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ORIGINAL PAPER

Enriching Service Learning by its Diversity: Combining University Service Learning and Corporate Social Responsibility to Help the NGOs Adapt Technology to Their Needs

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Abstract Community-based service learning helps students link subject matter to everyday life and developing sense of responsibility to their community. Corporate social responsibility (CSR) is a form of corporate self-regulation integrated into a business model. Both promote civic engagement but the two hardly come across each other. We explore the process that enriched service learning with its diversity by combining CSR practices of a multinational software company. It begins by exploring different forms of action research with a focus on action engagement to improve students' involvement in marginalized communities. The article provides field-based reflections of the sustained engagement and suggests ways in which service learning experiences may create rooms for innovation and growth in the non-profit sector, local communities, businesses, and students themselves.

Keywords Corporate Social Responsibility (CSR) · Service-learning · Non-Governmental Organization (NGO) · Engineering ethics

Introduction

Many different universities have incorporated service-learning into their curricula to address the contextual, motivational, and multi-disciplinary team needs (Malerius and

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Odermatt 2005; Bushell et al. 2006; Santas 2009; Hood 2009). For students, service-learning instills a stronger connection to their community and shows them that they have the power to make a difference (Avison et al. 1999; Artail 2008; Alzamil 2005). Service learning helps get students academically engaged and involved in professional careers by proving that what they're learning is applicable to their lives outside the classroom. Chou et al. (2011) started a national scale project in 2007 and led a multidisciplinary team to study technology acceptance models for NGOs that served people with special needs. The findings show that service learning could increase action engagement and build mutual trust essential to helping NGOs adapt technology to their needs. Purdue University created the Engineering Projects in Community Service (EPICS) program in 1995 (Olssen 1996). Under this program, freshman to senior undergraduate engineering students form multidisciplinary teams to meet community needs. Penn State University has created a certificate program entitled 'Humanitarian Engineering' (Colledge 2009). This enables outreach programs at the Penn State University to reach into local communities and creates awareness of civic engagement. Chang and Wang led a multiyear project providing information technology (IT) and/or assistive technology (AT) to make technology more accessible at NGOs devoted to persons with disabilities (Chang et al. 2011). Their approach involved persons with disabilities in participatory design processes. As humans interact with technologies alone or as they make technology-mediated human-to-human interactions, social structures are formed. Multidisciplinary research has been devoted to understanding these structures and interaction patterns, and to understanding the ethical and social impacts they bring. This meta-discipline has come to be known as social informatics (Kling 1999).

In 2008, Frontier Foundation started the Computer Recycling Program (CRP), a continuously operating full-service collection, reuse, and refurbishment program in Taiwan (Frontier Foundations 2012). Working with businesses and municipalities, the Foundation's participation in collection and drop-off programs diverted thousands of pounds of computer equipment from landfills each year. Reuse of entire units is given highest priority, followed by disassembly for reuse of parts, and finally recycling for the elements of unusable remaining items. This program has been well received by multinational and local businesses where computers are necessary in their daily operation. After years of use, old computers are phased out and replaced by new computers. For environmental concerns and charity contributions, businesses are willing to participate in the CRP by donating their used computers. The CRP collects these old computers and redistributes them to NGOs who have signed up to receive donated computing resources.

In a service-learning curriculum at the senior level in Electrical and Computer Engineering (ECE), we practice the action research methodology to improve students' involvement in the service learning context (Chang et al. 2010). The curriculum encourages students to apply what they learn in the classroom to enabling NGOs to achieve more through meaningfully created opportunities to participate in communities (Sigmon 1979, 1994; Furco 1996). Students first enhanced the CRP by integrating computer refurbication services into the existing program run by the Foundation. Later, two years of service-learning practices catalyzed a program confluence of the CRP with an existing commercial software donation program, resulting in a streamlined process to meet the needs of NGOs interested in the CRP. The software donation program was originally a CSR practice of a multinational software company that thrived to be socially responsible and environmentally sustainable. The company recognized the awareness-raising CRP because it benefited the society and helped address critical environmental issues.

Kotler and Lee (2005) define CSR as a commitment to improve community well-being through discretionary business practices and contributions of corporate resources. Carroll and Shabana (2010) propose that the essence of CSR and what it really refers to are the ethical and philanthropic obligations of the corporation towards society. CSR represents changing social consciousness and recognition of overall responsibility, involvement in community affairs, concern about urban decay, correction of racial discrimination, alleviation of pollution, and the continuing philanthropic era in which there was a focus on charitable donations by businesses (Carroll and Shabana 2010). Mirvis and Googins (2006) suggest corporate collaborations with community groups, NGOs and public authorities should transform into durable alliances that address real societal concerns. However, an investigation of the literature indicates there has been a missing link between students' community involvement and corporate social responsibility. We used action research to address the problem of disconnect between the two. Students as trainee engineers participated in identifying the issues with the CRP, generating workable solutions to implement changes, and making constant reflections in the continuous spiral process of inquiry, analysis, and actions in the light of action research (Agyris et al. 1985; Baskerville 1999; Friere 1970; DeLuca et al. 2008; Friedman 2001). This gave them an in-depth perspective when taking actions to implement changes at the community and greater society level. Initial definition of problems paved the way for subsequent action plans and interventions which informed the next iteration of problem discovery. One assumption is that iterations of the action research cycle improve the quality of professional development due to the four following reasons: (1) Action engagement enhances the students' knowledge of the local work practice through personal involvement (Rolfsen et al. 2007); (2) personal involvement by the students enhances their emotional understanding of the insiders' real problems that need to be solved; (3) through emotional understanding, the students become self-motivated to accomplish the goal to their best. Feeling valued in the process of intervention could be a powerful incentive, and (4) action engagement builds mutual trust across participants and creates a shared sense of good intentions which could be critical for overcoming difficulties and challenges when the change process encounters obstacles on its way.

Theoretical Foundations

Service learning integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, encourage lifelong civic engagement, and strengthen communities for the common good (Ogden and Claus 2004). Service learning offers students immediate opportunities to apply classroom learning to support or enhance the work of local agencies that often exist to effect positive change in the community (Knapp and Fisher 2010). The U. S. Community Service Act of 1990, which authorized the Learn and Serve America grant program, defines service learning as:

"a method under which students or participants learn and develop through active participation in thoughtfully organized service that is conducted in and meets the needs of a community; is coordinated with an elementary school, secondary school, institution of higher education, or community service program, and with the community; and helps foster civic responsibility; and that is integrated into and enhances the academic curriculum of the students, or the educational components of the community service program in which the participants are enrolled; and provides structured time for the students or participants to reflect on the service experience."

When starting a new community-based service learning project, participants as outsiders use their facilitating skills to create arenas for collective learning and creating common ground instead of defining the problem issue without involving insiders. However, insiders and outsiders live in two worlds (Chang et al. 2010, 2011). Participants orientate themselves to a new situation, learn about it and prepare to deal with it. For outsiders to take proper actions for interventions, action engagement (Rolfsen et al. 2007) suggests that participants could use some time to involve themselves in the everyday activities in the relevant part of the organization to their advantage. It suggests a willingness to understand the insider's culture and systemic parts of the insider's problem. Action engagement provides the participants with stronger relational ties to the insiders and insights to local organizational practice.

Methodology

Setting

Frontier Foundation is one of the organizations that participate in computer recycling programs (CRPs) in Taiwan. There are hundred thousands of NGOs in Taiwan. The need of computing resources to support daily operation is constantly observed. In the meanwhile, businesses upgrade their computing equipment after years of use. Used computers can cause environmental problems if they are not properly processed. The CRP is a bridge that meets the environmental concerns of businesses by collecting their used computers, and also meets the need of under resourced NGOs who sign up for donated computers. The CRP is well received by donating businesses because it not only helps solve environmental problems but also creates opportunities of charity, both positive in terms of corporate social responsibility. Frontier Foundation has been providing the CRP for the past four years. There are four staff members and a dozen of floating volunteers that involve the CRP.

Starting from 2006, senior-level ECE undergraduate students and graduate students with qualified prerequisites were offered a service-learning course in Chung Yuan Christian University (CYCU). The prerequisites included proficiency in computer organization and basic knowledge of software. At the outset, the students enrolled in the course understood that they were required to co-work with an NGO as trainee engineers in order to improve civic engagement. Students enrolled in this course were organized into groups, each with three to five members as a team to engage themselves in the NGO.

The curriculum included canonical action research methods such as problem exploration, needs analysis, planning, interventions, evaluation, and reflections. These modules were designed to guide students to conduct ethnographic observations, approach and talk to staff members at the participating NGO, and set goals of a long-term intervention through engineering and technology. Group discussions were scheduled in which students shared the progress of community participating, challenges they had met, and solutions that they had worked out. Field practices were substantially focused on the process of inquiry.

Identification of the Problem

The CRP has built reputation gradually since its inception. Multinational and local businesses were willing to donate old computers to the program. The CRP also successfully redistributed donated computers to NGOs who needed computing facilities in their daily operation. However, it was found that the Foundation had minimal capacity of refurbishing

donated computers in their daily practice. Insufficient human resource with computer skills limited staff members to collecting and redistributing computers instead of refurbishing them. Unfortunately, used computers may not be reused without proper refurbishment. While many NGOs were able to mobilize local volunteers to refurbish used computers when they received donations from the CRP, some NGOs had limited resource to do that. Due to lack of computer skills, some NGOs had to abandon a few computers if local staff members or volunteers were not able to refurbish them properly. In this case, logistics that shipped computers from donating businesses to the CRP drop-off sites and from drop-off sites to receiving NGOs could be wasted. The computers can only be recycled locally, losing the possibility of re-use by staff members at receiving NGOs.

Initial Intervention

Field observations were arranged for the students to gain understanding of the CRP operated by the Foundation. Students had three one-day trips to the CRP drop-off sites and the administrative office. To further improve students' involvement in service-learning, the students of each team were placed the drop-off sites for days, working with volunteers under the supervision of staff members. Action engagement enabled students as outsiders to get to know how the CRP worked, understand what volunteers did, learn their languages, and build friendship and trust. In return three teams of students decided to refurbish donated computers on-site at the shop floor. The students ensured that reuse of entire units was given highest priority, followed by disassembly for reuse of parts, and finally recycling for the elements of unusable remaining items. For each refurbished computer, a repair history was maintained so that floating volunteers could take over the job from one another. It turned out that three refurbishment workshops were scheduled in one semester last year, refurbishing 114 computers before they were redistributed to NGOs island wide.

Findings

The students with computer skills were an asset to the CRP. For the receiving NGOs who had minimal capacity for refurbishing used computers, the students did the job for them. Those NGOs appreciated that the computers were immediately usable out of the box with a simple power plug-in. The NGOs were happy because they were no longer worried about disposing of donated computers that they could not fix. The students remembered the moment when an NGO director sent unboxing photos to them, telling how much staff members of the NGO appreciated the efforts of refurbishment and how surprised they felt when they saw each computer came with a repair history. The student teams were happy that their learned computer skills had use in their lives outside the classroom. Service-learning experiences helped students build a stronger connection to their community and showed them that they have the power to make a change at work and in life. This is vital to get students academically engaged by proving that what they're learning is applicable to their lives outside the classroom. The intervention of students contributed to improved quality of the CRP and increased satisfaction of receiving NGOs, which in turn encouraged computer donations from businesses and promoted accountability of the program. The CRP found the addition of university service learning to the program made a difference.

To staff members at many NGOs, scarce of resources is an everyday lived experience the students are not even aware of. It is not uncommon that staff members and volunteers at NGOs use refurbished computers at work. Students experienced the effects of being under

resourced that can permeate every aspect of an organization's operation. The experience created opportunities for participation and stirred the feeling of being included and valued for the involved NGOs. Being exposed to such an unfamiliar world of life not only became a tipping point in the service learning experiences but also built the momentum for change in students' professional development and their ability to span different worlds as a function of curiosity, self-confidence, and sociability. The findings from this iteration have provided insight into social dimensions that are an intrinsic part of service-learning, including shared values, assumptions and beliefs. Students achieved increased credibility and trust through action engagement in ways that enabled students to bring in new value into NGOs.

Identification of New Problems

After two years of action research as a bridge between two worlds, a previously unknown world of NGO people, and a world of college students themselves, students found computer refurbishment diverted hundreds of pounds of computer equipment from landfills, met the needs of NGOs, provided benefit to the community, and created rooms for innovation and growth. In the next stage, the CRP was faced with a challenge to not only refurbish used computers but also upgrade the software that came with the computer. Software issues can complicate the process of reusing refurbished computers and in the meanwhile cost NGOs a lot of money. NGOs may choose to apply for software donations from charity programs set up by major software vendors. However, there is more paperwork in the process of more applications. Furthermore, donated software arrives in the box, not in the computer. While this may not be a major problem for NGOs who have local computer experts, it is a problem for some to install and configure the software.

Follow-up Interventions

The performance of the established CRP and continuous service-learning actions of the students were recognized by a major software vendor who had set up charity programs to donate operation systems to NGOs. In return, the students offered a proposal to install donated operating system software in addition to refurbishing used computers. If the idea worked, NGOs who applied for refurbished computers would have the chance to enjoy out-of-box experiences with software ready. Later, the Foundation worked with the operation system vendor to blueprint a program confluence. The renovated CRP program would enable NGOs to apply for refurbished computers and operating system software at the same time.

It took some time for the software company to reengineer the charity program because of required consent from the headquarter in North America. Finally, the CRP was enhanced to include processing software donations for the software vendor. In the meanwhile, the students extended the computer refurbishment process to include software installation and configuration. They made process changes that involved modifications and adjustments to standard operating procedures. The reduction of paperwork at the software vendor resulted in saving on a tight budget. The company generously donated the savings as a cash contribution to the service-learning project to cover parts replacement. Furthermore, the public relations department of the company started a campaign that mobilized their business partners to donate used computers. A press conference was arranged that attracted media attention, including national TV, newspapers, and radios. As a result, the CRP received hundreds of computer donations in a month.

The new service model was made possible by three parties, the software vendor that ran the charity program, the NGO that was in charge of the CRP, and the university that promoted service-learning. The result of combining service-learning and corporate social responsibility was a streamlined process that extended the scope of the CRP, eliminated additional paperwork of software donations, integrated software installation with computer refurbishment, and alleviated the burden on NGOs.

Reflection

Instead of applying for refurbished computers from the CRP and applying for software from the charity program, NGOs had a one-stop service under the renovated CRP backed by students participating in service-learning and a multinational software vendor motivated by corporate social responsibility. The students were happy that the computers came in handy out of the box at receiving NGOs. Although on the surface working closely with one only NGO, the students reached out to serve dozens of NGOs through the CRP. Lateral networks of NGOs expanded students' perspective of civic engagement while service-learning empowered them and made social change relevant. Working with a multinational software company was a new experience that not only enabled students to witness corporate social responsibility practices but also enriched service-learning by its diversity.

These results significantly impacted on students' experiences as propulsive and life changing. Using action research allowed students more of an insider viewpoint and resulted in students standing in one's shoes and feeling more confident in their understanding of the problems. We found that students became increasingly self-motivated and committed to the community program because of empathy. Furthermore, community service learning programs engaged youth not only in helping others but in critical reflection and the democratic pursuit of social reform. The study suggests that having voice, sharing in decisions, and engaging in dialogue are keys to personal and intellectual growth in participating students. Ogden and Claus (2004)constructed a notion of service learning based on sustained engagement. In our study, sustained engagement gave students working insights into NGOs' daily practices and helped make sense of seemingly minor yet important details in provisioning services. Sustained engagement not only helped identify the common grounds of service requirements but also exposed creative conflicts in implementation priorities. Therefore, sustained engagement fostered an esprit-de-corps as well as an opportunity for creativity.

By making individual's embedded thoughts explicit through discussions of new propositions, students enhanced their communication and critical thinking skills. Students, as trainee engineers, were no longer solely associated with the responsibility for identifying the problems to be solved; it was the responsibility of the NGO and students to identify, define, clarify, and thus prioritize the problems that existed. Students experienced a sense of social solidarity and ties in a society that bind people to one another. Working closely with staff members enabled the students to reach out and tap into critical community issues. This created rooms for innovation and growth. Although students were not aware in the beginning, service-learning actions with NGOs were a form of recognition to achievements of NGOs, let alone the workforce students could provide to enrich established social services. Compared to previous results of students' service involvement in local communities (Brenner et al. 2007; Chang et al. 2010, 2011) and foreign countries (McIver and Rachell 2002; Bushell et al. 2006), combining university service learning and corporate social responsibility enriched the possibilities and diversities of service learning.

Corporate social responsibility practices could be also enhanced with far-reaching effects with service-learning actions and potentials empowered by student engagement.

Conclusions

With the practice of action research methods and action engagement in particular, service learning experiences transcended into part of a social process and students' community involvement. Students worked with insiders in the organization thus facilitating a learning situation in which the students were encouraged to create new meanings based on their participation in the organizational routines. Through sustained engagement, students went through the process of changing the world around themselves, no matter how small the changes were, and most importantly they changed themselves profoundly. Furthermore, students enriched service learning by its diversity through confluence of two community programs. The findings from the study have provided insight into the social dimensions that are an intrinsic part of professional development such as shared values, assumptions, beliefs and the influence of participating individuals.

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