Service learning with a technology presence: bridging the gap between classroom theory and professional experience to fulfill societal needs

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ABSTRACT

Service learning is a teaching and learning methodology that connects curriculum with identified community issues and needs. Service learning engages projects that serve the community and build their social and academic capacities. Service learning was based off the views of John Dewey, a philosopher and educator who advanced the concept that active student involvement in learning, insisted that this is an essential element in effective education. He viewed the community as an integral component of educational experiences for both enhancing a student's education and for developing future societies. The need for engaged learning and an implementation of technology will further develop training for students in technological discipline, and will fulfill a societal need.

Service learning is an educational strategy that allows classroom skills and knowledge into practice while serving the community. It combines civic involvement with academic coursework in a manner that benefits both the student and the community. Service learning promotes a community partnership while course objectives are met, students turn classroom theory into practice and gain professional experience, and a pertinent community need is fulfilled.

Key words: service learning, society/community, civic involvement

Introduction

Service learning is an instrument, in which students take classroom applications and experiences to assist in fulfilling a societal need. The Virginia Office of Volunteerism and Community Services contended that service learning is an educational process by which participants learn and extend through direct involvement in service that is conducted in and meets the needs of a community. It is coordinated between a school/institution and community service program or targeted community group. This concept encourages the lifelong learning of participants, and includes structured time for participants to reflect on the service experience (http://www.vaservice.org). Since technology is such an integral part of life long-learning and our ever-changing society, the union of service learning and technology will afford opportunities that will enable continued growth of a global civilization.

According to the International Technology and Engineering Educators Association (ITEEA), technology is defined as human innovation in action that involves the production of knowledge and progressions that will develop systems to solve problems and lengthen human competencies. Technology also involves advancements, transformations, or modification of the natural environment to satisfy professed requirements and desires (http://www.iteaconnect.org). With continuous advancements, transformations, and modifications, the community stands at the vanguard of constant need for technological training and assistance. This renders a need for service. To assist in fulfilling this need, technology students should participate in service learning activities to enhance their awareness of societal needs, and they should identify how they can assist in fulfilling those

needs. In order for technology students on a post secondary level to better assist in fulfilling such a need, educators must

- research, assess, and evaluate technology deficiencies in a community;
- develop students' comprehension on the pedagogy of technology integration;
- identify a communal need such as computer literacy, in which technology students will assist in fulfilling;
- devise training sessions that will minimize computer illiteracy; and
- provide strategic methodology and future recommendations.

Once these objectives are satisfied, students will have more clarity of theory and application acquired in the classroom, and they become better prepared for implementation in real world situations.

Service learning implementing technology

Service learning is simply an extinction of classroom curriculum. It allows students to learn from performing services in their respective fields. It provides a great opportunity for students to receive hands-on training. Effective service learning programs challenge students to reflect on their service experiences through such activities as group discussions and journaling Yi & Lambright, 2010). The need to introduce reflection and self regulation into the learning experience is perhaps the most neglected component of service-learning. However, it is a well established fact that we learn through combinations of thought and action, reflection and practice, theory and application (Kendall, 1988). Effective learning can be achieved while discussing intellectual, civic, ethical, moral, cross-cultural, career, or personal goals (Kendall, 1990; Lisman, 1998). "Students from middle schools are mastering

academic content standards while immersed in hands-on, technology-integrated projects that provide learning experiences that are not usually possible within the confines of the traditional classroom" (Bradford, 2005, p.1). This emphasized that service learning is integral in school learning process. This process becomes more potent with the presence of technology.

Implementing technology into service learning is a major asset. Kurt (2001) asserted that service learning can be a meaningful way to combine service with academic learning in a variety of technology courses. Technology savvy students are eager to take on new roles in service learning. Service learning provides this change, because students become more aware of their positive impact to the community while working on technical projects. "Integrating technology with service learning catches and holds the attention of students who have grown up in the digital age and rely on computers, video games, cell phones and digital music players for their information and entertainment" (Bradford, 2005, p.1). Students are given the opportunity to make advances in technology, especially when they feel it is not foreign in today's society. With this in mind, students must have a strong technological skill set and be able to develop a method of instruction that will appeal to those of various learning styles and abilities. While technology is being integrated into every subject area, it is the teacher who decides what technology and how much of it to use in his or her classroom. Teachers must stay abreast to the latest technology and trends to prepare students for today's society. Since technology in the classroom can enhance instruction, it is very important that teacher develop effective way to manage their classroom and the technology used in it. Along with managing the classroom and

incorporating technology, teacher must not lose sight of activities involving critical thinking skills.

Technology integration and student comprehension

Burr (2001) suggested that today progressive learning methods are understood with a require departure from emblematic, set, preconceived objectives because the learning will be student directed. Progressive education occurs as real-life applications are joined with a self-directed series of experiences that create unlimited possibilities. Burr further recommended that increased enthusiasm for learning could happen with the collaboration of progressive education principles and service learning, resulting in *progressive service learning.*

In addition, great sums of persuasive confirmation submits to the benefits of service learning and experiential methods, thus revealing that teachers yet depend on the traditional practices of lecture and teacher-directed educational procedures—not appealing to all learning styles. Traditional practices should, in no way, be dismissed; however, it should include approaches where students are able to apply what has been learned in the classroom. Cohen and Brawer (as cited in Burr, 2001) stated the following:

> It is reasonable to assume that in an institution dedicated since its inception to "good teaching," new instructional forms will be tried. However . . . traditional methods of instruction still flourish. Visitors to a campus might be shown mathematics laboratories, the media production facilities, and computer-assisted instruction programs. But on the way to those installations, they will pass dozens of classrooms with instructors lecturing and conducting discussions just the way they and their predecessors have been doing for decades (p. 155).

Service learning is an appropriate teaching and learning approach in which the workplace provides a practical setting for structured problem-based learning experiences. Blumenfeld, Soloway, Marx et al. (1991) concluded that technology can play a powerful role

in project-based learning. Technology contributes to students' learning by enhancing interest, giving more access to information, providing active representation with the multimedia capabilities of technology, structuring the process to provide more tactical and strategic support, diagnosing and correcting errors more easily, managing complexity and aiding production, and providing potential for motivating students to carry out projects.

Example of graduate student involvement

At a research university in Mississippi, graduate students assisted with a local non-profit agency to create an electronic spreadsheet template that would allow the agency to better organize client information such as e-mail, phone, social network site data and mailing addresses. The information was to be also placed in sub-groups that would categorize the clients. The original request was for a Microsoft (MS) Access 2007 database, but the participants were encouraged to utilize an Microsoft (MS) Excel 2007 program since the instructors were highly proficient. Based on the verbal communication from the Chief Administrative Officer (CAO) of the agency, the MS Excel 2007 spreadsheet would address their immediate needs. However, there were plans for the next service learning project, which would convert the MS Excel 2007 spreadsheet into an MS Access 2007 database.

The Fall 2010 academic semester, is when this venture began. As a part of the professor's syllabus, the students were informed about the service learning project. According to Bringle and Hatcher (1995), courses with service learning objectives should provide opportunity for student reflection, community partnerships, student supervision and assessment, and course assessment and research. In adhering to this philosophy, twenty-four technology education graduate students became orientated with service learning, its concepts, and how service learning reflected their

course objectives. The professor provided the students with a general definition of service learning, and provided three technology education philosophical concepts: progressivism (change), constructivism (building on pre-existing knowledge), and pragmatism (practical approaches).

To better assist the students on their venture, the professor invited a representative from the university's Center for Community & Service Learning to provide an orientation and inform the students about a local Mississippi non-profit agency's need. The agency was inundated with client data, in various forms (i.e. business cards, forms, email addresses, etc.). The agency needed a system in place to better organize and store client data, and to become more skilled in a modern technology application to handle this process.

Methodology

The class was broken into smaller groups (5 members per group) that focused on logistics, instructions, training materials, and spreadsheet template design and development. Each group had a designated captain who made progress reports to the professors and organized collaboration with other groups. All groups had to work collaboratively in order to progress with their designated responsibilities.

Thirty hours were collectively spent by these groups and the technical advisor to assess the agency's objectives, build the Excel template, creation in-class and take-home learning materials, secure training equipment and facilities, as well as administrative duties and parking permits for the agency participants. Throughout the semester, the students posted their reflections on the discussion board section of Web-CT. This allowed the students in share their learning experiences and post questions to the professor as well as other students. After the students completed their assigned tasks, they invited the

agency representatives (7) to participate in two (2), two-hour courses. There purpose of the training course was teach the agency representative about the new features in MS Excel 2007, short cut techniques, and they students presented the new template. In addition, the students provide and training modules and a short cut table. Nevertheless, the professor and students wanted to ensure that training and resource material were helpful to the agency representatives.

Instrumentation

Merranko and Zeolla (2009) stated that in any service-learning project, one must reflect on whether the objectives were mastered. During this project, these reflections caused the students to ponder if their plan of action would benefit the individuals they were serving. As a result, the students have reflected on the following: How did the service learning process link to the essential needs of the participants? Did the participants actually learn the concepts? How could execution of the project be improved for future implementation?

The agency's participants were taught how to properly use MS Excel 2007 and how enter to data on the new template. The learning objectives for the agency's participants were to be mastered during two training sessions. After the completion of the first training session, a survey was administered to the participants to discover whether the participants' needs were met. In addition, survey was used to analyze the quality of the instruction, resources employed, and training materials.

The survey was divided into two sections: instructional materials and instructional effectiveness. Participants were able to rank response based on a 5 point Likert scale (e.g.

1-poor; 2-fair; 3-indifferent; 4-good; 5-excellent. The results of the participant feedback were as follows:

Instructional Materials	Score	Attainment
Quality of the Training Materials	20	100%
Quality of the Electronic Materials Covered	20	100%
Quality of the Work Sample	20	100%
Usefulness of the Materials	20	100%
Quality of the Resources Employed	20	100%

Table 1: Instructional Material

Instructional Effectiveness	Score	Attainment
Innovation and Creativity in the Teaching Technique	18	90%
Verbal Communication of the Instructors	19	95%
Eye Contact and Interaction of the Instructors	20	100%
Ability to the Instructor to "Reach" Every Learner	19	95%
Confidence, Carriage, and Conviction on the Subject	20	100%

Table 2: Instructional Effectiveness

Overall, the participants indicated that they were satisfied with the instruction and the training materials. However, the students did make stronger efforts to improve verbal communicate and transition of the instructional delivery. The graduate students also modified pedagogical approaches to insure participants of all learning styles were being reached. This was accomplished through lecture, distribution of MS Excel condensed short-cut guide, and interactive activities (e.g. spreadsheet data entries, calculations, mail merge, pivot tables, etc.). The graduate students desired that the participants be 100% satisfied with the instructional materials and effectiveness.

Methods to improve performance measurement

Unfortunately, the participants did not share any comments on how we could have improved upon our performance as a class. Although the graduate students strived for perfection, the students continued to strive for improvement. To mitigate this concern, the

graduate students indicated that proper execution of the service-learning project may have been reflective from the participants' mastery of the objectives.

However, the professor evaluated all training materials and student participation projection and made the following construction comments: make transitions from one activity to the next smoother, make sure the participants remain engaged, and provide activities where participants can demonstrate comprehension and mastery. The graduate students believed that it would have been prudent for the class to construct "take home" exercises after both sessions that required the participants to e-mail the instructors a document that proved mastery of the concepts taught. The graduate students also indicated that a "take home" activity would have been a better measure of whether or not the information was properly retained after the participants departed from the classes and returned to their respective offices to apply the knowledge. This was a part of the students' period of reflection.

Student reflections

Billig (2000) asserted that reflections in service-learning should connect the experience, content, skill, and value. The graduate students posted comments on the discussion board using Web-CT. The graduate students indicated that the service-learning experience was fulfilling, and it helped them to better understand the course content. Additional student comments revealed that the project increased the desire to work collaboratively and more effectively. The graduate students indicated that they obtained knowledge from the services that was provided, and they learned the culture of the community through providing instruction for the agency.

Furthermore, Billig contended that reflections should be on-going and used to evaluate the improvement of service for students. The professor provided information that provided foundational service-learning content and technology implementation (i.e. as an instructional aide or to remedy a technology application deficiency). In addition, the professor provided the following assignments and activities: service-learning article reviews, reflection comment postings on Web-CT, verbal reflections during class discussions, a service-learning research and reflection project paper and a classroom presentation at the conclusion of the project. The professor found that the graduate students grasped the technology education course content and were able to apply classroom knowledge during the service-learning project. However, the professor found that the activities should be condensed to allow the students more time to fully execute additional service-learning concepts and reflect on service-learning experiences. The professor did know want there to be a limit on opportunities students had to share their thoughts about the project and exchange ideas.

Limitations and future recommendations

When attempting to teach and implement course objectives, time is of the essences. This may cause the professor to condense some course materials, and it may cause students to rush to complete projects. The professor and students acknowledge that timing was a significant constraint in this project as several weeks were lost due to the participants' scheduling conflicts. It is recommended that this very necessary step be taken in the next project with the agency and future service-learning projects.

The distinctive element of service-learning is that it enhances the community through the service provided, but it also has powerful learning consequences for the students or others participating in providing a service. According to Eyler & Giles (as cited in Folkestad, et al, 2002) service-learning is a form of experiential education where learning occurs through a series of action and reflection as students work with others through a process of applying what they are learning to community problems. In addition, service learning allows the opportunity to deliberate on their experience where students desire to achieve real objectives for the community and deepen understanding all facets surrounding such a service.

Service learning combines experiential learning and community service opportunities. Service learning is distinguished in the following ways: curricular connections, student voice, reflection, community partnerships, authentic community needs, and assessment. Curricular connection is integrating learning into a service project, which is then coupled with student interactivity. Students have the opportunity to select, design, implement, and evaluate their service activity. Then, students' reflection on structured opportunities created to process, establish dialogue, and provide with communication regarding the service learning experience. There should be balance of reflection, and students should have the opportunity to develop a deeper comprehension of classroom application. This may occurs when the students are able to become active participants in the learning process while taking the learned theory and utilizing said theory to solve a problem.

Conclusion

There is a demand for technology literacy in lower social economic areas. Some people usually avoid technology and computer utilization for numerous reasons: 1) they have never been properly introduced and instructed on computer technology utilization, 2) they have never been informed on the benefits of using computer technology for professional personal development, and 3) they are unaware of entertainment components. However, completion of proper training will minimize the computer illiteracy issue, and allow give students the opportunity to apply classroom knowledge acquired.

Technology students should participate in service learning activities to enhance their awareness of societal needs. They may assist in efforts in fulfilling those needs and other demands by utilizing classroom knowledge to fulfill as demand of the community in such areas as technology. Such efforts enable technology to serve as a means that continues improving the quality of life for all. Service Learning motivates the student and it also motivates learning. Moreover service learning can help student develop leadership skills teach them how to be involved citizens and give them practice in working with others.

Community partnerships are when partnerships with community agencies are used to identify genuine needs, provide mentorship, and contribute assets towards completing a project. Authentic community needs is when local community members or service recipients are involved in determining the significance and depth of the service activities involved. Well structured assessment instruments with constructive feedback through reflection provide valuable information regarding the positive reciprocal learning and serving outcomes for sustainability and replication. Service-learning is one of the most prominent school-based approaches to involving students in their community (Westheimer

&Kahne, 2000). At its best, community service-learning integrates school or community based service projects with academic skills and content and provides opportunities for structured reflection on the service experience (Cairn & Kielsmeier, 1991). Since service learning allows students the opportunity to learn through experiences, student may develop competencies that will prepare them for the contemporary workforce. In addition, service learning creates a positive connection between schools and the community.

Since technology is ever-changing, some community entities may find it challenging stay abreast to current trends. According to Abravanel (2003), students who have been involved in high-quality service-learning programs demonstrate an increased sense of personal and social responsibility and are less likely to engage in "risk" behaviors. At the same time, these students show obtain an inspiration to learn. This renders higher attendance rates and increased academic performance. Service-learning has a positive effect on interpersonal development, student comprehension, and team work. Students see themselves as positive contributors to their community, feeling they can impact the world around them.

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