

The Business of Service Learning

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Abstract - Service Learning is a program where students utilize skills gained in coursework to benefit members of the community. Students gain practical experience, and those being served gain valuable assistance. Service Learning programs range from volunteer hours added as a requirement to a traditional course to semester or year-long classes dedicated to Service Learning. Each model has pros and cons and the effectiveness of a particular model can vary based on the characteristics of and resources available at the individual university. This paper presents the evolving model of a year-long course dedicated to Service Learning and housed in the Mathematical, Information and Computer Sciences department of Point Loma Nazarene University. PLNU is a relatively small liberal arts university without an administrative department overseeing Service Learning. The course is one of three options for gaining practical experience. Hence, the program must be flexible enough to provide a good experience for any number of students and combination of majors, and must be self-contained. We have chosen to run our Service Learning course using a business model where student resources can be realigned as necessary to meet project needs. In addition to project assignments, students cover administrative tasks and provide training to other students.

Index Terms – Service Learning, Multidisciplinary collaboration, Experiential learning, Community

INTRODUCTION

Service Learning is a program where students utilize skills gained through coursework to benefit members of the community. Service Learning programs range from volunteer hours added as a requirement to a traditional course to semester or year-long classes dedicated to Service Learning. For some universities, this curriculum permeates every department. For others, participation is limited to a few academic departments. Similarly, in some universities the Service Learning program is multidisciplinary and constitutes its own administrative area. In other universities, the administration of the program rests on the shoulders of a few or even a single professor.

This paper identifies three general models of Service Learning. The first model is a one-time short-term project. The time period varies from a day to a few weeks and may be associated with a class, but is often sponsored by a separate organization on or off campus. Students may help build a house for an organization such as Habitat for

Humanity or run a camp for underprivileged children. These projects are generally prearranged, and the participants simply “show up.”

The second model adds a service component to an established course. The students may work in a soup kitchen several times per month, pick up trash once a week, or tutor struggling students. Alternatively, the experience may be in the form of the term project for the class. In this case students may take on such tasks as generating a system plan or designing a web page for a non-profit organization. Ideally, the project is directly associated with the class, but sometimes it is not. Often, the service component model reflects a school-wide philosophy. Professors are encouraged or even required to add a Service Learning component. Frequently, there is an administrative office to help connect community partners and professors.

A third model of Service Learning is a dedicated class. The duration may vary, but it is at least one quarter or semester. This model allows for larger projects. The project may be completed during the academic term, or may be passed along from class to class with one class completing the design and subsequent classes working on the implementation and maintenance. The course may include students from only one major, or may be multidisciplinary.

For any of these models, it is essential to get the support and eager participation of the faculty members. Research has shown that faculty are reluctant to incorporate Service Learning into their courses if they feel that the service component cuts down on teaching time, if the process requires more time out of the faculty member’s schedule and is not a rewarded activity, if training is not provided, or if the administrative support is inadequate [1].

In the Mathematical, Information and Computer Sciences department of Point Loma Nazarene University (PLNU) we have implemented a variation of the third model that attempts to keep the concerns of the faculty advisor in mind. The remainder of this paper explores in more detail the three models discussed above, including specific implementations with their benefits and challenges. Following that discussion, we present our model, its evolution, and projections for the future.

BACKGROUND AND MOTIVATION

Many wonderful things have been written on Service Learning approaches and programs. This section seeks to provide prominent examples and limited discussion of the three models introduced above. It is certainly not exhaustive in its coverage.

I. Short Term Service Learning Project

A significant number of colleges and universities provide their students with opportunities for service. The University of Maryland is an excellent example. TERPcorps is a student organization which sponsors one day Service Learning activities to enrich students' lives and contribute to positive change in the community [2]. Some projects have included collecting food for the food bank, helping at a 5K run to benefit Habitat for Humanity, and working on building a house for Habitat for Humanity.

In addition to the TERPcorps opportunities, the university has an Alternative Break Program where students spend a week or more on a service project [3]. Past projects have included working in a children's shelter in Atlanta, assisting with invasive plant removal, erosion prevention and/or storm reparation in the Florida Keys, and assisting with rebuilding efforts in New Orleans. While these projects could be tied to an academic course such as sociology or a civil engineering course, they generally are not. The stated purpose of the Alternative Break Program is to give students "the opportunity to gain new perspectives on social issues while meeting community needs, and learning about and building upon community assets" [3].

For these short term projects, students are indeed serving and indeed learning. The students have an opportunity to make an impact in their communities in a short, focused amount of time. They are introduced to environments unlike their own, and often gain compassion and insights into the lives of others. While some students may be affected for the long term by these projects, the projects may also lack "ownership." Students are short-term participants and then return to their normal worlds. Students are not part of the design process, and can find it easy to compartmentalize this aspect of their college experience. They provide the students with opportunities to learn about themselves and the world outside of themselves, but do not generally provide experience within the scope of their academic major. These projects place no additional burden on faculty members.

II. Service Learning Component

Campus Compact is an organization that provides resources to help students become engaged with the surrounding community. One of the functions of this organization is to support Service Learning in member universities. Their website provides a link to syllabi for classes that include a Service Learning component in some form [4].

Humanities courses are the target for a large number of these syllabi. One example is a course at Adelphi University entitled *Emotional and Social Issues of Health*. The Service Learning component of this course required students to volunteer 4 hours a week at an agency that supported emotional health. An example of a Service Learning component that was less directly related to the coursework of a class came from Estrella Mountain Community College. This syllabus was for a *Small Group Communication Class* and required 20 hours of community service of the students.

It was loosely linked to the course because it provided a topic of conversation for the small group experiences of the course.

There were fewer syllabi related to STEM courses. Union County College submitted a syllabus for a class entitled *An Introduction to Mathematical Ideas*. The course project was to select a nonprofit organization that needed help with the creation of a survey, with statistical analysis, or with both. An *Introduction to Mechanical Engineering* course at the University of Southern Alabama designed modules for middle school students to help them learn math and science.

Campus Compact reports that nearly all of their 1200 university and college members have established connections with one or more community members. In addition about 85% of their members have one or more individuals dedicated to coordinating these community relationships.

Component Service Learning projects have the potential to reinforce learning on a particular subject if the project is carefully chosen to correlate to that subject. Typically there is not a lot of training or startup time required for these projects, so students can become quickly involved. If many of the classes at a university include such projects, students can be introduced to a variety of Service Learning experiences. Possible drawbacks to this form of Service Learning include the lack of ownership that students feel during the volunteer hours, or the time-limited scope of the term project that the students can undertake. The students often do not benefit from experiencing the design or implementation process. In addition the burden of identifying the project is left to either the student or the professor if the university does not have a campus-wide Service Learning coordinator.

III. Dedicated Service Learning Course

Recent research revealed that while students benefit from the short term types of Service Learning mentioned above, those being served often have less positive feelings about it. Some complaints include a lack of supervision, the lack of time to develop meaningful relationship in areas where mentoring is attempted, and the hesitance of the community partner to invest in training the student for a short time of service [5].

A course dedicated to Service Learning has the advantage of being able to take on larger projects where students commit more time. An example of this type of model is being implemented through the Engineering Projects In Community Service (EPICS) program initiated by Purdue University [6]. The EPICS web page describes the program as "a unique program where teams of undergraduates are designing, building, and deploying real systems to solve engineering-based problems for local community service and education organizations" [7]. Although aimed towards engineering projects, the teams consist of members from many disciplines. EPICS programs are now operating at 15 universities.

Projects typically span multiple academic terms. An example project is one that began in 2004 and provides service to Greater Lafayette Special Services. The reported mission is to “Develop hardware, electromechanical and software solutions which enable students with disabilities ages 3 to 21 to function more independently and to enjoy a better quality of life. This includes projects aimed to accomplish daily living tasks, assist with communication or to help participate in educational or recreational activities” [7]. The outside majors recruited include nursing, audiology, education, and child development

In the EPICS model, students are involved in identifying the needs of the community partners, designing a solution, implementing a solution, and sometimes maintaining the solution. While students are encouraged to remain involved in different aspects of a project over multiple terms, many students do not have the time to be involved from start to finish. Students receive academic credit, registering for one or two units each semester.

Formally, the course consists of a weekly lab session in which members meet with their groups. In addition, there is a one hour lecture where a topic is presented ranging from community partnership and communication issues to engineering design. Students may also attend sessions covering skills specific to their project.

A program as extensive as EPICS has broad operational resource requirements. Each team of 8-18 students has a faculty advisor. A half-time TA supports the administrative needs of several teams. The lectures and skills sessions draw in many and varied volunteers. The overall program at Purdue is led by a director and co-director aided by support staff. Additionally, there are facilities needs. Each group needs a room for laboratory meetings and the lectures need to be housed as well.

Students participating in EPICS saw benefits in their abilities to work as a team, work with a community partner, gain a greater appreciation of the design process and improve their technical and organizational skills. They had the opportunity to make an impact on a large project over a longer period of time [6]. Potential drawbacks to this model of Service Learning are the large amount of administrative overhead, required training, and startup time. Students often do not see the project from start to finish.

OUR BUSINESS SERVICE LEARNING MODEL

Several years ago the MICS department at PLNU decided to require all students to have an applied component to their education. This requirement can be completed by a year-long Honors Research project, an internship, or a Service Learning project. Because the purpose of all of these projects is to apply what a student has learned in coursework to a practical project, it was decided that the Service Learning project should be completed as a dedicated class.

As noted earlier, the benefits of a dedicated class are that the students can complete a larger project and be involved in all aspects of the project from design to implementation. They can learn to work as a team

experiencing the benefits and challenges that often accompany this model in the real world. However, the drawbacks include startup time, administrative overhead and training on skills specific to the project. As a small university, we do not have an administrative department to help arrange community partners, and we do not have a large enough program to have a program director or to have clerical assistance. All professors have a full teaching load, so are somewhat hesitant to assist in volunteering their time with additional lectures and skill sessions. Consequently, our program must be fairly self-contained.

Another challenge is that the makeup of the Service Learning class each year is unpredictable. The students come from three different majors (Math, Information Systems and Computer Science) and since students have three options for the applied requirement, we cannot anticipate how many students will choose Service Learning. To accommodate all eventualities and to reduce our dependency on those outside of the course, we came up with a one year dedicated Service Learning course that was run as a business.

I. The Basic Model

The professor/CEO receives 3 load credits for facilitating the course. The projects are selected during the summer after the class population is known and are chosen with the students' majors and coursework in mind. It is a requirement that all students be upperclassmen to participate. The number of projects required depends on the number of students, with 4-5 students per project. During the first week of the Fall semester, the students are presented with the available projects. The community partners themselves give the presentations so the students are able to ask questions. The student participants then submit a resume applying for a particular project, and the CEO chooses the teams.

As mentioned, however, the class is run as a unified business. Students are given corporate positions as well as team positions. Corporate positions include such things as project manager, chief financial officer, IT manager and trainer. Trainers are in charge of briefing the company on skills that are needed company-wide. This may include the use of a particular program such as Microsoft Excel or SPSS, use of the company's Wiki, or technical skills such as setting up a server.

In addition to the training and administrative tasks taken over by the students, this business model has another significant benefit. The students can be moved between projects just as they are in a real company. If one project is taking more time and demands more resources, a student can be re-assigned. Or, if there is friction among members of a group, one member can be re-assigned to make the groups more cohesive.

All team members meet weekly with the CEO as a group. During these meetings, the CEO is updated verbally on the progress of the teams. Short term and long term goals are reviewed. All students are kept current on the progress of other groups and help in solving problems for other groups and thus are ready should the redistribution of student

resources be needed. Teams meet individually at a time determined by the team itself. Individual schedules are taken into account when teams are assigned.

II. The First Year

This particular course is currently finishing its second year. The first year the program had 16 participants. The student population consisted of six Computer Science majors, two Information Systems majors, and eight Math majors. Although the projects had been chosen over the summer, a problem with one of the partners arose on the partner presentation day, so a substitute project had to be arranged immediately. The ultimate projects are described in Table 1.

TABLE I
FIRST YEAR PROJECT DESCRIPTIONS

Partner	Team Make-up	Description
Point Loma High School	5 Math	Partner with High School Teachers to help struggling math students. Work in the classroom, tutor for the exit exam, and whatever else was needed
Point Loma High School	3 CS	Refurbish donated computers and server. Set up laboratory and network. Partner with High School CS teacher helping with labs and tutoring students preparing for AP exam.
PLNU IT department	2 IS 1CS 1Math	Familiarize themselves with the school-wide database system. Interview faculty and administrators regarding their use of the system. Draw conclusions as to why the system is underutilized and what can be done to change that.
PLNU Pastoral Learning Center	2 CS 2 Math	Clean up data that had been collected regarding the training needs of Nazarene Pastors world-wide. Collect any missing data. Analyze the data, drawing conclusions as to how training needs vary based on location, education, etc.

Once the teams were announced, the students met with the partner to which they were assigned and determined the needs of the partner. They then created a pert chart with intermediate and final goal deadlines. These charts were revised as needed throughout the year in conjunction with the partner. Students met at least bi-monthly with the partner to review progress and change direction if necessary.

Throughout the first semester, students received training, journaled their progress on the course Wiki, gave presentations to their peers, completed self and peer evaluations and wrote reflections. Training was provided by the professor-advisor and two volunteer speakers. Training topics included how to create pert charts, how to set up a server, and how to use data storage and analysis programs (Microsoft Excel, SPSS, Microsoft Access, WEKA Data

Mining Software [8]) and the Microsoft PowerPoint presentation program.

At the end of the first semester department faculty, school administrators, and community partners were invited to a dinner where students displayed posters about their projects. The dinner was planned and served by the student team members.

During the second semester, the students continued with partner meetings, writing assignments and implementation. At the end of the second semester, partners had the opportunity to evaluate the students' projects and receive final reports as appropriate.

III. The Second Year

In anticipation of the second year, changes were made based on lessons learned and student input from the previous year. The project descriptions for the second year are described in Table 2.

TABLE II
SECOND YEAR PROJECT DESCRIPTIONS

Partner	Team make-up	Description
PLNU Nursing Department	4 Math	Five years of collected data were analyzed to see if there were any predictors for success in the program. Variables such as prerequisite grades, ATI examination scores, and success on the NCLEX exam were looked at to determine what, if anything, determines high achievement in the program.
PLNU University Advancement	4 Math	Seven years of data collected by University Advancement were analyzed to detect and trends in giving to the Point Loma University Fund. A report was prepared, and the information was used to change the patterns in who was contacted and how they were contacted in regard to giving to the university fund.
Point Loma High School	8 Math	Help prepare struggling students for the High School exit exam.
Faith Community School	8 Math	Teaching modules were created to help PC literate elementary school teachers learn to use their MAC lab and assist their students in using the internet and Microsoft Office suite.

The math tutoring project was not repeated because the students felt that it was more of an individual project rather than a group project. However, since we did want to keep up the relationship with the high school, periodic tutoring sessions were retained to help prepare the high school students for the exit exam. Student input also kept us from picking projects where the students were too familiar with the partner. In the first year, while a partner was the Pastoral Learning Center at PLNU, the direct advisors to the 4th

project were professors from the department. This was difficult because the student-partner relationship turned out to be less formal than desired. Sometimes meetings didn't happen due to the casual nature of the arrangements.

Another change was that the students did the training for their peers, freeing up the professor-advisor for other tasks. One student set up the Wiki and trained his peers on how to use it. Other students gave the presentations on Excel, SPSS and PowerPoint.

The projects were very different for the second year because all 8 of the students enrolled were Math majors. The main projects were both related to statistical analysis. These projects turned out to take less time than we had anticipated. Consequently, the second semester we picked up another project that was shared by all eight students. Similar to the activities of the first year, students made and revised pert charts, completed training, met with partners, and recorded and reflected on their progress. In addition, they presented their projects at a dinner for partners, faculty and administrators.

Unlike the first year, the students provided the training, and student resources were re-aligned at the semester. The teaching modules for the second-semester project were completed in groups of two, intermingling students from the first two projects.

RESULTS

The goal of the Service Learning course was to provide students with practical learning experiences within their areas of study, to provide a service to the community, including the campus community, and to do it with the resources available.

I. Practical Learning Experience

In all cases students were assigned to their 1st or 2nd choice projects indicating that they felt they had something to contribute to, or learn from the project. In the first year, all of the students assigned to the High School Math project had indicated an interest in being high school Math teachers. Some students indicated that this experience affirmed their desire to pursue this avenue, while some indicated that it steered them away from dealing with teenagers.

The students assigned to statistical analysis projects were either Math majors or Computer Science majors. In the case of the project assigned in the first year, the Computer Science majors served the team by learning the data mining program, where the Math majors contributed most by performing the statistical tests. These students learned that results don't always come out like they do in the book. They learned that data can be messy and that there is often a lot of time spent cleaning the data prior to being able to do the analysis.

The students who set up the lab had previously been only lab users. They learned more about computer networks and architecture.

The students working on the database project were the most diverse group. The Information Systems students were

the most familiar with databases and were able to explain some things to their peers. All of the students learned valuable interviewing techniques. The Computer Science student went on to use this experience when interviewing employers as to the technical skills they look for in new graduates for her honors project.

All students learned more about communicating with supervisors and with each other. They learned about design and how to be flexible. They learned about writing resumes, making pert charts, teaching others and making formal presentations. They learned about their ability to contribute, and that the learning experience between partners and students is mutual. Here are some comments from student in regard to what they learned outside of technical things.

"In the real world, a boss will give you a job, a deadline, and leave you on your own to do it; a good lesson."

"adapt, adjust and overcome"

"Group dynamics, leadership, client interaction, and other business skills. The nature of commitment."

"Nursing majors are very complex and their future success can't just be predicted easily by a few prerequisite grades. Too many other factors come into play. Sometimes we can't figure out everything using our math skills."

"I have learned that I am capable of taking on something real and important."

"I have learned that staff are very busy people [and thus it is important to] present the results in an easy-to-read manner."

"I can use my math and problem solving skills on real world problems. This was my first big experience trying to do this and it will give me more confidence in the future."

II. Service

A year-long service project can be taxing for anyone but it provides a chance for students to do something really worthwhile and gives them an insight into what service is really all about. In most cases, the service provided was very much appreciated, and in the other cases the students learned to push through anyway.

When the students gave their final report to the partners at University Advancement, they learned that the strategy for contacting donors had already changed due to their input, and that the fund had raised considerably more money this year than in previous years. The students were very excited about this. Last year, several high school students passed the exit exam that had tried several other times and failed. The students and their counselors felt that the PLNU tutors had made a real difference. Our students had worked with the high school students over a period of time, allowing a

rapport to be built and helping the high school students gain confidence. The students who conducted interviews for the PLNU Information Technology Department partner reported that the clients were thrilled with the information.

The attitude of the partner and the effectiveness of the communication had a huge impact on the quality of the service. Surprisingly, the most successful projects have been conducted for partners in other departments of the school as opposed to outside partners or partners within our department. The partners within the school at large were easier to communicate with, seemed more confident in the abilities of our students, and were more desperate for and therefore more appreciative of the help our students could provide. Outside partners frequently have multiple organizations willing to help. A small university often has limited resources for such things as institutional research. Included below are some comments from students on their ability to serve, and the process of serving.

"I have learned to push on with the project even when I didn't really feel like it because it is such a long process."

"I have been consistent in my services to PLHS. I am also excited to say that I have seen a complete turnaround with some of the students I have been working with throughout the year."

"I can see how the outlook and attitude of people can affect the motivation to want to work and perform for them."

"[Service] is a mutual exercise. There is stress on both ends."

"Service...requires patience, and is hard at some points, but we serve others because God has given us each certain talents to do so."

"I saw how crucial communication was. [Service] can change both the server and the one being served."

"I may feel like I have very little to give, but a little bit goes a long way for someone who doesn't have the resources that I have. Our partner was always surprised and pleased at how much information we squeezed out of the data he gave us."

II. A Self-Contained Program

Although a Service Learning program can benefit from outside assistance in finding partners, people willing to provide training and clerical assistance, none of this was available to our small program. We were able to find partners through word-of-mouth both on campus and off.

Students provided the training to other students. Students performed administrative and clerical tasks. We were able to remain flexible when projects cancelled, or were completed more quickly than anticipated.

FUTURE WORK

Work still needs to be done in finding good partners for the projects. In each of the last two years, two of our partners were from the university itself. While we would like to continue service to the university, the students who worked off campus benefitted from interacting with people different from themselves. This task is especially difficult for a university such as ours, as partners must be chosen carefully due to legal and safety reasons. It is important to find partners who are willing to meet with, and effectively communicate with our students.

Students have suggested ways in which to improve the course. They would like to see it expanded to include other departments. In addition, they would like more technical training and some form of recognition system for students who go above and beyond, just as is seen in the business world.

ACKNOWLEDGMENT

I am greatly indebted to my twenty-four-to-date Service Learning students who have embarked on this adventure with me. I am grateful to our department assistant Beth Denney for transcribing student comments. I am also indebted to our department chair, Maria Zack, for her vision and support as well as to the community partners who have welcomed the experience.

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