

A Framework For Service Learning In Professional Disciplines

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Abstract: This paper presents a framework for integrating service learning into educational programs for professional disciplines such as information technology. In this framework, a student engaging in service learning provides a community service, to one or more recipients, and is supervised by a community service tutor. At the same time, the service involves learning activities in the professional discipline, supervised by a professional discipline teacher. In some cases the role of the service tutor and the discipline teacher may be taken up by the same person. The learning student is modeled by a vector in 4 dimensions: hard/soft skills in the professional discipline, and hard/soft skills in community service. The service learning activity naturally impacts on the recipient(s) and the teacher/tutor. We then report our experiences in applying this framework to integrating community service into learning activities in an information technology program. It includes (1) exercises with a community service-theme in regular teaching subjects, (2) projects in collaboration with external organizations, both as part of the regular curriculum and as extra-curricular activities, and (3) tutoring of secondary and primary students in information technology workshops, both locally and in an excursion to a high school in mainland China. All such activities are carried out under the umbrella of a Community Outreach Merit Program in the department in which students are given recognition for their involvements in relevant community services. At the university level selected projects are given awards in a competition. Results so far indicated that our students value the experience and benefit significantly in professional and all-rounded education.

1. Introduction

We adopt the following commonly accepted definition of service learning from National Service Learning Clearinghouse:

“Service-learning is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities.”
(NSLC 2006)

Integrating related community service experience with classroom concepts has been considered by many educators to have significant benefits, particularly if it helps students reflect on their involvement to deepen understanding of course content and its relation to social needs and an enhanced sense of social responsibility [Bringle & Hatcher 1999]. The term service learning was even coined in 1967 to describe such practice and philosophy [Sanderson 2003].

Information technology has not been very visible in the service learning community; and vice versa. Nevertheless there is quite a number of service learning activities in information technology education [Sanderson 2003]. In fact, service learning is particularly relevant to and suitable for information technology. Firstly, information technology is application oriented, commonly adopting problem-solving approaches in teaching. Secondly, the need for information systems is common to all kinds of organizations, including non-profit organizations. At Purdue University, the Engineering Projects in Community Service (EPICS)

program was created in Fall 1995. [Reid & Slazinski 2003] [Purdue 2005]. EPICS programs have since been started at 15 universities including University of Illinois at Urbana-Champaign, Notre Dame, Iowa State, Case Western Reserve, Butler, etc.

2. Service Learning Framework

The following Figure illustrates partially our conceptual service learning framework. Students engage in service learning, which has two major components: (1) learning and practicing the technical discipline, and (2) providing community service. The two components are supervised by respective teachers. In many cases, the discipline teacher also takes on the role of the community service tutor. When resources permit it, it is better to have a proper tutor on the community service component. For example, before a recent service trip to mainland China, we arrange for an experienced social worker to help prepare our student volunteers. The results are encouraging and we plan to integrate the practice as a regular component in our service activities.

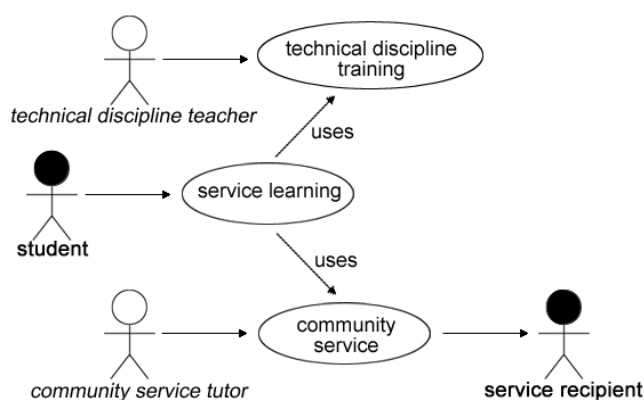


Figure 1. *Conceptual Service Learning Framework.*

In the context of service learning, the activity that the students are involved in can be modeled by the degree in which the activity contains elements in the following dimensions (activity model):

1. knowledge/skill in the technical discipline
 - a. hard – concrete and easily measurable skills, e.g., web page design, database design and implementation, programming, robot design and control, etc.
 - b. soft – more intangible skills, e.g., project leadership and management, team work, innovation, etc.
 - c.
2. knowledge/skill in community service
 - a. hard – concrete and measurable expertise in the specific service, e.g., youth work, serving seniors, health maintenance, relief work, etc.
 - b. soft – e. g., human interaction skills, reading body language, empathy, etc.

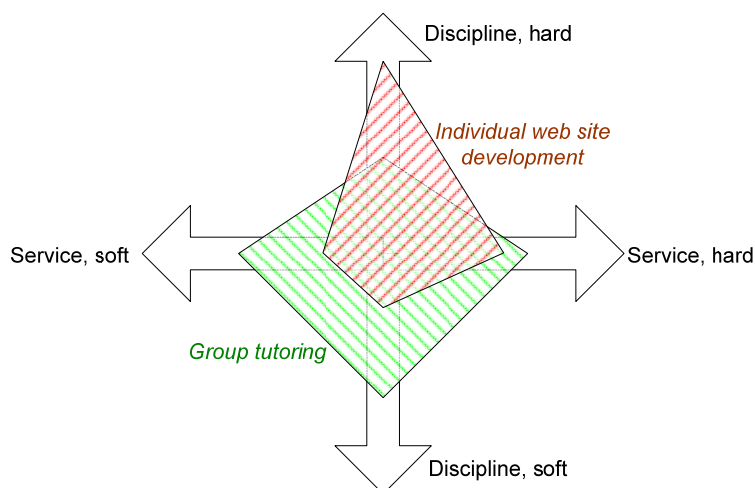


Figure 2. Activity Model with 2 examples of activities.

It is expected that service learning will have an impact on the student. Different types of projects and activities emphasize on different dimensions of the (model of) the student. It is important to decide on the dimension to be emphasized and to design projects and activities accordingly, in order to achieve the desired results.

For example, a student working alone to design a web site for a non-profit organization would probably address these dimensions, roughly in this order:

1. hard technical skills
2. hard knowledge in community service, and
3. soft technical skills.

On the other hand, a team of computing students tutoring a group of primary school students would likely address all dimensions more or less evenly. Within the team, however, the team leader will likely have a chance to learn much more soft technical discipline skills.

The same dimensions can also be used to model the state of a student in the context of service learning. For example, the following figure presents two students with significantly different skills.

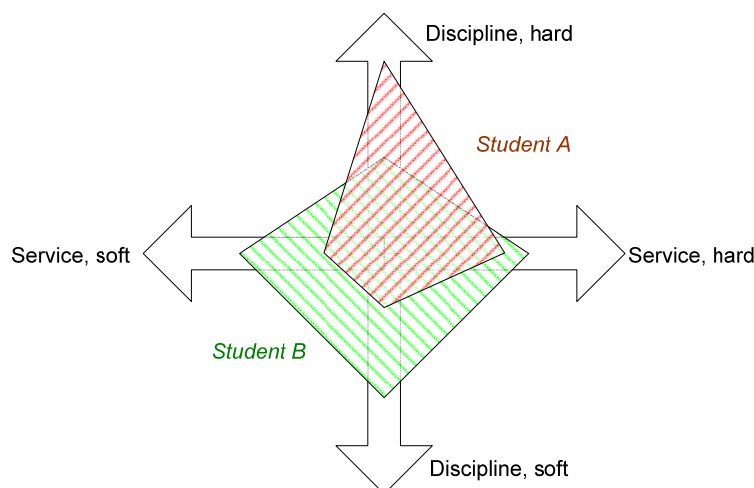


Figure 3. *Student Model with 2 examples of students with different characteristics.*

A student who has strong technical skills but more comfortable working alone rather than in a team, and having little experience in community service may be modeled as Student A. On the other hand, another student technically not as strong, but more comfortable working with other people and having more experience in community service may be modeled as Student B.

The service learning framework and the activity/student models then provide a basis for studying and managing service learning projects and activities, and their impact on the student. Service learning work naturally also has impacts on the service recipients and the teachers/tutors. That will be discussed further in another paper. .

3. Research Methods and Execution

Our research methods consist mainly of the following:

1. identify desired dimensions/qualities in the student model to be developed.
2. design projects/activities to develop those qualities.
3. investigate effectiveness of the projects through
 - a. pre-activity assessment (questionnaire)
 - b. in-activity student journals
 - c. post-activity assessment (questionnaire and group interviews)

Some of the instruments used in our studies are included in the appendix for reference.

In a previous paper, Chan et al. (2006), we have discussed some of the activities carried out in the past several years. In summary, they include the following:

1. Service management exercises in the teaching subject Information System Development. Students are formed into small teams and assigned non-profit organizations to develop information systems to manage their services. Examples include Blood Donation services for the Red Cross, Child sponsorship for World Vision, etc. We emphasize that these are exercises intended to produce prototypes rather than workable systems.
2. Information System Development projects for non-profit and government organizations. Examples include web site development for Braincare, a bilingual

glossary for the Department of Justice, a crime incidence database and analysis system for the Police Force, etc.

3. Training workshops for (primary and secondary) school students. These have been on-going for several years, on weekends during school days, and week-long summer camps. Each year hundreds of school children are tutored by 20-30 university students. The number and variety of workshops, and the number of students involved are growing year by year.

On current project merits special discussion. In the summer of 2006, we collaborated with a Christian church to organize a summer camp in mainland China, in HuangShi in Hubei province. About 20 English instructors and tutors, plus 10 university students in information systems jointly taught phonics, basic computer animation, and robotic programming to 100+ junior high school students in HuangShi. It was very well received by the Hubei students, school administration, and the city leadership. It was even reported by the city television station. Our own students are all very happy with the experience, and most indicated eagerness to participate in such activities again. We are now in the process of strengthening the collaborative relationship and expanding the scope of activities.



Figure 4. *Some of the English tutors and university students from Hong Kong, and junior high school students from HuangShi participating in a robot programming contest.*

Departmental and university level structures have been set up to support service learning at the Hong Kong Polytechnic University. At the department level, a Community Outreach Merit Program (COMP) has been setup to organize and give recognition to service learning activities. In the first year of its operations in 2006, 25 students receive 3 different levels of individual awards for their involvement in service learning, and the Hubei project was given an outstanding project award.

A university-wide Community Service Learning Program (CSLP) has also been in operation for 2 years in the Hong Kong Polytechnic University. Under this program, team-based awards are given to recognize outstanding service learning projects. It is believed that permanent structures such as these are important in promoting and supporting continuing service learning activities.

4. Observations and Conclusion

Results indicate that our university students feel they benefit from participation in the service learning activities. In general, they benefit more in hard and soft professional skills

than community service skills. Judging from the increasing number of students volunteering for service, the students perceive real benefits.

There is also some variation on the results among different activities (with different activity models as represented in Figure 2). Because most of our current service learning activities are voluntary, they tend to attract mainly students who are interested in community service to start with. That does not mean, however, that they are skillful in services. We have some statistical and more anecdotal evidence that students participating in activities with strong service dimensions are also strongly impacted by them, being motivated to get involved even more. But we do not have sufficient data so far to make very definite conclusions yet. More research are needed. Overall, we are strongly encouraged by the responses of the participating students and other stake-holders, and to continue the development and experimentation.

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Appendix

(A) A sample pre-activity assessment questionnaire.

Please write down your answer as a number from 1 to 5 (1=totally disagree, 2=disagree, 3=neutral, 4=agree, 5=totally agree), unless instructed otherwise. Thank you.

No.	Question	Ans.
1	Before going on this trip, I have participated in community service for _____ years.	
2	I understand the purposes of this trip.	
3	I know my own role in this trip.	
4	I am confident I can perform my role successfully.	
5	I have good computing skills.	
6	I have good communication and presentation skills.	
7	I have good inter-personal skills.	
8	I work well in a team.	
9	I prefer to work and learn in a team, rather than working and learning alone.	

10	Participating in this trip will help me understand better the impact of information technology in society.	
11	Participating in this trip will strengthen my computing skills.	
12	Participating in this trip will help me become a more caring person.	
13	Participating in this trip will help me interact with people better.	
14	Participating in this trip will increase my awareness of community services.	
15	Participating in this trip will increase my interest in getting involved in community services.	
16	The reason I joined this trip is (please name one or more reasons):	

(B) A Sample Reflective Journal *(To be filled out at the end of each day)*

1	<p>On the service learning chart, draw a 4-sided polygon to represent the activities that you are engaged in today, similar to the examples provided in Figure 1.</p> <div style="text-align: center;"> </div>
2	<p>For each of the 4 dimensions, give an example of what you have been engaged in/learned/practiced today.</p> <p>(a) Discipline, hard: _____</p> <p>(b) Discipline, soft: _____</p> <p>(c) Service, hard: _____</p> <p>(d) Service, soft: _____</p>
3	<p>How many hours of work did you put in today? ____</p> <p><i>Please answer the following questions (4-7) with a number from 1 to 5 (1=totally disagree, 2=disagree, 3=neutral, 4=agree, 5=totally agree).</i></p>
4	<p>I am satisfied with my work today. ____</p>
5	<p>The leaders of the trip are satisfied with the activities today. ____</p>
6	<p>The participants that I interacted with today are happy with the activities today. ____</p>
7	<p>The local teachers and school are happy with the activities today. ____</p>
8	<p>What are the three most exciting things that happened today?</p> <p>(a) _____</p> <p>(b) _____</p> <p>(c) _____</p>
9	<p>Among the things that you did today, what is the one thing that you would like to change?</p>

(C) A Sample Post-activity assessment questionnaire.

Please write down your answer as a number from 1 to 5 (1=totally disagree, 2=disagree, 3=neutral, 4=agree, 5=totally agree). Thank you.

No.	Question	Ans.
	Gender: M/F My initials (first,last)_____ Program: _____ Year: _____	
1	Participating in this trip increased my computing skills.	
2	Participating in this trip increased my communication and presentation skills.	
3	Participating in this trip helped me to work better in a team.	
4	I prefer to work in a team, rather than working alone.	
5	Participating in this trip helped me to understand better the impact of information technology in society.	
6	Participating in this trip helped me become a more caring person.	
7	Participating in this trip helped me interact with people better.	
8	Participating in this trip helped me understand mainland China better.	
9	Participating in this trip helped me understand mainland students better.	
10	Participating in this trip increased my awareness of community services.	
11	Participating in this trip increased my interest in getting involved in community services.	
12	If you have to point to one incident or observation that made the most impact on you during this trip, what would it be?	