Combining Adult Education and Professional Development Best Practice to Improve Financial Education Teacher Training

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Financial education is an important area of study due in part to the need for improved understanding of how to navigate an ever more complex financial decision-making environment, thus the need for effective classroom instruction. The purpose of this study is to examine a "teacher-as-learner" professional development program that is rooted in both professional development and adult education fields of study as means of providing financial education. This program educates teachers on their own personal finance, ultimately better preparing educators to teach financial literacy education. Results showed significant improvements in self-reported financial behaviors between pre- and posttests. Results suggest using contextual learning for teacher professional development because it benefits personal finances and successful teaching practices.

Keywords: adult education, consumer finance, financial literacy, professional development, teacher training

The need for financial literacy in the United States is critical. To navigate the complex financial marketplaces, consumers need to be able to discern the risks as well as the opportunities associated with financial products, services, and decisions (Consumer Financial Protection Bureau, 2013). On the front line of this mission are school and community-based educators. However, Way and Holden (2009) find that the vast majority of school-based educators know very little about financial education and topics related to personal finance. With the improvement we have seen in the area of state- or district-mandated personal finance course requirements (Brown, Collins, Schmeiser, & Urban, 2014; Council for Economic Education, 2014; Gutter, Copur, & Garrison, 2010), more teachers are being asked to add the topic to their areas of responsibility within their state's K-12 academic content standards. With the limited professional development (PD) funding and opportunities available to districts across the country (Association for Supervision and Curriculum Development, 2013), this is a cause of particular concern. Through policy, research, and practice, the field of teacher PD has become a strategic tactic in the achievement of students in the United States; yet, empirical evidence points to the unstandardized and lack of teacher-focused program implementations around the United States (Way & Holden, 2009). This results in lack of teacher preparation, confidence, and an inability to effectively educate students and meet the goals of PD, which is ultimately student achievement. It is the attempt of this research study to further the field in financial literacy teacher PD by using a "teacher-as-learner" approach to enhancing educators' abilities to effectively integrate financial topics into K-12 classrooms.

An alliance of national financial education experts, Council for Economic Education, Jump$tart Coalition for Personal Financial Literacy, Junior Achievement USA, National Endowment for Financial Education, and Take Charge America Institute at the University of Arizona, crafted an approach to provide training to K-12 teachers (although most that attended were 9th–12th grade teachers) where they are viewed as learners and individual consumers of knowledge. The element that made this project unique was the focus on the benefit of learning the content for personal use first, what is named "teacher-as-learner"—an advantage that works to build confidence with the topic as it is applied outside the classroom, and which ultimately motivated integration of

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the topic inside the classroom. In addition, this study contributes to the findings that in order for behavior change in personal finance to be achieved, interventions need to be relevant and timely for the participants (Fernandes, Lynch, & Netemeyer, 2014; Hensley, 2015). It is the goal of this PD research project to prepare teachers with knowledge of financial literacy through a "teacher-as-learner" approach that impacts their personal finances by building confidence, which leads to improved instructional practices and in turn an impact on student outcomes. It additionally emphasizes the importance of using both PD and adult education fields of research to inform effective practice.

Literature Review and Research Questions

One of the means to providing a focused and effective PD program is to use theory and research in the field of PD, education, and adult education (Brown & Inglis, 2013). In this literature review, we will discuss and interrelate previous literature within these disciplines which have provided the theoretical framework and research-based foundation from which this research is built. We will additionally identify a research gap within the existing literature for which this study attempts to fill. Finally, we will state the research questions this study attempts to answer.

Adult Education and Professional Development

The similarities that adult education and PD have are within their mechanisms of teaching, practicing, and delivering education to students, which have many implications for the development of PD (Hanna, Salzman, Reynolds, & Fergus, 2010). There are many methods of developing a PD program, such as using Vygotsky's sociocultural theory of knowledge acquisition (Vygotsky, Hanfmann, & Vakar, 2012), constructivism (Hanna et al., 2010), and performance-oriented perspectives (Boud & Hager, 2012), among many others. These theories form the basis of the "teacher-as-learner" PD modality created in this research study.

The educators who designed the PD for this study took multiple elements from each of these theories, along with financial literacy content, to create a "teacher-as-learner" PD environment, which enabled teachers to make sense of the financial content they were learning. This was accomplished by using instruction that encouraged participants to integrate the material into their own lives, their own finances, and their plans for the future. The intervention linked personal growth and meaningful behavior change, through experience and reflection, to personal outcomes such as increased confidence and capability to integrate personal finance topics into K-12 classroom instruction. An example of how this was accomplished was the activities that accompanied the topical sessions when teachers brought in declarations statements from their insurance plans and were asked to evaluate their risk tolerance as part of the Managing Risk and Insurance session.

There is additionally previous literature which suggests that this modality may yield positive results in the field of financial educators. Research by Baron-Donovan, Weiner, Gross, and Block-Lieb (2005) finds that well-designed teacher PD opportunities focused on increasing financial education teacher satisfaction, confidence, and motivation may have a positive influence on the belief that individuals have about themselves as teachers. They report that teachers who completed the 2-day train-the-trainer program based on a Coalition for Consumer Bankruptcy Education curriculum were satisfied, generally feel prepared to teach, and have more confident attitudes about teaching basic financial literacy.

Teacher-as-Learner

Literature on "teacher-as-learner" PD, which is experiential and teacher-centered, indicates that learning and experience are essential in forming constructivist teachers because of its inductive, problem-based, and practice-oriented approaches (Boud & Hager, 2012; Hunzicker, 2011; Klein & Rioran, 2011). Darling-Hammond and McLaughlin (2011) state that within this approach, "Teachers learn by doing, reading, and reflecting [just as students do], by collaborating with other teachers; by looking closely at students and their work, and by sharing what they see" (p. 83). Teachers who construct new knowledge from experience in PD are more likely to teach innovatively, solve problems, and implement the curriculum (Hunzicker, 2011; Klein & Rioran, 2011; Lumpe, 2007; Richter, Kunter, Klusmann, Ludtke, & Baumert, 2011).

Effective "teacher-as learner" approaches are experiential and practice oriented, both stemming from literature on teacher PD and adult education (Burke, 2013). Creating an active space for teachers allows them autonomy to experiment and reflect on new learning and enables them to bring awareness to their own needs in daily practice (Borko, 2004; Boud & Hager, 2012; Visser, Coenders, Pieters, & Terlouw, 2013). Through practice, teachers are able to take agency within their professional identities that they also can

incorporate into their classroom instruction. Specific to the learner-centered instructional approach, teachers are able to become managers of change within their own classroom because they are able to identify their own needs as well as student needs and support collaboration and reflection in their own communities of practice (Cohen, 2005; Glazer & Hannafin, 2006; Heck, Banilower, Weiss, & Rosenberg, 2008; Raider-Roth, Stieha, & Hensley, 2012).

Research indicates that PD interventions should be active, experiential, content-focused, on-site, and concerned with teacher learning not necessarily teacher teaching (Allison, 2013; Desimone, 2009; Guskey, 2002; Smith, Hofer, Gillespie, Solomon, & Rowe, 2003), all leading to increased teacher knowledge and strengthened instructional practice. Each of these elements are directly related to adult education principles and best practice for a "teacher-as-learner" PD intervention to enhance instructional practice and student achievement.

Research Questions

Student achievement is a major outcome of teacher PD and is often called the goal of teacher PD. This research study attempts to further the field of teacher PD and bridge the gap between teacher preparation and student outcomes through the development and further implementation of a "teacher-as-learner" PD program for K-12 financial education. The goal of this research study is to enhance teacher's knowledge, behaviors, and confidence so that they can successfully increase student outcomes in financial literacy. Specifically, the research questions are as follows:

1. Would a "teacher-as-learner" PD program lead to more positive personal financial behaviors for grade K-12 teachers?
2. Does a "teacher-as-learner" PD program increase the content-specific confidence level of grade K-12 teachers?
3. Would a change in the content-specific confidence level of grade K-12 teachers lead to an increase in the number of educators who integrate financial education into classroom instruction?

Method

Description of the Professional Development Model

The model of teacher PD described in this study was piloted at five locations in the states of Illinois, Colorado, Vermont, Arizona, and South Carolina between 2010 and 2012 by an alliance of several organizations. Three of these locations, Colorado, Vermont, and South Carolina, will be the focus of this research because they delivered similarly structured programs. Each of the pilots incorporated the opportunity to earn a locally appropriate educational credential (e.g., graduate credit, continuing education credit) to incentivize participation and build legitimacy for the content being provided.

In these three locations, teachers had the opportunity to spend three days in a PD course composed of six 3-hour sessions, totaling a minimum of 18 hours of content, covering topics that examine how economic trends impact personal financial situations, develop personal finance management strategies, identify ways to build wealth through saving and investing, compare and contrast financial services and products, specify strategies to protect from fraud, consider options when using credit and managing debt, and explore personal finance resources.

The class topics were designed to be presented by academics, financial planners, insurance agents, and others who represented a diverse and trusted group of experts who were strictly prohibited from self-promotion. Each of the 3-hour classes included the development and execution of a learning plan, a competency, learning objectives, success factors, prework, and classroom learning and reflection activities. For example, the class that asked teachers to consider options when using credit and managing debt implemented the following essential elements:

- Learning Plan: Managing credit and debt
- Competency: Explore strategies to use credit and manage debt
- Learning Objectives (in part): Give examples of why and how people borrow money; compare and contrast the advantages and disadvantages of using credit; discuss how individual credit use impacts society; categorize the elements that impact a person's credit/FICO score; give examples of when and why an individual's credit score and history is shared others.
- Success was determined when the learner could predict how their financial goals will be affected by their existing credit history and could identify at least one strategy to incorporate the study of

credit and debt management into a classroom learning experience.

- Activities included prework and on-site work, which included the following:
  - Collect credit card and loan offers recently received in the mail
  - Compile current debts with amount owed, due dates, and interest rates
  - Examine current credit report
- In-Class Learning and Reflection Activities included, but were not limited to, the following:
  - In a small group, share some of the reasons why you borrow money. How do you think these reasons compare to how students would respond?
  - Use the data collected for your prework to calculate how much consumer debt you can manage.
  - How can you help students develop skills to make informed credit decisions?

By broadening their own knowledge base around these financial topics, teachers applied what they learned to their own lives, rapidly incorporated strategies into classroom learning experiences, and addressed some of the concerns teachers have about their own financial well-being. Table 1 outlines how the assessment survey was aligned with these learning objectives.

Data Collection

Attitudinal and behavioral surveys were used to provide a clearer understanding of how well teachers retain content, how they use the information in their personal lives, and if integrate the topics into their classrooms. Participants were asked to voluntarily submit demographic information such as their age, gender, or highest level of education completed to which all participants agreed. Participants were not required to answer each statement and were free to not answer any statement which may not pertain to them. This information was used to better understand where greater impact occurred.

Quantitative data were collected on teachers' behaviors, attitudes, and confidence levels before and after the treatment effect. The confidential attitudinal surveys were given pre-PD and immediately post-PD. The Colorado attitudinal assessments were completed using a paper form, whereas the Vermont and South Carolina assessments were administered online via the SurveyMonkey assessment tool. The behavioral assessments were given immediately after the training, and participants were asked to reflect on their financial behaviors 6 months prior to the event. These statements were asked after the workshop to assure all teachers had a common personal finance vocabulary and to assure participants fully understood the statements (Davis, 2003; Rockwell & Kohn, 1989). The behavioral assessment was administered again 180 days later reflecting on the 6 months since the PD. The behavioral assessments at all locations were administered via the web-based SurveyMonkey assessment tool. Concerning the validity of retrospective data, Bernard, Killworth, Kronenfeld, and Sailer (1984) state that a technique for getting around the problem of participant recall inaccuracy is to ask informants about conceptual variables like beliefs and attitudes. They outline that this technique is based on the assumption that internal states, such as beliefs and attitudes, lead to certain behaviors and such must be highly related with it.

Sample

The sample of the "teacher-as-learner" PD research project was mostly 9th–12th grade teachers that participated in the 3-day PD for financial literacy education in Vermont, Colorado, and South Carolina. Participants were recruited to participate through multiple partners in each state. Any teacher from any grade or subject area was allowed to register. In Colorado, 137 individuals submitted pretests, whereas 97 individuals submitted posttest data. In South Carolina, 48 individuals submitted pretests, whereas 37 individuals submitted posttest data. In Vermont, 30 individuals submitted pretests, whereas 29 individuals submitted posttest data. It may be noted that the higher posttest response rate for Vermont may be attributed to the programs eligibility to count as graduate education credit. The total number of participants in this PD opportunity was 215. The total number of participants who submitted at least partial pre- and posttest data was 163.

Descriptive Statistics. The demographic characteristics of the sample are detailed in Table 2. Most of the participants were female in both the pretest (73.24%) and the posttest (77.02%). The ages of participants were relatively well distributed with 45.77% reportedly being between the ages of 31 and 45 years in the pretest and 50.00% of the posttest

TABLE 1. Alignment of Learning Objectives With the Assessment Survey

Learning Objective	Assessment Statement
Examine how economic trends impact personal financial situations.	I pay attention to news related to our national economy.
	I feel that my personal spending habits impact our economy.
Develop personal finance management strategies.	In the last 6 months, I have stuck to a financial spending plan or monthly budget.
	In the last 6 months, I have reviewed my financial goals.
	In the last 6 months, I have met or exceed the number of withdrawals I could make from my savings account.
	I worry about my day-to-day finances.
	I feel in control of my financial future.
Identify ways to build wealth through saving and investing.	In the last 6 months, I have contributed to a retirement account.
	In the last 6 months, I've considered when I'd like to retire and have taken steps to achieve this financial goal.
	I am concerned that I will not accumulate adequate retirement savings.
	Each time there is a major change in my life (e.g., marriage, birth of a child, etc.) I change the amount being withheld from my paycheck.
	I calculate the amount of money I would like to have when I retire and make contributions to my retirement account based upon attaining that amount.
Assess how career planning impacts earning power.	I am confident that I have the knowledge necessary to effectively teach my students about finance.
Compare and contrast financial services and products.	When considering a new bank or credit account, I request disclosure documents for each account.
	I compare insurance policies to ensure I am getting the best rate.
	Before borrowing money, I compare rates of credit unions and other banks in my area and/or online.
Specify strategies to protect from fraud.	In the last 6 months, I have reviewed each line of each pay-stub for consistencies and potential errors.
	I use passwords for each financial account I manage online.
	If I suspect my credit card has been lost or stolen, I immediately contact the credit card company to file a report.
	I shred all financial documents before throwing them away.
Consider options when using credit and managing debt.	In the last 6 months, I have reviewed my credit report.
	In the last 6 months, I have actively taken steps to improve my credit score.
Devise plans to minimize financial risk.	In the last 6 months, I have set aside (or already have) at least 3 month's salary to protect myself from financial emergencies.
	If something bad happens to me, I am confident that my family will be protected.
Explore personal finance resources.	In the last 6 months, I have integrated financial education into my classroom instruction.

TABLE 2. Demographic Characteristics of the Program Participants

Characteristic	Pretest	Posttest
Years teaching		
1–5	16.82% (36)	13.66% (22)
6–10	27.10% (58)	26.09% (42)
11–15	23.36% (50)	26.09% (42)
16–20	14.95% (32)	14.29% (23)
21+	17.76% (38)	19.88% (32)
Total	214	161
Subject(s) taught		
All	18.04% (35)	13.51% (20)
Math	32.47% (63)	33.78% (50)
Social Studies	18.04% (35)	16.22% (24)
History	11.86% (23)	10.14% (15)
Geography	8.25% (16)	6.76% (10)
Economics	11.86% (23)	12.16% (18)
Business	22.16% (43)	25.00% (37)
Accounting	6.70% (13)	8.78% (13)
Technology	9.79% (19)	15.54% (23)
FCS	9.28% (18)	8.11% (12)
Personal Finance	18.56% (36)	24.32% (36)
Total	194	148
Grade level(s) taught		
Pre K-4	13.27% (28)	14.29% (23)
5–8	26.54% (56)	29.19% (47)
9–12	67.30% (142)	65.22% (105)
Adult education	3.32% (7)	3.73% (6)
Total	211	161
Taken personal financial course?		
Never	58.41% (125)	55.63% (89)
High school	26.17% (26)	11.88% (19)
College	19.63% (42)	19.38% (31)
PD	21.50% (46)	28.13% (45)
Total	214	160
Age		
21–25	2.34% (5)	1.23% (2)
26–30	10.28% (22)	8.64% (14)
31–35	17.29% (37)	18.52% (30)
36–40	15.89% (34)	15.43% (25)
41–45	12.62% (27)	16.05% (26)
46–50	16.82% (36)	11.73% (19)
51–55	8.88% (19)	9.88% (16)
56+	15.89% (34)	18.52% (30)
Total	214	162

(Continued)

TABLE 2. Demographic Characteristics of the Program Participants *(Continued)*

Characteristic	Pretest	Posttest
Gender		
Female	73.24% (156)	77.02% (124)
Male	26.76% (57)	22.98% (37)
Total	213	161
Total household income		
Less than $30,000	1.20% (2)	3.23% (4)
$30,000–$49,999	20.48% (34)	13.71% (17)
$50,000–$69,999	16.27% (27)	16.13% (20)
$70,000–$99,999	25.30% (42)	29.84% (37)
$100,000+	36.75% (61)	37.10% (46)
Total	166	124
Highest education completed		
High school	0.47% (1)	1.23% (2)
Bachelors	25.00% (53)	24.07% (39)
Masters	68.87% (146)	67.90% (110)
Specialist	3.30% (7)	3.70% (6)
Doctorate	2.36% (5)	3.09% (5)
Total	212	162

Note. Frequencies in parentheses. Data collected from programs administered in Colorado, Vermont, and South Carolina. FCS = Family and Consumer Sciences; PD = professional development.

group within those same ages. The sample had an almost equitable number of earlier career teachers as 43.92% of participants stated they had 10 years or less of teaching experience on the pretest, and a very similar 42.75% stated the same on the posttest. The largest number of teachers taught mathematics (32.47%) as reported on the pretest, but the largest groups were on the posttest business (25.00%) and personal finance (24.32%). Most respondents were taught in Grades 9–12 on both the pretest (67.30%) and the posttest (65.22%). The questions of which subjects the participants taught and which grade level they taught allowed for multiple responses. Most participants had earned master's degrees as indicated on both the pretest (68.87%) and the posttest (67.90%).

Measures

The measures for the PD program were developed by reviewing the PD learning objectives and creating an assessment tool that tied directly back to the goals of each of the topics covered (Table 1). The surveys were used as pre- and posttest conditions to measure differences before and after the treatment condition of the PD program.

Behavioral Assessment

The 25-statement behavioral assessment was e-mailed to participants to measure their personal finance behaviors and administered through the SurveyMonkey assessment tool. This assessment measured behavioral change over the course of 180 days and is aligned with the learning outcomes and lesson plans of the training. The survey was sent immediately following the workshop, and participants were asked to assess their behaviors over the 6 months prior to the event. The follow-up survey was sent 180 days later asking the same statements about the 6 months after the workshop. The behavioral prestatements were asked immediately after the workshop about their previous financial behaviors to assure all teachers had a common personal finance vocabulary. Comparisons were made between the two evaluations to see if teachers changed their behavior—integrating knowledge and best practices learned at the training.

Missing Data

Missing data causes two primary problems. First, lost data decreases statistical power (Gilley & Leone, 1991) and, second, it may bias parameter estimates (Little & Rubin, 1987). There are two simple techniques to work with the issue of missing data—listwise deletion and pairwise deletion. Listwise deletion eliminates all cases with any amount of missing data from a calculation. It is often the least accurate technique to deal with missing data (Roth, 1994) because listwise deletion sacrifices a large amount of data (Malhotra, 1987). Pairwise deletion deletes information only from those statistics that "need" the information. Thus, it preserves a great deal of information that would be lost when using listwise deletion (Roth, 1994). This research uses a pairwise deletion method to deal with the missing data as to preserve as much data as possible for interpretation. The amount of missing data varies depending on the analysis because not all participants answered all statements on both the pre- and posttest. Of the participants who completed at least partial pre- and posttests, there was a loss of 52 participants (215 pretest and 163 posttest). All data used in this analysis are from 1 year of the study, 2012.

Statistical Analysis

The Shapiro–Wilk test was developed by Shapiro and Wilk (1965) and was the first test able to detect departures from normality because of either skewness, a lack of symmetry in the distribution of the data, or kurtosis, a measure of whether the data are peaked for flat relative to a normal distribution, or both (Althouse, Ware, & Ferron, 1998). The null hypothesis of the Shapiro–Wilk test is that the population is normally distributed. If the p value is less than our chosen alpha level of .05, then the null hypothesis is rejected and there is evidence that the data tested are not from a normally distributed population. Among four common tests of normality (Shapiro–Wilk, Kolmogorov–Smirnov, Lilliefors, and Anderson–Darling), Razali and Wah (2011) showed that the Shapiro–Wilk test was the most powerful when experimenting on 10,000 samples of various sample sizes of alternative symmetric and asymmetric distributions. For all 25 statements of the behavior survey, the null hypothesis of a normal distribution was rejected at an alpha level of .05.

A Wilcoxon signed-rank test, which was used for this analysis, is a nonparametric test that is used to compare nonnormally distributed matched samples to determine if their average ranks differ (Siegel, 1956).

The method in which we compute the critical z value for the Wilcoxon signed-rank test is defined by Berenson, Levine, and Krehbiel (2012). First, we compute a set of difference scores, D_i, between each of the n paired values:

$$D_i = X_{1i} - X_{2i}$$

where

$$\begin{aligned} i &= 1, 2, \ldots n \\ i &= \text{individual } i \\ X_1 &= \text{pretest score} \\ X_2 &= \text{posttest score} \end{aligned}$$

The Wilcoxon test statistic, W, is computed as the sum of the positive ranks.

$$W = \sum_{i=1}^{n'} R_i^{(+)}$$

For a two-tailed test, the null and alternative hypotheses for the Wilcoxon signed-rank test are

$$\begin{aligned} \mathrm{H_o}&: M_\mathrm{D} = 0 \\ \mathrm{H_1}&: M_\mathrm{D} \neq 0 \end{aligned}$$

where

$$M_\mathrm{D} = \text{mean difference score}$$

Because the sum of the first n' integers (1,2, . . . n') equals $n'(n' + 1) / 2$, W ranges from a minimum of 0 (where all the difference scores are negative) to a maximum of $n'(n' + 1) / 2$ (where all the difference scores are positive). If the null hypothesis is not rejected, W is expected to be close to its mean, $\mu_\mathrm{w} = n'(n' + 1) / 4$. For this study, we employ an additional step for our sample size. The large-sample ($n > 20$) Wilcoxon signed-rank Z_STAT test statistic was derived from the following equation:

$$Z_\mathrm{STAT} = \frac{W - \dfrac{n'(n' + 1)}{4}}{\sqrt{\dfrac{n'(n' + 1)(2n' + 1)}{24}}}$$

We reject the null hypothesis if the computed Z_STAT test statistic falls within the .05 alpha level for a two-tailed test. A separate Z_STAT test statistic was calculated for the

each of the 25 statements on the behavioral assessment. In addition, a total item score (TIS) and an average item score (AIS) were calculated for the pre- and posttest as an additional method to understand the potential change in participants financial behaviors. The TIS is simply the summation of the numerical values of the participant's survey responses. A TIS was not calculated and analyzed unless a full data set, either the pretest or the posttest, was present. This was to avoid an artificially low TIS score because of missing values. The AIS was found by computing the mean score of all assessment statements, which were answered by the respondent. All response variables were numerically coded such that lower values were assigned to responses which were viewed as more positive financial behaviors when compared with the other available responses. In short, for this analysis, the lower the numerical value, the more positive financial behaviors the respondent has reported.

Effect size measurements tell us the relative magnitude of the experimental treatment. They represent the size of the experimental effect, and they allow us to compare the magnitude of experimental treatments from one experiment to another (Thalheimer & Cook, 2002). This study employs a measure of effect size developed by Rosenthal (1991) and recommended by Field (2013) which is appropriate given the characteristics of our data and should result in a measure between −1.00 and 1.00. The equation to convert a z score into the effect size estimate, r, is as follows:

$$r = \frac{z}{\sqrt{N}}$$

The z score is derived from the Wilcoxon signed-rank tests, which were administered on each individual assessment statement and summary statistics (TIS and AIS) to compare the scores on the pretest with the scores on the posttest. The N is the total number of observations on which the individual z score is based. It is important to be clear that this is not the number of pairs of data or respondents, but the number of total observations. A separate effect size was calculated for each assessment statements and the absolute value of r was analyzed. Cohen (1988, 1992) has made some general suggestions about what may be considered a large or small effect: $d = 0.2$ (small), 0.5 (medium), and 0.8 (large) which may also be adopted for use when using the r statistic (Field, 2013).

Results

Program participants displayed statistically significant improvements in their reported financial behaviors between the pre- and posttest in 21 of 25 assessment statements analyzed. Results of assessment statements are reported according to their corresponding learning objectives.

The two assessment statements related to the learning objective of "Examine how economic trends impact personal financial situations" were first, "I pay attention to news related to our national economy," and second, "I feel that my personal spending habits impact our economy." The results showed statistically significant differences in respondent's answers between the pre- and posttest for each statement, $n = 143$, $z = -5.384$, $p < .01$, $r = .32$, and $n = 142$, $z = -3.024$, $p < .01$, $r = .08$, respectively.

Five distinct assessment statements were constructed in relation to the stated learning objective "Develop personal financial management strategies." Answers to the statement "In the last 6 months, I have stuck to a financial spending plan or monthly budget" were found to have a statistically significant difference between the pre- and posttest, $n = 144$, $z = -5.252$, $p < .01$, $r = .31$. Similarly, answers to the statements "In the last 6 months, I have reviewed my financial goals" and "I worry about my day-to-day finances" were also found to have statistically significant differences between the pre- and posttest, $n = 144$, $z = -4.529$, $p < .01$, $r = .27$, and $n = 142$, $z = -3.215$, $p < .01$, $r = .19$, respectively. No statistically significant results in the difference between the pre- and posttest answers were observed for the assessment statement "In the last 6 months, I have met or exceeded the number of withdrawals I could make from my savings account." However, positive results were recorded concerning the statement "I feel in control of my financial future" with statistically significant differences between the pre- and posttest answers, $n = 142$, $z = -3.836$, $p < .01$, $r = .23$.

Encouraging results were witnessed surrounding the five assessment statements related to the learning objective "Identify ways to build wealth through saving and investing." Statistically significant differences were found in the answers for statements "In the last 6 months, I have contributed to a retirement account" and "In the last 6 months, I've considered when I'd like to retire and have taken steps to achieve this financial goal", $n = 143$,

$z = -2.041$, $p < .05$, $r = .12$, and $n = 143$, $z = -4.009$, $p < .01$, $r = .24$, respectively. In addition, analysis of the statement "I calculate the amount of money I would like to have when I retire and make contributions to my retirement account based upon attaining that amount" yielded statistically significant differences in the answers between the pre- and posttest, $n = 140$, $z = -4.621$, $p < .01$, $r = .28$. Also related to building wealth through savings and investing, statistically significant results were detected when exploring the statements "I am concerned that I will not accumulate adequate retirement savings" and "Each time there is a major change in my life (e.g., marriage, birth of a child, etc.) I change the amount being withheld from my paycheck" between the pre- and posttest, $n = 142$, $z = -3.048$, $p < .01$, $r = .18$, and $n = 141$, $z = -3.569$, $p < .01$, $r = .21$, respectively.

"Assess how career planning impacts earning power" is the stated learning objective for which the statement "I am confident that I have the knowledge necessary to effectively teach my students about finance" was placed on the assessment. The connection results from the belief that an effective, confident finance teacher is more likely to be rewarded with a long-term career in education, with corresponding longevity pay increases, should they so choose. The results showed statistically significant differences in the respondent's answers on the pre- and posttest assessments, $n = 143$, $z = -2.024$, $p < .05$, $r = .12$.

A trio of assessment statements were administered to better understand the effectiveness of the PD opportunity in meeting the learning objective of "Compare and contrast financial services and products." First, participants were given the statement "When considering a new bank or credit account, I request disclosure documents for each account" for which statistically significant results were observed between the pre- and posttest, $n = 142$, $z = -6.024$, $p < .01$, $r = .36$. Second, responses to the statement "I compare insurance policies to ensure I am getting the best rate" were analyzed. Statistically significant results were also noted when examining the difference between the pre- and posttest on this statement, $n = 143$, $z = -4.345$, $p < .01$, $r = .26$. Last, inspecting results of the third statement "Before borrowing money, I compare rates of credit union and other banks in my area and/or online" yielded statistically significant differences between the pre- and posttest, $n = 142$, $z = -3.290$, $p < .05$, $r = .20$.

The training introduced participants to behaviors and strategies which may protect them and their assets from various types of fraud. The two statements "I shred all financial documents before throwing them away" and "In the last 6 months, I have reviewed each line of each pay-stub for consistencies and potential errors" were included in both the assessments. Analyzing the results lead to statistically significant differences between the pre- and posttest, $n = 143$, $z = -3.569$, $p < .01$, $r = .21$, and $n = 140$, $z = -5.285$, $p < .01$, $r = .32$, respectively. The remaining two statements connected with this learning objective, "I use passwords for each financial account I manage online" and "If I suspect my credit card has been lost or stolen, I immediately contact the credit card company to file a report," did not result in statistically significant differences between the pre- and the posttest.

The PD training course stressed options, resources, and strategies on how to effectively use credit and manage debt. Two succinct and direct statements were included in the assessment to evaluate the program's capacity to meet this learning objective. Results from the pre- and posttest for the statements "In the last 6 months, I have reviewed my credit report" and "In the last 6 months, I have actively taken steps to improve my credit score" were reviewed and statistically significant differences were observed for both statements, $n = 143$, $z = -5.341$, $p < .01$, $r = .32$, and, $n = 142$, $z = -5.000$, $p < .01$, $r = .30$, respectively.

Although financial risk cannot be entirely eliminated for either an individual or household, this training program aimed to impart strategies, approaches, and plans which may be employed in an effort to minimize many of the most common varieties of financial risk. These include the need for emergency funds and the loss of a household's financial support in the event of a wage earners illness or death. Examination of the statement "In the last 6 months, I have set aside (or already have) at least 3 month's salary to protect myself from financial emergencies" did not show a statistically significant difference between the pre- and posttest. However, examination of the assessment statement "If something bad happens to me, I am confident that my family will be protected." yielded statistically significant differences between the pre- and posttest, $n = 143$, $z = -4.427$, $p < .01$, $r = .26$.

A positive step in effectively managing an individual or household's financial situation is the ability to explore personal finance resources and use them in a gainful manner.

The financial resources discussed during this training were appropriate for learners in varying life stages. Seeking out and making effective use of available resources within their subject matter is also a common strategy of many teachers. The assessment statement "In the last 6 months, I have integrated financial education into my classroom instruction" was included to explore a potential difference in the number of training participants who incorporated financial education into their classroom instruction in the time immediately preceding the training to after the training. Evaluation of the results returned a statistically significant difference from the pretest to the posttest, $n = 142, z = -4.715, p < .01, r = .28$.

Finally, an analysis was performed on the two listed summary statistics, the TIS and AIS, and results are presented in Table 3. Table 3 additionally illustrates the results of the Wilcoxon signed-rank test for each of the individual behavioral and attitude statements with a corresponding effect size for each. Assessment responses were coded such that lower scores represented more positive financial behaviors being reported by the respondent. A Wilcoxon signed-rank test revealed a significant difference in the TIS between the pre- and posttest, $n = 124, z = -6.720, p < .01, r = .43$. An equally statistically significant difference was found for the AIS, $n = 144, z = -8.735, p < .01, r = .51$.

Discussion

Statistical analyses were conducted to examine differences between pre- and posttest scores following a "teacher-as-learner" PD program conducted in Colorado, South Carolina, and Vermont. Variables included a 25-item financial behavior survey, TIS, and AIS. Results of this research study support the use of a "teacher-as-learner" PD modality that use adult learning theories and practice tied to financial literacy. First and foremost, there were significant changes in teacher personal behaviors concerning their own financial literacy, which is directly related to the "teacher-as-learner" paradigm. Subsequently, significant increases in teacher confidence were seen as well. Assessment results additionally support the use of PD best practices in personal finance teacher education as there were significant changes in teacher behaviors within the classroom, specifically pertaining to the integration of financial education content.

We can assume from these pre- and posttest scores that participants in those states increased their positive personal financial behaviors after completing the training. Statistical analysis determining that significant differences were present between the pre- and posttest results on most assessment statements suggest the financial training on specific concepts within the training was relevant and impactful.

The findings from this analysis are consistent with current literature on the effects of a "teacher-as-learner" approach to PD. Literature supports the use of a contextually based, personal approach to learning that invites students to link what they are learning with real life tasks and examples they may experience in PD (Boud & Hager, 2012; Desimone, 2009; Hunzicker, 2011; Klein & Rioran, 2011). The ability of teachers to use this kind of method for PD is also supported in the literature through PD best practice. Making linkages to what teachers have learned and have incorporated in their own lives enables them to further educate students on subjects, in this study, financial literacy education (Allison, 2013; Hunsicker, 2011; Klein & Rioran, 2011; Lumpe, 2007; Richter et al., 2011). Both adult education and PD literature contend that active, participatory approaches are best practice for learning, retention, and integration in the learning process (Burke, 2013; Darling-Hammond, 2001; Garet, Porter, Desimone, Birman, & Yoon, 2001; Guskey, 2002; Hanna et al., 2010; Smith et al., 2003). Results indicated that a "teacher-as-learner" approach to PD enhanced teachers' attitudes, confidence, and behaviors regarding their own financial literacy.

This research has additional implications for the field of financial counseling and planning education. The findings suggest that some personal finance teachers may not feel confident enough in their knowledge of personal finance topics to effectively teach their students. Because this specific PD program is not available everywhere, motivated and resourceful teachers will need to seek out avenues to gain this content knowledge in their area. An increase in the number of personal finance teachers working to enhance their own specific human capital and gain confidence in the subject matter highlights the need for a financial counselor to excel in her role as educator and content expert for their community. Financial counselors and other certified financial professionals may find a mutually rewarding relationship in reaching out to teachers and offering their expertise both as an in-classroom guest speaker or behind-the-scenes resource. Seasoned financial professionals have a wealth of knowledge that may be useful to educators. This

TABLE 3. Results of Behavior and Attitude Statements

Statement	Pre/Post	*M*	*SD*	ES	*n*	Z_{STAT}
1. In the last 6 months, I have stuck to a financial spending plan or monthly budget.	Pre	1.5701	0.4962	.3095	144	−5.252**
	Post	1.2945	0.4572	—	—	—
2. In the last 6 months, I have reviewed my financial goals.	Pre	1.2804	0.4502	.2669	144	−4.529**
	Post	1.0741	0.2627	—	—	—
3. In the last 6 months, I have set aside (or already have) at least 3 month's salary to protect myself from financial emergencies.	Pre	1.6495	0.4782	.0808	144	−1.372
	Post	1.5951	0.4924	—	—	—
4. In the last 6 months, I have reviewed my credit report.	Pre	1.5634	0.4971	.3158	143	−5.341**
	Post	1.2515	0.4352	—	—	—
5. In the last 6 months, I have actively taken steps to improve my credit score.	Pre	1.5566	0.4980	.2967	142	−5.000**
	Post	1.3067	0.4626	—	—	—
6. In the last 6 months, I have contributed to a retirement account.	Pre	1.1549	0.3627	.1207	143	−2.041*
	Post	1.0982	0.2985	—	—	—
7. In the last 6 months, I have met or exceed the number of withdrawals I could make from my savings account.	Pre	1.1315	3.341	.0864	143	−1.461
	Post	1.0864	3.855	—	—	—
8. In the last 6 months, I've considered when I'd like to retire and have taken steps to achieve this financial goal.	Pre	1.5660	0.4968	.2371	143	−4.009**
	Post	1.3145	0.4858	—	—	—
9. In the last 6 months, I have reviewed each line of each pay-stub for consistencies and potential errors.	Pre	1.6321	0.4834	.3158	140	−5.285**
	Post	1.3168	0.4667	—	—	—
10. In the last 6 months, I have integrated financial education into my classroom instruction.	Pre	1.4178	0.4944	.2798	142	−4.715**
	Post	1.1429	0.3510	—	—	—
11. I am concerned that I will not accumulate adequate retirement savings.	Pre	3.0610	4.099	.1809	142	−3.048**
	Post	2.8333	3.865	—	—	—
12. If something bad happens to me, I am confident that my family will be protected.	Pre	1.8685	0.58406	.2618	143	−4.427**
	Post	1.5802	0.5762	—	—	—
13. When considering a new bank or credit account, I request disclosure documents for each account.	Pre	2.4413	0.7664	.3575	142	−6.024**
	Post	1.9000	0.8774	—	—	—
14. If I suspect my credit card has been lost or stolen, I immediately contact the credit card company to file a report.	Pre	1.0374	0.1901	.0225	141	−.378
	Post	1.0188	0.1361	—	—	—
15. I calculate the amount of money I would like to have when I retire and make contributions to my retirement account based upon attaining that amount.	Pre	1.7512	0.4334	.2762	140	−4.621**
	Post	1.4875	0.5014	—	—	—
16. Each time there is a major change in my life (e.g., marriage, birth of a child, etc.) I change the amount being withheld from my paycheck.	Pre	1.5187	0.5008	.2125	141	−3.569**
	Post	1.2813	0.4510	—	—	—
17. I shred all financial documents before throwing them away.	Pre	1.3692	0.4837	.2110	143	−3.569**
	Post	1.2037	0.4040	—	—	—
18. I use passwords for each financial account I manage online.	Pre	1.2009	0.4862	.0662	142	−1.115
	Post	1.1180	0.4090	—	—	—

(Continued)

TABLE 3. Results of Behavior and Attitude Statements *(Continued)*

Statement	Pre/Post	*M*	*SD*	ES	*n*	Z_{STAT}
19. I worry about my day-to-day finances.	Pre	2.7089	3.4079	.1908	142	−3.215**
	Post	2.4136	0.8201	—	—	
20. I feel in control of my financial future.	Pre	2.3458	0.7068	.2276	142	−3.836**
	Post	2.0683	0.7160	—	—	—
21. I pay attention to news related to our national economy.	Pre	2.2290	0.7806	.3184	143	−5.384**
	Post	1.8704	0.6416	—	—	—
22. I feel that my personal spending habits impact our economy.	Pre	1.1925	0.3952	.0794	142	−3.024**
	Post	1.0741	0.2627	—	—	—
23. I am confident that I have the knowledge necessary to effectively teach my students about finance.	Pre	1.9296	0.5744	.1203	143	−2.034*
	Post	2.1235	1.2598	—	—	—
24. I compare insurance policies to ensure I am getting the best rate.	Pre	2.0327	0.6810	.2569	143	−4.345**
	Post	1.6543	0.5718	—	—	—
25. Before borrowing money, I compare rates of credit unions and other banks in my area and/or online.	Pre	1.6916	0.7175	.1952	142	−3.290*
	Post	1.4348	0.6203	—	—	—
Average item score (AIS)	Pre	1.7159	7.6671	.5147	144	−8.735**
	Post	1.5014	8.5696	—	—	—
Total item score (TIS)	Pre	41.7919	7.8862	.4267	124	−6.720**
	Post	37.6309	8.4680	—	—	—

Note. n = number of paired samples used for the analysis; ES = effect size (absolute value of r); Z_{STAT} = Wilcoxon signed-rank test.
*$p < .05$. **$p < .01$.

may include sharing written, online-based, or community resources.

Conclusion

The increasing number of state mandates requiring the integration of financial education topics into schools will do nothing to help teachers prepare without quality, timely, and relevant PD. Educators' aptitude to teach personal finance is a key success factor; however, the current capacity is not stellar, as evidenced by the low number (11.6%) of teachers who have taken at least one workshop in personal finance, those who feel competent (20%) to teach the subject, and those who feel qualified (36.2%) to use their state's financial education standards (Way & Holden, 2009). This study shows that by integrating a content-focused PD model that allows for the use of tested adult learning theories, educators will not only improve their personal financial behaviors but also integrate the topic into the classroom at a very encouraging rate. This study confirms previous research that financial education may encourage behavior change (Xiao et al., 2004).

In particular, research on teacher PD should consider the elements that have been taken into account in this study. To integrate the considerations of adult learning models and theories into PD not only strengthens the practical instruction of the topic but also provides a stronger platform from which to build the educational delivery. Specifically, with improved instruction and a better understanding of the audience, the evaluation of the PD should provide a more accurate measure of what was learned, what was effective on participants' practice, and where refinements can be made to improve the PD—when instruction is already limited because of poor planning or consideration of audience, it is more difficult to accurately measure the program's effect. Simply, when PD programs do not incorporate adult learning theories into educational interventions meant to serve adults (whether they are classroom teachers or not),

the delivery of information faces the potential for a limited impact. In the guise of training, if the learners are not fully considered in the design of the intervention, then programs for this group can scarcely be expected to be engaging and effective.

This research is not without limitations. These include a possible self-selection bias of attendees who not only attended the PD but also took the pre- and posttests. The research does show promise on how to assist educators in learning more about personal finance in a transferrable environment. Instituting a research-based, replicable model of teacher PD has the potential to impact teachers, students, and even families. Although further examination of this research is forthcoming and is expected to document more insight into effective PD practices, it is apparent that this model is built on a foundation that exhibits significant impact. If impactful training and PD—linked to other well-established pedagogical trainings that are locally and regionally available—is instituted in each state where financial education standards have been established, refined, or updated, great advancements can be made far beyond the sample illustrated in this article. Many individuals and students can be well-informed, especially if this style of training is emulated within the framework of a research-based, extended, and ongoing program.

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