

## **Building Teaching Dispositions and Service-Learning Practice: A Multi-Site Study**

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*This multi-site study of candidates in nine teacher education programs sought to measure gains in pre-service teacher participants' teaching efficacy, commitment to teaching, service ethic of teaching, and acceptance of diversity, as well as their intent to personally engage in community service and to utilize service-learning in their own classrooms. Findings revealed significant gains on three measures: acceptance of diversity, importance assigned to teachers' ability to bring about social change, and intent to use service-learning in participants' future teaching. Analyses also determined the contribution of student characteristics and aspects of the service-learning experience to the dependent variables. Quality of the experience, assisting a K-12 teacher with a service-learning project and respondents' perception that the course instructor had helped them adjust to the service-learning experience were significant predictors of increased commitment to teaching.*

Service-learning is increasingly recognized as a valuable addition to teacher preparation programs (Donahue, 1999; Erikson & Anderson, 1997). In 1993, for example, the Association for Supervision and Curriculum Development recommended that teacher education programs introduce teaching candidates to service-learning (Anderson, 2000). A recent survey by the National Service Learning in Teacher Education Partnership (NSLTEP) revealed that service-learning has been adopted by more than 200 teacher education programs nationwide.

Proponents of service-learning in teacher education argue that it can strengthen several teacher dispositions crucial to effective teaching, such as professional commitment and sensitivity to diversity (Boyle-Baise, 1998; Green, Dalton & Wilson, 1994; Vadeboncouer, Rahm, Aguilera, & LeCompte, 1995). Additionally, Education students who participate in service-learning are expected to more readily adapt it to their own teaching (Wade et al., 1999), a significant aim, given recent evidence on service-learning's effectiveness for K-12 students' academic and social development (Melchior, 1998). In the present study, we sought to test claims about service-learning's effects on preservice teachers. Specifically, we examined connections between participation in

service-learning and the following preservice teacher development areas: teaching efficacy, commitment to teaching, service ethic of teaching, accepting diversity, intent to personally engage in community service in the future, and intent to utilize service-learning in future teaching. Based on research evidence that the quality of the service-learning experience can influence student outcomes (Astin, Ikeda, Vogelgesang & Yee, 2000; Conrad & Hedin, 1982; Eyler & Giles, 1999), an additional goal of this study was to examine the aspects of the service-learning experience's moderating influence on the dependent variables. In the following section, we explain the study outcomes in greater detail.

### Dependent Variables

#### *Teaching Efficacy*

Teaching efficacy has been defined as the teacher's belief in his or her ability to influence learning, even among students "who may be difficult or unmotivated" (Guskey & Passaro, 1994, p. 4). A Rand study (Armor et al., 1976) revealed two sets of efficacy beliefs: General Teaching Efficacy (GTE), the teacher's belief in the power of teachers in general to overcome external obstacles to learning, and

Personal Teaching Efficacy (PTE), the teacher's faith that he or she personally has the skill to bring about learning. Teachers who have a strong sense of efficacy are more committed to teaching and willing to adopt educational innovations, and bring greater planning, organization, enthusiasm, and clarity to their teaching (Allinder, 1994; Coladarci, 1992). Greater teaching efficacy is also linked to higher student achievement (Armor et al., 1976; Ashton & Webb, 1986; Moore & Esselman, 1992), efficacy (Anderson, Green, & Loewen, 1988) and interest in school. While Root and Batchelder (1994) found no effects for a child advocacy project on Education students' teaching efficacy, Wade (1995) observed improved self-esteem and self-efficacy among methods used by students who both participated in service and assisted an elementary teacher with a service-learning project. Thus, in this study, we expected that involvement in service-learning would be associated with gains in both GTE and PTE.

### *Commitment to Teaching*

Commitment to teaching refers to a "belief in the importance of teaching and willingness to dedicate oneself to that career" (Goodell, 1968). Prospective teachers' initial commitment to teaching is the strongest predictor of their duration in the profession, while weak commitment has been linked to withdrawal from teacher education, failure to enter the teaching profession upon certification and premature departure from teaching (Schlechty & Vance, 1983). College students' commitment to teaching is influenced by several considerations, both extrinsic (e.g., schedule) and intrinsic (e.g., love of children, desire to make a difference); however, intrinsic factors appear to exert the strongest influence (Lortie, 1976; Serow, Eaker & Ciechalski, 1992). In this study, we anticipated that service-learning, particularly projects involving children and adolescents, would enable preservice teachers to express their intrinsic motivation to teach, thereby strengthening their commitment to teaching. This hypothesis has been supported by studies which show participating in tutoring programs effecting intent to enter the teaching profession (Flippo, Hetzel, Gribonski & Armstrong, 1993; Green, Dalton & Wilson, 1994).

### *Attitudes Toward Diversity*

The growing disparity between the ethnic backgrounds of U.S. teachers and their students has generated widespread concern about teachers' cultural sensitivity and preparation to engage in culturally responsive teaching. Most white preservice teachers have limited understanding of diverse students, multicultural teaching, and issues of racism

and discrimination (Sleeter, 2001). While the evidence indicates that conventional, didactic instruction is ineffective at addressing these problems, numerous studies have shown positive effects for service-learning on knowledge and dispositions related to effective multicultural teaching. For example, service-learning with ethnically and economically diverse individuals has been linked to increased diversity issues awareness and reduced stereotyping (Beyer, 1991; Boyle-Baise, 1998; McKenna & Ward, 1996; Potthoff et al., 2000; Seigel, 1994; Tellez, Hlebowitsh, Cohen & Norwood, 1994; Vadeboncoueur et al., 1995). Candidates who engage in service with diverse populations also become more aware of the need to adapt curricula and teaching strategies to diverse youth, and gain a greater commitment to working with urban youth (Boyle-Baise; McKenna & Ward; Siegel; Tellez et al.). Given these findings, in the present study, we expected that service-learning would positively influence future teachers' attitudes toward diversity.

### *Service Ethic of Teaching*

Parsons (1934) first articulated the professional service ethic concept, defining it as a commitment to "realize the ends of other individuals" through one's profession (p. 672). Serow et al. (1994) define the service ethic of teaching as the "satisfaction derived from working with young people" and the desire to work on their behalf (p. 28). They note that, given the modest social status and financial rewards associated with teaching, the service ethic has and will continue to constitute an important incentive to teach. In a study of secondary candidates, Serow et al. (1994) found that a desire to serve figured prominently in students' decision to teach and in their perceptions of the desirable qualities of teachers. "I like helping people," and "I like working with young people," were the two reasons most frequently cited by candidates for pursuing certification, while 53% of respondents cited a "strong interest in individual students" as a positive quality of teachers. In this study, we predicted a positive impact for service-learning on preservice teachers' professional service ethic.

### *Commitment to Future Involvement in Service*

A primary goal of service-learning is to promote developing a lifelong commitment to civic involvement, community problem solving, and service to others. For example, Eyler and Giles (1999) identify intent to participate in service ("I must and will do") as one of five active citizenship elements. Several investigations have shown an impact for service-learning on students' intention to engage in

future community service (Astin et al., 2000; Eyler & Giles, 1999; Stukas, Clary & Snyder, 1999); thus, in this study, we expected participation in service-learning to predict increased intent to serve.

### *Intent to Use Service-Learning in Future Teaching*

The general increase in service-learning in K-12 programs has led to a call for beginning teachers who are knowledgeable about and adept at incorporating this method in their classrooms. In order to assess the effect of including service-learning in teacher education, Wade et al. (1999) surveyed beginning teachers whose teacher education programs had included this method. They found that 30% of the beginning teachers in their study had implemented service-learning in their classrooms, while 68% reported an intent to use it in the future. Length of time in teaching, responsibility for implementing a service-learning project during teacher preparation, and funds available for service-learning were predictors of teachers' using service-learning. Variables which predicted teachers' intent to use it in the future included having had responsibility for implementing a service-learning project during teacher training, positively evaluating their college service-learning experience, class size in their current school, previously implementing service-learning, months of full-time teaching, a service-learning program presence in their school, and funding availability. In this study, it was hypothesized that candidates who participated in service-learning would evidence increased commitment to using this approach in their own teaching.

## Methods

### *Participants*

Participants were 442 education students from 9 teacher education programs that were members of the National Service Learning in Teacher Education Partnership. Three hundred twenty-three participants (73%) were female and 119 (27%) male. Eighty-eight percent were Caucasian, 6.9% African-American, and 5% Asian-American or another ethnicity. Seventy-two percent were seeking elementary certification, 21%, secondary, and 7% another type of certification. A high percentage of subjects had prior community service experience in high school and college.

### *Instruments*

Surveys gathered information about students' demographic characteristics, including past and current service experience. Additional items addressed constructs relevant to the study's goals.

*Teaching Efficacy.* Teaching efficacy was

assessed using two items from the Rand study of effective teaching. The measure of PTE was, "As a teacher I believe that if I try really hard, I will be able to get through to even the most difficult or unmotivated students." GTE was measured with the item, "When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his/her home environment" (reverse scored).

*Commitment to Teaching.* A single Likert-type item was used to measure commitment to teaching: "At this point in time, I am \_\_\_\_\_ about my choice of teaching as a career." ("Very unsure" to "Very sure")

*Attitudes Toward Diversity.* A subscale from the Cultural Diversity Awareness Inventory developed by Henry (1991) was used to assess candidates' attitudes toward diversity. Respondents rated their agreement with several statements which completed the stem, "I believe . . .," including: "my culture to be different from one of the children I serve," "it is important to identify immediately the ethnic groups of the children I serve," "I would prefer to work with children and parents whose cultures are similar to mine," (reverse scored) "I would be uncomfortable in settings with people who speak a different English dialect than myself," (reverse scored) and "I am uncomfortable with people who exhibit values or beliefs different from my own" (reverse scored). Because our analysis indicated low internal consistency for this scale (Cronbach's coefficient alpha, 0.39), we decided to use individual scale items rather than a total score as outcome measures.

*Service Ethic of Teaching.* Two measures were adapted from a study by Serow et al. (1994) to measure participants' service ethic of teaching. On the first, subjects ranked the three most influential reasons in their decision to teach from a list including, for example, "Family members were teachers," and "The schedule is attractive." Of particular interest to this study were changes in rankings assigned to the four items which seemed to reflect a service ethic of teaching: "I like helping people," "I like working with young people," "Teachers can bring about social change," and "Teaching is a calling."

A second measure of a service ethic of teaching asked students to rank order the desirability of four potential qualities of teachers: "strong interest in shaping values and beliefs," "strong interest in a particular subject," "strong interest in individual students," and "strong interest in correcting social problems." Of special concern to this study were changes on the last two items.

*Commitment to Future Personal Involvement in Service.* Intent to participate in service in the future

was assessed using one Likert-type item, “How likely is it that you will participate in community service activities once you enter the teaching profession?” (“Very unlikely” to “Very likely”)

*Intent to Use Service-Learning in Future Teaching.* A six-item scale assessed the likelihood that respondents would incorporate service-learning into their future teaching. Respondents estimated the likelihood that they would involve their students in political or social activism (“political issues or social causes that affect your community,” and “contacting public or elected officials to tell them their views”); outreach to those in need (“programs to help others in need,” and “organizing projects to help others”); and environmental service (“environmental projects,” and “actively supporting efforts to protect the environment”). This scale’s high internal consistency (Cronbach’s coefficient  $\alpha=.86$ ) suggested that it measured a single underlying variable of plans to utilize service-learning in instruction; thus, we used participants’ total scale score as the dependent measure.

Discriminant validity analyses indicated that, with two exceptions, the various scales in our instrument appeared to tap different dimensions. Pearson correlation coefficients for the scales ranged from .004 to .33. The two scales which showed low discriminant validity (.56) included the measure of intent to perform future community service and the measure of intent to integrate community service into future teaching.

*Preservice Teacher Characteristics and Aspects of the Service-Learning Experience.* In addition to these measures, the post-test measured characteristics of the service-learning experience. One characteristic was the service project type (service in a community agency, school, literacy program, developing a service project, planning and implementing a service-learning activity with elementary or secondary students during a field placement, or developing and implementing a service-learning activity with students during student teaching). A second was the population served (whether children or adolescents, ill or disabled adults, homeless individuals, other college student(s), a classroom teacher, or other). Preservice teachers who had assisted a teacher with a service-learning project estimated their responsibility as a percentage for: a) project planning and b) project implementation. Finally, the perceived quality of the service-learning experience was measured by adapting the Aspects of the Service Learning Experience scale (Eyler & Giles, 1999) and the Describing Your Service Experience scale (Batchelder & Root, 1994). It elicited subjects’ perceptions of the challenge, autonomy, and support

associated with the project, its perceived relevance to teaching, and the opportunity to work with diverse individuals and to participate in different reflection types.

### *Procedures*

Potential participating faculty were nominated by NSLTPE regional directors based on their service-learning involvement in teacher education. The possible faculty pool included NSLTPE directors, teacher educators at institutions which had received NSLTPE training and Education faculty known by the directors to utilize service-learning. In Fall, 1998, we asked these instructors whether they were using service-learning in any class in the Spring, 1999 semester and were willing to participate in the study. Interested faculty received survey packets at the spring semester’s beginning, and administered pre- and post-tests on the first and last day of classes in Spring, 1999. Students were informed that participation was voluntary, and were guaranteed anonymity and confidentiality.

Participating faculty completed a questionnaire that described their service-learning project goals, the project, number of service hours required, reflection assignments, and their procedures for evaluating student work on the project. Survey reviews showed that the service projects in all courses were integrated with academic objectives. All courses included a reflection component (typically, a service journal). The number of required service hours ranged from 10 to 30.

### *Data Analysis*

Depending on the dependent variables’ nature (categorical or continuous), Cochran-Mantel-Haenszel tests or Multivariate Analyses of Variance controlling for repeated measurements were conducted to determine overall pre-post differences. Logistic or linear regression procedures were employed to determine the contribution of student characteristics and characteristics of the service-learning experience to the outcomes.

Prior to these tests, the Aspects of the Service Learning Experience scale was subjected to principal components analysis followed by varimax rotation. Four factors emerged from the analysis (See Table 1). Five items loaded highly on the first factor with loadings of .49-.73: “I had challenging tasks,” “I could make important choices about important aspects of the service-learning experience,” “My service-learning project helped me learn more about being a teacher,” “Class discussions helped me reflect on and learn from my service experience,” and “My service activity involved individuals whose cultural background was differ-

ent from my own.” Because most items loading on this factor (e.g., challenge, reflection, exposure to diversity) have been identified as high quality service-learning elements, in previous research (Eyler & Giles, 1999), Factor 1 was labeled, “Quality Experience.”

The second factor consisted of three items, with factor loadings ranging from .67 to .75. These included: “Teachers or staff in an agency where I worked helped me adjust to and deal with the service-learning experience,” “I received instruction in service-learning as a teaching method,” and “I was given adequate training to perform my tasks.” Because the common theme among these items was the assistance students had received with their service-learning responsibilities, Factor 2 was labeled “Perceived Support.”

Two items loaded highly on Factor 3: “I worked with one or more peers on my service project” (.87), and “I was given adult responsibilities” (.50). This factor was labeled “Peer Collaboration and Responsibility.”

Finally, two items loaded highly on Factor 4. “I assisted an elementary or secondary teacher with a service-learning project” loaded positively on this factor (.78), while “kept a journal” loaded negatively (-.67).

## Results

Eighty-nine percent of students in the study provided service to children or adolescents, while 22% assisted a classroom teacher. Service to senior citizens engaged 10% of the participants, while 9% provided service to ill or disabled adults and 7.8% to homeless individuals. Students spent an average 6.4 hours per week on their service projects and the average experience spanned 8.8 weeks.

Cochran-Mantel-Haenszel tests revealed no significant effects for service-learning participation on Personal Teaching Efficacy ( $cmh=.06, p=.81$ ). Participants expressed a strong sense of PTE on both the pre and post tests (See Table 2). However, frequency tables for pre and post results indicated that students with lower scores on the pretest did show improvement. Of the 9 students who strongly disagreed with the statement, “As a teacher, I believe that if I try really hard, I will be able to get through to even the most difficult or unmotivated students” on the pretest, 2% selected “agree” and 6% selected “strongly agree” on the post test. Of the 10 students who disagreed on the pretest, 7% selected “agree” on the post test.

No significant change occurred in General Teaching Efficacy ( $cmh=.51, p=.475$ ). On both the

Table 1  
Results of Factor Analysis: Aspects of Service-Learning Experience Scale

Variables	Factors			
	“Quality Experience”	“Perceived Support”	“Peer Collaboration and Responsibility”	“Assisted Teacher with a Service-Learning Project”
“Challenging tasks”	<b>.67</b>	.20	-.05	.10
“Could make own choices”	<b>.50</b>	.15	.28	.04
“Helped me learn about being a teacher.”	<b>.73</b>	.16	.02	.13
“Class discussions helped me reflect...”	<b>.62</b>	.21	.12	-.17
“Assisted a teacher with a service-learning project”	.23	.10	.06	<b>.78</b>
Exposure to diversity	<b>.49</b>	-.21	-.02	-.31
“Experience often made me sad helpless”	.07	-.02	-.26	.08
“My responsibilities...seemed clear...”	.33	.34	.41	-.26
“Text and readings helped me... learn from...service.”	.44	.36	.25	-.08
“Worked with peers”	-.05	.03	<b>.87</b>	.02
“Given adult responsibilities”	.37	.16	<b>.50</b>	-.04
“Course instructor helped me adjust to...service-learning.”	.29	.47	.35	-.16
“Kept a journal”	.25	.17	.13	<b>-.67</b>
“Teachers or staff... helped me adjust to service-learning	.14	<b>.75</b>	-.12	-.15
“Received instruction about service-learning as...teaching method”	.13	<b>.67</b>	.24	.13
“Adequate training”	.09	<b>.71</b>	.08	.08
“Felt appreciated”	.27	.45	.12	-.17

Table 2  
Teaching Efficacy and Commitment to Teaching: Pre and Post Test Means and Standard Deviations

Variables	X Pretest	S.D. Pretest	X Post test	S.D. Post test
Personal Teaching Efficacy (1-5; 5=high)	4.05	1.009	3.97	.968
General Teaching Efficacy (1-5, reverse scored)	1.98	.789	2.01	.777
Commitment to teaching (1-4, with 1=low commitment)	3.55	.686	3.47	.819

pre and post test, a high percentage of preservice teachers expressed a strong belief in the teachers' ability in general to overcome barriers to achievement.

Cochran-Mantel-Haenszel tests revealed no significant gains in students' commitment to teaching ( $cmh=1.10, p=.293$ ). On both the pre and post tests, Education students demonstrated a high degree of certainty about their desire to enter the teaching field. However, reviewing pre and post frequency data for this variable revealed gains for students with low initial scores. Of the six students who were "very unsure" about their choice of teaching at the pretest, two reported being "sure," and two "very sure" at the post test. Of the 10 who were "unsure" at the pretest, five students reported being "sure" about their intent to enter teaching on the post test.

On the first measure of a service ethic of teaching—reasons for wanting to enter the teaching pro-

fession—participants expressed a strong motivation to serve (see Table 3). On both the pre and post tests, the two reasons most frequently cited for wanting to teach were, "I like helping people" (selected as one of the three most important reasons by 65% of participants on the pre test and 58% on the post) and "I like working with young people" (74% and 78% ). Although preservice teachers' primary reasons for entering teaching were consistent across the pre and post tests, significant changes did occur on two items. The percentage of students ranking "Teachers can bring about social change" among their top three items showed a significant increase ( $cmh=5.38, p=.02$ ), while the percent selecting "I like helping people" declined significantly ( $cmh=39.11, p=.001$ ).

On the second measure of a service ethic of teaching—perceptions of desirable teacher qualities—there were no significant changes. Consistent with Serow et al. (1994), students in the present

Table 3  
Service Ethic of Teaching: Pre and Post Test Means and Standard Deviations

Variables	X Pre test	S.D. Pre test	X Post test	S.D. Post test
<i>Reasons for selecting teaching (Ranked 1-3; 1=most important)</i>				
... Family members are teachers	1.80	.88	2.07	.799
... Teachers can bring about social change	2.10	.829	1.91	.852
... Interest in a specific subject.	2.15	.743	2.02	.774
... Like helping people	1.94	.75	2.08	.735
... Job to fall back on	2.38	.768	2.09	.831
... Attractive schedule	2.57	.661	2.59	.694
... Like working with young people	1.89	.793	1.80	.792
... Job security	2.57	.634	2.57	.646
... Fellowship or scholarship requires it	0	0	2.33	1.15
... Example of own teachers	2.31	.769	2.23	.817
... Needed a major	0	0	3.0	0
... Feel that teaching is my calling	1.87	.858	1.71	.82
... Other	1.93	.923	1.85	.987
<i>Desirable qualities of teachers (Ranked 1-4; 1=most desirable)</i>				
... Strong interest in shaping values and beliefs	1.83	.906	1.87	.894
... Strong interest in a particular subject	3.11	.972	3.23	1.01
... Strong interest in individual students	1.75	.960	1.78	.936
... Strong interest in correcting social problems	2.83	.902	2.75	.859

study emphasized the importance of an orientation to service, particularly individual service. On the pretest, 54% of participants ranked “interest in individual students” as the most desirable teacher characteristic, while on the post test, 50% assigned it this rank.

On the Attitude toward Diversity scale, scores on all items improved. Significant gains occurred on two items: “I believe my culture to be different from some of the children I will serve” ( $cmh=4.5, p=.03$ ) and “I believe it is important to immediately identify the ethnic groups of the children I serve” ( $cmh=4.2, p=.04$ ).

No significant change occurred in students’ intent to personally engage in community service once they entered the teaching profession ( $cmh=.02, p=.89$ ). On both the pre and post tests, approximately 85% of students reported intending to participate. However, participants did show a significant increase in their overall intent to integrate community service activities into their future teaching ( $T=3.11, p=.002$ ).

*The Effects of Student and Service Experience Characteristics*

In addition to overall changes, a second focus of this study concerned the contribution of student and service experience characteristics to the dependent variables. Two characteristics of Education students predicted the variance on measures on which they had shown significant overall gains (See Table 5.). Parent’s educational level and history of high school service significantly positively predicted acceptance of diversity. Additionally, students who were more involved in community service outside of class made greater gains than others in their intent to integrate service into future teaching.

Several characteristics of the service-learning experience emerged as moderating variables. The service activity type significantly predicted the variance in commitment to teaching, service ethic

of teaching, acceptance of diversity and plans to employ service-learning in one’s own classroom. Compared to participants in other activities, preservice teachers who had been involved in a literacy project were significantly more likely to experience decreased commitment to teaching. Students whose service had occurred in a community agency showed greater gains than others on one service ethic of teaching indicator—perception of a “strong interest in individual students” as a desirable teacher quality—while those who had developed a service project on their own or with others showed a decrease in rank assigned to “strong interest in correcting social problems.” Performing “Other” service significantly predicted gains in acceptance of diversity and intent to use service-learning in future teaching.

The population with whom students worked also significantly predicted the variance on several outcome measures. Preservice teachers whose service had involved homeless individuals were significantly more likely than others to show a decrease in the importance assigned to “strong interest in individual students” as a desirable teacher characteristic. In contrast, serving ill or disabled adults and senior citizens predicted gains in emphasis on a “strong interest in correcting social problems” as an important characteristic. Service with homeless individuals was associated with decreased acceptance of diversity. Education students whose service had involved ill or disabled adults and those who had assisted a classroom teacher showed greater gains than others in their plans to incorporate service activities in future teaching.

Factors and individual items from the Aspects of the Service Learning Experience scale significantly predicted difference on several outcomes. Quality Experience (Factor 1), assisting a K-12 teacher with a service-learning project (Factor 4), and respondents’ perception that the course instructor had helped them adjust to the service-learning

Table 4  
*Attitudes Toward Diversity, Intent to Participate in Service, Intent to Use Service-Learning: Pre and Post Test Means and Standard Deviations*

Variables	X Pretest	S.D. Pre	X Post test	S.D. Post
Attitude toward diversity #1: “I believe my culture to be different from some of the children I will serve.”	3.97	.88	4.14	.87
Attitude toward diversity #2: “I believe it is important to immediately identify the ethnic groups of the children I will serve.”	3.19	1.07	3.34	1.15
Intent to personally participate in service (1-5; 5=High)	4.13	.696	4.08	.768
Total intent to use service-learning activities in future teaching	24.07	3.30	24.60	3.59

Table 5  
*Effects of Student Demographics and Service Experience Characteristics*

Characteristic	Dependent variable	Coefficient estimate (p-value)
<b>Student Characteristics</b>		
Mother's educational level	"I believe it is important to immediately identify the ethnic group of the children I will serve."	-.328 (.009)
Family history of community service	"I believe it is important to immediately identify the ethnic group of the children I will serve."	.421 (.004)
Hours of high school service	"I believe it is important to immediately identify the ethnic group of the children I will serve."	-.348 (.004)
Number of hours of service outside of service-learning class	Intent to integrate service-learning into future teaching	.23 (.01)
<b>Type of Service</b>		
Service in a literacy project	Commitment to teaching	1.90 (.01)
Service with a community agency	Desirable qualities of teachers-Strong interest in individual students	-.614 (.04)
Develop a service project on my own or with others	Desirable qualities of teachers-Strong interest in correcting social problems	.864 (.01)
"Other" service	"I believe...my culture to be different from some of the children I will serve."	-.66 (.02)
"Other" service	Intent to use service-learning in future teaching	.887 (.01)
"I assisted an elementary or secondary teacher with a service-learning project!"	"I believe...my culture to be different from some of the children I will serve."	-.30 (.02)
<b>Service Recipients</b>		
Homeless individuals	Desirable qualities of teachers-Strong interest in individual students	2.11 (.00)
Homeless individuals	"I believe it is important to immediately identify the ethnic group of the children I will serve."	1.22 (.049)
Ill or disabled adults	Desirable qualities of teachers-Strong interest in correcting social problems	-1.34 (.03)
Senior citizens	Desirable qualities of teachers-Strong interest in correcting social problems	-1.24 (.04)
Ill or disabled adults	Intent to use service-learning in future teaching	2.06 (.01) (Results of linear regression)
Classroom teacher	Intent to use service-learning in future teaching	.99 (.02) (Results of linear regression)
<b>Aspect of the Service-Learning Experience</b>		
Quality Experience (Factor 1)	Commitment to teaching	-.50 (.04)
Assisted a K-12 teacher with a service-learning project (Factor 4)	Commitment to teaching	-.35 (.05)
Course instructor helped me adjust to... the service-learning experience	Commitment to teaching	-.35 (.03)
Perceived Support (Factor 2)	General teaching efficacy	.50 (.00)
Perceived Support (Factor 2)	"I believe it is important to immediately identify the ethnic group of the children I will serve."	.457 (.01)
Course instructor helped me adjust to...service-learning experience	Service ethic of teaching-Desirable qualities of teachers: Strong interest in correcting social problems	-.30 (.03)
Perceived Support (Factor 2)	"I believe it is important to immediately identify the ethnic group of the children I will serve."	
Assisted an elementary or secondary teacher with a service-learning project	"I believe...my culture to be different from some of the children I will serve."	-.33 (.02)
Aspects of the service experience-Clear responsibilities	"I believe it is important to immediately identify the ethnic group of the children I will serve."	.35 (.04)
Kept a journal about my service experience	"I believe...my culture to be different from some of the children I will serve."	-.44 (.02)

experience, positively predicted increased commitment to teaching. Perceived Support (Factor 2) was a positive predictor of General Teaching Efficacy and greater acceptance of diversity. That is, prospective teachers who felt that they had received more support during their service-learning experi-

ence were more likely than others to disagree that teachers exerted little influence on students' learning and to believe in the need to be aware of students' ethnicity. Education students' perception that their course instructor had helped them adjust to the service-learning experience significantly



predicted gains on one measure of a service ethic of teaching: belief that a strong interest in correcting social problems is a desirable teacher quality. Finally, assisting a teacher with a service-learning project and keeping a journal were positively associated with improved attitudes toward diversity, while having clearly defined responsibilities in service-learning was unexpectedly linked to a decline.

### Discussion

The present investigation's results revealed that future teachers at several institutions who participated in service-learning in their teacher education courses showed gains in their belief in the importance of teachers' ability to bring about social change, acceptance of diversity, and in their intent to incorporate service-learning in their future teaching.

In their study of preservice teachers' service ethic, Serow et al. (1992) found that a commitment to addressing individual needs (personal service) rather than larger social problems (societal service) was central. The present finding—that the ability to bring about social change acquired increased salience for participants—suggests that service-learning may stimulate a shift in preservice teachers' service ethic. Specifically, these experiences may provide candidates with a greater awareness of, and desire to respond to, the ubiquity of human needs and the social conditions underlying them.

The finding that service-learning was associated with improved attitudes toward diversity (with significant gains on two measures) accords with previous findings of a link between service with multicultural and disadvantaged populations and preservice teachers' sensitivity to diversity (Beyer, 1991; Boyle-Baise, 1998; McKenna & Ward, 1996; Potthoff et al., 2000; Siegel, 1994; Tellez et al., 1995; Vadeboncoeur et al., 1995). The findings' convergence on service-learning's positive effects is consistent with other studies showing the "power of community-based, cross-cultural contexts" (Sleeter, 2001, p. 97) in multicultural teacher education and is noteworthy considering evidence that information transmission about groups and poorly designed field experiences in culturally diverse communities may actually reinforce teachers' negative stereotypes (Haberman & Post, 1992; Sleeter).

The finding that participants made significant gains in their plans to include service-learning in their future teaching supports the contention that including this method in teacher education can foster service-learning's diffusion in K-12 classrooms. Further, despite Wade et al.'s (1999) discovery that designing and implementing a service-learning project for K-12 students more strongly predicted intent to use service-learning than other experi-

ences, these results indicate that a wide variety of service-learning activities in teacher education can encourage future teachers to adopt this method.

In contrast to some prior investigations, the present study did not find effects for service-learning on teaching efficacy and commitment to teaching (Green, Dalton & Wilson, 1994; Wade, 1995). One explanation for these results may be that high entering scores created ceiling effects for these variables.

In addition to general impacts, this study examined the moderating effects of student and service experience characteristics on service-learning outcomes. With respect to student characteristics, finding an effect for high school service on acceptance of diversity is consistent with prior findings on K-12 service-learning (Melchior, 1998), and suggests the encouraging possibility that service-learning experiences in secondary school may establish a preparedness to learn from continued exposure to culturally diverse individuals.

Results for the service project type imply that teacher educators need to consider the fit between projects and course goals in designing service-learning activities. For example, the results suggest that service in a community agency may be especially appropriate in courses where the goal is to enhance sensitivity to individual learners' needs. The finding that service in a literacy project predicted decreased commitment to teaching was unexpected. However, examining written comments from participants in this project suggested possible reasons for this result. Several students commented on this project's poor organization and/or the teacher's poor management skills.

Results revealing that the population type with whom students worked predicted the variance on several outcomes indicates how important this dimension is in designing service-learning projects. In this study, working with ill or disabled adults appeared to have been an especially powerful experience, with candidates emerging from it more aware of the need for teachers to be interested in social problems and to involve their students in community service.

Findings showing significant effects for aspects of the service experience confirm several previous investigations' results showing that features of the service experience are important student development mediators during service-learning (Astin et al., 2000; Conrad & Hedin, 1982; Eyler & Giles, 1999; Waterman, 1993). The components which loaded on the Quality Experience factor (challenge, autonomy, exposure to diversity, and relevance to teaching) are congruent with the elements of quality service-learning, which have emerged in prior research (Eyler & Giles, 1999). The finding that the Quality Experience factor predicted increased

commitment to teaching suggests that well-designed, appropriate service-learning activities can strengthen the desire to teach.

In this study, instructor support surfaced as a critical service-learning experience aspect. Specifically, the factor Perceived Support predicted increased GTE, while having an instructor who helped one adjust to the service-learning experience was associated with increased commitment to teaching and a tendency to assign a higher rank to teachers' ability to correct social problems. The finding of important effects for support is congruent with Eyler and Giles' (1999) observation that, "Students need considerable . . . support when they work in settings that are new to them"(p.185).

Finally, consistent with findings by Wade et al. (1999), the opportunity to apply service-learning as a pedagogy was an important predictor of preservice teachers' development. Students who had assisted a teacher with a service-learning project showed greater gains than others in their commitment to teaching and acceptance of diversity.

In summary, the present study suggests that service-learning can contribute to developing vital dispositions among future teachers, including acceptance of diversity and belief in the importance of teachers' ability to bring about social change. High quality service-learning experiences and those accompanied by instructor support have the potential to produce more far-reaching effects, such as increased commitment to teaching and sense of teaching efficacy. Finally, the hypothesis that service-learning in teacher education can promote its dissemination in K-12 programs is supported by the finding that participants showed increased determination to incorporate this pedagogy into their prospective practice.

### Notes

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