

Incentivizing E-Learning Agricultural Professional Development Content for Tennessee Secondary Teachers

C.N. Boyer¹, C. T. Stripling², K. Martin³

Abstract

Teacher professional development is seen by many as a cornerstone for initiating educational change. Yet, there are many challenges to participating, such as family commitments, high workloads, poor-quality content, high program costs, and frequent travel. Financial incentives can be an effective tool to overcome these challenges. However, setting up incentives to motivate participation can be difficult, since several factors can influence the optimal payment level. This study investigates how content, time commitment, and stipend payment influences willingness to participate in an agricultural professional development program. Data were collected by surveying participants. Most of the participants joined the program based on the content and stipend, indicating both were influential for involvement. The \$500 stipend offered to teachers exceeded the compensation for which they were willing to participate, and they indicated they were willing to dedicate additional hours to professional development. Based on the results of this study, we recommend stipends for professional development be at rates comparable or higher than local instructional rates to maximize participation and persistence.

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Introduction and Problem Statement

There is strong and growing demand for jobs in agricultural-related fields in the United States (US), and the agricultural job market is currently outpacing the new US graduates with agricultural-related degrees (Fernandez et al., 2020). The expected shortfall of college graduates with agricultural-related degrees is especially concerning in Tennessee. A report by the Tennessee Department of Education (TDOE; 2017) projected robust growth in Tennessee jobs for college graduates with agricultural degrees with demand growing nine to 21% depending on the field (TDOE, 2017).

Research suggests taking agricultural courses in high school could increase the number of students entering postsecondary agricultural degree programs (Stair et al., 2016). In Tennessee, secondary agriculture education programs of study areas are disproportionately offered, and current offerings are not reflective of projected demand (TDOE, 2017). A lack of teacher proficiency in specific content such as agribusiness (Dossett et al., 2019; Sanok et al., 2015; Stripling & Roberts, 2012) may partially explain why program of study offerings do not reflect employment demands.

Teacher professional development is seen by many as a cornerstone for initiating educational change (Guskey, 2002; Shoulders & Myers, 2014; Supovitz & Turner, 2000). Yet, there are many challenges to participating, such as family commitments, high workloads, poor-quality content, high program costs, and frequent travel (Krille, 2020). Financial incentives can be an effective tool to overcome these challenges (Miles et al., 2003; Odden et al., 2002). However, setting up incentives to motivate participation can be difficult, since several factors can influence the optimal payment level. This study investigates how content, time commitment, and stipend payment influence willingness to participate in an agricultural professional development program, which provided secondary agriculture teachers with online modules and instructional resources aligned with the Tennessee agribusiness program of study standards. This research may help developers of other professional development programs maximize their impact by reaching the largest number of teachers with a limited budget for stipends.

Theoretical and Conceptual Framework

The professional development program was developed using Guskey's (2002) model of teacher change. Guskey posited the "three major goals of professional development programs are change in the classroom practices of teachers, change in their attitudes and beliefs, and change in the learning outcomes of students" (p. 383). Guskey stated that the key component of successful professional development is changing teachers' attitudes and beliefs.

Correspondingly, teachers need to see that changes in classroom practices have a positive impact on student learning. Guskey also purported instructional change is gradual and a difficult process as learning something new and finding meaning requires time and effort. Guskey stated teachers need regular follow-up, feedback on their efforts, support, and occasional nudging to persist.

However, before a teacher's attitudes, beliefs, and actions can be influenced by a voluntary professional development program, the teacher must agree to participate. Krille (2020) provided an overview of reasons for teachers not participating in professional development opportunities. They cite several reasons such as high workload, timing, and family commitments. Additionally, there is discussion about issues with previously attended professional development such as poor-quality content, high costs, and difficulties traveling to programs.

Furthermore, Odden et al. (2002) noted that teacher stipends are a key cost for professional development programs to attract teachers to participate. Miles et al. (2003) showed these stipends will range, which is anticipated since salaries and cost of living differ regionally. In developing the professional development program, we recognized the need for providing teachers with a proper incentive for them to persist and participate outside of the regular school day and year (Miles et al., 2003; Odden et al., 2002). A more detailed description of the professional development program is provided in the methods section of this article.

Purpose

The purpose of this study is to understand what incentives teachers to participate in an agricultural-focused professional development program. Specifically, our objective was to determine how content, time commitment, and stipend payment influences willingness to participate in professional development. Data were collected by surveying Tennessee secondary agriculture teachers who participated in the first year of a professional development program. Results will inform future years of the professional development program and provide those who are considering similar programs with lessons learned regarding participation, content, and stipend payment.

Methods

Our goal was to recruit 60 agriculture teachers to participate in the first year of the University of Tennessee Agribusiness Academy and provide each participant a \$500 stipend. An email invitation was sent out across the Tennessee agricultural education teacher listserv to recruit participants, and the invitation described the importance, goals, and scope of the professional development program. A total of 63 teachers signed up to participate. Sixty teachers signed up to participate with a stipend and three others without a stipend. Fifty-seven of the 60 teachers that signed up to participate with a stipend completed the first year of the program, which allowed us to provide a stipend for the three that were originally participating without a stipend. Our recruitment efforts targeted teachers located in schools that do not currently offer the agribusiness program of study and teachers that currently offer the agribusiness program of study. The program was designed to provide three years of professional development related to the second-, third-, and fourth-year courses in the high school program of study. The first-year course is agriscience, which is common to all high school agriculture programs of study in

Tennessee. The format of the program is for yearlong professional development to be delivered for each of the three courses beyond the first-year course in the program of study. Each year, the professional development consists of e-learning modules (designed as 12-hours of instruction) with technical content and student learning activities to be completed during the summer, a face-to-face meeting at the summer teachers conference (most teachers in Tennessee regularly attend this conference) to discuss challenges and demonstrate some of the student learning activities, and on-demand instructional support provided by university faculty during the school year as the teachers implement student learning activities and content.

We collected data on how stipends (or incentives) impacted their decision to participate using a survey. We emailed the survey to all participants who completed the first year of professional development using QuestionPro. A total of 42 (70%) of participants completed the survey. Of the respondents, 60% were female and 40% male, and 54% described their school district as urban and 46% described their school district as rural. Respondent indicated they teach on average 128 students per year in their various secondary agriculture classes. The survey asked a series of questions about initial motivation to participate, the stipend amount, hours spent on the program, willingness to participate at a lower stipend level, and maximum number of hours they would spend on the program for a \$500 stipend. Descriptive statistics were used to summarize the findings. Readers should use caution when interpreting or generalizing the data, since a convenience sample was used.

Findings

Teachers were asked what initially motivated them to participate in the agricultural professional development program. The vast majority stated both the content and stipend were motivating factors (Table 1). Seven percent indicated the stipend was the motivating factor, and 12% indicated they were motivated by the content. As mentioned, these teachers were told of the content, anticipated time commitment and dates, and stipend amount before they agreed to participate.

Table 1

Motivating Factors to Participate in the Program

Factor	Percent
Content	12%
Stipend	7%
Both	81%

Table 2 shows the hours respondents reported they spent on the first year of the professional development and would be willing to spend for the \$500 stipend. The respondents indicated they spent on average eight and a half hours engaging with the program, but the hours engaged ranged from four to 30 hours. Around 81% spent less than 10 hours, but another 14% spent between 10 hours and 20 hours. Dividing the \$500 stipend by the average hours spent

per person, teachers were paid on average \$59 per hour to participate in professional development. We also asked respondents to indicate how many hours they would be willing to spend for a \$500 stipend. The respondents indicated they would be willing to spend an average of 16 hours. At the \$500 stipend rate, this is equal to about a \$31 per hour rate for professional development, which is lower than participants were paid for year one of the program. Teachers indicated they were willing to spend more time on the program for \$500.

Table 2

Hours Spent and Would be Willing to Spend on the Program for \$500 Stipend

Hours	Did Spend	Would be Willing to Spend
1 to 5	42%	15%
6 to 10	39%	22%
11 to 15	12%	24%
16 to 20	2%	20%
21 plus	5%	20%

Table 3 shows how their professional development experience aligned with their expectations in terms of time commitment. Over half (59%) indicated the program time commitment was about their expected time going into the program. Of the remaining percentage, 36% indicated the program took less than expected, while 5% said it took longer than expected.

Table 3

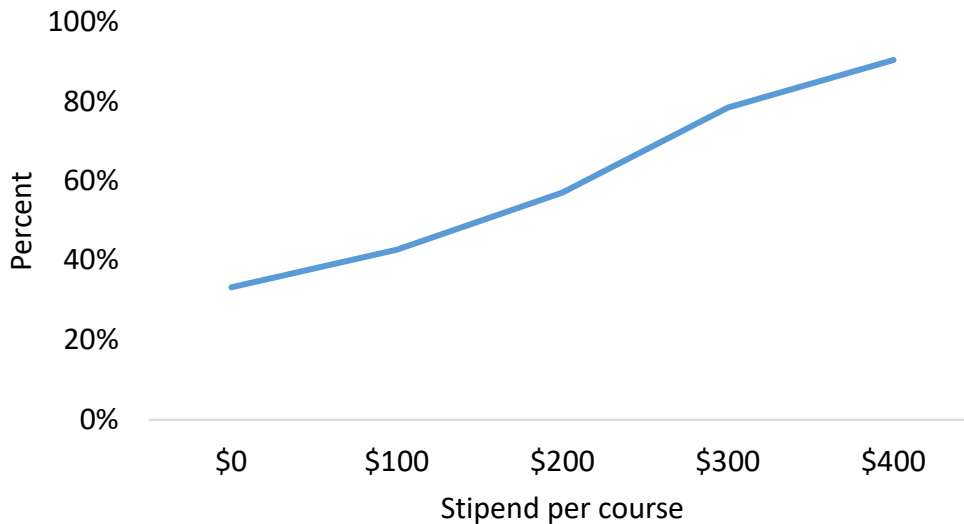
Participates Actual Time Spent on the Program Relative to What They Anticipated

Time	Percent
More than anticipated	5%
Less than anticipated	36%
About what you anticipated	59%

Figure 1 illustrates the percentage of participants that would participate in the program at various stipend rates. When the stipend goes up, more people would be willing to participate. With no stipend, about 33% of the respondents said they would participate. This is higher than the percentage who said they were motivated by content only (see Table 1). Figure 1 shows that going from zero to \$100 resulted in four additional respondents indicating they would participate. Going from \$100 to \$200, six more respondents indicated they would participate. The number of respondents willing to participate increased by 10 and five going from \$200 to \$300 and \$300 to \$400, respectively. The results suggest, on average, respondents' willingness to participate was inclining at an increasing rate until the \$300 stipend. After a \$300 stipend, more individuals would participate but at a lower rate of increase than going from \$200 to \$300.

Figure 1

Percent of Respondent Who Would Participate in the Academy at Various Stipend Levels



Regarding participation in the program at various stipend levels by initial motivating factors (Table 4), teachers who stated the stipend was the sole motivating factor for participation would not participate until the stipend reached \$200, and teachers who stated content was the sole motivating factor for participation responded to stipends similarly. Interestingly, none of the teachers who stated content was the sole motivating factor for participating would be willing to participate when the stipend was zero. Several who indicated both content and the stipend would have participated without a stipend.

Table 4

Count of Respondent Who Would Participate in the Course at Various Stipend Levels by Motivating Factor

Stipend	Content	Stipend	Both
\$0	0	0	12
\$100	1	0	15
\$200	1	2	18
\$300	2	2	27
\$400	3	2	31

Conclusions, Discussion, and Recommendations

Most of the teachers indicated the content and the \$500 stipend in combination were motivating factors for participation in the agricultural professional development program. Few teachers indicated the content or stipend alone were motivating factors for participation. This

finding supports Miles et al. (2003) and Odden et al. (2002), who stated incentives are needed for teachers to persist and participate in professional development programs outside of the regular school day and year. Additionally, 60 of the 63 teachers who registered for the professional development program completed the first year. As a result, we recommend those who design and deliver secondary teacher professional development utilize stipends to aid in teacher recruitment and retention.

Regarding the amount of the stipend to provide, teachers participating in this program were paid on average \$59 per hour for eight and a half hours of professional development, but the teachers indicated they were willing to spend 16 hours on professional development, which is equivalent to a rate of \$31 per hour. Additionally, the teachers indicated that higher stipend rates would encourage participation in the program, and willingness to participate inclined at an increasing rate until \$300. After a \$300 stipend rate, more individuals indicated they would participate, but willingness to participate was at a lower rate of increase than going from \$200 to \$300. This suggests the dollar value of willingness to participate in the professional development program declines after \$300 and is the highest going from \$200 to \$300. Based on the results of this study and supported by Miles et al. (2003) and Odden et al. (2002), the stipend is a primary driver of participation. Furthermore, Guskey (2002) stated instructional change is gradual and difficult and that learning something new and finding meaning requires time and effort. Our data suggests Tennessee teachers are willing to engage in agricultural professional development at rates comparable to their classroom instructional rate. The average Tennessee classroom teachers' instructional rate per hour for the 2019-2020 school year was \$34.60 (Tennessee Comptroller of the Treasury, 2021). Based on Miles et al. (2003) and the results of this study, we recommend stipends for professional development be at rates comparable to or higher than local instructional rates to maximize participation and persistence.

The primary limitations of this study are the small sample and composition of teachers. Extending this survey to more secondary agriculture teachers across the US or in wider regions would give more insight into teachers' response to incentives. Replicating this survey across states would provide a unique dataset to determine optimal stipends for professional development. This survey could easily be adapted to include other content areas such as animal science or horticulture. This data would provide insights into if teachers' willingness to participate in professional development programs varies by agricultural content area and how stipend amounts would need to vary across content areas to encourage participation and persistence. This type of information may prove useful in addressing teacher content and skill deficiencies, which should improve student learning outcomes, encourage teachers to offer programs of study and teach content such as agribusiness that they currently lack the knowledge and skills to teach, and as a result, assist in increasing and strengthening the pipeline of students into postsecondary agricultural degree programs.

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