Enhancing curriculum through service learning in the social determinants of health course

Ronica Nicole Rooks[1] and Christine Tagliaferri Rael

Abstract: Service learning bridges classroom learning and community volunteerism and is anchored in the curriculum, classroom discussion, and community. We incorporated service learning projects (SLP) into three Social Determinants of Health courses (2008-2010) to promote: experiential learning; undergraduate scholarship; faculty career development through the scholarship of teaching and learning; and collaborative university-community research to reduce social inequalities in health. We examined whether SLP facilitated student learning of course concepts. We used mixed methods analyzing students' (n=25) pre-/post-test surveys, research papers, and site supervisors' (n=17) interviews. Despite positive survey ratings, results showed decreased student agreement about SLP facilitating student learning. Content analysis revealed specific student themes: finding SLP rewarding for future public health careers; aligning student interests with community-based organizations (CBOs)' goals; and valuing interactive experiences with CBOs' clients. Students gained beneficial career development skills with CBOs but needed better preparation for their SLP by increased discussion of their and CBOs' expectations.

Keywords: service learning, social determinants of health, social inequalities, undergraduates, public health

I. Introduction.

Service learning bridges classroom learning and community volunteerism, where service is anchored in the curriculum, classroom discussion, and community (Ballantine & Phelps, 2002), i.e. the laboratory to apply public health and social science knowledge and skills to social issues. It also promotes undergraduate scholarship through research, professional networking, and service. In recognition of these benefits the Institute of Medicine recommends that all undergraduates should have access to public health education, including an understanding of how the social and physical environments shape health through an ecological model (Cashman & Seifer, 2008; Gebbie, Rosenstock, & Hernandez, 2003). Service learning can be a vehicle to fulfill this mandate by applying public health and social and behavioral sciences to health-focused social problems.

We are particularly interested in the benefit of improving student outcomes through problem-based learning with a community-based organization (CBO). The literature on health-focused service learning identifies various benefits to students and CBOs. Students' benefits include: improved academic outcomes such as better grades, critical thinking, and problem-solving skills; connecting theory to practice; increased capacity to view phenomenon from multiple perspectives and a deepened sensitivity to diversity; increased social awareness and

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[1] Department of Health and Behavioral Sciences, ronica.rooks@ucdenver.edu

social justice beliefs; increased confidence to make community service contributions (e.g., self-efficacy); leadership; and enhanced understanding of their professional development and career paths (Cashman & Seifer, 2008; Peterson & Yockey, 2006; Reeb, 2010). CBOs' benefits include: volunteer hours to meet the organization's goals addressing social problems; freeing the organization's time and resources for other projects; gaining new ideas from outsider perspectives; programmatic and infrastructure improvements; opportunities to contribute to students' education; and developing positive relationships with the university (Blouin & Perry, 2009; Brown et al., 2006; Cashman & Seifer, 2008; Peterson & Yockey, 2006).

However, little research exists on whether universities are successful in improving student learning outcomes as they address health-focused social problems and social inequalities through community outreach (Kenny & Gallagher, 2002; Mobley, 2007). As a public health student Toboada (2011) critiqued community service learning models designed as charity-oriented activities, traditionally pairing White, middle-class students with low income and communities of color. Based on her experiences, students need proper curriculum training in racism, power, and privilege before and during their interactions with communities so that their experiences do not reinforce bias.

Addressing the prior issues Loewenson and Hunt (2011) used social determinants of health (SDOH), health disparities, and social justice frameworks, as well as theory on working with underserved populations, to positively transform public health nursing students' attitudes toward the homeless. By the end of the semester students reported stronger beliefs related to structural causes for homelessness and more comfort associating with homeless people. This research shares the theme of adequate curriculum preparation on social inequalities in health prior to and concurrent with students' service learning experiences. Thus, as instructors a critical first step to enhancing the health of vulnerable populations is improving students' attitudes towards working with them throughout the semester (Daiski, 2007).

To facilitate student learning, theory on student engagement supports using service learning projects (SLP) to foster community social change. Giles and Eyler (1994) developed service-learning theory from Dewey's principles of experience, inquiry, and reflection within his theory of knowing. Dewey's educational philosophy connects theory to practice in communities for social justice. He presents problems that awaken students' curiosity and demand for information. Students build on their prior experiences through interaction and reflective thinking, resulting in learning. Similarly, Kolb's (1984) experiential learning theory links education, paid work, and personal development to a lifelong active process of learning through direct interactions with phenomena. Kolb believes that learning is an active process where knowledge is created through transforming experiences.

Considering these guidelines, we incorporated SLP into three SDOH courses (fall 2008-2010) with the goals of promoting: experiential learning at the intersection of public health and the social and behavioral sciences; undergraduate scholarship and professional development; faculty career development through the scholarship of teaching and learning; and collaborative university-community research to reduce social inequalities in health. The major objective of this course was for students to analyze the relationships between the individual pursuit of health and the social structural contexts in which this happens in our society, with some cross-national discussions. We examined issues related to the social, psychological, behavioral, economic, political, cultural, and environmental variations in health and disease, particularly focusing on social inequalities in health, social stress, health behaviors, illness experiences, relations between

providers and patients, the structure and processes of healthcare organizations, financial and other barriers to accessing healthcare, health policy, and social change.

Students were required to do SLP, engaging in civic responsibility while connecting course concepts to their service. The assignment specified that students do their SLP with a local health- or healthcare-focused CBO. The specific SDOH topics to focus on in their service learning experiences and research papers were left to students, but we suggested the following general topics: disease (e.g., biomedical perspective) versus illness (e.g., psychosocial perspective) in society, health behaviors, social stressors, experiencing illness and disability, interactions with healthcare professionals, the healthcare system, healthcare delivery, treatment, healthcare policy, etc. from a patient's and/or an organization's perspective. Students had to:

1) Provide a service learning contract describing their SLP.
2) Work at least 20 hours in a CBO.
3) Keep journal notes on their experiences, observations, and reflections.
4) Participate in two in-class discussions, reflecting on their SLP.
5) Complete a final research and evaluation paper of their SLP.
6) Provide a letter verifying their completion of their SLP and hours signed by their site supervisor.

We provided students with SLP learning goals, a rubric, and on-going course discussions about the SLP throughout the semester to model successful student learning. We included the rubric in Appendix 1.

This paper addresses whether SLP facilitate applied student learning of SDOH course concepts using mixed methods. Our intent was to help students gain an awareness of social inequalities in health, understand their own biases, and illustrate how these prior issues could affect health-related problems.

II. Methods.

A. Study Design.

With Institutional Review Board approval from the University of Colorado Denver, we examined the service learning experiences of SDOH students and their site supervisors. The sample included university students from three semesters in 2008 (undergraduate), 2009 (undergraduate and master's level), and 2010 (undergraduate and co-taught course) and their site supervisors, primarily working in non-profit, health-related CBOs in Denver, Colorado. We used mixed methods, descriptively analyzing students' pre- and post-test quantitative surveys and their research papers and site supervisors' interviews using qualitative analysis. We divided students (n=25) and supervisors (n=17) into two mutually exclusive groups and asked them to respond to surveys or interviews unique to their group.

Student Sample. A research assistant proctored student consent forms 4-5 weeks into each course. Students either immediately turned their consents in or by semester's end. Students' involvement in service learning data collection was voluntary, and they were able to refuse participation at any time, for any reason. We asked students to respond to pre- and post-test surveys to assess their service-learning experiences, with open-ended comments at the end (Gelmon, Holland, Driscoll, Spring, & Kerrigan, 2001). Gelmon and colleagues present a long and revised, shorter version of this survey in their research, developed for use with undergraduate students. We used questions from the longer version, but substituted in a few

questions from the revised version. For the pre-test, students were asked to respond to whether they believed their SLP would benefit their learning of SDOH course material (prior to beginning their SLP). The post-test was the same as the pre-test, except we changed questions to past tense (post completing their SLP). We administered the pre-test within the second week and the post-test during the last week of the course. We instructed students to choose a unique, random number to anonymously match their pre- and post-tests. Additionally, we examined students' SLP papers with reflections about their experiences.

Site Supervisors/CBO Sample. We conducted follow-up interviews after final grade submissions so that site supervisors' comments did not factor into students' grades. Prior to conducting mostly telephone interviews a research assistant obtained signed consents from site supervisors via email or fax. Site supervisors' survey participation was completely voluntary; they were allowed to stop the interview at any time. The interview guide included questions about students' responsibilities, whether students had sufficient knowledge to volunteer at the site, the quality of their work, whether students had professional characteristics (e.g., showed initiative, communicated effectively, and reliability), and whether students' work at the sites was beneficial to the CBO, other positive or negative aspects associated with this experience, and suggestions for improvement to the SLP.

Dependent variables. To assess students' learning we used quantitative surveys and qualitative paper reflections focused on the value of service learning as an applied tool for learning course concepts. Student surveys included twenty-four items on whether their attitudes toward community service in the course changed during their SLP experiences (shown in Table 2). Each item indicated students' level of agreement via a 5-point Likert scale (1=strongly disagree to 5=strongly agree). Survey items reflected a Cronbach's alpha of 0.884, indicating high internal question consistency. Students were also asked to qualitatively reflect on their SLP experiences in their papers' research/evaluation and conclusion sections, particularly focusing on any applied learning gained in the course or for their future professional development.

Independent variables. We included five socio-demographic survey items to understand any variation among our students. Race/ethnicity included the following categories: Caucasian/White, African American/Black, Hispanic/Latino, Native American, Asian/Asian American, or Other. Age included: 18-24, 25-34, 35-44, or 45-54. Sex included: male or female. Class level included: freshman, sophomore, junior, senior, post-baccalaureate, graduate, or other. And, paid work/hours per week included: 1-10, 11-20, 21-30, 31-40, 41+ hours, or "I do not have a job."

Statistical Analysis. For our quantitative analysis we used a paired sample t-test to determine whether students' mean level of agreement regarding their learning through community service varied significantly between the pre- and post-tests. Due to the small sample size, we set significance at 0.1 to increase the likelihood of attaining meaningful results. For our qualitative analysis we used content analysis to examine students' survey comments and research papers and site supervisors' interviews in Microsoft Excel (Swallow, Newton, & Van Lottum, 2003). We developed a priori codes based on the surveys and interview questions, as well as deductive codes via emerging themes. To increase inter-rater reliability, both co-authors reviewed all documents. Combining both types of analyses as mixed methods is beneficial for data triangulation, providing generalizability and contextual-depth to our analyses (Borkan, 2004).

III. Results.

A. Quantitative Analyses.

Table 1. shows summary statistics of students' socio-demographic characteristics from the pre- and post-test surveys. The majority of students were female, Caucasian/White, seniors in class level, and working between 21-30 hours a week.

Table 3 shows paired sample t-test mean responses for students' pre- and post-test surveys. Students generally rated the pre-test items between neutral to agree, with the majority of items slightly decreasing in agreement, a negative change, by the time of their post-tests. The only significant items included: Q.1, Q.8, Q.20, and Q.22, showing that students felt less likely to believe: their service learning work could be used in their everyday lives; it benefitted the community; it made them aware of their own biases and prejudices; and it helped them enhance their leadership skills. Students' ratings on eight questions (e.g., Q.4, Q.6, Q.10-11, Q.17-19, and Q.21) slightly increased, ranging from neutral to agree or remaining the same over time, but none of these findings were significant. While the final question (Q.3) did not show a significant change over time, students slightly increased their disagreement that they could have learned more from this course if more time was spent in the classroom instead of doing community work. The highest student agreement items at the beginning and end of the course focused on them being comfortable working with other cultures and being able to make a difference in their communities.

We also showed significant change items by course year (Table 3), where most significant items did not overlap in each year. In 2008, two items showed improvement, with students changing from neutral to agree regarding their interactions with their community partner enhancing their course learning and the community work assisting them in defining their profession. But, the remaining two items decreased from agree to neutral, regarding the community work making students more aware of their own biases and feeling they could make a difference in their communities. In 2009, students increased their disagreement with the item that they could learn more from the course by spending more time in the classroom rather than the community and increased their agreement with the item that performing community work helped them clarify their majors. Students decreased their agreement with the items concerning community work helping them become more aware of their communities' needs; it assisting them in defining their profession; it making them more marketable in their profession; and it helping them develop problem-solving skills. In 2010, students were less likely to believe that community participation helped them to see how the subject matter could be used in everyday life; more likely to agree about volunteering before the course; and more likely to agree that they have a responsibility to serve their community. Despite the items remaining positive, about half of the significant changes across each year occurred in a negative direction.

B. Qualitative Analyses.

Students' comments revealed that those who intended to pursue a public health career found this experience especially relevant to their course learning and career development. Students stated:

"…The most valuable thing this course did for me was to classify the practical need our individual people, counties, communities, states, and nations as a whole all have for public health."

"I think that the service learning project is so great because it gives us real-world experience and allows us to see the class-content outside of the classroom."

"I would rate this experience as substantial in regards to a research or advocacy position I might employ one day. I feel this way because I assume there will be many jobs within the human and health services sector i.e. public health that require a large amount of research…"

"This project also helped solidify that my future educational endeavors will be focused around HIV/AIDS."

"The lasting effect this project has is that I know how much more research needs to be put into prenatal epidemiology and how important public health issues in maternal and child health need to be addressed… this experience impacted me on a greater level than simply scholastic achievement. I felt like I gained real world knowledge…"

Table 1. *Summary Statistics of Students' Demographic Characteristics from the Pre- and Post-test Surveys.*

		Pre-test Percent	Post-test Percent
Gender	Male	9.4	12.5
	Female	84.4	68.8
Race/Ethnicity	Caucasian/White	53.1	50.0
	African American/Black	12.5	3.1
	Hispanic/Latino	15.6	12.5
	Asian/Asian American	3.1	3.1
	Other	6.2	6.2
	Multiracial	6.2	6.2
Class Level	Sophomore	9.4	3.1
	Junior	28.1	31.2
	Senior	50.0	37.5
	Graduate	9.4	9.4
Hours Worked per Week	1-10 Hrs/Wk	9.4	15.6
	11-20 Hrs/Wk	6.2	3.1
	21-30 Hrs/Wk	28.1	31.2
	31-40 Hrs/Wk	28.1	21.9
	41+ Hrs/Wk	6.2	0
	I do not have a job	18.8	6.2

Source: Social Determinants of Health students in 2008-2010.
Notes. Our original pre-test (n=31) and post-test (n=27) sample sizes varied due to: 1) differences in those students who began the course, prior to the drop/add period, and those who finished the course and 2) absences on the days the surveys were administered. After we matched the pre- and post-test surveys a sample size of 25 students remained. We coded the unmatched

surveys as missing data.

Table 3. *Paired Sample T-test Mean Results for Students' Pre- and Post-Test Surveys.*

Item Statement	Pre-test Mean	Post-test Mean	Sign. (2-tailed)
Q.1) The community participation aspect of this course will help me to see how the subject matter I learn can be used in everyday life.	4.24	3.44	0.011[+]
(Q.2) The community work I will do through this course will help me to better understand the lectures and readings in this course.	3.76	3.48	0.283
(Q.3) I feel I could learned more from this course if more time was spent in the classroom instead of doing community work.	2.76	2.60	0.491
(Q.4) The idea of combining work in the community with university coursework should be practiced in more classes at this university.	3.88	3.96	0.723
(Q.5) I am responsible for the quantity and the quality of knowledge that I obtain from this course.	4.28	4.00	0.183
(Q.6) I was already volunteering in my community before taking this course.	3.32	3.60	0.230
(Q.7) The community participation aspect of this course will show me how I can become more involved in my community.	4.08	3.96	0.560
(Q.8) I feel that the community work I will do through this course will benefit the community.	4.16	3.56	0.036[+]
(Q.9) The community work involved in this course will help me to become more aware of the needs in my community.	4.04	3.84	0.446
(Q.10) I have a responsibility to serve my community.	4.1	4.29	0.382
(Q.11) My interactions with the community partner will enhance my learning for this course.	3.72	3.72	1.000
(Q.12) Doing work in the community will help me to define my personal strengths and weaknesses.	3.76	3.64	0.641
(Q.13) Performing work in the community will help me clarify which major I will pursue.	3.46	3.17	0.418
(Q.14) The community work in this course will assist me in defining which profession I want to enter.	3.71	3.38	0.224
(Q.15) The work I will accomplish in this course will make me more marketable in my chosen profession when I graduate.	4.04	3.92	0.450
(Q.16) The community aspect of this course will help me to develop my problem-solving skills.	3.68	3.56	0.574
(Q.17) The syllabus provided for this course outlined the objectives of the community work in relation to the course objectives.	3.96	4.00	0.857
(Q.18) Most people can make a difference in their community.	4.36	4.36	1.000
(Q.19) I am comfortable working with cultures other than my own.	4.48	4.48	1.000
(Q.20) The community work involved in this course will make me aware of some of my own biases and	4.04	3.60	0.013[+]

prejudices.			
(Q.21) The work I will perform in this course will help me learn how to plan and complete a project.	3.80	3.80	1.000
(Q.22) Participating in the community will help me enhance my leadership skills.	4.04	3.64	0.047[+]
(Q.23) The work I will perform in the community will enhance my ability to communicate my ideas in a real world context.	4.08	3.84	0.110
(Q.24) I can make a difference in my community.	4.56	4.40	0.256

Source: Survey questions from Gelmon et al. (2001) for the Social Determinants of Health students in 2008-2010.

[+] Our significance level is set at α=0.1

Table 3. *Significant Mean Results for Students' Pre-and Post-test Surveys by Course Year.*

Item #	2008				2009				2010			
	N	Mean	t-test	Sig (2-tailed)	N	Mean	t-test	Sig (2-tailed)	N	Mean	t-test	Sig (2-tailed)
1									14	4.29	2.242	.043
									14	3.50		
3					6	2.17	-2.236	.076				
					6	2.67						
6									14	3.00	-2.223	.045
									14	3.64		
9					6	4.33	2.712	.042				
					6	3.50						
10									14	3.86	-2.876	.013
									14	4.36		
11	5	3.60	-2.138	.099								
	5	4.40										
13					6	4.00	3.841	.012				
					6	4.17						
14	5	3.40	-2.138	.099	6	4.00	2.697	.043				
	5	4.20			6	2.67						
15					6	4.17	2.236	.076				
					6	3.67						
16					6	4.00	2.236	.076				
					6	3.00						
20	5	4.20	2.449	.070								
	5	3.60										
24	5	4.80	4.000	.016								
	5	4.00										

Source: Social Determinants of Health students in 2008-2010.

[+] Our significance level is set at α=0.1.

"The project was a great addition to the Social Determinants of Health course as well as to my personal exposure and experience…I gained valuable knowledge…including skills like data collection methods…I plan to continue my career path focusing on Public Health, Sociology, and Demography so obtaining these skills hands on has been a great asset to my academic and professional life…this was my first time [in college] with the opportunity to

apply my knowledge from inside the classroom, to something that is occurring right now, in the real world."

A second theme was the importance of aligning individual student interests with the organization's goals. Students who provided negative feedback often indicated that had their personal objectives been more compatible with those of their CBOs, they would have had a more enriching learning experience. One student commented, "If I had chosen a better site – many of my 'disagrees' [in the post-test] would have probably been 'agrees.'" Participants in volunteer opportunities stressing labor-oriented tasks, such as restocking shelves, cleaning, or running errands, were less likely to positively rate their experience than students who participated in research or outreach activities. In addition, students who strictly performed labor jobs were more likely to perceive their volunteering as a burden rather than as learning.

A third theme was some students' desires to be more interactive with their CBOs' clients. These students initiated their SLP believing they would have more "hands-on" learning experiences with people, but some CBOs worked at a macro-structural level needing students to do background research for educational materials, designing surveys, and influencing policy. One student who worked with a preventive health center CBO stated, "The weakness of the project was the lack of direct interaction with the students. I never interviewed the transgender students, therefore my poster could have been off or the flyer might have been irrelevant to the

Table 4. *Major Themes Identified from Students' and CBOs' Perceptions.*

Student Themes
1. SLP provided career development.
2. SLP were more beneficial when students' interests aligned with CBOs' goals.
3. SLP were more beneficial when there was interactive, "hands-on" learning with CBOs' clients.
CBOs' Themes
4. Students should understand the CBO's mission and have a clear idea of what they want to accomplish with their SLP.
5. Student SLP volunteers were beneficial to CBOs, who often had limited budgets.
6. Having student volunteers provided publicity for CBOs, raising public awareness about their causes.

Source: Social Determinants of Health students and their site supervisors in 2008-2010.

needs of those particular students." A second student found that her initial expectations of working on child abuse and neglect issues were disappointingly different than her experiences stating, "I thought that by working with organizations whose emphasis was on child wellbeing, that a person-to-person interaction with the children was part of my description…I thought it would be more a community center type atmosphere and not offices pushing out paperwork?…I wanted a more hands on experience...However, when taking a step back and analyzing the situation objectively I felt that what I was trying to accomplish…was exactly what they needed."

While some students expressed these concerns, many others were satisfied with their direct, interactive learning and experienced positive improvement in their early expectations to real experiences by semester's end. One student stated, "While it was an accident that I ended up in the mobile clinic, I think that it was the best place I could have been because of the direct contact with patients and because that is where the need was and continues to be." A student

working in a long-term care facility was initially terrified, "…expecting to find men and women who were on their death beds and getting ready to die…Instead my views and expectations were altered after my time at [anonymous CBO], and I now have a renewed understanding and appreciation for quality long term healthcare." Another student stated, "I would recommend to future students who want to volunteer with this organization to interact more with those who are homeless and spend as much time as you can with this organization because there are a lot of wonderful people to meet and interesting things to learn about the homeless in Denver."

Students' themes were consistent with many made by site supervisors, where the first supervisor theme was that students and CBOs could experience greater benefits if students had an introductory-level background in their CBOs' mission topic and a clear idea of what they wanted to accomplish with their SLP. Site supervisors were willing to train students in all relevant technical skills, but they agreed that incoming students should have some familiarity with the CBO. One supervisor reported, "Students should learn about the background of the organizations…checking the website, being knowledgeable about what the organization does. They should come with a few ideas about what they would like to learn." Once students became proficient with their acquired skills, demonstrating a positive learning transition, supervisors relied on students to provide their CBOs with meaningful assistance.

Despite the prior concern, at least two SLP turned into part-time paid employment for students. These service learners were described as "enthusiastic" and "self-starters" by their site supervisors. Both students forged strong bonds with the populations in which they worked.

Positive responses by site supervisors were overwhelming. This second theme was nearly uniform across all sites. CBOs reported that working with students was a great experience and provided lasting benefits to their organizations. Most CBOs operate on a limited budget and many supervisors reported that having volunteers was extremely helpful.

A third theme was publicity. Many supervisors viewed SLP as a way to raise awareness about their causes. One supervisor required students to shadow her before beginning their individual projects on homelessness. She stated, "A lot of people don't have a background on this and it's nice to be able to educate the community and to get our name and message out there." Often university students had no previous contact with the populations in which they worked. By exposing students to these groups, CBOs were able to promote greater public understanding of their clients.

IV. Discussion.

Perhaps the most striking finding on whether SLP facilitated student learning was the mean decrease in student agreement levels on all significant measures from the pre- to post-tests, despite ratings still occurring between neutral and strongly agree. These findings were not consistent with most service-learning research, where students' attitudes generally showed improvement in social responsibility, awareness, and social justice (Bach & Weinzimmer, 2011; Long et al., 2011; Ottenritter, 2004; Reeb, 2010). However, some researchers have encountered difficulties with decreasing student ratings (Parker-Gwin & Mabry, 1998; Villanueva, Hovinga, & Cass, 2011).

While Gelmon, et al. (2001) state that few students will demonstrate dramatic changes in their pre- and post-tests during a one semester course, we offer possible reasons for students' decreased agreement about their SLP. Two explanations relate to earlier themes of some students not having compatible interests with their CBOs and differences in students' initial expectations

versus later realities regarding client interactions. Third, the higher percentage of students working greater than 20 hours a week while taking this course and doing their SLP could have been an added stressor, dampening their experiences. From post-course student interviews, Madsen and Turnbull (2006) found that students' paid work was the biggest challenge for their service learning experiences. Fourth, while students were advised to avoid organizations that did not include applied research as a part of their SLP, some students did administrative tasks not relevant to their SLP. One future strategy to fix this problem is to channel students toward the faculty pre-approved CBOs who present their possible SLP in the course. Fifth, students' self-selection into this course and their initial naiveté or idealism about doing applied research and helping others could have negatively changed by semester's end. Students' attitude changes were possibly prompted by SLP difficulties, including: site selection, site interactions, or meeting CBOs' project goals.

To address the prior difficulties, we believe that instructor awareness of challenges is warranted to better prepare students and faculty for interaction with CBOs. Various authors reference challenges associated with students' service learning interactions with CBOs (Blouin & Perry, 2009; Cashman & Seifer, 2008; Peterson & Yockey, 2006). They mention unprofessional and/or unreliable students who risk CBOs' invested resources and the populations they serve. Sometimes students misrepresent CBOs in their writing assignments, when CBOs' missions are not learned and/or understood. Another problem is poor communication between faculty and CBOs, when CBOs' roles are not clearly defined in assignments. These challenges can reduce CBOs' enthusiasm to work with university students and faculty and must be addressed to sustain university-community partnerships for service learning.

We addressed these issues by becoming more proactive and inviting CBOs and the university's Experiential Learning Center to present their potential projects to help students find sites. We reminded students early in the semester about being professionals as they interact with CBOs, making sure they dress appropriately, show up on time, and learn the missions of their CBOs. In addition, for CBOs that we recommended to students, we emailed them the assignment and goals within the first two weeks of the semester so that they could ask us any questions if needed. Similarly, when students chose their own CBOs we told them to disclose the assignment, its goals, and instructor contact information at the beginning of their service.

But, we were not able to resolve all difficulties. In some CBOs students worked with the coordinator of volunteers rather than direct supervisors, who were often unaware of details pertaining to students' later volunteer activities. Subsequently, these direct supervisors were unable to provide feedback beyond their initial students' training experiences or they gave

Table 5. *Challenges Identified by Faculty.*

Student Challenges
1. Some students lacked compatible interests with their CBOs.
2. There were differences in some students' initial expectations versus their later realities regarding client interactions.
3. Some students worked more than 20 hours a week, creating an additional stressor on their service learning experiences.
4. Some students did administrative tasks not relevant to their SLP.
5. Some students' initial naivete or idealism about doing applied research and helping others could have negatively changed by semester's end.
CBO challenges
6. Some students worked with volunteer coordinators rather than direct supervisors, where the latter were often unaware of details pertaining to these students' volunteer activities.
Other research challenges
7. We had a small sample size.
8. Selection bias may exist in the students who took the course as an elective, prior to it becoming a requirement for undergraduate public health majors.
9. The survey we used measured attitudinal changes due to students' SLP over a short-term, but we do not know if these changes were maintained in the long-term.
10. We did not adjust for social desirability.

Source: Social Determinants of Health courses in 2008-2010.

secondary reports of student performance. This phenomenon was more common in larger organizations.

This research had other challenges. First, we had a small sample size from a single institution, despite collecting data from three courses over three years. Our sample size was smaller than expected in part due to difficulties with matching pre- and post-test surveys. We asked students to write a three-digit number on their pre-test and write it in their notes to use for the later post-test and anonymous matching. However, many students did not keep or remember the correct numbers to match the surveys. Second, selection bias was a concern in the type of students taking this elective course, prior to it becoming a requirement for undergraduate public health majors in our last course. Because the course work load was high, it likely attracted above average, upper-class level students at the university (Villanueva, Hovinga, & Cass, 2011). Third, the survey design measured short-term attitudinal changes (Gelmon et al., 2001); however, some research has shown long-term changes in student attitudes over years (Fenzel & Peyrot, 2005). Finally, this study did not adjust for social desirability; thus, students' responses could be artificially more positive than negative about their SLP.

Despite students' reduced, but still positive, interest in some aspects of community service over time and our prior limitations, we view service learning as a valuable learning experience for undergraduate public health students. By pairing service learning with undergraduate public health education students gain public health literacy through the application of social determinants to individual and community health (Cashman & Seifer, 2008). Service learning emphasizes reciprocal learning between students, faculty, and CBOs, as

well as reflection that connects practice to theory and critical thinking. It also develops citizenship skills to achieve social change. Our undergraduate public health program, situated within a college of liberal arts and sciences, is an interdisciplinary, pre-professional degree that teaches critical analysis, information synthesis, and problem solving (Cashman & Seifer, 2008; Riegelman, Teitelbaum, & Persily, 2002). This combination of knowledge and skills will better prepare undergraduate students to meet the challenges of and contribute to our nation's health.

In addition, service learning is valuable to undergraduate public health students because it provides practical field experience in a discipline where there are few internship opportunities for undergraduates. Schools of public health have typically favored research institute structures for student development rather than the work-based learning models in professional schools, but even these opportunities are limited for undergraduates (Madsen & Turnbull, 2006; Potter & Eggleston, 2003). Consequently, undergraduate students may lack exposure to important community issues. But, by creating service learning opportunities with CBOs as part of undergraduate public health matriculation, students can gain access to organizations, populations, and problems of interest to their career development.

Based on our experiences with this course we realize that future improvements to students' experiences means that we better prepare them for their SLP through early and on-going class discussions about their and CBOs' expectations. The following student comment continues to inspire us to improve students' service learning experiences—"At the end of my time with [anonymous CBO] for this project I can rate it as one of, if not the, best experiences that I have had as a student so far. It expanded my knowledge of the subject matter in such a way that I'm afraid any future class experiences may fall a little short."

Appendix 1. *Service Learning Project (SLP) Assignment Learning Objectives and Grading Rubric.*

1) Have knowledge of the social determinants of health perspective (SDOH), an interdisciplinary conceptual model for understanding health and healthcare problems. A list of possible issues to address within this model include: social inequalities in health by race, ethnicity, social class, gender, sexuality, disability, etc.; social stress; health behaviors; the life course (in utero to older adults); social and physical environments (social support, social networks, neighborhoods, housing, transportation, working conditions, etc.); doctor-patient relationships; access to and quality of healthcare; etc.

Inadequate	Adequate	Advanced
Student demonstrated poor knowledge of the SDOH perspective on exams, in journal and final paper discussions with no examples from the SDOH conceptual model, and no change in knowledge on pre- to post-test surveys.	Student demonstrated good knowledge of the SDOH perspective on exams, in journal and final paper discussions with multiple examples from the SDOH conceptual model, and change in knowledge on pre- to post-test surveys.	Student demonstrated excellent knowledge of the SDOH perspective on exams, in journal and final paper discussions with multiple examples from the SDOH conceptual model and high initial knowledge or significant change in knowledge from pre- to post-test surveys.

2)   Be able to explain and provide examples of macro- and micro-level contributions to health and healthcare problems and offer solutions to address them.

Inadequate	Adequate	Advanced
Student did not discuss or provide examples for macro- & micro-level contributions to health and healthcare through his/her journal and final paper.	Student described macro- & micro-level contributions to health and healthcare problems with multiple examples through his/her journal and final paper.	Student described macro- & micro-level contributions to health and healthcare problems with multiple examples and discussed innovative solutions to health and healthcare problems through his/her journal and final paper.

3)   Demonstrate their awareness of social inequalities related to health and healthcare, whether in terms of culture, race, ethnicity, gender, socioeconomic status, sexual orientation, immigration status, age, etc., and understand their own biases and how these could affect health and healthcare problems.

Inadequate	Adequate	Advanced
Student demonstrated poor knowledge of diversity/ social inequality issues in journal and final paper discussions with no examples of how these affect health and healthcare and little knowledge of other cultures or own biases on pre- to post-test surveys.	Student demonstrated good knowledge of diversity/social inequality issues in journal and final paper discussions with multiple examples of how these affect health and healthcare and knowledge of other cultures or own biases on pre- to post-test surveys.	Student demonstrated excellent knowledge of diversity/social inequality issues in journal and final paper discussions with multiple examples of how these affect health and healthcare and knowledge of other cultures or own biases on pre- to post-test surveys. Student demonstrated a deep understanding of structural barriers based on social inequalities in health and healthcare through their journals, final papers, site supervisor's interview report, and having high initial knowledge or significant change in knowledge from pre- to post-test surveys.

4)   Demonstrate how their service learning projects can contribute to the organization's growth, meet community needs, and enhance community members' and students' lives.

Inadequate	Adequate	Advanced
Student did not demonstrate both a descriptive and analytical knowledge of the organization's or community's need, how this project meaningfully affected or changed community members' lives, and self-reflection on what was learned from this experience to enhance his/her education or career skills in his/her journal, final paper, and employer's interview report.	Student demonstrated good descriptive and analytical knowledge of the organization's or community's need, how this project meaningfully affected or changed community members' lives, and self-reflection on what was learned from this experience to enhance his/her education or career skills, with one or two examples in each of the prior categories from his/her journal, final paper, and site supervisor's interview report.	Student demonstrated excellent descriptive and analytical knowledge of the organization's or community's need, how this project meaningfully affected or changed community members' lives, and self-reflection on what was learned from this experience to enhance his/her education or career skills, with multiple examples in each of the prior categories from his/her journal, final paper, and site supervisor's interview report.

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