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Enhancing the Scholarship of Teaching and Learning Through Micro-Level Collaboration Across Two Disciplines

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Two professors from two disciplines—education and sociology—analyzed the commonalities, differences, successes, and challenges of conducting cross-disciplinary Scholarship of Teaching and Learning (SoTL) research at the course level (micro-level). This case study of their collaboration resulted in a series of lessons learned which add to the literature base on the process of SoTL collaboration. The results of their professional collaboration at this level provide a validation for increased communication and alignment during the development and implementation of the projects developed to enhance teaching and learning in their respective courses. This erudition illuminates the potential of increased SoTL collaborations across disciplines at the micro-level.

This project is an outcome of our participation in a Faculty Learning Community (FLC). We are from two disciplines—education and sociology—and while convening monthly in a FLC to discuss the concept and field of the Scholarship of Teaching and Learning (SoTL), we developed a desire for research collaboration. The challenge was that we came from very different disciplines. As we explored collaborative research options, a common thread of interest emerged: service learning. As the FLC extended into another semester to afford the participants opportunity to further examine ways to collaborate, we determined that we would utilize service learning to improve teaching and learning in our respective courses. In addition, we were interested in the potential of cross-disciplinary SoTL research at the micro-level. This led to our research question focusing on this collaboration: what are the commonalities, differences, challenges and successes of collaborating at the micro-level to conduct SoTL research across disciplines?

The problem addressed here is about the challenges of cross-disciplinary collaboration. This article examines our successes and challenges as we collaborated to enhance teaching and learning through SoTL collaboration at the classroom level, or micro-level, in our respective courses—an introductory curriculum course in an early childhood education program and a gerontology course in a sociology program.

The Scholarship of Teaching and Learning

The concept of SoTL has been around in higher education even before the emergence of the term *scholarship of teaching* in the early 1990s when Boyer's (1990) work was published on the topic. Some disciplines, such as sociology, English, chemistry, and communication have embraced this concept for much longer than some of the other disciplines. Some of the earlier proponents of this concept include: (a) Shulman (1987), who focused on *pedagogical content knowledge*; (b) Pellino, Blackburn, and Boberg (1984), who discussed the *scholarship of pedagogy*; (c) Braxton and Toombs (1982), who designated teaching activities and course content as scholarship; (d) Baker (1980), who began citing relationships between what teachers know, what they do, and what they write about their teaching; and (e) Cross (1986), who emphasized that college teachers should be considered *classroom researchers*. More contemporary proponents of SoTL include: (a) Huber and Hutchings (2006), who encourage teachers to consider their classroom as a site for research in order to enhance the teaching profession; (b) Kreber (2005), who deems the scholarship of teaching and learning critical as college and university teachers strive to attain their goals; and (c) Weimer (1997), who began writing about teaching and research, emphasizing that "research improves teaching" (p. 54), and continues to write about this idea using the term *pedagogical scholarship* (Weimer, 2006).

According to Hutchings and Shulman (1999), "Scholarship of teaching is *not* synonymous with excellent teaching" (p. 14) but extends to framing and investigating the questions related to their students' learning. Numerous definitions are offered for SoTL, varying by discipline and/or institution, many of which incorporate ideas from Boyer (1991). His ideas promote that teaching may be considered as routine, but when defined as scholarship, it can educate and attract future scholars; stimulate active learning by students; engage faculty, not only as teachers, but also as learners; and help maintain a vibrancy of scholarship in professors' work.

The design of this project resonates with the description of SoTL offered by Huber and Hutchings (2006): "… viewing the work of the classroom as a site for inquiry, asking and answering questions about students' learning in ways that can improve one's own classroom and also advance the larger profession of teaching" (p. 1). Additionally, this study follows the

outline of the mission of the Carnegie Foundation for the Advancement of Teaching (2013), which includes (a) learning from each other, (b) improving on what we know works, (c) continuously creating new knowledge, and (d) taking what we learn and making it usable by others.

Collaboration and the Scholarship of Teaching and Learning

Inasmuch as the works in the classroom are encouraged to be shared with others, collaboration with colleagues is paramount in SoTL in the procedures, outcomes and applications (Carnegie, 2013; Huber & Hutchings, 2006; McKinney, 2007; Shulman, 1993). Demonstrating this relationship, a study by Cox, Huber and Hutchings (2004) found that 88 percent of the participants in the Carnegie Academy for the Scholarship of Teaching and Learning collaborated with colleagues in their institutions as they investigated SoTL questions.

Collaboration in SoTL most often occurs within the discipline, but considering collaboration across the disciplines allows expansion of the questions and research ideas in attempts to improve student learning with SoTL (McKinney, 2007). According to Yakura & Bennett (2003), scholarship within disciplines is important, yet it should not limit work across the disciplines. Huber and Morreale (2002) summarized the advance of collaboration by explaining that more cross-disciplinary collaborations are contributing to a broadening of literature that once may have been shielded from others due to its specific language, procedures and subject matter.

Other researchers have noted that this approach, also called transdisciplinary research, demands high quality when adopting ideas from one discipline into another and is based on common underlying relationships in which theories can be applied (Lattuca, 2003; O'Brien, Marzano, & White, 2013). Additionally, O'Brien et al. (2013) conclude that this type of collaboration sparks enthusiasm, not only about learning from other researchers, but also about gaining new ideas, perspectives and practices. Dewulf, Francois, Pah-Wostle, and Taillieu (2007) note that the different elements within disciplines work together to create professional communities through which researchers' professional and personal identities can be strengthened.

McKinney (2007) further notes that SoTL collaboration may occur in a variety of ways. Some of these descriptions include: (a) working independently, yet brainstorming with a colleague; (b) discussing efforts with another professor at various phases during a project; (c) gathering ideas with someone; (d) measuring concepts and/or analyzing the result; (e) engaging with a partner throughout the whole project. Finally, she offers an additional description, which is the mode of collaboration utilized in this project: SoTL work, which involves two or more professors sharing a research question for which they gather data in different courses, departments, or institutions. The researchers then pool their data and work together to analyze, interpret, publish, and apply the results (McKinney, 2007).

Huber and Hutchings (2006) resonate with Hatch, Bass, Iiyoshi, and Pointer-Mace (2004) as they note that, through technological advances, there are now more opportunities for collaboration across disciplines/institutions during SoTL projects. Additionally, the SoTL results can be more collectively disseminated at the end with networking. An advantage of collaboration in SoTL across disciplines is learning from each other about the respective disciplines. Additionally, Yakura and Bennett (2003) assert that finding commonalities across the disciplines strengthens the effectiveness of the methods employed in the study. They concur that connecting ideas and concepts creates new relationships and provides fresh perspective. Their study further validates Huber's (1999) findings that cross-disciplinary collaboration allows us to draw from the objective view of colleagues to note knowledge gaps, whether wide or narrow, and allows us to fill them within our disciplines. Yakura and Bennett (2003) reiterate that filling in these knowledge gaps may very well prevent scholars from getting frustrated and unnecessarily repeating work that has already been done. Additionally, in the teaching profession the collaboration strengthens the findings of studies, empowers replication, and advances the literature by providing diverse contributions (Huber & Hutchings, 2006; McKinney, 2007; Weimer, 2006).

As is evident from the literature, many of these collaborations occur at the institution/discipline level or *macro-level*. In this study, we use the classroom aspect to show that SoTL can be accomplished across disciplines at the *micro-level* and to answer the question, "What are the commonalities, differences, challenges and successes of collaborating at the micro-level to conduct SoTL research across disciplines?" According to Bernstein (2010): "... the best instructors in all fields are those who read what others are doing, evaluate their own successes, and refine their teaching through careful consideration of the evidence before them" (p. 1). Resonating with his words that summarize the SoTL mission, our goal in this study is to demonstrate effective collaboration across disciplines to improve teaching and learning in our respective courses.

Service Learning in the Setting of this Study

Although this case study is not about service learning in our courses but about our cross-discipline

micro-level collaboration, we feel it is necessary to aid the understanding of our selection of service learning as the strategy adopted for enhancing the teaching and learning in our classes. Therefore, we are providing an operational definition of service learning, which we adopted to guide us in the design of the service-learning option in our respective courses; a brief statement of the status of this methodology being utilized in university settings; and some of the reported benefits of students participating in a service-learning experience. The definition adopted for this study resonates with the explanation of service learning offered by Bringle and Hatcher (1995): Students receive credit in a course as they (a) participate in an organized service activity based on identified needs in the community in which they are working; and (b) reflect on their service activity to gain understanding of the course content, to develop a deeper appreciation of their discipline, and to enhance their personal values and commitment to civic responsibility.

Service learning has become a powerful force in universities, particularly in undergraduate education. In 2004, it was reported by Campus Compact, a national coalition of higher education committed to civic and community-based learning, that the number of full-time faculty teaching service-learning courses had increased threefold in the four-year period from 2000 to 2004 (Ehrlich, 2005). Recent reports indicate that membership in Campus Compact has grown by an average of 70 campuses per year over the past five years. This trend reflects an increased commitment to the civic purposes of higher education (Campus Compact, 2013).

Studies have confirmed students' higher academic achievement as a benefit of their participation in service learning (Astin, Voglesang, Ikeda, & Yee, 2000; Eyler, Giles, & Braxton, 1997; Jameson, Clayton & Ash, 2013; Shastri, 1999; Strage, 2000). In addition, the use of service learning provides rich experiences for students which promote self-esteem, develop higher-order thinking skills, and provide hands-on opportunities to help develop awareness of and value for diversities (Kahne & Westheimer, 1996; Wade, Boyle-Baise, & O-Grady, 2001; Weatherford & Owens, 2000). Finally, findings suggest that students may gain a greater depth of understanding of their course objectives and/or content as a result of participating in service learning (Anderson, Swick, & Yff, 2001; Eyler, Giles, & Braxton, 1997). The authors may be contacted for further information on service learning in this study.

Method

The focus of this article is on the collaborative case study of two professors in two different disciplines adopting service learning in their courses. For clarity, we have divided the methods section into a description of the participants, data collection and analysis for research in the *courses* and then a description of the participants, data collection and analysis of this *case study*.

Courses

Our collaboration consisted of implementing and evaluating the effect of service learning in two different courses in two different disciplines. This section of the methods describes the classes and the process of data collection for our collaboration.

Participants in the courses. To elaborate further and aid in the understanding of the results of our collaboration, information on the students in each of the classes is provided here. One course from the department of teaching and learning (hereafter referred to as Course Ed), was a junior-level, three-credit early childhood education introductory curriculum course that is required by the major. All 25 students enrolled in the class participated in the study; they were all juniors and education majors. All students, except for one, were traditional-age students (20-22 years old), and all but one were female. The other course was an upper-level gerontology course offered as an elective in the sociology department and hereafter is referred to as Course Soc. Anyone of any major could take this course. There were 28 students in the course participating in the study (five students opted not to participate). Students were in a range of years, but the majority were juniors (n=13) or seniors (n=13). Nineteen were traditional age (20-22 years old), and nine were non-traditional (23-54 years old). There were 20 females and eight males. Of the 28, only 10 were sociology majors.

In Course Ed, of the 25 students in the class that participated in the study (out of a total enrollment of 25), eight of the 25 students opted for service learning, which consisted of determining a need within their field placement classroom or school. They set goals and planned activities to address the targeted needs. Seventeen students opted for the traditional assignment, which consisted of observing and completing various tasks assigned by the elementary classroom teacher. In Course Soc, of the 28 students in the class that participated in the service-learning study (out of a total enrollment of 33), ten opted to do service learning which consisted of teaching computer lessons to older adults at the local library, and 18 opted for the alternative assignment, which included an interview with an elder and a paper based on the content of a range of feature films depicting older adults. We compared students who opted to do service learning with those students who opted to do an alternative assignment relative to their attainment of course objectives. Table 1 summarizes the participants in the course.

Table 1
Course Participants

Characteristic	Course Ed	Course Soc
Number of Participants	25	28
Description/Level	Homogenous; all juniors	Diverse; 1 freshman, 1 sophomore, 13 juniors, and 13 seniors
Gender	24 females; 1 male	20 females; 8 males
Age	24 traditional: 20-22 years old 1 non-traditional: 35 years old	19 traditional: 20-22 years old 9 non-traditional: 23-54 years old
Major	All were Early Childhood Education (ECED) majors	Only 10 were Sociology majors
Course	Junior Level; Required for major; Early Childhood Curriculum Course; skills based objectives	Upper level; Elective for any major; Sociology Course; knowledge-based objectives
Service-Learning (S-L) Option	8 students designed S-L in P-5 classrooms based on identified needs	10 worked with older adults and computers in library
Traditional Assignment Option	17 observed and completed various tasks assigned by P-5 classroom teachers	18 interviewed an elder and wrote a paper based on feature films with older adults

Data collection and analysis in the courses. To further support understanding of our collaboration, a brief description of our data collection and analysis within our courses is included. First, we collected basic demographic information from all students. Next, we gave all students in both classes a quantitative test at both the beginning and end of the course to measure their level of understanding of the course objectives. Since each class had a different set of course objectives, these tests were different for each class. These quantitative instruments consisted of a series of multiple-choice questions, and each question directly related to at least one course objective. In addition, all students in both classes provided three reflective journals (beginning, midpoint, and end of semester) where they could reflect on their learning through either the service learning or alternative assignments. Finally, all students were given a self-rated scale they could use to measure the attainment of course objectives and the utility of the learning strategy they had engaged in.

While similar data were collected for both classes, there were some differences. For instance, because of the homogeneity of the students in Course Ed, basic demographics included only gender and age, while in Course Soc, data was also collected on year in school and major. While students in both classes were required to provide journal entries at three points in the semester, those reflective journals differed. For Course Ed, journals focused on the process of service, students' attitudes about the experience, and examples of student work or on the traditional field experience activities in which they were involved. For Course Soc, journals focused on contributions of service learning or the alternative assignment to understanding course content and what was helpful and challenging about the experience.

Because the classes had different course objectives, those reflections looked different. In addition, we created different pre/posttests that were designed to measure baseline and terminal understanding of their individual course objectives. We also created a self-rated scale that allowed students to rate their level of understanding of each course's objectives using a five-point scale. This was included as part of the journal entries, and for Course Ed, it was administered at the beginning, midpoint, and end of the semester. For Course Soc, it was only administered at the midpoint and end of the semester, and a qualitative reflection of baseline understanding of course objectives was done at the start of the semester. In addition, students in both classes also rated how their learning experience (service learning or alternative) contributed to their understanding of each of the learning objectives on a five-point scale. This was completed in Course Ed at beginning (they projected how they perceived it *would* contribute), middle and end points; and in Course Soc, this was completed at the midpoint and end of the semester.

Case Study

This section of the methods describes the case study documenting a collaborative effort between two professors. This is the primary focus of this work, and the results section is a reflection of the case study process.

Participants in the case study. As participants in this study, we were the professors for the two courses.

The professor of Course Ed will be hereafter referred to as Prof Ed, and the professor of Course Soc will be hereafter referred to as Prof Soc. Our background in this setting is included below.

Prof Ed: This study was conducted during the fourth semester that I had taught Course Ed. During the same semester, I also taught a Creative Arts methods course to second-semester juniors, and I supervised first semester seniors in a practicum field experience. I was serving as Service-Learning Faculty Fellow for the College of Education, and had served as a Service-Learning Faculty Mentor the previous semester to a Service-Learning Student Facilitator—a student leader trained to assist professors in their service-learning projects. I was participating in my second Faculty Learning Community (FLC), this one being my introduction to SoTL.

Prof Soc: This study was conducted during the ninth semester I had taught the course. It was the second time I taught the course at my current university and the first time I adopted a service learning option for the course. During that same semester, I taught one additional course, death and dying. I served as a Service-Learning Faculty Mentor to a Service-Learning Student Facilitator for the aging course that is the focus of this study. I was also participating in the same FLC focusing on SoTL as Prof Ed. This was also my first SoTL project.

Data collection and analysis in the case study. We utilized a case study approach to examine the process of collaboration across two disciplines. According to Patton (2002), a case study is a method for examining the complexity of a single case. The case consisted of our collaborative efforts in teaching very different courses to very different sets of students in different departments and evaluating the effectiveness of service learning on the attainment of the course objectives. The focus is on the commonalities, differences, challenges and successes of doing collaborative micro-level SoTL research across disciplines.

The process of collaboration began when we were a part of a FLC on SoTL. After concluding that our strategy for enhancing teaching and learning would be the implementation of the service-learning option for our students we began a collaborative planning process. We determined the appropriate types of data collection to use for the service-learning study. There were three major processes we both utilized for data collection: field notes, on-going dialogue between the researchers, and a reflective spreadsheet (matrix of comparisons) focusing on the process of collaboration. In our initial planning sessions, we developed the matrix of comparisons as an on-going shared document on which we entered the qualitative data: field notes, observations, feelings, and other pertinent information. We divided it into four main categories: commonalities, differences, challenges, and successes. Then, we each added our data/notes (designated with our initials) under the headings of process, desired outcomes, and outcomes for each of the categories.

The collaborative process continued during the implementation of the study. During the semester we held regular discussions (weekly at first, then monthly as the semester progressed) to talk about the research process from the beginning stages to the end stages. During our discussion sessions, we examined our matrix of comparisons as it developed throughout the semester. Discussions primarily took place during the ongoing FLC that focused on SoTL. In this setting, we were able to discuss our collaboration and receive feedback and support from other faculty familiar with the SoTL process. We also collaborated during the analysis process. As themes emerged regarding the collaborative process, we were able to discuss these themes with other colleagues, thereby providing a level of triangulation. The shared matrix of comparisons document proved invaluable as we began to compare and contrast our experience throughout the semester. Not only had it provided an "agenda" for our discussion sessions, the field notes and pertinent data contributed most to the construction of the thematic results of this case study. This research focused on the process of collaboration more than the classroom outcomes regarding the utilization of service learning. Specifically, this case study is the process of collaboration between the two of us. The results will be used to contribute to the limited base of process-focused literature in SoTL.

Results

Results provided here are our reflections and analyses regarding the process of working together. In order to establish answers to our research question, "What are the commonalities, differences, challenges, and successes of collaborating at the micro-level to conduct SoTL research across disciplines?," we utilized reflections from our individual field notes as well as from ongoing discussions. We used our running spreadsheet, matrix of comparisons, that focused on our four themes: commonalities, differences, challenges, and successes of the collaborative process. For each of these themes, we were attentive to the process, outcomes, and plans for the future.

Commonalities

Process. There were several commonalities in the process for both classes. First, we both were implementing a new teaching methodology for enhancing teaching and learning. In this case we

selected to add a service-learning component in our classes. We had both revised our course syllabi to provide a service-learning option for students. As part of this process, we submitted our course syllabi to the university's Service-Learning Faculty Fellows for approval, and we both attained the course designation of service-learning course. The partial implementation of service learning allowed for comparisons between students opting into service learning and those opting for an alternative assignment in both classes. Also, while we both hoped that service learning would help students to attain course objectives, neither course had any specific course objectives directly related to service learning. There was a single IRB application, and students in both classes had to sign the same informed consent form to have their data included in the study.

Outcomes. One commonality with regard to the outcomes was that there were too few students in both courses to allow for a statistically significant quantitative assessment. This is discussed in more detail in the section on challenges. This led to ongoing discussions between researchers about if and how changes in the integration of service learning should take place. Through these discussions, we were both able to make decisions about future revisions to our classes.

Plans for the future. Similar types of quantitative and qualitative data were collected in both classes. Looking at outcomes, we both decided to adopt service learning as a course requirement the next time we taught our classes. A course objective was added to the syllabus for future sections of the course for Course Soc that directly related to service learning. Although Course Ed objectives could not be modified, as per program design, course activities were modified to include service-learning to achieve the prescribed objectives.

Differences

Process. One of the key differences between the two classes was that Course Ed was a required course for majors in their junior year, whereas Course Soc was an elective for students of any major. This led to two very different sets of students. Course Ed was much more homogenous when compared to Course Soc across a range of factors, especially age and major.

Each course had its own objectives. A comparison of those course objectives showed that Course Ed's course objectives are much more skill-based, whereas Course Soc's course objectives are more knowledge-based. This may be attributed to the fact that education is a more applied discipline while sociology is a more theoretical discipline.

We both faced limitations with regard to service-learning options, but the limitations differed. Course Ed service-learning students had little opportunity to work outside the field placement classroom, which meant that students' service-learning options were limited to in-class based service. This limitation was due to a highly-prescribed course of study in the practicum experience of Course Ed. Course Soc service-learning students were only given the option to do computer lessons one-on-one with older adults in the community. This limitation in options was due to a limited amount of time available for coordination with a community partner.

Outcomes. Miscommunication due to failure to establish a common deadline for collecting the first reflections resulted in a difference in the first set of data collected in our classes' journals. The difference occurred when Course Ed students began their projects later than those enrolled in Course Soc, and Prof Ed revised the design of the first reflection after Prof Soc had already collected her first reflections. As a result, Course Ed students were asked to rate their baseline understanding of course objectives using a quantitative five-point scale in addition to their qualitative reflections in their journals, but Course Soc students were only asked to reflect on their understanding qualitatively in their journals.

Plans for the future. We both evaluated the effectiveness of service-learning in our classes, but our foci for future implementations are varied. Prof Ed plans to evaluate the effect of service-learning on students' self-efficacy, and Prof Soc plans to evaluate the effects of different types of service learning on students' attitudes toward older adults.

Challenges

Process. Inasmuch as the two colleges within a single university represented in this study are separated physically across the university campus, our regular connection with each other was challenging. Additionally, there were scheduling conflicts.

We both struggled with service learning being new to our respective programs. For Course Soc, this was the first service-learning course for the department, so there were no clear processes or requirements for the adoption of service learning. For Course Ed, it was the first Early Childhood Education (ECED) course with field placement, and at this introductory level there are many limitations to the students' understanding of the classroom and identifying needs within that classroom. A previous student's experience as a Service-Learning Student Facilitator was employed to help introduce the concept to Course Ed students and encourage them to participate in this premier experience.

Additional challenges in Course Ed occurred relating to other classes in the Teaching and Learning Department. While multiple sections of the course

were offered by other professors, these courses did not have a service-learning component, and that potentially affected students' expectations with regard to course content.

Outcomes. Perhaps the biggest challenge we faced was the limited number of students involved in the study. We each only taught one section of the course we were evaluating. As a class-based study, the data collected could only come from a limited number of students (n=25 for Course Ed and n=28 for Course Soc). In addition, the comparisons between service-learning and non-service-learning students were limited by the number of students who opted for service-learning (32 percent of students in Course Ed and 38 percent of students in Course Soc). This resulted in insufficient power to detect all but the largest of effects.

Plans for the future. The deficiency of statistical findings, along with the lack of service-learning options offered by the various instructors of the same courses within the program for Course Ed, made determining whether to continue, extend or eliminate service learning difficult. The lack of statistically significant findings also limited decision making for Course Soc.

Successes

Process. Despite the challenges, we were both able to gather both quantitative and qualitative data that could be used to determine the success of implementing a service-learning component into our classes, and we were both able to analyze the data.

Outcomes. Each of us was able to utilize the qualitative data to develop themes that led to a better understanding of how service learning contributes to the attainment of course objectives. Data analysis for Course Ed showed that students participating in service-learning component achieved the course objectives as well or better than those who did not participate in service learning.

Plans for the future. We both report success in plans for the future. First, both of us have decided to require service learning for the class in the future based on non-statistical results, the thematic coding of qualitative results and collaborative discussions. We are both continuing with research regarding the effectiveness of service learning in our classrooms, and we each have developed specific plans for our own courses and disciplines. Prof Ed is sharing the idea of implementing service learning with other faculty members who have traditionally not offered this type of project due to the prescribed practicum programs: they now have a model on which they can base their implementation. And Prof Soc is using lessons learned from this research to implement a service-learning component in another upper-level sociology course. Both have been able to share the results of this work with faculty interested in SoTL through a presentation at an SoTL conference.

Discussion

One of the best ways to think about teaching/learning problems, issues, or questions, according to McKinney (2007), is to consider SoTL questions posed by others. During this project, we investigated various SoTL projects as we determined our own design and research question(s). We discovered the same phenomena as McKinney (2007): "SoTL teaching-learning problems or research questions can vary tremendously even within a discipline" (p. 29). The more important discussion comes from the value and challenges of such collaboration. Although the approach for enhancing teaching and learning in our case study was implementing the methodology of service learning, the results from this collaboration can be applied to the execution of other strategies in cross-disciplinary SoTL research. What follows are some lessons we learned from the process.

Lessons Learned

Lesson One: The two times that the collaboration was the most valuable were at the beginning and the end of the research process. At the beginning, we were able to collaborate on the research design. We both agreed on the research questions, the types of data to collect, and the method to collect them. In addition, we were able to submit a single IRB application. Our initial miscommunication regarding the initial data collection served as a caveat to remind us of the importance of getting off to a good start with clear communication. In the middle, each of us separately collected and analyzed our data. While we were able to check in and be supportive of each other during that process, the work itself was done separately. At the end, we were able to share results of our analysis and discuss why and how we would make revisions to future iterations of the classes.

Lesson Two: From the beginning, it is essential to have a clear understanding of the ways that each class and discipline differ and the ways they are similar. This is especially important when planning our methods. In our case, there was a range of differences, from course objectives to student demographics to place of the course in the major. All of these differences, described in the participants' sections, had an influence on data collection and data analysis. Understanding this, and thus allowing for the flexibility of process for each of the professors, is crucial. For instance, while we both had a quantitative measure of students' knowledge of course objectives, those measures were very different. In addition, analysis of the data collected needed to be

done through separate processes. Initially, we had hoped to have one codebook for the qualitative analysis of journal entries, but we found this to be impossible since the students' reflections were so different, and the nature of the information we needed from them was also different.

Lesson Three: It is crucial to set up regular times to communicate about process, because learning about the bumps in the road faced by the other person can be helpful only if one knows what those bumps are. While we both felt that the experience of collaborating with someone from a different disciple was helpful, there were some challenges. Working collaboratively with someone from another department housed in a different building on campus meant we did not "run into" each other, and regular connection was challenging. We discovered that, while data collection and analysis is performed separately, ongoing communication is still essential.

Lesson Four: It is essential from the beginning to accept that outcomes and options will be different when working collaboratively with someone from another discipline. From the beginning, we planned to create separate articles on our findings that would be submitted to our own discipline-specific journals. In addition, we accepted that while we were both moving to make a decision about the future implementation of service learning, those decisions would most likely look different. Indeed, while each of us now require service learning in our classes, the implementation of that service-learning component—location, hours, connections to course content—are very different. Although the implementation of service learning was our common thread, this lesson can be applied in other content areas utilizing SoTL collaboration at the micro-level.

Lesson Five: A major advantage to working together is the ability to exchange ideas along the way, and in that sense, this process was invaluable. In addition, having another person who did not completely understand our individual disciplines forced us to provide a level of clarity that is not required by someone within our discipline. That worked to our advantage in a range of areas including IRB application, explanations of the research to students and community partners, and ultimately in producing publishable work.

Limitations

As a process study, there were some limitations. While working across disciplines has advantages, there are disadvantages regarding the requirements of the disciplines. One limitation was the dramatic differences with regard to course outcomes. In addition, the study is limited by the fact that only two disciplines and two classes were involved. Future research would benefit from additional disciplines and additional classes. The additional complexity would provide an additional layer of understanding. Finally, the study was limited by the number of students involved. It would have been a stronger study of cross-disciplinary collaboration if the study had expanded to include future semesters of the same classes. These additional numbers would have enhanced our results as the process of continued collaboration could be explored.

Conclusions and Recommendations

During this collaborative process of employing SoTL, we found that it is important to realize that results will be different and that each us has different limitations with regard to changes that can be made based on those results. In addition to the implications from the lessons learned, we recommend more long-term studies with the same classes, which would increase the number of subjects from which data could be collected. Ultimately, micro-level collaboration across disciplines enriches the research experience and contributes to the participants' increased Scholarship of Teaching and Learning.

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