PROMOTING OPPORTUNITIES FOR STATISTICS SERVICE-LEARNING AT A LARGE URBAN UNIVERSITY

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Service-learning connects course content with service projects that address real world problems and provides a focus for student interest in learning to use and interpret statistics. Service-learning also supports leadership development, problem analysis and solving, evaluation and useful outcomes for community partners. Working with community to plan and coordinate student work requires additional resources, leading to a question whether the promise of enhanced student learning and benefit of working with community produces a sufficient return, especially in a research university, where emphasis is placed on research productivity and ability to garner external support for research. An example from a large research university reveals four elements for development and institutionalization of service-learning: (1) leadership/support from University Administration, (2) faculty development, (3) common definition and visibility, and (4) infrastructure. Suggestions for the institutionalization of service-learning in statistics will be emphasized.

INTRODUCTION

The ability to calculate, use, and interpret statistics is widely recognized as an essential part of general education. The challenge is how to capture the attention and enthusiasm of a class of twenty-year olds for learning to understand and use statistics in a variety of settings. One approach is to develop the learning around topics that matter to students. A longitudinal study conducted at Stanford University (2008) examined the need to make learning relevant to students. The research uncovered a disconnect between the power of writing to effect social change outside the classroom and the purposes assigned to classroom writing. In that study, students said repeatedly that "good writing is writing that makes something happen in the world, and by that they meant something GOOD happening in the world. Students tend to perceive that the writing they do in their coursework is not that kind of writing, while what they do in out of class writing has a better chance of being 'good writing.'"

An extension of that research can be useful in many fields of study, including statistics. Students who see statistics as relevant for their own experience and as useful for something *good* may be more energized about how the lessons are useful to them. Lesser (2008) cites attention to service-learning as one way to help students connect content and application. Students enrolled in his course reported low levels of student interest in content upon entering the course but rated the instructor as excellent in end-of-course evaluations; and the most frequent student comment about the course referred to the value of the service-learning project.

From a broader research perspective, service-learning has been shown to be an effective means for universities to engage with their neighborhoods, to extend faculty expertise to community and societal issues, and to prepare students for effective participation as citizens (Corporation for National Service, 1990; Rhoads & Howard, 1998). Research also provides positive results related to understanding and applying course material, critical thinking, intellectual curiosity and development of social responsibility and citizenship (Eyler & Giles, 1999).

SERVICE-LEARNING: A BRIEF OVERVIEW

One way to increase the value of learning for students is through service-learning. Service-learning is a form of experiential education characterized by student participation in an organized service activity that is connected to specific learning outcomes, meets identified community needs, and provides structured time and assignments for connecting the service with the learning.

A service-learning course is typically developed as discipline-based or project-based service-learning and as providing direct or indirect service. In a discipline-based course, students have a presence in the community throughout the term and complete assignments or participate in discussions to connect the classroom learning with the service activity. An example is students

enrolled in a history of the civil rights movement developing and presenting units on some aspect of the movement to students at a local elementary school. This project may be repeated every term with different classes.

Students in a project-based service-learning course use knowledge gained in the course and/or prerequisite courses to work on a community problem or need. The specific service-learning activity in a project-based course is not likely to be repeated. The partnership between the faculty and the community partner may continue with different problems each term. An example is a city and regional planning course collecting and analyzing data to identify frequency and spatial patterns of neighborhood problems and developing recommendations (based on best-practice research) for addressing problems.

Service-learning courses may also be categorized as providing direct or indirect service. Direct service involves working with others—person to person and face to face. Examples are tutoring or mentoring children or assisting elderly persons. Indirect service typically involves a project with impact on a community as a whole. Examples include designing a playground, collecting data, or studying and making recommendations to solve a problem. Indirect service courses may also focus on a research question—finding, gathering, analyzing, and reporting information or conducting environmental or other tests, or conducting experiments. Incorporating research into the course requires IRB compliance.

An effective service-learning course should include the following core premises:

- strong connection between academic learning and service and analysis of the connection;
- service activity reflects community goals and priorities;
- mutual benefit for all involved, including collaborative planning with the community partner;
- student preparation and support;
- plan for evaluation;
- plan for sustainability.

Community service is designed and developed to provide a strong connection to academic learning that will enhance student understanding of course content. The service activity should not only reflect community goals and priorities but also be connected to course content and learning outcomes. The service enhances understanding of the academic content of the course and leads students to apply academic learning in a community setting. The service activity is designed with clear goals, expectations, and responsibilities for both the faculty and students enrolled in the academic course as well as the community partner. The service activity should be of value to all constituent groups involved and provide for flexibility to accommodate changing circumstances. Successful partnerships are based on clearly established lines of communication that allow for all groups to provide feedback about the service activity. Evaluation is primarily based on the contribution of service to learning in the class and on the community outcomes. One aspect of evaluation of learning is the ability of the student to integrate the course content with the service, i.e., the ability to use the service as an additional text for the course. Evidence of this ability may come from writing, course discussion, products created during the service activity, or feedback from the community partner. The concept of sustainability in service-learning refers to continuation of the collaborative work. The faculty and partner may negotiate a short term arrangement (one discrete project) or an ongoing collaboration, depending on the community objectives and the course offering schedule. Longer term sustainability should be a part of departmental and faculty planning for commitment to offer the course as a service-learning course.

BUILDING SERVICE-LEARNING IN A UNIVERSITY

Institutions seeking to build service-learning opportunities may refer to a framework developed by Campus Compact, a US coalition of University presidents that support student involvement in public service. Campus Compact includes five elements necessary for developing effective service-learning:

- development of infrastructure within the university;
- adoption of a definition;
- support and recognition for faculty involvement;
- clear and visible messaging to students about opportunities;
- provision of resources and financial support.

Creation of an infrastructure to support and promote service-learning is necessary. The absence of staffing, resources and a name and place leaves development dependent on individual effort and enthusiasm. Appropriate infrastructure is related to the size of the institution, mission of the service-learning effort and the role of service-learning in the institution. Examples of size and function vary from large centers funded by endowments reporting to Academic or Student Life administrators to small offices with part-time faculty and support staff attached to a larger university outreach and engagement effort. Creating infrastructure may begin with faculty adoption of service-learning across the disciplines of the university. Buy-in by highly regarded faculty is key for demonstration of high standards and positive learning outcomes essential for adoption across the university. Institutions with successful service-learning programs exemplify both (1) a core group of faculty highly involved in promoting and developing service-learning and (2) provision of funding and other resources with sufficient regularity and frequency to support faculty design and offering of community-based experiences to support learning.

Adoption of a commonly-held definition is an essential part of effective service-learning development. The institution may elect to impose a definition that fits with its mission or to allow the definition to evolve as service-learning is included in curricula across the university. Elements that usually appear as part of a definition include student provision of meaningful service that meets a need or goal defined by a community and connects to/enhances learning of academic content taught in the course. The connection between service and course concepts does not happen automatically but must be intentionally planned as part of the course through assignments, exam questions, class discussion and other activities. The connecting elements are often referred to as "reflection" or "analysis". An emphasis on social justice and development of civic participation are other elements that may be considered important or essential.

Another aspect of definition is familiarity with the concept and its meaning. Thus, another requirement for developing service-learning in an institution is communication and providing visibility for the approach and its contributions to student learning and community outcomes. This may be accomplished through a variety of approaches, including collecting and distributing an inventory of courses; providing summaries of course topics, activities and outcomes on a service-learning website; including reports of service-learning in university and external news publications/media; publishing brochures for students, advisors, faculty, and community groups identifying opportunities for involvement; and highlighting service-learning courses in the university listing of course offerings.

University support for and recognition of community-based work as a valued form of scholarship is a necessary element, particularly in a research institution. Collaborating with groups outside the university can be time and other resource intensive. But, examples of faculty who succeed in both the research and outreach agendas can be found. Service-learning provides a vehicle for developing exemplary courses that enhance student learning and provide community benefit. Successful faculty also find ways to meld their community based work into a larger research program of discovery. Support for this work is reflected in awards recognitions, criteria for promotion and tenure, and funding.

Community benefit is an essential element of service-learning and must be a part of development. Service projects should reflect planning with a partner from the community to develop an activity that reflects the goals and needs of the community rather than an idea from the university or a "great project that just needs a place for a try-out". Building an emphasis on community benefit includes faculty development around working with community rather than "doing for" or "doing to". Our usual approaches and assumptions developed inside the academy may not be relevant or useful in community-based work. Part of the learning in service-learning is listening to the community and appreciating new ways of knowing and meaning-making. Another intentional element related to community benefit is preparation of students for cultural sensitivity,

respect, and an attitude of learning. Best practice in service-learning emphasizes planning service that can be completed and evaluated to meet the objectives of the community partner within the time constraints of the university course.

EXAMPLES FROM STATISTICS

Lesser (2008) suggests service-learning as a useful approach for engaging students in the content of statistics and as a valuable way to extend meanings of community service through connecting a service activity with academic content and application. The service, when connected with academic content, helps students make a connection between their private lives as student, child, consumer, etc., and their public roles as citizen, civic participant, etc. Lesser's work was part of a university funded grant titled Action for Equity (ACE). The university provided infrastructure and support for redesign of ten courses in a wide range of departments. The goals of the work focused on access to and awareness of opportunities for girls, women, and underrepresented minorities in higher education.

The redesigned statistics course described by Lesser included data from the communities represented by the students. Students were offered three options for meeting the course requirements, including data collection and analysis, development of a lesson plan which used data, or a 20-hour service-learning project. The project involved developing and presenting lessons at a public school. Lesser connected the activity to the class through refection on the learning about how data or statistical thinking contributes to the lives of people and how the experience affected their thinking about how to use data in their teaching.

CONCLUSION

There is wide agreement that understanding and ability to use and interpret statistics is highly desired as a learning outcome in higher education. One way to capture student attention, motivate interest, and demonstrate career possibilities is through service-learning, a form of experiential education the helps students make connections between academic content and real world problems. Research shows the positive attributes of this approach for student learning and development as engaged citizens. Development of effective service-learning courses and institution-wide initiatives requires university wide planning as well as dedication of institutional, human, and fiscal resources.

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