9	19.1	1	6.3	11	12.4	16	20.5	5	15.2	2	18.2
Interactive T.V.	19	12.0	13	24.1	17	11.4	14	29.8	1	6.3	15	16.9	11	14.1	5	15.2	1	9.1
Web-based Courses, Workshops, and/or Seminars	51	32.3	21	38.9	45	30.2	22	46.8	5	31.3	36	40.4	22	28.2	9	27.3	5	45.5

Teachers with more than ten years experience in the classroom also preferred to have in-service training session during the summer conference. This can be attributed to the desire of experienced teachers to maximize their time away from students, while in the process, improving the delivery methods and technical expertise necessary to ensure their students success.

Agriculture teachers located in urban and suburban areas, along with female agriculture teachers, have a greater tendency to prefer to participate in mentoring programs. The former can possibly be explained by the lack of geographical boundaries that hinder agricultural educators in rural areas from the necessary interactions between the mentor and their charge. The latter can possibly be explained by the heavy male dominance that exists in this state's agricultural education profession and the need for beginning female teachers to interact with successful experienced female teachers. Teachers who hold a doctorate were the least inclined to choose the mentoring program as a form of in-service training.

Lastly, female agriculture teachers and teachers who hold a bachelors degree as the highest degree earned prefer to receive course credit for participating in in-service training. Perhaps the increase in knowledge that is gained by the teacher in obtaining a higher degree to improve classroom instruction, the management of the entire program, and ensuring student success, along with the significant increase in annual salary, are some reasons for appreciating course credit for in-service training.

### **Implications and Recommendations**

In this Georgia the number of middle and high school agricultural education teachers is on the rise. Georgia agricultural education staff and university faculty need to design in-service training that meets the needs of the teachers if these training opportunities are to be utilized for the benefit of agriculture education students throughout Georgia. The following recommendations are specific to and appropriate for agricultural education in Georgia, but other states may also benefit from the findings and suggestions that follow.

According to this study, agricultural educators prefer to have in-service training delivered via training sessions held during the annual summer conference, through a one week training session held in conjunction with summer break, through a mentoring program with experienced teachers, and through short two to three hour seminars or workshops. Training sessions should be planned with these delivery options in mind utilizing the expertise of not only state agriculture education staff, but also university personnel and successful agriculture teachers. Involving the expertise of these groups of individuals will build collegiality with the organization and ensure that teachers receive training that is meaningful and worthwhile.

This study should be re-conducted in regularly scheduled intervals to ensure that teachers are not only receiving the technical training to keep up with advances in the agriculture industry, but also have beneficial options available for receiving in-service

training. In addition, further research should be conducted that delves into what makes these particular forms of in-service delivery effective, why and how certain demographics affect teachers' preferences of in-service delivery methods, and what cutting edge technologies and methodologies will help to improve the delivery of in-service training that will better prepare agriculture teachers to serve the students that choose to participate in their programs.

Future research should not only assess the needs of agricultural educators in various states, but also in discovering the most effective way to deliver in-service training. If there are similarities in teachers' needs discovered that cross state borders, collaboration should take place between universities, colleges, and state agricultural education leadership in the pooling of resources that will keep agricultural education proactively involved in ensuring that students succeed in their educational endeavors.

Follow-up studies should also be conducted to measure the relationship between in-service delivery methods and effective classroom instruction and program management of agriculture teachers. According to Boser and Daugherty (1994), effective in-service training requires not only extensive planning and careful delivery, but also follow-up of the participant's success in the teaching setting. Follow-up is important to ensure that educational outcomes are being achieved and money that is spent on in-service delivery is actually making a difference (Boser & Daugherty, 1994).

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