

The Effects of Service-Learning Participation on Pre-Internship Educators' Teachers' Sense of Efficacy

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This study aimed to determine if pre-internship teacher education students' participation in service-learning activities in K-12 classrooms would significantly affect their teachers' sense of efficacy (TSE). A secondary focus sought to determine if one type of service-learning activity (e.g., whole-class instruction) would affect teacher efficacy more than another (e.g., small-group tutoring). Findings revealed that pre-internship service-learners in both types of service-learning activities increased significantly in their TSE. However, neither type of service-learning activity was superior to the other as measured by the minimally accepted .05 level. The discussion focuses on factors shared between the two service-learning designs that might mediate a positive mastery experience.

L'objectif de cette étude était de déterminer si la participation par des étudiants en pédagogie à des activités de bénévolat dans des classes de la maternelle à la 12e année augmenterait de façon significative leur sentiment d'être efficaces comme enseignants. Un deuxième objectif consistait à déterminer si un type d'activité de bénévolat (par ex. l'enseignement à toute la classe) affecterait l'efficacité d'un enseignant plus qu'une autre (par ex. le tutorat à de petits groupes). Les résultats indiquent que les deux types d'activité ont accru de façon significative le sentiment d'efficacité comme enseignants chez les étudiants bénévoles. Toutefois, les paramètres selon le seuil minimal de 0,05 ont révélé qu'aucune activité n'était supérieure à l'autre. La discussion porte sur des facteurs communs aux deux activités de bénévolat et qui pourraient entraîner une expérience d'apprentissage fructueuse.

Improving the quality of teachers is a consistent theme in educational reform in the United States. For example, improving the effectiveness of both individual teachers and teacher preparation programs are stated goals in the *Race to the Top* (US Department of Education, 2009) and the *Improving Teacher Quality State Grants* programs (US Department of Education, n.d.) respectively.

Teachers' sense of efficacy (TSE) has been linked to quality of teaching and level of student achievement (Bandura, 1993; Goddard, Hoy, & Woolfolk-Hoy, 2000; Midgley, Feldlaufer, & Eccles, 1989; Soodak & Podell, 1993). TSE is defined as a teacher's perception of his or her competence to facilitate positive educational outcomes for learners (Tschannen-Moran & Woolfolk-Hoy, 2001). The importance of TSE is unambiguous considering that 25% of teachers in the US are said to leave within the first two years of teaching, and 40% leave within five years (Grant & Gillett, 2006) because they feel underprepared for the daily classroom and lack

confidence to address their internalized shortcomings.

Research has shown that pre-internship education students' TSE can be significantly malleable when addressed through nontraditional approaches to teacher education that include more reciprocal commitment to school partners through pedagogies of engagement like service-learning (Butcher, Hogan, Surrey, & Ryan, 2004; Stewart, Allen, & Bai, 2010). Earlier studies examining teacher efficacy and service-learning (Nelson, Tice, & Theriot, 2008), however, have predominantly focused on teacher interns or novice teachers in their first three years.

With this in mind, the current study aimed to determine if the TSE of pre-internship education majors is affected by their engagement in one of two course-based service-learning activities.

Review of Relevant Literature

Self-Efficacy

Teachers' sense of efficacy is rooted in Bandura's (1977, 1986, 1993, 1997) social cognitive theory construct of self-efficacy. Self-efficacy refers to a person's beliefs about his or her capabilities to learn, organize, implement, and perform actions or behaviors in particular situations and at designated levels. Information about self-efficacy expectations is derived from four sources. First, the most powerful sources of information about efficacy are mastery experiences or previous performances interpreted by the individual as successful (Pajares, 2002): "Enactive mastery experiences are the most influential source of efficacy information because they provide the most authentic evidence of whether one can muster whatever it takes to succeed" (Bandura, 1997, p. 80). Individuals with low self-efficacy may avoid attempting future tasks that are similar to those at which they previously failed or performed under their initial assumed capabilities. Their more efficacious peers, in contrast, will exert effort even when the task is difficult. When we succeed, our efficacy beliefs will rise; failure may result in lowered self-efficacy.

Second, vicarious experiences (i.e., the influence of observing and learning from others) can have a significant influence on the observer's efficacy. Vicarious experiences allow learners to assess their own capabilities through someone else's accomplishments or failures. The more strongly the observer identifies with the model, the more self-efficacy will be affected.

Third, self-efficacy is affected by social persuasion or feedback received during performance of a task. The effect of social persuasion on self-efficacy is correlated with the recipient's view of the persuader. A credible and trustworthy source is more potently influential than one for which the learner holds little admiration or respect (Bandura, 1997).

Last, physiological and emotional states (e.g., heart rate, sweating) affect self-efficacy. Stressful, anxious, or troubling activities lower efficacy, whereas more exciting tasks tend to increase it (Bandura, 1997; Pintrich & Schunk, 2002).

Regardless of the source, self-efficacy is future-oriented (Pajares, 1997) and is thus a strong predictor of initiation and persistence of behavior (Bandura, 1997). Research has found that self-efficacy affects an individual's choice of, effort toward, and persistence in tasks or activities (Bandura, 1982, 2000; Bandura & Cervone, 1983, 1986; Schunk, 1991, 1995, 2001; Schunk & Pajares, 2002, 2004).

Teachers' Sense of Efficacy (TSE)

The construct of self-efficacy appears to be domain-specific, specific to a set of capabilities or particular situations, showing little generalization across areas (Pajares, 1996; Smith & Fouad, 1999). Teachers' sense of efficacy (TSE) refers to a teacher's judgment of his or her competence and ability to bring about meaningful and significant educational outcomes for all students (Armor et al., 1976; Bandura, 1977; Tschannen-Moran & Woolfolk-Hoy, 2001; Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998). Findings suggest that teachers with a high TSE are

- more enthusiastic about teaching (Guskey, 1988; Woolfolk, 2008);
- less likely to interact negatively with students (Soodak & Podell, 1993);
- less likely to experience burn-out (Burley, Hall, Villeme, & Brockmeier, 1991);
- more likely to remain in the teacher profession (Coladarci, 1992; Ebmeier, 2003; Evans & Tribble, 1986);
- more open to instructional innovations and planning (Allinder, 1994; Ghaith & Yaghi, 1997; Guskey, 1988; Stein & Wang, 1988);
- less critical of errors and mistakes made by students (Ashton & Webb, 1986); and
- more committed to the profession of teaching and to their schools (Coladarci, 1992; Ebmeier, 2003; Evans & Tribble, 1986).

Teachers with a high TSE also tend to be more enthusiastic about and persistent in efforts to bring about positive student outcomes (Ashton, 1984; Woolfolk, 2008), including (a) student achievement (Anderson, Greene, & Loewen, 1988; Ashton & Webb, 1986; Ross, 1992; Shahid & Thompson, 2001; Woolfolk-Hoy & Davis, 2006), (b) student motivation (Midgley et al., 1989; Tschannen-Moran et al., 1998), and (c) the students' own sense of efficacy (Tschannen-Moran & Woolfolk-Hoy, 2001). In fact, the collective efficacy of a faculty can be a stronger predictor of student achievement than the socioeconomic level of the students (Bandura, 1993; Goddard et al., 2000).

Teachers' Sense of Efficacy (TSE) and Service-Learning

Published studies examining teacher efficacy and service-learning are few, inconclusive, and in certain cases have mistakenly inferred TSE effects from generalized self-efficacy because of the study's sample. For example, several studies have shown that preservice teachers increase in their commitment to teaching, community participation, self-esteem and self-efficacy, and feelings of compassion and concern (Flippo, Hetzel, Gribonski, & Armstrong, 1993; Green, Dalton, & Wilson, 1994; Wade, 1995). In contrast, Root, Callahan, and Sepanski (2002) did not find significant effects for service-learning on teaching efficacy and commitment to teaching in 442 preservice teacher participants in nine teacher education programs who were members of the National Service-Learning in Teacher Education Partnership (NSLTP). We hypothesized that the high scores with which the sample entered the study might have created ceiling effects for these variables. Regardless, preservice teachers' perception of the level of instructors' support available to them during service-learning was linked to increases in general teaching efficacy.

Nelson et al. (2008) examined if preservice teachers' participation in class-based service-learning increased their personal and teacher efficacy more than that of a control group.

Although they concluded that there was “a significant impact on novice teachers’ efficacy when involved in a well-designed servicing learning pedagogy” (p. 106), this finding was based on a difference between the service-learning and control group. However, no significant change in the experimental group was noted over time.

Stewart et al. (2010) conducted a study in which pre-internship students enrolled in education courses participated in one of two service-learning designs to determine if the experiences would affect their TSE. They found that “having pre-internship teachers engage in service-learning activities that are in line with their level of knowledge and skills” (p. 139) significantly increased participants’ levels of TSE.

Research Questions

1. Are there significant changes in pre-internship [teachers'] TSE after participating in whole-class K-12 service-learning projects?
2. Are there significant changes in pre-internship teachers’ TSE after participating in individual student and/or small group tutoring service-learning projects?
3. Are there significant differences in pre-internship teachers’ TSE between the two service-learning designs?

Methods

Design

A two-group, pre-test-post-test quasi-experimental research design was used to determine if change would occur over time in pre-internship educators’ TSE from participating in a K-12 service-learning project within and between treatment groups.

Participants

The 293 participants in this study were junior-level, undergraduate, pre-internship education majors enrolled in one of two education courses in a large, metropolitan, research-intensive university in the southeast US. One case had missing data, so 292 cases were used as the final study sample. The ethnicity of the sample was 255 Caucasian, 13 African-American, 18 Hispanic, two Asian, and four other participants. The sample comprised 248 female and 44 male students, and all were over 18 years of age. Table 1 provides demographic information for the whole sample and by course. It can be noted that this sample comprised a large portion of white students and a majority of female students; therefore, we are cautious about generalizing any findings from this study to other student populations that may not share similar demographic backgrounds.

Procedures

The participants were enrolled in one of two undergraduate education courses, but not both, requiring service-learning during the spring, summer, or fall semester in 2008. Participants were asked to complete the *Teacher Sense of Efficacy Scale (TSE—long form, Tschannen-Moran & Woolfolk-Hoy, 2001)* as a password-protected Web survey by the third week of class and again during the penultimate week of the course. Pre- and post-responses on the surveys were

Table 1
Gender and Ethnic Representation by Course

| | Combined Group | | Course 1 | | Course 2 | |
|--------------------------------|----------------|-----|----------|------|----------|------|
| | <i>N</i> | % | <i>n</i> | % | <i>n</i> | % |
| Male | 44 | 15 | 26 | 15.3 | 18 | 14.8 |
| Female | 248 | 85 | 144 | 87.4 | 104 | 85.2 |
| Black/African-American | 13 | 4.4 | 7 | 4.1 | 6 | 4.9 |
| Latino/Hispanic/Chicano | 18 | 6.1 | 9 | 5.3 | 9 | 7.4 |
| Caucasian/White (not Hispanic) | 255 | 87 | 152 | 89.4 | 102 | 83.6 |
| Asian | 2 | .7 | 1 | 0.6 | 1 | 0.8 |
| Other | 4 | 1.7 | 1 | 0.6 | 4 | 3.3 |
| Total | 292 | 100 | 170 | 100 | 122 | 100 |

matched by a student identification number. Incomplete surveys and surveys without a pre- or post-match were removed from the sample because the missing data comprised less than 5% of the total numbers of participants. In the end, the sample for this study consisted of 292 students (Course 1=170, Course 2=122).

Comparison Groups and Service-Learning Assignments

Course 1 was a general methods and classroom management course. Students were exposed to various instructional delivery techniques and organizational and management skills that promote the development of a classroom community. Students had to complete 15 hours of service-learning with a certified teacher in an underserved K-12 classroom during normal school hours. They were (a) to assist the teacher in any way he or she needed, (b) deliver a lesson and get feedback from the host teacher using an observation form provided by their college instructor, and (c) complete one reflective assignment on classroom management.

Course 2 was an educational psychology and assessment course. The focus of this course was to examine principles of learning as applied to classroom teaching situations, with emphasis on behavior, cognition, motivation, and assessment. Course 2 students had to complete 15 hours of service-learning with a certified teacher in an underserved K-12 classroom during normal school hours. In contrast to Course 1 students, Course 2 service-learning hours were to be completed by tutoring individual students or small groups of students, working with the same students over the 15 hours. These students had been identified by the host teacher as needing assistance. Course 2 students were required to chart the human development of students with whom they worked. No work with the whole K-12 class was part of the Course 2 requirement, only individual tutoring or small-group work.

Instrument

The *TSE*—long form (Tschannen-Moran & Woolfolk-Hoy, 2001) was used to measure TSE. The *TSE*—long form is a 24-item scale that considers both personal competence and the task with certain resources and constraints in particular teaching contexts. Principal-axis factoring and Varimax rotation have previously found three factors with eigenvalues greater than 1. These include teacher efficacy in student engagement, instructional strategies, and classroom

management.

The instructional strategies efficacy factor includes questions such as “To what extent can you provide an alternative explanation or example when students are confused?” Factor 2, efficacy for classroom management, includes questions such as “How much can you do to control disruptive behavior in the classroom?” The final factor includes questions related to the efficacy of students’ engagement. Sample questions include “How much can you do to get students to believe they can do well in schoolwork?” Responses are measured on a 9-point Likert-type scale with the notations 1 (Nothing), 3 (Very little), 5 (Some influence), 7 (Quite a bit), and 9 (A great deal). High scores are indicative of a high self-perception of teaching competence.

Various studies (Tschannen-Moran & Woolfolk-Hoy, 2001; Tsigilis, Grammatikopoulos, & Koustelios, 2007) have found that the TSE has sound psychometric properties that can be applied to diverse education settings to assess teachers’ self-efficacy. The reported internal consistency of the scale is .94 (Tschannen-Moran & Woolfolk-Hoy, 2001) and .97 (Tsigilis et al., 2007). The validity of the instrument has been cross-validated through various studies using independent samples (Tschannen-Moran & Woolfolk-Hoy, 2001; Tsigilis et al., 2007). Stewart et al. (2010) confirmed the instrument’s validity for studies on similar samples. Therefore, for research studies examining teacher efficacy of pre-internship teachers, the TSE—long form is recommended.

Variables

Our study included three dependent variables and one independent variable. The dependent variables include: (a) teacher efficacy for instructional strategies (InstrucStrateg), (b) teacher efficacy for student engagement (StudEngage), and (c) teacher efficacy for classroom management (ClassManage). The independent variable was the type of service-learning activity in which pre-internship teachers engaged as part of their respective classes. For Course 1, university students took part in whole-class instruction activities; Course 2 service-learners tutored K-12 students in small groups or individually.

Data Analysis

Descriptive analyses were conducted to determine general information about the data. The descriptive statistics were means and standard deviations of the pre-test and post-test scores of the measured variables for both treatment groups.

To answer the research questions, we first used multivariate repeated measures to test for any statistically significant group differences in overtime changes on the three dependent variables. Box’s *M* value of $F(21, 249514.31)=1.64$ ($p=.033<.05$) revealed unequal variances among groups. In this situation, more robust MANOVA test statistics (i.e., Pillai’s Trace) were used when interpreting the MANOVA.

A repeated-measures MANCOVA was conducted with gender and ethnicity as covariates. Because no gender or ethnicity interaction with the group and time was found to be statistically significant, the repeated-measures MANOVA was conducted to determine any significance in the overtime changes among the groups on teachers’ efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement. Post hoc tests were also conducted to explore the within-group overtime changes.

Limitations

This study had several limitations. First, findings are based on self-reported data from university students who were required to complete service-learning as part of a course. Social desirability might, therefore, have skewed responses. The courses in which the student participants were enrolled were required for their programs of study, but they self-selected into the specific sections of the courses. Knowledgeable about the study, the university instructor might have unintentionally and unconsciously altered his or her teaching to in some way that resulted in strengthening efficacy outcomes.

Second, we assumed that pre-internship education students' activities in the K-12 settings were restricted to their assigned service-learning activities. We did not track whether they spent additional hours, volunteered or worked in other schools, or made distinctions among service-learners' previous relevant experiences and the findings.

Third, analyses did not consider the quality of the actual service-learning experience. Social variables do not exist in a vacuum and are influenced by myriad factors. For example, the effectiveness of the host teacher, K-12 student populations, and classroom settings vary within a single site and certainly across sites. Because of this variation, and coupled with the above-mentioned unequal gender and ethnicity representation in the sample, this study lacks generalizability.

Finally, this study inferred its findings from statistical data over a brief period. Outcomes from students' participation are limited to the measures selected and analyses completed. Trying to account for individual psychologies is difficult to capture in a scale.

Analysis Results

Descriptive Analysis

Table 2 shows the descriptive statistics by course. In general, it can be seen from Table 2 that Course 1 started with somewhat higher scores for all three measures than Course 2. However,

Table 2
Descriptive Statistics

| | Sub-Scales | Course | <i>N</i> | <i>M</i> | <i>SD</i> |
|------------------|-----------------------------------|----------|----------|----------|-----------|
| Pre-test Scores | Student Engagement Efficacy | Course 1 | 170 | 60.45 | 8.549 |
| | | Course 2 | 122 | 60.11 | 9.468 |
| | Instructional Strategies Efficacy | Course 1 | 170 | 58.25 | 9.633 |
| | | Course 2 | 122 | 56.91 | 10.114 |
| | Classroom Management Efficacy | Course 1 | 170 | 58.61 | 9.052 |
| | | Course 2 | 122 | 57.57 | 10.463 |
| Post-test Scores | Student Engagement Efficacy | Course 1 | 170 | 61.37 | 8.071 |
| | | Course 2 | 122 | 61.78 | 8.223 |
| | Instructional Strategies Efficacy | Course 1 | 170 | 61.54 | 7.430 |
| | | Course 2 | 122 | 62.18 | 7.946 |
| | Classroom Management Efficacy | Course 1 | 170 | 61.97 | 7.616 |
| | | Course 2 | 122 | 62.70 | 7.948 |

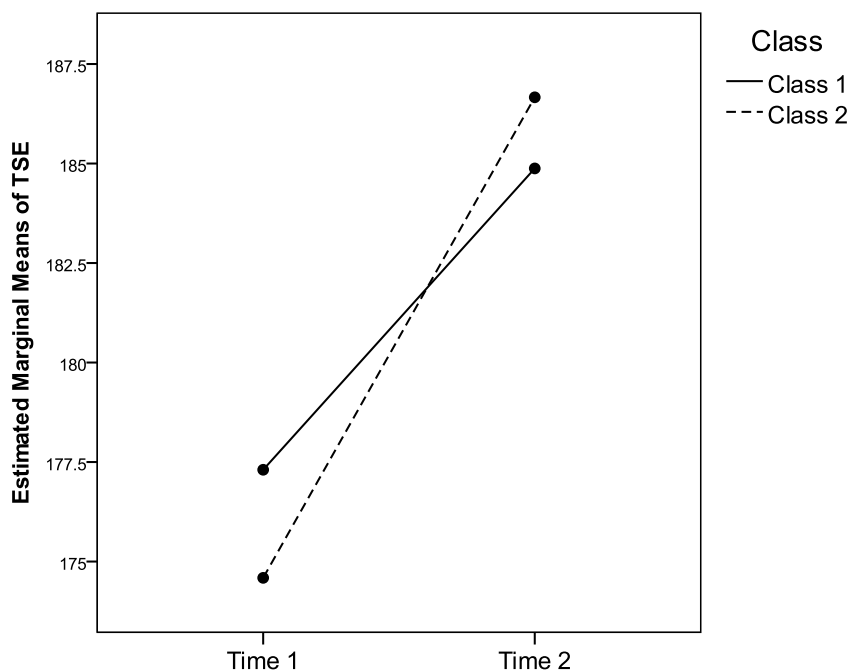


Figure 1. The two courses' over-time changes on the combined measures.

after the experimental period, the TSE scores for Course 2 were systematically higher than those for Course 1. This also can be seen in *Figure 1*, which compares the two courses' over-time changes on the combined measures of TSE. To explore whether any statistically significant differences were present in the over-time changes between the two courses, we used multivariate repeated measures to investigate the effectiveness of the two instructional methods for the service-learning courses.

Multivariate Analysis

We used the multivariate repeated-measures to analyze the multiple outcome measures (teachers' efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement) over two measuring points to study the over-time changes of the two classes. We conducted a 2 (experimental condition) \times 2 (measuring point or time) \times 3 (dependent variable) factorial analysis of variance with repeated measures on the two measuring points. We analyzed the pre-test-post-test scores on the three measures: (a) teacher efficacy for instructional strategies (PreInstrucStrateg and PostInstrucStrateg), (b) teacher efficacy for classroom management (PreClassManage and PostClassManage), and (c) teacher efficacy for student engagement (PreStudEngage and PostStudEngage).

Results of the analysis confirmed a statistically significant interaction effect between the measures and measuring points (time \times TSE) with Pillai's value=.15, multivariate $F(2, 289)=26.27$ ($p<.001$), and $\eta^2=.15$ (see Table 3). The results indicated significant changes in the three outcome measures over time (see *Figure 2*). However, no significant over-time changes between courses on the combined measures with the interaction effect (time \times class \times measures) of $p=.36>.05$ were found (see Table 3).

Table 3
 Multivariate Tests Results on the Treatment Effects on the Combined TSE measures

| Effect | Pillai's Trace Value | F | Hypothesis df | Error df | p | η^2 |
|---------------------|----------------------|---------------------|---------------|----------|------|----------|
| Time | .116 | 37.876 ^a | 1 | 290 | .000 | .116 |
| Time * Course | .007 | 1.990 ^a | 1 | 290 | .159 | .007 |
| TSE | .070 | 10.835 ^a | 2 | 289 | 0 | .070 |
| TSE * Course | .002 | .294 ^a | 2 | 289 | .745 | .002 |
| Time * TSE | .154 | 26.274 ^a | 2 | 289 | .000 | .154 |
| Time * TSE * Course | .007 | 1.023 ^a | 2 | 289 | .361 | .007 |

^a Exact statistic.

^b Computed using alpha=.05.

^c Design: Intercept + Course.

Within-Subjects Design: Time+TSE+Time *TSE.

The statistically significant omnibus interaction effect was too general to enable the acceptance or rejection of the null hypotheses. As can be seen from Table 2, it is evident that both groups had lower scores on all three measures in the pre-test. However, both groups accumulated higher post-test scores in teacher efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement. In order to explore further the changes within groups on the different measures, we conducted post hoc tests.

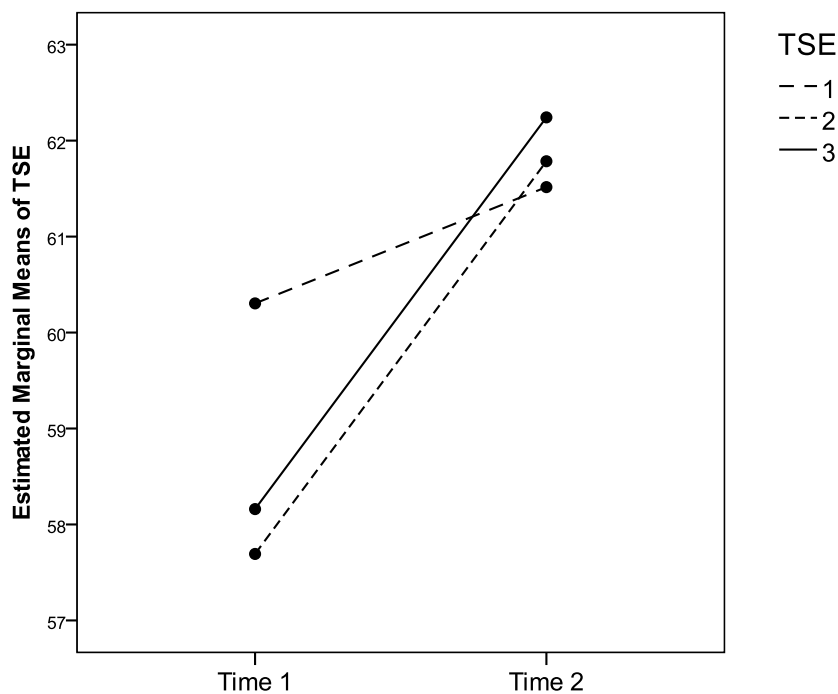


Figure 2. The whole group over-time changes on the three measures. (1 = Teachers' efficacy for student engagement, 2 = Teachers' efficacy for classroom management, and 3 = Teachers' efficacy for instructional strategies).

Table 4
Paired Samples *t*-Tests by Course with Pre/Post Means

| | Pre-test <i>M</i> | <i>SD</i> | Post-test <i>M</i> | <i>SD</i> | Means Diff. | <i>SD</i> | <i>T</i> | <i>df</i> | <i>p</i> |
|--------------------------|----------------------|-----------|-----------------------|-----------|----------------|-----------|----------|-----------|----------|
| Course 1 (n = 170) | | | | | | | | | |
| Student Engagement | 60.45 | 8.55 | 61.37 | 8.07 | 0.92 | 8.94 | 1.35 | 169 | 0.18 |
| Instructional Strategies | 58.25 | 9.63 | 61.54 | 7.43 | 3.28 | 10.07 | 4.25 | 169 | <0.001 |
| Classroom Management | 58.61 | 9.05 | 61.97 | 7.62 | 3.37 | 9.82 | 4.47 | 169 | <0.001 |
| Total | 177.31 | 24.76 | 184.88 | 21.42 | 7.57 | 25.93 | 3.81 | 169 | <0.001 |
| Course 2 (n = 122) | | | | | | | | | |
| Student Engagement | 60.11 | 9.47 | 61.78 | 8.22 | 1.66 | 10.31 | 1.78 | 121 | 0.08 |
| Instructional Strategies | 56.91 | 10.11 | 62.18 | 7.95 | 5.27 | 10.42 | 5.59 | 121 | <0.001 |
| Classroom Management | 57.57 | 10.46 | 62.70 | 7.95 | 5.14 | 10.41 | 5.45 | 121 | <0.001 |
| Total | 174.59 | 27.32 | 186.66 | 22.49 | 12.07 | 28.20 | 4.73 | 121 | <0.001 |

Post Hoc Analysis 1: Course 1 (n=170), Whole-Group Service-Learning

A paired-samples *t*-test indicates that for the 170 participants in Course 1, the mean score on the TSE post-survey ($M=184.88, SD=21.42$) was significantly greater ($t_{(169)}=3.81, p<.001$) than the mean score on the pre-survey ($M=177.31, SD=24.76$, see Table 4).

Paired-samples *t*-tests were also used to determine how scores on each subscale changed after treatment. On the student engagement efficacy subscale, Course 1 subjects' post-survey

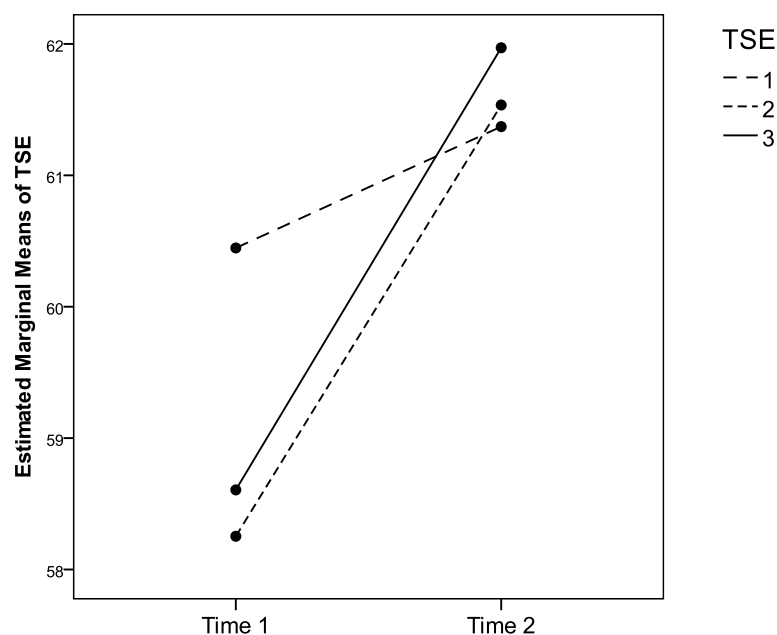


Figure 3. Over-time changes of Course 1 on the three measures.

score ($M=61.37$, $SD=8.07$) showed a slight increase of .92 points from the pre-surveys, but was not statistically significant ($M=60.54$, $SD=8.55$, $t_{(169)}=1.35$, $p=.18>.05$). However, the analysis revealed that prospective teachers' instructional strategies efficacy increased significantly by 3.28 points after participating in service-learning. Pre-survey scores ($M=58.25$, $SD=9.63$) increased to 61.54 ($SD=7.43$, $t_{(169)}=4.25$, $p<.001$). Classroom management efficacy increased most significantly ($t_{(169)}=4.47$, $p<.001$). Post-survey scores ($M=61.97$, $SD=7.62$) rose 3.37 points from the pre-survey ($M=58.61$, $SD=9.05$, see Table 4 and Figure 3).

Post Hoc Analysis 2: Course 2 (n=122), Small-Group/Individual Service-Learning

A paired-samples *t*-test on the TSE pre/post-score differences for Course 2 ($n=122$) also found that pre-survey teacher efficacy ($M=174.59$, $SD=27.32$) increased significantly by 12.07 points on the post-survey ($M=186.66$, $SD=22.49$, $t_{(121)}=4.73$, $p<.001$, see Table 4).

Paired-sample *t*-tests also revealed how scores on each subscale changed after treatment. On the student engagement efficacy subscale, Course 2 subjects' post-survey score ($M=61.78$, $SD=8.22$) also showed an increase of 1.66 points from the pre-surveys ($M=60.11$, $SD=9.47$), which was close to a marginal statistical significance on this measure ($t_{(121)}=1.78$, $p=.08>.05$). Course 2 prospective teachers' instructional strategies efficacy most significantly increased after their participation in service-learning ($t_{(121)}=5.59$, $p<.001$). Pre-survey scores ($M=56.91$, $SD=10.11$) increased to 62.18 ($SD=7.975$), a difference of 5.27 points. Classroom management efficacy pre-survey scores ($M=57.57$, $SD=10.64$) also gained 5.14 points in the post-survey ($M=62.70$, $SD=7.95$) with $t_{(121)}=5.45$ ($p<.001$) indicating a statistical significance of changes (see Table 4 and Figure 4).

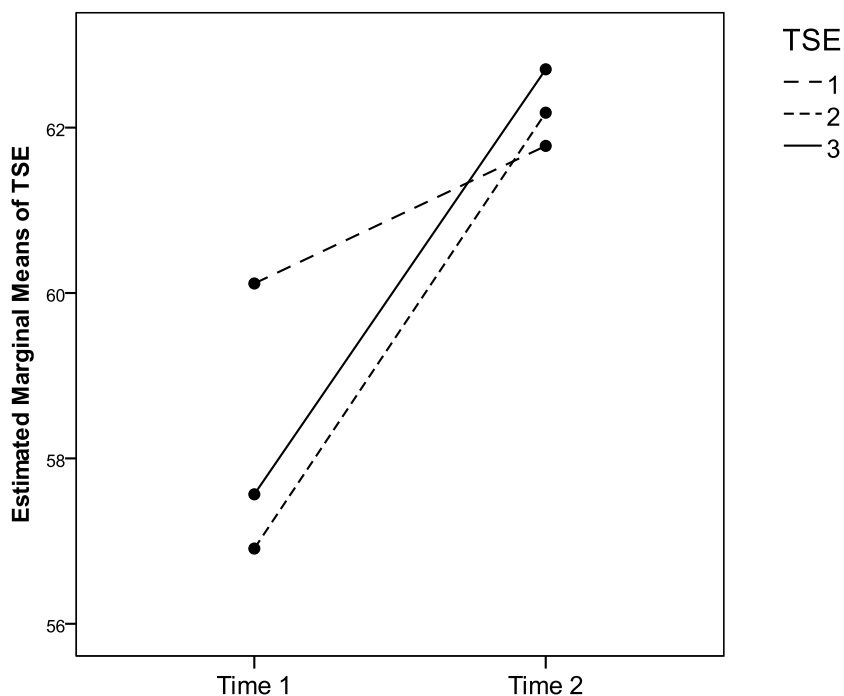


Figure 4. Over-time changes of Course 2 on the three measures.

Discussion

In this study we sought to determine if pre-internship teacher education students' participation in service-learning activities in K-12 classrooms would significantly affect their TSE. A secondary focus sought to determine if one type of service-learning activity (e.g., whole-class instruction) would affect teacher efficacy more than another (e.g., small-group tutoring).

Findings revealed that pre-internship service-learners in both types of service-learning activities increased significantly in their overall TSE. However, neither type of service-learning activity was superior to the other as measured by the minimally accepted .05 level. It appears, therefore, that the service-learning design (e.g., whole-class vs. small-group) was not a significant factor.

As mentioned above, mastery experiences have the most significant effect on one's sense of efficacy. For an experience to be categorized as a mastery experience, a person must perceive the outcome to have demonstrated the cognitive and behavioral capabilities for executing appropriate courses of action (Bandura, 1995). Based on the highly significant increases in TSE resulting from the service-learning experience in this study, we believe that the pre-internship students' perception was that they had in fact demonstrated the necessary cognitive and behavioral capabilities in the areas of classroom management and instructional strategies.

With this in mind, we focus the discussion on the factors shared between the two service-learning designs that might mediate a positive mastery experience. The potential role of these factors on TSE is discussed in line with social cognitive theory, the construct of efficacy, and service-learning.

Preparation

Pre-internship teacher education students in both classes were prepared for their service-learning experiences in their college classes before beginning their service-learning activities. Specifically, service-learners were required to complete a module on the philosophical foundations of experiential education, which included an article on the difference between service-learning and other experiential pedagogies. Purposive attention was placed on having the pre-internship students understand that they would be helping to meet an actual need and that these volunteer activities were in fact supporting their achievement of course goals. The expectation of contributing may have aided in formulating the experience in a positive light. Students, may have been excited for their possible effect, approached the tasks with greater confidence and earnestness, and taken greater pride than in their typical course assignments. Service-learners who were challenged to develop their own projects or to take responsible roles in and control over meaningful activities have reported an increased sense of efficacy (Billig, Root, & Jesse, 2005; Furco, 2002).

The seriousness and professionalism of the service-learning activities were further evidenced in the structure provided to the students by their college instructor. Service-learners were provided with timelines, clear expectations on focused assignments, forms and logistical support, and were advised to meet with the host teacher before engaging in their documented service hours. The process of preparation may, therefore, have created a more positive, comfortable, and motivating effect on the pre-internship students' physiological and emotional states. Through the lenses of social cognitive theory and teacher efficacy, experiencing less stress

from the demands of academic tasks can be associated with feeling more efficacious and more likely to master a task (Schunk, 2008).

Teacher Modeling in K-12 Classrooms

Modeled behavior is a fundamental part of observational learning. Completing service-learning activities in the K-12 classrooms alongside a K-12 teacher potentially provided opportunities for pre-internship students to watch their host teachers throughout their visits. As a mentor and model of who the service-learners could become, the host teacher was most probably accepted as a credible model and a plausible source of persuasion.

Service-learners were able to learn the effective practices, approaches, and techniques used by experienced teachers. In seeing these approaches in action and the resulting outcomes, pre-internship students may feel more confident in using the same approach later, even if they simply replicate what the host teacher has modeled. On the other hand, pre-internship service-learners may also have noticed their host teacher using an instructional strategy, classroom management approach, or student engagement technique that failed or was contrary to the best practices that they had learned in their college coursework. In the latter case, these future educators might feel more confident in their abilities knowing that they should avoid certain approaches that might negatively affect students' learning or the classroom ambiance.

Although the same could be said for those only observing classroom teachers, pre-internship service-learners had the immediate opportunity to practice the teaching behaviors that they had witnessed. In these instances, the K-12 teacher would then serve as a potent persuader regarding their teaching performance and interactions with students.

Authentic Teacher Tasks

Becoming a teacher is a process that involves the development of a new self-definition. With regard to their professional development, a pre-internship student's self-definition arguably has been primarily that of a *student*. Going into the classroom and becoming the *teacher* allowed the pre-internship student to step temporarily into the role of a teacher while retaining his or her student role and thus the support of the K-12 teacher and the college instructor. The dual self-definition (e.g., student/teacher) may have served to reduce service-learners' performance anxiety by sanctioning the pre-internship students' *I don't have to know it all* mindset.

For example, Course 1 service-learners were required to work alongside a K-12 teacher and ultimately teach a lesson to their host class. Before the lesson, service-learners were required to provide a copy of their lesson plan and an observational rubric on which their host teacher would provide feedback in a one-on-one meeting. Teaching the lesson allowed the pre-internship students to practice instructional strategies, to engage students, and to manage classroom discipline. The observation by the host teacher may have mimicked an administrator's assessment of the classroom teacher's performance. Knowing that they were to submit the completed form and lesson plan to their college instructor afterward further evidenced the authenticity and seriousness of their tasks.

A second assignment was to examine the classroom management practices, rules, and procedures in the host classroom. Although a more structured task, this activity is common practice for classroom teachers, who must constantly rethink the layout of the classroom, the approach to dealing with disciplinary issues, and how to minimize distractions by establishing

routines through which K-12 students become almost self-guiding.

Course 2 pre-internship service-learners also had opportunities to work in authentic teaching roles. Trusting service-learners to work independently with students who need assistance and even to design the tutoring lessons and activities themselves parallels the lesson planning and implementation of their Course 1 peers. As individuals, Course 2 service-learners also had to attend to behavior issues and to motivate students in their small group to engage.

In addition, the small-group service-learning design provided an opportunity for the pre-internship students to see how their efforts directly resulted in change and achievement in K-12 students. According to social cognitive theory, the perceived effect or lack of effect that they had on these young learners would certainly color the internalization of their experiences. The reactions expressed by the K-12 students may have served as a viable persuader. The K-12 students would have been a credible and trustworthy source because they tended to be open and honest and because they represented the audience with which pre-internship students aimed to work. Because the K-12 students were receiving individual attention, management of disciplinary issues may have been minimized. If K-12 students in either situation showed excitement, good behavior, and appreciation, coupled with increased academic achievement, the pre-internship teacher would arguably leave the experience as a more efficacious teacher.

Course 2 service-learners also had college course assignments that echoed real K-12 teachers' tasks. First, they were required to examine a textbook lesson and assess its potential for developing K-12 students' critical thinking. This activity perhaps provided them with their first access to teachers' materials and teachers' editions of a textbook and demonstrated to them that they could not take information in publisher-supplied materials for granted. They may have realized that they must be conscientious about choosing their materials and lessons if they intended to provide opportunities for their future students to think critically. Charting through journaling the development of one of their tutees was another significant assignment completed by the pre-internship students. At the end of the semester, they analyzed their findings using one of the developmental theories presented in their educational psychology course. Although K-12 teachers may not routinely follow the specifics of this assignment, there is no doubt that the practice of assessing a learner's human development so as to best meet his or her needs educationally is paramount.

Direct Interaction with Support Mechanisms

According to Eyler and Giles (1999), "Students need considerable ... support when they work in settings that are new to them" (p. 185). In both service-learning designs, the pre-internship students would have experienced the ongoing support of the college instructor, the availability of the K-12 teacher to address questions and concerns, and the interactions of their fellow students who were engaged in a similar service-learning activity. In essence, these designs created a triple safety net that would reduce the stress factors that might hinder development of efficacy. Arguably, the more comfortable one is in a situation, the more likely it is that efficacy will increase.

As highlighted above, the K-12 teacher was always available to assist, provide direction as needed, and step in if there was a problem. The college instructor and pre-internship classmates also may have served as sources of vicarious learning and social persuasion. The college instructor was available to discuss the experience with the student as he or she reflected on the process. Although these sources probably influenced social persuasion, it should also be noted

that the encouragement received from the college instructor was probably perceived as an emotionally positive influence for the pre-internship students. Knowing that they were not alone in their experiences and hearing supportive comments from an educator whom they may have respected may have reinforced their beliefs in their ability to perform teaching tasks independently in their host K-12 classrooms and in the future. In short, the pre-internship students would have had the feeling that *I can do this—I can teach*.

Juggling both university student and future teacher roles and the presence of support mechanisms may also have hindered service-learners' development of TSE. The positive, yet nonsignificant change in the Student Engagement subscale might be attributed in part to the continual presence of the host teacher. After all, the host teacher who assigned tasks to both the K-12 students and the university service-learner, was ultimately in charge of students in the classroom and was a reminder to K-12 students and the service-learner that the site was still his or her classroom. In addition, and unlike instructional strategies and classroom management the effect of which can usually be immediately attested, student engagement can be a cumulative process. Fifteen hours volunteering may not have been sufficient time to internalize one's effect on a variable that may have been strongly influenced by comfort levels between parties.

Pre-internship students were afforded the opportunity to learn vicariously from the experiences of their classmates and future colleagues, students engaged in ongoing, formative reflections of their service-learning experiences. In these reflective discussions, the course instructor and students were able to share experiences, react to situations, and provide information or ideas to other students in the class. Although all students may not have had a certain experience or opportunity to practice a strategy themselves, hearing the steps, successes/failures, and lessons learned from their classmates and advice from the instructor may have served as a vicarious learning experience and may have even been practiced during the service-learning experience. These possibilities parallel earlier research that demonstrated an increase in teacher efficacy when participants collaborated with colleagues, including observing one another and offering feedback and guidance (Henson, 2001). Monitoring progress has similarly been linked to student efficacy (Billig et al., 2005).

Finally, persuasive reinforcements must not all be external to the learner. Social cognitive theory embraces the role of self-reinforcement, which echoes the role of reflection and introspection advocated for and central to service-learning. Therefore, service-learners may have been reinforced internally through the required class and non-required personal reflections that aided them in processing their experiences.

Conclusion

From this study, we can infer that having pre-internship teachers engage in service-learning activities that are in line with their level of knowledge and skills is desirable if the goal is to achieve increases in TSE. Pre-internship service-learning opportunities in K-12 settings allowed participants to begin their professional development from student to student/teacher before their internship. As students move in their self-definition from student to student/teacher to teacher/student and eventually to teacher, the mastery experiences along the way can facilitate an incremental increase in overall TSE.

In reference to the sources of efficacy beliefs (Bandura, 1986, 1995), an incremental and progressive approach would be more likely to contribute to the perception of having achieved a mastery experience at each stage. In short, matching ability to task would allow students to

engage in challenging yet not overwhelming tasks, and the perception of the experience would be more likely to result in higher TSE. As Bandura (2006) noted, "Belief in one's efficacy is a key personal resource in self-development, successful adaptation, and change" (p. 4).

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