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# Preservice Teacher's Use of Service-Learning in Applying Educational Theory to Classroom Practice

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## Abstract

A study was performed to ascertain whether service-learning projects performed by preservice teachers help them apply educational theory to classroom practice during field experiences and as in-service teachers. This study found that: (1) preservice teachers should perform service-learning projects prior to other education courses; (2) participation in service-learning projects improved performance on a measure of learning theories and developmental theories; (3) earlier student involvement in service-learning resulted in more practical applications of theory. Students involved in service-learning projects that emphasize criticism of theory had a stronger understanding of its relation to their teaching style. Finally, students participating in problem-based projects made closer connections between theories learned during coursework and methods employed in the field. The results of the study are reviewed as they relate to the teaching of educational psychology and developmental coursework for preservice teachers.

## Overview

This paper seeks to ascertain whether service-learning projects performed by preservice teachers (elementary and secondary education college students) help them apply educational theory to classroom practice during field experiences and following their college coursework. Service-learning, a curricular support to learning that increases students' involvement with local communities while improving the philanthropic experience of youth, has received increasing attention in higher education as a method that provides students with information and skills that can serve them in their professional careers. In utilizing service-learning methodologies and performance-based curriculums, postsecondary educators hope to give students opportunities not available to them in their traditional coursework, including the chance to examine how theoretical material can apply to real-world situations.

Educators believe that such pedagogy prepares teaching professionals for the ever-changing nature of the classroom setting. Service-learning is intended to provide valuable, practical experience and the opportunity to utilize information rather than merely

retain static facts. This study of the efficacy of service-learning is intended to provide postsecondary educators with greater insight into the strengths and weaknesses of service-learning projects for use with preservice teachers. It is thought that such community and curricular integration is likely to increase elementary and secondary students' participation within schools, creating a sense of ownership and active participation *(Furco 1996; Plucker and Slavkin 2000; Schine 1997)*.

## Service-Learning and Experiential Education

Otten *(2000)* states that "character education" is an umbrella term used to describe many aspects of teaching and learning for personal development. In the past, service-learning has been known by a variety of names, from "civic literacy" to "character education" to "community service" *(Rutter and Newmann 1989; Rutter and Newmann 1990)*. However, regardless of the name, schools have utilized service-learning as a curricular support that increases students' involvement with local communities and improves the philanthropic experience of youth *(Meyers 1999; Nix 2001; Schumer and Belbas 1996)*. Service-learning provides students with opportunities for active involvement in the democratic processes of the school and community, although the potential impact of such programs has not yet been realized *(Rutter and Newmann 1989; Schukar 1997*).

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Many researchers have acknowledged the importance of students' moving from the theory of the classroom curriculum to reality via involvement with their communities *(Lee 1997; Meyers 1999; Halsted and Schine 1994; Newmann and Rutter, 1985–86)*. Unlike such earlier forms as character education or civic literacy, service-learning is designed "to equally benefit the provider and the recipient of the service as well as to ensure equal focus on both the service being provided and the learning that is occurring" *(Furco 1994, 396)*. Community service offers students the opportunity to give back to their communities, while emphasizing the connections between service, curriculum, and the students' reflections on their experiences as they relate to the curriculum *(O'Flanagan 1997)*.

## Service-learning Curriculums as Tools for Student-led Applications of Educational Psychology

Current research and practice in educational psychology, cognitive psychology, and teacher education suggest that students learn best when they have direct experiences that strengthen previous connections and establish new connections. Many in these fields suggest that learning occurs best when contextualized in real-world problems *(McChesney 1996; Sandoval 1999; Staten 1998; Yazzie 1999)*.

Several underlying themes are critical to effective service-learning projects: (1) all children can learn, and their learning should be coordinated with an understanding of students' prior knowledge and experience; (2) the curriculum should be keyed to current events and issues of local or personal interest; (3) teaching and educational outcomes should be designed to bring about improvement with testing to ensure that improvements occur; and (4) basic skills, such as reading, writing, and language arts, should be based in cooperative learning experiences *(McChesney 1996)*. These expectations are not mandates for successful service-learning curriculums; however, they are considered important components for effective service-learning experiences.

Huhtala *(1994)* and Manning *(1994)* suggest that service-learning involve some form of "theme immersion." Theme immersion requires that the curriculum involve the in-depth study of a topic, a question, or an issue related to students' field of interest. The immersion topics should emerge from the experiences and current needs of students and the needs of the community. The teacher, working as a service-learning facilitator, does not impose or control ideas, but works as an active member of a community of learners. Students then work together to (1) identify the service-learning topic, (2) demonstrate and express knowledge, (3) coordinate and participate in the assessment and evaluation of the service-learning situation, and (4) review the process of service-learning for future use *(Manning and Manning 1995)*. Such a pedagogy supports interdisciplinary approaches, student-led curricular involvement, and school-led change—topics of ever-increasing interest to those in K–12 grades or higher education.

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Recent standards for teacher education programs have called for preservice teachers to engage in service-learning situations. Service-learning situations are groups of real-world interrelated processes used to ask and examine questions pertaining to the field of education *(Staten 1998)*. Secondary educators who wish to use service-learning in their teacher preparation programs need to determine what the goals of this method should be. Service-learning in teacher education may provide preservice teachers the opportunity to develop explanations and problem-solving skills related to students and the classroom. Furthermore, it may provide the opportunity to use theoretical models as tools for problem solving in real-world classroom situations *(Anderson et al. 1995; Doyle and Carter 1996; Rocklin 1996; Renninger 1996; Schuell 1996)*.

## Service-Learning Practice

Service-learning is no longer a method designed to replace the standard lecture-based format of higher education coursework. Rather, this dynamic method implements other methods of teacher education. Sandoval *(1999)* suggests that service-learning is limited in that students' performances lack quantitative explanations, and therefore the relationship between service and learning is difficult to prove. Furthermore, at times students show ineffective evaluation and limited explanations of why methods work in some instances and not in others.

This study developed a framework for moving preservice teachers toward applying a service-learning approach both to learning theories of learning and to teaching in their elementary and secondary instruction.

## Hypotheses

It is hypothesized that teacher education students who performed service-learning projects will make closer connections between theories learned during college coursework and methods employed in the field than those who did not perform such projects. The present study explored the following three hypotheses: (1) students who performed service-learning projects will exhibit more sophisticated knowledge of developmental and learning theories; (2) students who performed service-learning projects earlier in their programs will assert more practical applications of theory than either students who performed them later in their college coursework or students who did not perform them; and (3) students involved in service-

learning projects that emphasize criticism and application of theory will have a stronger understanding of its importance in their teaching style than those without such experiences.

## Methods

***Participants:*** Participants in the study were 148 preservice teachers enrolled in educational psychology courses at four midwestern colleges and universities. These preservice teachers performed optional service-oriented course assignments in ten courses during the 1998-99 school year. No difference between participants and non-participants was identified by the researchers or professors involved. Participants received no compensation for participation in the study, as participation was optional.

*Preservice teachers.* Four subgroups were identified for participation in this study. The preservice teachers studied were students participating in programming at a large midwestern state school, two private liberal arts colleges, and an inner-city commuter campus affiliated with the state university system. Participants ranged in age from 18 to 34 years, with a mean age of 21 years. The majority of participants were from middle-class families. Of the 148 participants, 103 were female and 45 were male; 111 were self-described as Caucasian Americans; 31 were self-described as African American; and 6 were self-described as Hispanic Americans.

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*Degree program objective.* Participants involved in service-learning projects included students from three college programs: early childhood programming ($n$ = 22), elementary programming ($n$ = 67), and secondary programming ($n$ = 59).

*Postsecondary educators.* Nine postsecondary educators (5 males, 4 females) were involved in the study. All were of middle-class background and were self-described as Caucasian American. Educators included tenure-track faculty ($n$ = 3), non-tenure-track instructors ($n$ = 3), and field professionals employed by the universities as adjunct faculty ($n$ = 3). Educators' careers ranged from 2 to 24 years as K–12 grade teachers. Educators' careers in postsecondary education ranged from 3 semesters to 14 years of college teaching.

***Procedure:*** All initial data collection took place during the undergraduate class experience (either educational psychology or a developmental education course). Participants were observed as they completed a number of hands-on in-class activities that required both individual and group involvement. Completion of the study involvement took approximately three hours. Participants completed this activity as fulfillment of optional program requirements.

The assessment form used to evaluate knowledge of learning theories was administered to the participants in a group by the researcher in their classrooms following one day of coursework. Participants completed a form of the National Teachers Examination *(NTE 1998)* used to assess the preservice teachers' understanding of learning theories and developmental theories. Group and individual interviews also included questions to confirm students' recognition of theories.

Following graduation or during their student teaching, teachers were tested *(NTE 1998)* to ascertain whether those who had performed a wider variety of service-learning activities had better recognition of theoretical information. An examination of the application of theoretical information included individual interviews, in-class observations, and a document analysis of classroom materials.

***Data Collection:*** Data collection included (1) pre- and post-testing of knowledge of developmental and learning theories in educational psychology coursework *(NTE 1998)*; (2) observation of participants engaging in preservice teaching coursework; (3) observation of participants engaging in service-learning curricular experiences; (4) observation of participants following preservice training during student teaching or during their first year of service as teachers; (5) group and individual interviews with preservice teachers and postsecondary educators; (6) document analysis of the textbooks used for coursework; (7) document analysis of projects performed during coursework; (8) document analysis of syllabi from the participating postsecondary educators; and (9) document analysis of lesson plans or documents used during instruction by in-service teachers.

*Demographic factors.* Information on the students' age, race, and years of education was obtained from self-reports. To examine age as a possible factor in participants' responses to the service-learning activity, three age groups were created: 18–20 years (early college age), 21–23 years (late college age), and 24 years and older (nontraditional college age).

*National Teachers Examination.* Participants completed the National Teachers Examination *(NTE 1998)* to assess pre- and post-

service-learning knowledge about developmental, educational, and learning theories. Testing followed preservice teachers' normal course time or their classroom teaching, and required approximately 30 minutes to complete.

*Observations*. Throughout the group activity naturalistic recording methods were utilized to rate (1) participants engaging in preservice teaching coursework, (2) participants engaging in problem-based curricular experiences, and (3) participants' classroom involvement with student teaching or during their first year of service as teachers. Three graduate students rated participants in each of these environments. Inter-rater agreement for each setting or purpose held an alpha level of .90. Raters were blind to the other variables in the study. Observers were blind to the hypotheses under examination as well as the participants' NTE scores.

Field notes were taken in an attempt to identify phenomena between students and teachers as they occurred. Observations were performed to capture descriptions of the class activity, service-learning, students' interactions with teachers, their school, and so on. All field notes and observational notes were performed in accordance with assessment methods defined by Bechtel *(1977)*, and Bechtel, Marang, and Michelson *(1987)*. Participants' in-service teaching was observed in order to ascertain whether students applied service-learning methods in their curriculum, whether preservice teachers worked with their classes in ways suggested by the literature on service-learning, and whether participants were able to apply theories identified and learned during postsecondary educational psychology and development coursework.

*Group and individual interviews.* Some participants were randomly selected to participate in group and individual interviews. These semi-structured interviews lasted approximately 15 to 20 minutes. Group interviews followed individual interviews. Specific questions asked (1) participants' perspectives on the course under study; (2) their beliefs regarding service-learning curriculums; and (3) their perspectives on students' and teachers' roles during class activities. Interpretation was essential in identifying participants' perceptions of ideal gender roles *(Bechtel, Marans, and Mickelson 1987; Krasner 1980)*.

*Document analysis.* Document analysis was performed in order to gain information about (1) the theories that participants may have reviewed as students in coursework; (2) the curriculum reviewed in postsecondary courses; (3) the educational values that participants might hold as future teachers; and (4) what postsecondary educators and preservice teachers believed to be critical to their practice prior

to working in the field of education. Document analysis was performed on the following items: (1) the textbooks used for coursework, (2) the projects performed during postsecondary coursework, (3) the syllabi from the participating postsecondary educators, and (4) the lesson plans or documents used during instruction by in-service teachers. Information from the textbook was used in confirming participants' statements regarding their postsecondary coursework, their actions as inservice teachers, and discussion of their philosophies of education.

*Triangulation of data sources.* Triangulation of data sources was critical in gaining a holistic picture of the efficacy of service-learning projects in ensuring preservice teachers used learning theory in their classrooms following graduation. Triangulation included triangulation by observer, with two observers performing field observations simultaneously.

*"Students who performed service-learning projects apparently achieved higher scores on a measure of learning and developmental theories than students who did not perform them."*

***Two-Step Member Checking Process:*** In order to assess the validity of records and the accuracy of the results in describing how service-learning projects impacted in-service teacher pedagogy, 40 of the 148 in-service teachers who participated in the study were consulted as to the accuracy of field observations, interview information, and the completed paper. Of the remaining participants, 100 were not available for member checking, while eight could not be contacted. After criticisms regarding information were documented and included, 32 of the 40 participants were consulted again. No new information was included and no criticisms were offered.

## Results

***Knowledge of Learning Theories:*** Closer connections between theories learned during coursework and methods employed in the field were thought to be found with students who performed service-learning projects when compared with students who did not perform them. Students who performed service-learning projects apparently achieved higher scores on a measure of learning and developmental theories than students who did not perform them.

The analysis for the knowledge of learning theories concerned a 2 × 2 × 3 × 3 × 3 between-subjects factorial ANOVA using the NTE scores factor as the dependent measure, with participation in service-learning projects, gender, age group, experience of postsecondary educator, and type of preservice teacher certification program as independent variables. All 148 participants were analyzed for the between-subjects analyses of variance. Since results for this study were exploratory, only main effects and interactions between two predictors were examined.

The between-subjects analysis of variance confirmed that participation with service-learning projects significantly improved students' knowledge of learning and developmental theories over those of students who did not complete service-learning projects ($F$ (1, 147) = 11.42, $p$ = .001). Main effects for age groups were not significant ($F$ (2, 147) = 1.58, $p$ = .19), nor were the main effects for sex ($F$ (1, 147) = .002, $p$ = .96). No differences were identified as a result of the experience of postsecondary educator who facilitated the course ($F$ (2, 147) = .98, $p$ = .46).

One of the strongest results identified with respect to Praxis scores was identified when examining differences between the types of certification programs ($F$ (2, 147) = 27.00, $p$ = .001). A Bonferroni post-hoc technique indicated that significant differences at the .01 level were found between all permutations of teacher certifications (early childhood program $M$ = 18.87, elementary program $M$ = 21.93, and the secondary program $M$ = 22.34).

No significant interaction was identified between age groups and sex ($F$ (3, 147) = 1.15, $p$ = .33). However, a significant interaction was identified between age group and type of preservice teacher ($F$ (4, 147) = 2.06, $p$ = .01), with nontraditional college-age students who were secondary education majors showing the highest levels of Praxis scores. A significant interaction also was identified between age group and type of postsecondary educator ($F$ (4, 147) = 4.42, $p$ = .004), with nontraditional college-age students paired with doctoral-level professors showing the highest levels of Praxis scores. Significant interactions were identified between certification program of the preservice teacher and sex ($F$ (3, 147) = 5.56, $p$ = .001), with secondary-level females identified as having the highest levels of Praxis scores. R-squared verified that this model accounted for 28 percent of the theorized variance (see Table 1).

***Early Versus Later Involvement in Service-Learning Projects:*** Students involved in service-learning projects earlier in their programs demonstrated more practical applications of theory than

students involved in service-learning projects later in their programs. Students stated that involvement in service-learning projects allowed them the opportunity to identify "slices" of the teaching curriculum prior to seeing it again in greater depth later in their programming *(state university, group interview II, March 10, 1999, page 6)*. Students suggested that this early involvement with theory and the examination of the classroom allowed them to see what occurs in classrooms from multiple perspectives. Katie, a sophomore at a large midwestern university, stated:

> Service-learning projects in the beginning seemed like just another research paper, [but] then I began to notice the differences. Instead of just talking about ideas and leaving it at that, [my professor] would allow groups to debate the ideas and relate them to our experiences in the classroom. There was much more focus on practice, and on the importance of how theory can help me out as a teacher. *(Katie, state university, individual interview, March 18,1999, 4)*

Jonathan, a first-year student at a small rural campus, shared similar ideas: service-learning projects provided him the chance to reflect on his time as a student, and identify what was important to him as a teacher. He stated:

> Knowing what I want to do as a teacher is so important to me. As a high school teacher, it will be important early on to have ideas of what I should do about discipline and how I want to teach. [The project] gave me some ideas about how I should set up my classroom, and that as I go through my program here, I will continue to fine-tune these ideas. *(Jonathan, rural university, group interview, March 4, 1999, 11)*

Early involvement with service-learning projects provided students with a number of opportunities to see the depth of the field, and in many cases, created an anticipatory set for what they would study in future courses *(rural university, group interview I, March 24, 1999, 12–13)*. However, students who experienced service-learning projects later in their careers found the work involved in service-learning projects to be repetitive of prior coursework and commonly referred to theories of service-learning projects as *redundant (urban university, individual interviews, April 20,1999, 4–7)*.

**Table 1. Analysis of variance symmetry of Praxis scores in preservice teachers by participation with service-learning project, gender, age group, type of postsecondary educator, and preservice teacher certification program**

| Source | SS | df | MS | F | p |
|---|---|---|---|---|---|
| Service-learning (A) | 25.22 | 1 | 2.21 | 11.42 | .001** |
| Sex (B) | 117.69 | 1 | 58.84 | .00 | 0.96 |
| Age Group (C) | 266.96 | 2 | 88.99 | 1.58 | 0.194 |
| Postsecondary (D) | 985.22 | 2 | 1005.32 | 0.9 | 0.46 |
| Certification (E) | 1135.55 | 2 | 42.03 | 27.00 | .000*** |
| A X B | 74.4 | 2 | 66.43 | 1.12 | 0.34 |
| A X C | 393.05 | 3 | 162.43 | 2.42 | 0.07 |
| A X D | 296.8 | 3 | 115.94 | 2.56 | 0.09 |
| A X E | 490.05 | 3 | 314.14 | 1.56 | 0.62 |
| B X C | 194.99 | 2 | 64.99 | 1.15 | 0.328 |
| B X D | 1348.93 | 3 | 249.5 | 4.42 | .001** |
| B X E | 1748.59 | 3 | 314.49 | 5.56 | .001** |
| C X D | 962.42 | 3 | 217.74 | 4.42 | .004** |
| C X E | 987.8 | 3 | 479.5 | 2.06 | .01* |
| D X E | 1123.21 | 3 | 549.5 | 2.04 | 0.02 |
| Error | 4236.11 | 110 | 56.47 | | |
| Total | 14386.99 | 147 | | | |

* Significant at 0.1 level; ** Significant at 0.01 level; *** Significant at 0.001 level

***

In two of the four colleges observed for this study, completion of service-learning projects was required before the end of the sophomore year (at the large midwestern university and small rural university, where service-learning projects were a part of the introductory education coursework needed for entrance into the School of Education). An overwhelming number of students from schools where no early service-learning requirement existed indicated frustration with the class and challenged its importance.

> I can't believe this project was a requirement. We have done nothing but review information I already knew and just made up stuff about how it relates to my classroom. I feel like I totally wasted the semester. . . . I can't see how I will ever use this. *(Kaitlin, urban university, group interview, October 12, 1998, 2)*

Jessica, a classmate of Kaitlin at the urban university, suggested that the project be changed into an elective, as opposed to being a required course.

> What was the point of this semester, or the project? Everything that we learned was related to stuff I would have guessed or what I experienced [as a high school student]. I am surprised that my professors make such a big deal about this project, since we just reviewed what amounted to general information and common sense. *(Jessica, urban university, individual interview, October 12, 1998, 4)*

Students who experienced service-learning early in their college careers believed it to be helpful and important in creating schema that could later be used as tools within the classroom. Students who waited to be enrolled in coursework that required a service-learning project saw it as a "trivial project" guided by "common sense" *(Jessica, urban university, individual interview for triangulation of data, 1999)*. They were less likely to utilize any of the information reviewed and, in some situations, reverted to more traditional methods of instruction or what they had experienced as students.

***Critical Reviews of Theory in Educational Psychology:*** Students involved in service-learning projects that encouraged class discussion of theory and criticism of theory gained a stronger understanding of its importance in their teaching style. Whether classes were offered early or late in a student's career was not related to appreciation of the importance of theory for teaching. Students who were involved in classes that incorporated a number of problem-solving situations and debate-like discussions showed a greater appreciation for theory and its use in the classroom than students who were not involved in such activities. Joshua, a student at the large midwestern university, shared:

> We were constantly playing around with ideas in this class. I think that when I started this fall, I thought this class would give me answers to what I was supposed to do with my students. Now, I think that there aren't answers.

> I just need to remember the things we discussed and continue to think about how to teach. *(Joshua, state university, group interview III, February 9, 1998, 13–14)*

Joshua and other students involved in process-focused service-learning projects had a much more flexible perspective on the role of theory in teaching. Rather than providing students with specific solutions to problems, service-learning assignments helped them to see the importance of reflection, rather than just the replacement of disequilibrium with a fact. Dr. Solomon, a ten-year veteran educator at the rural university, and one of the few professors who emphasized constructivist ideas and interactive dialogue during class, suggests:

> My class is so much different than any other these students have had. I don't lecture. I don't spoon them information, in the hopes that they later apply it. I have them investigate theory by identifying its purposefulness. I want them to see the classroom as I see it: a dynamic and ever-evolving system that requires thought, not easy solutions to difficult problems. If I gave them any less, they wouldn't be worthy of being considered teachers. *(Dr. Solomon, rural university, individual interview, February 18, 1999, 2)*

Students of Dr. Solomon and other instructors who emphasized the value of application, tended to see service-learning projects as a valuable tool for later use. The discussion of theories also was incorporated in the ways they observed their field experiences, as evidenced by the writings of several students:

> If I were a student in this class, I would be so bored. There is no discussion, no involvement by the students. They may as well not even be here. What is most frustrating is that the teacher doesn't appear to even notice. Wouldn't it be interesting if she asked the students to think about what she was saying? *(Jack, state university, reflection journal from field experience, 1998, 2)*

> The kids are so frustrated. You can see why they act out. [The teacher] doesn't seem to understand that they wouldn't act up if he involved them in the class. Why doesn't he make them talk? Lecturing doesn't work with this group. [He] should try something different. I would have some discussion right now, make the material relate to the kids' lives. *(Tricia, rural university, reflection journal from field experience, 1999, 3)*

The majority of students who had experienced group-oriented and student-driven service-learning projects wanted to see those same techniques mirrored in their field experiences. When they observed the opposite occurring, they were driven to critique negatively and suggest that teachers utilize these more progressive theories. Some students, like James, even challenged teachers to revisit their own ideas and investigate whether student apathy and indifference was a result of the classroom system rather than a student issue.

*"The majority of students who had experienced group-oriented and student-driven service-learning projects wanted to see those same techniques mirrored in their field experiences."*

Students who were involved in lecture-format educational psychology courses (and were not involved with service-learning coursework) were largely unaffected by what they observed in the field. Moreover, these students did not appreciate the experience as much as those from discussion-format courses. Students who were used to lecture generally made comments about the content of the course, but spent very little time reviewing the dynamics of the classroom, as evidenced by Shauna's statements from class:

> My class was totally different from [that of another student in the class]. [The teacher] knew what she was talking about, and the students took lots of notes. Nobody had any questions, and the hour was pretty average. She had some problems with students talking in the back of the class, but they stopped talking after she told them they would have to answer questions if they didn't shut up. They didn't talk too much anymore. No one did. *(Shauna, rural university, comment during class, May 6, 1999)*

Lecture and note-taking were observed to be a functional system and one that required little interaction between students and teacher. When the instructor asked Shauna to comment about what theory was being used by this teacher, Shauna replied, "There wasn't any need for theory. She was just teaching" *(Shauna, rural university, comment during class, May 6, 1999)*. Students like Shauna did not see the necessity of justifying their teaching approaches or the importance of using theory as an applicable tool. Teaching was, as

their professor put it, "just a static transmission of knowledge from teacher to student. Information in, information out" *(Dr. Arens, rural university, comment during class, May 6,1999)*.

## Discussion

The results of this study suggest that preservice teachers should be involved with service-learning projects throughout their programming, such involvement tends to improve both awareness and practical use of educational theory. Moreover, preservice teachers who participated in service-learning projects tended to show significant differences in theoretical knowledge from those who did not. Field observations also indicate that these practical uses of service-learning projects follow students into the field, providing some confirmation of the importance of theories in the practice employed by students during their fieldwork, student teaching, and professional lives.

Students who have an instructor that used student-driven instruction and service-learning in an early education course may show a greater gain in theoretical knowledge than those who observe teacher-driven instruction, results that parallel the findings of Johnson and colleagues *(1998)*. Initial results suggest that these students who performed service-learning projects also show an improved ability to put theory into practice; they also can explain what their practice entails and how it is relevant to discussion in their previous coursework. The results of the study indicate that service-learning projects provide a supportive strategy for students to gain and incorporate knowledge from their college curriculum and field experience.

This study found that preservice teachers should perform service-learning projects prior to other education courses. Students who are farther along in programming tend to have poor experiences with service-learning projects because of limited interaction with theory early in their college careers, as well as limited early experience in the field. The majority of students were of the opinion that service-learning projects could provide them with a common language and tools usable in the craft of teaching. Participants expected to know how to apply theories of learning and development to teaching and learning in their classrooms. Those students who used service-learning projects later in coursework tended to see these projects as repetitive, perhaps as a result of their grounding in other methods and strategies identified earlier in their education coursework.

## Implications for Curricular Design

Did service-learning projects provide a foundation for the application of theory into classroom practice? Initial results suggest that students felt better prepared for practice following their service-learning projects, perhaps because they now had the tools to think reflectively about their field.

Programs also should be concrete in identifying and sharing with students the credos of their teaching programs. Students indicated that they understood learning theories and developmental theories better if they could see how such theories would relate to their future classrooms. Theory was viewed as a tool to help resolve real-world problems that teachers in the field might experience.

Moreover, all of the professors interviewed suggested that service-learning projects provided more than just common knowledge about theories. When they shared their experiences and teaching philosophies with students, students felt more aware of the connection between theory and practice and felt more like professionals who were prepared for their field of interest. Most educators involved in teacher education would suggest that education is a dynamic profession that must utilize theory in order to help students become invested and educated citizens *(see Anderson et al.1995; Rocklin 1996)*. Service-learning projects have the potential to bridge the distance between theory and practice in education.

*"Initial results suggest that students felt better prepared for practice following their service-learning projects, perhaps because they now had the tools to think reflectively about their field."*

Further research is needed, including examination of large samples of students with instructor and course variation. Greater attention also could be placed on the life experiences of students and instructors. These factors and others all should be investigated in a larger study.

Teachers must become mentors and facilitators of learning, helping students to construct their own knowledge and understanding of the world around them. If postsecondary education is to use the service-learning approach in teacher education programming, teachers of such courses must clearly understand the skills

needed for effective service-learning instruction, help to develop problem-solving skills, and teach with some component of integrated service. Moreover, they must enable preservice teachers to understand why they should sustain these behaviors when they enter the field and encourage such behaviors in their future students.

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