

SERVICE LEARNING

Students' Self-Assessment of Learning through Service-Learning

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The objective of the study was to determine what students learn through Service Learning (SL), based on their self-assessment of the learning. Survey instruments were administered to students at the beginning and end of a required SL course in one college's pharmacy curriculum. Students' responses revealed their personal and professional attitudes and how they changed as a result of their participation in the course; what they believed they had learned in this course; and what factors may have affected their attitudinal changes and learning. Actual course outcomes were reviewed in light of the educational outcomes of the Center for the Advancement of Pharmaceutical Education (CAPE). The study is the first step in what needs to be a longer-term assessment based on objective measures of learning, but it demonstrates concrete learning outcomes of service-learning.

Keywords: service-learning, educational outcomes, assessment

INTRODUCTION

Service-learning (SL) is a pedagogical method in which students provide service to individuals and/or groups, and by doing the service and reflecting on it they learn from it. As such, SL can be differentiated from volunteer (community) service (which may lack the reflective activity), clinical training, internships, field study, internships, and other forms of service or education. (See Connors and Seifer for a discussion of SL in the education of health-care professionals.¹)

Service Learning is currently endorsed by several educators, while others remain skeptical or critical of it. If it is to be incorporated in an academic curriculum, especially a full one as found in most schools of pharmacy, a sound argument for its educational efficacy supported by evidence of its educational outcomes needs to be presented.

Several studies have been done about the effects of service-learning. A comprehensive compilation of the studies (*At a Glance: What We Know about the Effects of Service-Learning on College Students, Faculty, Institutions and Communities, 1993–2000*, Third Edition) is available online.² This resource lists personal, social, learning, and other outcomes of SL. For example, in one of the studies reported in this compilation, Eyler and Giles report that participation in service-learning has an impact on such academic outcomes as demonstrated complexity of understanding, problem analysis,

critical thinking, and cognitive development.³

Beyond its inclusion in higher education generally, service-learning has also been incorporated in professional, and specifically, healthcare education; and educators have written and spoken about its value in these fields. For example, Seifer has written about SL in the education of healthcare professionals, discussing its benefits for students, faculty members, communities, and institutions of higher education.⁴ Others have surveyed SL programs in pharmacy education.^{5–11} Service-learning workshops were presented at the annual meetings of the American Association of Colleges of Pharmacy (AACP) in 2001 and 2003, and will be again in 2004.

This paper builds on and adds to this earlier work. The study on which it reports examined the perceptions and attitudes of students in SL courses, as others have done.^{8,10,11} Beyond this, the study explored specific learning outcomes for SL and the factors that may affect those outcomes. Data for the study were gathered by administering precourse and postcourse survey instruments to the students in the SL course.

In order to assess learning, students were asked to rate their abilities in a variety of areas at the beginning and end of the course, and their responses were analyzed to determine to what extent there were changes. In order to assess other changes, questions were asked about the respondents' thoughts and attitudes, and precourse and postcourse responses were compared. In order to explore factors that might affect learning, attitudinal changes, and future plans, students were asked about their past and present experiences and attitudes,

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and then their responses to other questions were analyzed as a function of these factors. Finally, in order to assess the value of various parts of the course, in the postcourse survey the students were asked to rate the contributions of various exercises to their learning.

METHODS

Description of the Service Learning Course

The study on which we report involved a 2-credit, required SL course in the first professional year (P1) of the pharmacy curriculum at the Massachusetts College of Pharmacy and Health Sciences (MCPHS), School of Pharmacy-Worcester (SOP-W). MCPHS opened its Worcester campus in 2000, and offers an accelerated, year-round program, whereby students complete the standard professional curriculum in just under 3 years. More than 50% of the entering students have completed at least a bachelor's degree and their average age upon enrollment the past 3 years has been 26 to 27 years.

Since SOP-W opened, the SL course has been required of all students during the first academic quarter of the P1 year. From the outset, the administrators of the School and of the College have supported the inclusion of this course in the curriculum, as well as the SL components in other courses.

Before this course began, students were given a list and description of the SL sites and were asked to express their preferences as to where they would like to do their community service. Students were then assigned to sites matched as closely as possible with their preferences. The type of work and sites included the following: tutoring and mentoring children in public schools and in a day care center in a public housing project; visiting senior citizens in a variety of settings; working and visiting with the homeless and indigent in homeless shelters, a soup kitchen, and a food and clothing distribution center; organizing activities for young people in a neighborhood recreation center; welcoming and talking with patients in several free medical clinics; and working with clients in an agency serving individuals infected with AIDS/HIV and their families and friends. There were ~30 sites where students worked. At most of the sites, even those providing health care, the students provided general assistance that was not necessarily healthcare related.

During the 10-week quarter, students were required to spend an average of at least 2 hours per week providing service at their SL site. The first 2 weeks of the quarter typically involved "getting situated" at the sites, so most students actually provided ~16 hours of service during the quarter.

Students were required to keep journals as part of the course, making weekly entries. Students were asked to describe the work they did, to reflect on it (their re-

sponse to their experiences, issues and questions raised by the experiences, and their thoughts about what they learned from the experiences) and to outline their plans for their next visit to the site.

Students participated in a 2-hour seminar each week. There were 3 seminar sections, with 40 to 45 students in each. For the first 6 weeks of the course, students were assigned readings, and were required to write short reflection papers about the readings. They then discussed the readings and their papers in the seminars. For most weeks of the course, representatives from the SL sites or other guests, participated in the seminars, talking about the work of their organizations.

During the final 4 weeks of the quarter, students were divided into teams based on common service work (eg, tutoring or working with senior citizens) and gave presentations to the class. Team members were instructed to describe their service goals, accomplishments, and challenges, and what they had learned and were learning from their experiences. The presentation had to be a team effort and not just a collection of individual presentations.

The stated course objectives for the students were as follows: to provide a concrete service to the individuals and the institution, organization, or agency where the service is rendered; to develop/improve oral and written communication skills through their service work and by participation in the classroom; to develop/improve the ability to think critically about, and analyze the issues encountered in, the service provided; and to develop a better understanding of the individuals and populations served by members of the class, especially senior citizens, children, and those "on the margins" in the community. The readings, presentations, and discussions in the seminars touched on these topics, and then the students were given opportunities to apply what they had discussed in their work.

Grades for the course were based on provision of service at the SL site (based on an assessment form completed by a supervisor at the site), regular attendance in the seminars, the 5 short reflection papers, the journal entries, and the team presentation.

Survey Procedure

In order to gather general information about the students in the above-mentioned course, and to assess students' perceptions of their knowledge, attitudes, and opinions on a variety of matters, surveys (see Appendix) were administered to them on the first and last days of the course in the fall of 2002. The design of the study was reviewed and approved by the College's Institutional Review Board. Participation in the survey was optional, and students completing the surveys signed consent forms.

Table 1: Demographics of Student Respondents

Variable	N (%)
Sex	
Female	54 (64)
Male	30 (36)
Age	
19-21	6 (7)
22-24	42 (51)
25-27	18 (22)
28-30	3 (4)
30+	14 (17)

Someone other than the study director administered the surveys so that the study director would not know which students participated in the study and which did not. Each respondent was given a randomly generated identifier number and asked to enter it on the precourse and postcourse surveys. The study director did not know the respondents' identifier numbers, which ensured the anonymity of the respondents. Of 127 initially enrolled in the course, 127 completed the precourse survey. Out of the 125 students who completed the course, 119 also completed the postcourse survey. However, there were only 84 precourse and postcourse surveys with matching identifier numbers. Only the responses from these paired surveys were included in the survey analysis.

Survey questions were about general demographic information, previous experience, reasons for wanting to become a pharmacist; type of SL work performed as part of the course; self-assessment of individual skills and abilities; the student's thoughts and attitudes regarding SL and community service in general, those who need social services, children who struggle in school, community involvement, personal efficacy, professional skills and preparation; and their assessment of various parts of the course.

The students were asked to respond to each question by indicating an answer on a Likert scale of 1 to 5 ("much worse" to "much better," or "strongly disagree" to "strongly agree," depending on the question), as shown in the Appendix. Survey data were compiled, the number of respondents indicating a given answer to

each question was determined, and a mean response and standard deviation were determined for each item. This was done for the entire sample, as well as for various subgroups based on sex, age, involvement in various organizations and activities during college; type of service activity completed for the course; previous SL experience; self-rating of key skills; and attitudes toward, or assessment of their experiences in, community service and SL. Percentages of those who agreed ("Agree" or "Strongly Agree" or disagreed ("Disagree" or "Strongly Disagree") to various questions were calculated. Finally, paired *t*-tests were performed to compare precourse and postcourse responses to questions asked in both surveys. SYSTAT® Version 8.0 (Systat Software, Inc; Richmond, Calif; 1998) was used for data analysis. For this study, a P value of 0.05 or less indicated a significant difference between the means of 2 groups.

Questionnaires were also sent to representatives of the organizations with which the students worked, asking them for feedback about the students and their work. A copy of the survey sent to these organizations (community partners) is included in the appendix. Approximately half of these organizations returned completed questionnaires.

RESULTS

Table 1 gives a demographic profile of the 84 students who responded to both surveys, and Table 2 shows the previous involvement of the respondents. Table 3 lists the groups of people the students served in their work and the number of students who worked with those groups. Responses to the remaining survey questions are listed in Table 4.

Reasons for Wanting to Become a Pharmacist

Concerning their motivation for becoming a pharmacist, 81% of the respondents agreed with the statement, "The main reason that I want to be a pharmacist is to help people" (mean score = 4.11 ± 0.81). This con-

Table 2: Previous Involvement of Student Respondents*

Frequency	Work for pay	College Groups	Community Service	Religious Org/Activ	Service Learning
Never/No	8%	38%	42%	42%	83%
A few times a year	4%	35%	29%	25%	
Once a month	6%	12%	6%	7%	
2-3 times a month	15%	7%	8%	7%	
Every week	68%	8%	16%	19%	
Yes					18%

*Based on responses to questions 3-6, and 35, on the precourse survey. In some cases, rounding leads to sums greater than 100%.

Org= organization; Activ=activities

Table 3: Numbers of Students Working with Various Groups*

Type of Group	N	(%)
Senior citizens	20	(24%)
Children	42	(50%)
Health Care	10	(12%)
Homeless	10	(12%)
Other	2	(2%)

*Based on answers to question 1 on the postcourse survey.

trasts with only 27% agreeing with the statement, “The main reason that I want to be a pharmacist is that pharmacists are well paid”(mean score = 2.75 ± 1.11). Thus, while a few students were motivated by more than one factor, the predominant factor seems to be related to service.

Self-Assessment of Skills and Abilities

Students were asked to assess their abilities in a variety of areas important in the practice of pharmacy. As shown in Table 4, students rated themselves relatively highly at the beginning of the course and even more highly at the end of the course. Though this does not necessarily mean that the SL course was the primary source of the learning, the areas of learning do correspond to some of the learning objectives of the course. (Course objectives are given in the Methods section, above.)

The areas in which there were statistically significant improvements in self-assessment were the following: oral communication; written communication; analytical ability and critical thinking; and leadership ability. The students’ assessment of their ability to listen and understand others did not change significantly from the beginning to the end of the course for the entire class, but the self-assessment of those who worked with senior citizens increased significantly ($N = 20$, mean 3.85 [pre] to 4.25 [post]; $P = 0.042$). No other statistically significant changes were observed, either for the entire class or for any sub-groups.

Thoughts and Attitudes About SL and Community Service

Questions 18–20 on the precourse survey and the corresponding questions, 11–13, on the postcourse survey, asked the students about their attitude toward SL, or about their expectations (precourse) or experiences (postcourse) with regard to the service and learning components of the SL course. More students disagreed than agreed with the statement that SL should *not* be part of the curriculum, and there was no significant change in responses from the beginning to the end of the course. This indicates a general openness to SL that was unchanged by their experience in the course.

The respondents generally looked forward to doing community service as part of the course, and at the end of the course a significantly greater number reported that they had been able to provide this service. On a related question, more respondents agreed than disagreed with the statement that they expected to learn skills relevant to the practice of pharmacy. Slightly more students agreed at the end of the course that they had indeed learned such skills from the course. On the postcourse survey, 79% of the respondents agreed with this proposition. The respondents generally looked forward to doing community service as part of the course, and at the end of the course a significantly greater number reported that they had been able to provide this service. On a related question, more respondents agreed than disagreed with the statement that they expected to learn skills relevant to the practice of pharmacy. Slightly more students agreed at the end of the course that they had indeed learned such skills from the course. On the postcourse survey, 79% of the respondents agreed with this proposition.

To determine whether the increases were simply due to those who had positive attitudes at the outset becoming even more positive by the end of the course, the responses of various subgroups were analyzed. Interestingly, as shown in Table 5, those who had disagreed with either of these propositions on the precourse survey generally responded positively on the postcourse survey. Additionally, those who on the precourse survey were uncertain about their expectation about providing service, generally agreed on the postcourse survey that they had provided service.

Two future-oriented questions were asked about community service and SL on the postcourse survey. More students agreed than disagreed with the statement, “I plan to do further community service work after this quarter ends.” More students agreed than disagreed that they would be interested in doing service-learning work as a part of future courses. In order to determine what factors might influence respondents’ answers to these questions, the responses of various subgroups were analyzed. The primary factors were attitudes toward, or assessment of, service and learning. Table 6 shows the responses of various groups, based on their responses to precourse and postcourse survey questions about service and learning.

The words of one student succinctly illustrate the learning and service outcomes of the course: “This course was of help to me because I learned a lot. It showed that there is more to education than just learning your subjects in class. It also showed me that community service is very important. It helps you learn a lot about different people.”

Table 4: Results of Pre- and Postcourse Surveys*

Question #		Question [†]	Pre	Post	P value
Pre	Post		Mean (SD)	Mean (SD)	
7	2	Oral communication	3.22 (0.91)	3.49 (0.78)	0.006
8	3	Written communication	3.20 (0.95)	3.71 (0.84)	<0.001
9	4	Analysis & critical thinking	3.56 (0.72)	3.76 (0.67)	0.016
10	5	Listen & understand	3.90 (0.71)	4.00 (0.73)	0.37
11	6	Understand different people	3.88 (0.83)	3.94 (0.73)	0.44
12	7	Set & achieve goals	3.76 (0.72)	3.81 (0.72)	0.60
13	8	Responsibly care	4.08 (0.73)	4.06 (0.78)	0.78
14	9	Leadership ability	3.40 (0.88)	3.68 (0.82)	0.004
15	10	Open to new/diff. ideas	4.00 (0.81)	4.06 (0.77)	0.46
		Composite score for questions above	3.67 (0.33)	3.83 (0.20)	-
16	-	Previous faculty relationship	2.68 (1.34)	-	-
17	-	Become pharmacist for pay	2.75 (1.11)	-	-
18	11	No SL at MCPHS	2.24 (1.06)	2.35 (1.28)	0.46
19	12	Provide community service	3.86 (0.96)	4.23 (0.81)	<0.002
20	13	Relevant learning from SL	3.99 (0.90)	4.07 (0.99)	0.42
21	14	Needy to blame for need	2.02 (0.88)	2.02 (0.92)	1.00
22	15	Individual cannot help	2.18 (1.13)	2.39 (1.25)	0.14
23	16	Children are to blame	1.63 (0.74)	1.81 (0.99)	0.17
24	17	Understand seniors	3.24 (0.98)	3.58 (0.84)	0.005
25	18	No need to be involved	1.51 (0.59)	1.64 (0.89)	0.13
26	19	Uncomfortable with difference	1.82 (1.03)	1.93 (1.19)	0.45
27	20	Children's homes to blame	4.24 (0.89)	4.24 (0.93)	1.00
28	21	Should do community service	3.98 (0.93)	4.11 (0.81)	0.25
29	22	External factors lead to need	3.37 (0.88)	3.50 (0.98)	0.29
30	23	Can make good ethical decisions	4.13 (0.72)	4.26 (0.60)	0.18
31	24	Work to change public policy	4.04 (0.71)	4.13 (0.65)	0.34
32	25	Uncomfortable with seniors	2.05 (0.89)	2.05 (0.88)	1.00
33	-	Become pharmacist to help others	4.11 (0.81)	-	-
34	-	Leadership experience	3.37 (1.18)	-	-
-	26	Speakers increased understanding	-	3.99 (0.90)	-
-	27	Others' presentations help	-	4.24 (0.65)	-
-	28	Writing helps writing	-	3.64 (1.17)	-
-	29	Discussions help reflection	-	3.99 (0.90)	-
-	30	Journal helps understanding	-	3.63 (1.02)	-
-	31	My presentation & my work	-	3.82 (1.04)	-
-	32	My presentation & oral comm.	-	4.00 (0.88)	-
-	33	My presentation & teamwork	-	3.90 (0.97)	-
-	34	Plan to do more comm. service	-	3.44 (1.05)	-
-	35	Interest in SL in other course (s)	-	3.49 (1.14)	-

* For questions 7-15 (Pre) and 2-10 (Post), self-assessment: much worse to much better than others, 1 to 5; for questions 16-34 (Pre) and 11-35 (Post), strongly disagree to strongly agree, 1 to 5

[†] Abbreviated. For complete questions, see Appendix.

Students' Thoughts About Those Who Need Social Services

Only ~12% of the respondents worked with the homeless or those in great need of social services; but all of the students in the course heard about the experiences of these students. In previous years, on precourse and postcourse surveys, students had demonstrated a notable increase in their agreement with the statement, "I have a good understanding of the issues involved with homelessness." These data were not reported due to lack of appropriate statistical controls. In 2002, in order to further explore their attitudes toward those who

need or use social services, 2 more specific questions were asked of the students. The respondents generally disagreed with the statement, "People who use social services largely have only themselves to blame for needing those services." Correspondingly, more agreed than disagreed with the statement, "The problems that cause people to need social services are frequently the result of circumstances beyond their control."

On the latter of these 2 questions, there was a change in the mean response, but it was not statistically significant. However, for those students who reported having prior experience doing community service (an-

Table 5: Mean Answers of Selected Respondents*

Question	Group	N	Pre	Post	P Value
Look forward to providing (pre), or did provide (post), community service?	Those who did not look forward to providing community service (D/SD on Q 19 Pre)	7	1.57	3.43	0.032
	Those who were uncertain about providing community service (Q 19 Pre)	15	3.00	4.20	<0.001
Anticipate learning (pre), or did learn (post), from SL?	Those who did not anticipate learning from SL (D/SD on Q 20 Pre)	6	1.83	3.50	0.011
	Those who were uncertain about learning from SL (Q 20 Pre)	13	3.00	3.08	0.79

*1=strongly disagree, to 5=strongly agree

Table 6: Mean Answers of Selected Respondents to Postcourse Survey Questions*

Group	Plan to do further community service?		Interested in doing SL in future courses?	
	N	Mean	N	Mean
All respondents	84	3.44	81	3.49
Those who did not look forward to doing community service (D/SD on Pre Q 19)	7	1.57	7	1.57
Those who were not able to provide community service (D/SD on Post Q 12)	4	1.50	4	1.00
Those who did not anticipate learning in the course (D/SD on Pre Q 20)	6	2.50	6	2.50
Those who did not learn from the course (D/SD on Post Q 13)	7	2.14	7	1.71
Those who looked forward to doing community service (A/SA on Pre Q 19)	62	3.77	59	3.78
Those who were able to provide community service (A/SA on Post Q 12)	75	3.56	72	3.63
Those who anticipated learning in the course (A/SA on Pre Q 20)	65	3.65	62	3.76
Those who learned from the course (A/SA on Post Q 13)	66	3.55	63	3.76

*1=strongly disagree, to 5=strongly agree

swering 2–5 on precourse question #5), the mean response changed from 3.31 ± 0.87 on the precourse survey to 3.80 ± 0.93 on the postcourse survey, a statistically significant increase ($P = 0.005$).

Students' Thoughts About Children Who Struggle in School

Working with children was the most common form of service provided by students in the course. (Fifty percent [50%] of the respondents worked with children.) In previous years, survey responses suggested that through their own or through their classmates' experiences, students learned about the lives of these children and their performance in school. To probe their sense of children's lives, the respondents were asked 2 questions. On both the precourse and postcourse surveys, they generally disagreed with the proposition that "Children who do poorly in school have only themselves to blame for their poor performance." Taking a different perspective, more agreed than disagreed with the statement that

"The home situations of children and adolescents play a major role in their success or failure in school."

Students' Attitudes Toward Community Involvement

Students in the course generally thought that community involvement and service, and working to change public policy as appropriate, are important (Table 4). This finding is consistent with the strong emphasis at MCPHS-Worcester on the *community*-based practice of pharmacy. Even as the students are beginning their studies, their focus is not only on the profession for which they are preparing, but also on the environment in which they plan to practice that profession.

Students' Sense of Personal Efficacy

One's sense of one's ability to have an impact on the society in which they live influences their willingness to engage in work to change that society. Most the respondents to our surveys thought they were able to

have such an impact, disagreeing with the proposition that one person “can do little to bring about changes in our society.” The fact that the degree of the disagreement decreased modestly (though not statistically significant from the beginning (71%) to the end (64%) of the course (a trend we also observed in past years) leads us to consider the possibility that the course (or other concurrent factors) may foster, in some students, a sense of helplessness as they are exposed to societal problems (homelessness, etc). Such a sense may simply result from exposure to problems without adequate opportunities to reflect on them and consider ways to address them. With this in mind, we are considering ways of more explicitly confronting and discussing such problems in the next offering of the course.

Professional Skills and Preparation

Several of the survey questions concern what can be grouped together under the heading of general professional preparation: understanding senior citizens, who comprise a significant proportion of pharmacists’ patients; being comfortable with diversity; and being able to make good ethical decisions. With regard to the first of these questions, there was a significant increase in the respondents’ agreement with the statement that they had “a good sense of what the lives and concerns of senior citizens are about.” Though the average scores of all respondents increased, not surprisingly the change in the average scores of those who worked with senior citizens (24% of the respondents) was most dramatic. There was no change in the students’ response to the question about being comfortable with senior citizens. However, while the respondents generally disagreed that they were uncomfortable with seniors, those who chose to work with senior citizens reported being less uncomfortable than others, which may explain why they chose that work.

With regard to diversity, more survey respondents disagreed than agreed with the statement, “I feel uncomfortable working with people who are different from me in such things as race, wealth and life experiences.” As to ethics, the majority of the students agreed that they had “the knowledge and experience necessary to make good ethical decisions.”

Students’ Assessment of Various Parts of the Course

Questions 26–33 on the postcourse survey instrument asked the students to evaluate various components of the SL course. The results are presented in Table 4. From these results, it seems that the strongest components of the course in terms of educational value in the eyes of the students were the following: the oral presentations (as a way for students to educate each other, and as a way of improving oral communication skills), the

speakers who visited the seminars and the in-class discussions. Components that were generally evaluated positively, but not as strongly, were journal writing, essay writing, and oral presentations as a positive teamwork experience and as a way of learning about one’s own work. For all of these components, the responses were notably lower from those who had reported on the precourse survey that they did not anticipate they would learn significantly from the course, while they were higher from those who had reported on the precourse survey that they did anticipate they would learn significantly from the course (data not shown). As noted above, predisposition clearly influences one’s (reported) learning.

Feedback from Sites

Comments on survey instruments returned by representatives of the organizations with which students worked were quite positive. They commented that the students were reliable and responsible; that they benefited those whom they served (eg, as tutors to school children); that they provided valuable assistance to professionals at the sites (eg, teachers); and that they seemed to learn about those whom they were serving. There were no negative comments, though there were a few suggestions for improvement, such as specify the objectives of the program more clearly at the beginning; ask the students to evaluate the service sites at the end of the program, ask the students to come more often. To the extent that they are feasible, these suggestions are being considered for incorporation into future course offerings.

DISCUSSION

Do students learn from service-learning? That must be the central question educators address when we determine whether to retain or introduce a service-learning course in a curriculum. Eventually, the ideal way to answer this question is by assessing the achievement of central educational objectives by some external measures. As an early indicator, however, asking students for their subjective assessment of learning is an effective way of addressing this matter.

As described above, students at MCPHS-Worcester were quite favorable in their assessment of their learning in the SL course. This is similar to what others have found with first-year pharmacy students.^{6,10} Carter and Cochran found that students in their third professional year generally had positive attitudes about an SL course at the outset, but that in most categories they were more negative at the conclusion of the course.¹¹ It may be that SL courses are generally better received early in the curriculum than later.

Piper et al found that only ~20% of students sur-

veyed thought that a service experience should be *required* after completing a one-semester course.⁸ In contrast, 46% of our students indicated that they planned to do more community service following the SL course, and 52% expressed an interest in doing SL work as part of another course. The difference may lie in the fact that in our survey the subsequent community service or SL work was not labeled as *required*. Additionally, as noted above, postcourse attitudes about continuing service are significantly influenced by the students' attitudes going into the course and their service and learning experiences during the course.

Not all skills improved to the same extent during the course. For example, students reported substantial increases in their oral communication, written communication, analytical and critical thinking, and leadership skills from the beginning to the end of the course. In other areas covered in the survey, there were not statistically significant improvements, such as in the ability to listen to and understand others, the ability to understand people who are different from oneself, the willingness to hear and try to understand new or different ideas, etc. Thus, the skills with the highest postcourse scores were the same as those with the highest pre-course scores, while the greatest improvement was in those areas initially with the lowest scores. The lesser improvement of the higher scores may be because higher scores do not have much room for improvement (the "ceiling effect"), while the significant improvement in lower scores indicates that the reported learning is greatest in the areas where there is most room for improvement.

The respondents' attitudes toward and assessment of community service and service-learning were quite positive. Their positive attitude at the beginning of the course obviously reflects their prior experiences, but the positive change in attitude from the beginning of the course to the end most likely reflects their experience in the course itself. Most of the other courses the students were taking concurrently were in the sciences and did not involve or address community service or service-learning. The most substantial change was in regard to the provision of service. The most heartening changes, however, were not in the aggregate scores of the entire class, but rather in the scores of potentially hard-to-reach students: those who either did not look forward to service or did not expect to learn, or who were uncertain about these areas (Table 5). All of the subgroups were more positive in their assessment at the end of the course. This indicates that the course is not only reinforcing positive attitudes and meeting positive expectations, but also "converting" some doubters and skeptics.

With a forward-looking eye, it is noteworthy, but not surprising, that those who positively assess their

community service experience, and/or their learning from SL, are more likely than others to intend to do more community service or to be interested in additional SL opportunities in the future (Table 6). When there is a strong positive assessment of a service-learning course, as was the case with the present course, this suggests that it would be wise to build on this success by offering students future opportunities for community service and SL.

The results of the surveys also provide some evidence that there is greater learning "on the second time around" with service-learning. Students with prior community service experience had a significantly greater change in their responses to the survey question about "the problems that cause people to need social services" than did students who had had no prior experience. This suggests that learning, or at least an increasing sense of the complexity of the problems at the root of poverty, from a community service experience is greater when there has been previous community service experience.

The postcourse survey instrument asked the students to rate the various individual components of the course, and the responses enabled us to identify the specific strengths of the course and those areas that need further development. The most highly rated aspect of the course was the oral presentation as a teaching method ("Through the presentations of my classmates ... I came to better understand the people they worked with"). This clearly underscores the value of active and self-directed learning, in which the students are engaged in teaching and learning. This is important since 40% of the seminar time involves these presentations, which appear to be a highly effective pedagogy.

At the low end of the scale, essay writing as a way of improving writing and journal writing as a way of coming to better understand and learn from service work were less highly rated. We have noted these as areas needing support, and in the new academic year will work with a writing specialist to help students improve their writing, and with a course assistant to help students use journal-writing as a reflection tool.

Based on our findings in this study, we believe that this course addresses many of the 1998 *Education Outcomes* enumerated by the Center for the Advancement of Pharmaceutical Education (CAPE) of the American Association of Colleges of Pharmacy (AACP).¹² Among the outcomes addressed by this course are the following:

- Demonstrate effective oral and written communication tailored to the individual needs of the audience and type of setting.
- Think critically, solve complex problems, and make informed, rational, responsible decisions within scientific, social, cultural, legal, clinical, and ethical contexts.

- Communicate clearly, accurately, and persuasively with various audiences using a variety of methods and media.
- Make rational, ethical decisions regarding complex personal, societal, and professional situations within a context of personal and professional values.
- Social and Contextual Awareness: Demonstrate the ability to place health care and professional issues within appropriate historical, cultural, social, economic, scientific, political, and philosophical frameworks, and demonstrate sensitivity and tolerance within a culturally diverse society.
- Social Responsibility: Demonstrate an appreciation of the obligation to participate in efforts to help individuals and to improve society and the health care system.

Of some concern to us was the observation that the students' disagreement with the proposition that "an individual can do little to bring about changes in our society" waned slightly from the beginning to the end of the course. Our hope had been that, as a result of positive service experiences, the students would feel less helpless and more empowered in the face of the societal problems they experienced or learned about from their classmates. In retrospect, however, we believe, as others have noted, that experience alone is not an effective teacher.³ To transform a "raw" experience into an educational moment, effective reflection is critical. Though reflection is an element of this course, we take this finding as a reminder that we need to strengthen some of the reflective activities in the course, especially with regard to focusing on the problems the students encounter and discussing how individuals or groups can address these problems.

The service in service-learning usually refers to actions performed *gratis* for someone else's benefit. However, we believe that what students learn from providing such service will carry over naturally into their professional careers, where they will provide service and be compensated for it. With this in mind, as a part of the service-learning course, students read a paper by Indritz and Hadsall, in which the authors reported that customers in retail stores (pharmacies and others) judge service based on the responsiveness, reliability, and empathy of the employees, the sense of assurance conveyed by the employees, and the quality of the tangibles (facilities, equipment, etc) involved in the delivery of service.¹³ We propose that several of these are qualities promoted by SL, through both direct service activities and reflection on them. Working with senior citizens, for example, requires that one develop habits and skills of empathy, patience, and caring. These will certainly make the students superior care-providers in their professional lives.

CONCLUSIONS

In this paper, we have touched on many positive aspects of service-learning, but our emphasis has been on demonstrating how it can be and is an effective pedagogy for achieving positive educational outcomes. We have shown that service-learning can and does contribute to the achievement of a broad range of general outcomes, such as critical thinking, communication and social interaction, decision-making, and social awareness and responsibility. We have also shown that service-learning contributes to the achievement of professional practice-based outcomes in pharmacy education. For example, students' service-learning experiences and reflective activities will make them more competent professionals, more aware of the needs of the populations they and their classmates served, and more aware of ethical issues in the public arena.

The primary limitation of this study is that it is based on students' self-assessment of their learning. Clearly, the next logical step in the assessment of learning is to examine objective measures of learning outcomes. It is our intention to explore ways of objectively assessing these outcomes in the near future.

We do not argue that SL is the sole effective pedagogy or that it belongs in every course. However, our study demonstrates its educational efficacy, and therefore supports its inclusion in pharmacy education, especially early in the professional curriculum. This study also demonstrates that positive SL experiences predispose students to be open to subsequent community service and SL experiences. Thus, once a successful SL program has been established, educators would be well advised to consider incorporating SL as an effective pedagogy elsewhere in the curriculum.

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Appendix. Text of survey instruments used by students to assess a service-learning course

Fall 2002 Service Learning Pre- and Postcourse Surveys

Unless otherwise noted, primary numbers are numbers of questions on the precourse survey, while numbers in parentheses are postcourse question numbers.

1. Respondent's sex (2 = Female, 1 = Male)

2. Respondent's age: 19-21 (5) 22-24 (4) 25-27 (3) 28-30 (4) over 30 (1)

Respondent's average level of involvement in the listed activities:

5 = every week 4 = 2-3 times a month 3 = once a month 2 = a few times a year 1 = never

3. Work for pay during the school year while in college

4. College athletic teams or clubs/groups

5. Community service project(s) while in college

6. Religious organizations/activities

Type of group to whom service was provided (postcourse survey):

(1) With what group of people, or in what type of setting did you do your SL work this fall? 5 = senior citizens, 4 = children, 3 = health care, 2 = homeless, etc., 1 = other

Respondent's rating of self in comparison to others:

5 = much better than most; 4 = better than most; 3 = about same; 2 = not as good as most; 1 = much worse than most

7. (2) Communicating my thoughts and ideas to others orally

8. (3) Communicating my thoughts and ideas in writing

9. (4) Ability to analyze and think critically about issues

10. (5) Ability to listen to and understand others

11. (6) Understanding people who are different from me

12. (7) Effectiveness in setting and accomplishing goals

13. (8) Ability to responsibly care for others

14. (9) Leadership ability

15. (10) Willingness to hear and try to understand ideas that are new or different from my own

Respondent's agreement/disagreement with the following questions:

5 = strongly agree 4 = agree 3 = mixed thoughts or uncertain 2 = disagree 1 = strongly disagree

16. Before coming to MCPHS, I developed a close personal relationship with at least one faculty member.

17. The main reason that I want to be a pharmacist is that pharmacists are well paid.

18. (11) Service Learning should not be a part of the curriculum at MCPHS.

19. (12) I look forward to providing (I have been able to provide) community service through Service Learning.

20. (13) From my Service Learning work and our seminars, at least as much as from other courses, I think I will be able to learn (I have learned) things that will make me a better pharmacist.

21. (14) People who use social services largely have only themselves to blame for needing those services.
22. (15) Realistically, an individual can do little to bring about changes in our society.
23. (16) Children who do poorly in school have only themselves to blame for their poor performance.
24. (17) I have a good sense of what the lives and concerns of senior citizens are about.
25. (18) Pharmacists don't really need be involved in their local community.
26. (19) I feel uncomfortable working with people who are different from me in such things as race, wealth and life experiences.
27. (20) The home situations of children and adolescents play a major role in their success or failure in school.
28. (21) People should do community service to help individuals in their community.
29. (22) The problems that cause people to need social services are frequently the result of circumstances beyond their control.
30. (23) I have the knowledge and experience necessary to make good ethical decisions.
31. (24) People should do whatever they can to change public policy to improve the quality of life in their communities.
32. (25) I am not comfortable interacting with senior citizens.
33. The main reason that I want to be a pharmacist is to help other people.
34. I have played a leadership role in organizations I belonged to or worked with.
35. Had you ever been involved in Service Learning before enrolling in MCPHS-W? (2 = Yes; 1 = No)

Questions only on postcourse survey:

- (26) The speakers we heard in this course increased my understanding of topics that will make me a better health-care professional.
- (27) Through the presentations of my classmates in this course, I came to better understand the people they worked with.
- (28) Writing the essays in this course helped me improve my writing.
- (29) Our discussions in this course helped me reflect on the articles I read and my service-learning work.
- (30) By keeping a journal, I came to better understand my service work and learn from it.
- (31) In doing the oral presentation in this course, I came to better appreciate my SL work.
- (32) Doing the oral presentation helped me improve my oral communication skills.
- (33) Doing the oral presentation was a positive experience of working as a team.
- (34) I plan to do further community service work after this Quarter ends.
- (35) I would be interested in doing service learning work as a part of future courses.

Fall 2002 Service Learning Survey for Community Partners

Placement Site: Site

MCPHS Student: Name

Massachusetts College of Pharmacy and Health Sciences

Service Learning Program Student Evaluation

December 2002

Did the above-named student visit your location on a regular basis, and provide at least 2 hours of service work per week (average) during the period from October 7 through December 6, unless prevented from doing so because of illness or other unavoidable problems? (Please circle one.)

Yes

Yes, with some exceptions

No

Please explain any "exceptions."

We want to offer special commendations to those students who did work above and beyond what would ordinarily be expected of volunteers. We want to reserve this recognition for the top 10% of our students. Did this student perform service work of such high quality or quantity that she/he deserves such **special commendation**? If so, please describe briefly the student's exemplary work.

Any comments, either about this student or about the MCPHS Service Learning program?

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