

Diverse Methodological Approaches and Considerations for SoTL in Higher Education

2009 Submitted to:

The Canadian Journal for the Scholarship of Teaching & Learning

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The scholarship of teaching and learning (SoTL) is a distinctive form of research within higher education. SoTL is shaped by multi-disciplinary research contexts and focuses on practice-driven institutional/curricula/classroom inquiries with an explicit transformational agenda. Essentially, SoTL internalizes theory and practice through a systematic and cyclical process of inquiry that involves hypothesis testing, planning, observing, analysis, and action (Clarke & Erickson, 2004; McKinney & Cross, 2007; Mills, 2000). Thus, SoTL provides unique opportunities for faculty members to reflect on and initiate positive changes to their teaching and learning practices, as well as engage students and colleagues in the process (Hubball & Gold, 2007; Friedman, 2008). Further SoTL attempts to find common ground within and across disciplines by engaging the scholarly community in critical educational issues in higher education (Senge & Scharmer, 2008).

Clearly, the strengths of SoTL researchers lies in their complex understanding of the teaching and learning context; SoTL researchers have a vested interest with the practice-based issues under investigation; and their experience is critical to assess the realities for positive change in these settings (Cochran-Smith, & Lytle, 2004). More often than not, however, multidisciplinary faculty members, especially those unfamiliar to social science research methods, do not possess the appropriate methodological expertise and thus find it significantly challenging to conduct SoTL research in complex institutional/curricula/classroom settings.

This particular essay provides critical insight to diverse methodological approaches and considerations for conducting SoTL within and across disciplines. The following insights are grounded in the SoTL literature and 10 years of mentoring experience with over 200 multidisciplinary and multi-institutional faculty members whom have conducted SoTL research within the context of the 8-month *SoTL Leadership: UBC Faculty Certificate Program* (UBC FCP) at the University of British Columbia (Hubball & Poole, 2004; Hubball, Pratt & Collins, 2005; Hubball & Burt, 2006)

Communities of SoTL practitioners

For many multidisciplinary faculty members, undertaking complex institutional/curricula/classroom research to enhance practice can be both epistemologically challenging and empowering (Davis & Sumara, 2006; Huber, 2006). SoTL research, for example, very often requires faculty members to move beyond disciplinary research boundaries, embrace broader social science methodologies, and collaborate with students, colleagues and stakeholders. Thus, a community of practitioners is at the very heart of SoTL research (Cox, 2004; Friedman, 2008; Vaughn, 2004). McKinney & Cross (2007) asserted that:

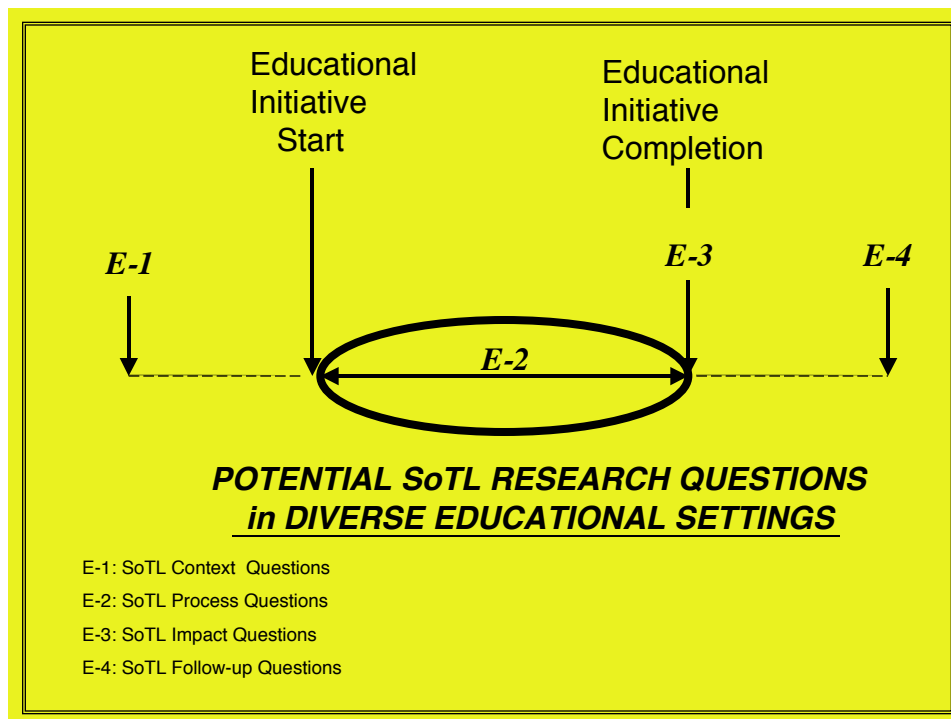
Making SoTL community property by collaborating with colleagues is key to high quality, shared and meaningful projects. Involving students in our SoTL efforts beyond the role of research subjects is an important, defining characteristic of our work” (McKinney & Cross, 2007, p.54).

By engaging administrators, faculty members and students in opportunities for discourse and peer-review activities that critique common teaching and learning issues and achievements, goes a long way to enhance critical issues of validity, reliability and practicality of conducting SoTL

research (Kreber, 2006; Wenger 1998). For example, a community of SoTL practitioners can facilitate which literature sources and theoretical frameworks are appropriate to inform SoTL research and practice in complex disciplinary settings, which SoTL research questions are important, what data to gather, when and how to collect and analyze these data, how to initiate positive changes to enhance practice, how to engage key stakeholders (e.g., students, colleagues, administrators) in the process, and, finally, to consider how this SoTL research might be of interest to the broader scholarly community in terms of dissemination (Hubball & Albon, 2007; Hubball, Clarke & Beach, 2007). It is from this starting point, therefore, that SoTL researchers are urged to consider and frame their institutional/curricula/classroom investigations.

SoTL research questions in diverse higher education contexts

Various types of SoTL research questions are investigated in diverse institutional/curricula/classroom contexts. Preliminary SoTL questions tend to focus on problematizing one's institutional/curricula/classroom practice. These preliminary questions typically focus around "what's going on here?", "what's going wrong or needs to be improved with 'X'?", "why is 'X' happening?", "what processes create these impressive outcomes?". Thus, preliminary questions point to the central intent of the SoTL investigation and the sorts of insights sought to enhance specific practices. Following the preliminary questions, SoTL researchers are challenged to consider broader (inter-related) factors about their practice and begin to formalize their SoTL research questions for investigation (Norton, 2009; Senge & Scharmer, 2008). The following framework has been employed by instructors and educational developers to investigate SoTL research questions in diverse higher education settings (Hubball & Albon, 2007; Hubball & Gold, 2007; Hubball & Burt, 2007; Iaria & Hubball, 2008; Steele, Hubball & Day, 2009).



[ENTER FIGURE 1 HERE]

Figure 1. An heuristic model for investigating potential SoTL research questions in diverse higher education settings

This framework takes into account complex higher education contexts and highlights a wide range of potential time-phased SoTL research questions which can be selected.

SoTL context questions. These focus on critical structures that shape the educational initiative. For example, SoTL context questions might include: a critique of literature models and best practices, an examination of critical implementation factors, assessment of perceived needs of key stakeholders, and examination of cost-benefit analysis and resource feasibility issues. What needs to be improved, why, how?

SoTL Process questions. These focus on periodic assessments of issues of importance that arise throughout the educational initiative (formative). For example, investigating theory-practice integration or problematic, innovative, or successful outcomes-based program processes; examining how and to what extent educational experiences are responsive to the needs and circumstances of the key stakeholders? Investigating whether and how learning experiences are progressively sequenced? What needs to be improved, why, how?

SoTL Impact questions. These focus on issues of importance that occur as a result of the educational initiative (summative) evaluation. For example, what are learning outcomes and how do key stakeholders rate the quality of the educational initiative? To what extent does the educational initiative meet, surpass, or fall short of expectations, why and how? What needs to be improved, why, how?

SoTL Follow-up questions. These focus on issues of importance which arise as a result of the longer term (e.g., months, year) impact of educational initiatives. For example, where do graduates go and how do they apply their learning?, as key stakeholders reflect upon the educational initiative, what do they remember and value most? Generally speaking, to whom and to what extent, if at all, did the educational initiative make any difference? If at all, how did the educational initiative contribute to further development?

The selection of specific SoTL research questions, therefore, is key to determining an appropriate methodology in order to gain the sorts of critical insights sought to enhance institutional/curricula/classroom practices.

Diverse methodological approaches for SoTL

There are a wide range of methodological approaches (e.g., experimental design, action research, self-study, case study research, grounded theory research, classroom ethnography, implementation analysis, phenomenological study, program development/evaluation research, survey research, longitudinal study research) to investigate SoTL research questions in diverse higher education settings (Bogden & Biklen, 2006; Bullough & Pinnegar, 2001; Gerring, 2007; Janelle, Barba, Frehlich, Tennant, & Cauraugh, 1997; Strauss & Corbin, 1998). Each methodological approach is rooted in particular ontological and epistemological assumptions, as well as embodies important ethical considerations for the processes and outcomes of conducting SoTL research (Cohen, Manion & Morrison, 2007; D'Andrea, 2006; Hutchings, 2002; Kubler, 2004). Although common methodological approaches do emerge in the literature, there is no one single best approach for investigating SoTL. Selecting an appropriate methodology for a SoTL

inquiry will depend on situational practicalities, as well as the appropriate alignment of clearly articulated SoTL research questions that one wants to ask in order to gain the sorts of insights to enhance institutional/curricula/classroom practices. This determination will also enable the SoTL research to develop a clear sense of who and how many people are likely to be involved, the sort of data that will need to be collected, over what time period, and under what conditions. Initially, however, SoTL researchers are more likely to select familiar methodological approaches that are common to their disciplinary field. Huber (2006) cautions, however, that herein lies a fundamental challenge for SoTL researchers since such methodological approaches may not allow for the richest results to ideal questions that are at the heart of the investigation:

The scholarship of teaching and learning is typically pursued as a kind of practitioner or action research by teachers in their own classrooms, not the circumstances or settings for which the investigative methods used in most disciplines—including education and the learning sciences—are well designed. Doing the scholarship of teaching and learning sits, therefore, at the edge of most disciplines, calling on but also going beyond the normal knowledge practices of most fields (Huber, 2006, p.72).

The following table highlights a range of methodological approaches, that were drawn from the UBC FCP and literature sources, to conduct SoTL research in multidisciplinary settings (table 1). Readers are encouraged to examine in more detail each publication to gain a fuller appreciation of the nature and substance of these methodological approaches.

Table 1 Examples of diverse methodological approaches for SoTL inquiries in Higher Education

SoTL Research Context	Central SoTL Research Question	Methodological Approach	Data Collection Methods	General Outcomes
Investigating learning-centred curriculum change in the Faculty of Pharmaceutical Sciences 4-year BSc Program (Hubball & Burt, 2007)	Theory-practice integration of curriculum learning outcomes	Action research and implementation analysis	Focus group interviews, review of course syllabi and curriculum documentation, examination of student assessment methods and teaching practices	More attention is required for faculty development on learning-centred course design and assessment practices, as well as strategic monitoring of formative curriculum evaluations
Investigating the use of supplying powerpoint lecture notes to enhance student learning in an Undergraduate Human Development Course (Noppe, 2007)	Impact of an instructional intervention, at three time intervals, on the quality of students' work	Experimental design with two sections of the same course. One section was assigned a control group, without the intervention	Review of students' work and assessment of final exam marks	No difference found in students' knowledge at three time intervals, with or without supplied lecture notes. Students had a more positive perception of the class when hard copy lecture notes were provided.
Critique of SoTL literature: Learning-	To what extent do learning-centred	Grounded theory	Meta-analysis of multidisciplinary	Multidisciplinary literature sources

centred assessment practices in higher education (Lanyon & Hubball 2008)	assessment practices take into account gender considerations?		literature about gender differences and assessment of learning	suggest significant gender bias exist with learning-centred assessment practices. Classroom strategies are suggested for self, peer and group assessment methods.
Facilitating lifelong learning in multidisciplinary Undergraduate courses (Wiersema & Licklider, 2007)	Exploration of students' perceptions of life-long learning in multidisciplinary settings	Phenomenological study	Focus group interviews, individual interviews, student journals, and student self-assessments	Six characteristics best captured the student's perspectives of life-long learning with implications for course design and teaching approaches
Investigating active learning experiences to enhance course delivery in small and large classes (Iaria & Hubball, 2008)	What are interaction differences and learning outcomes between students in large and small classes	Quasi-experimental design with two different classes and class size	Focus group interviews, student feedback forms, external classroom observations, video analysis	Class size had a significant impact on the quality of student interactions, but no difference found on learning outcomes. Strategies suggested to enhance large classroom communities and use of large classes in final, rather than introductory undergraduate courses.
Investigating assignment submission practices to enhance on-line learning in a 3 rd year Communications course (Steele, Hubball & Day, 2009)	Impact of on-line assignment submission practices on the quality of students' work	Quasi-experimental design to assess student grades, quality of students' work and assignment submission practices	Grading of students projects, analysis of student feedback comments toward self-selected assignment submissions	Fewer on-line assignment submissions were received. Further, on-line assignment submissions received lower grades. Student support strategies were provided to enhance on-line learning practices.
Analysis of a critical incident in a first year undergraduate course (Torosyan, 2007)	Developing best practice guidelines when faced with the challenge of a student who does not take responsibility for his/her own learning?	Narrative case study inquiry	Journaling of complex interplay between student and teacher	Through an inductive process, a set of best practice principles were developed to guide future engagements with students in this position, as well as five dimensions for reflecting on

				critical incidents
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Methodological approaches for SoTL inquiries may also be considered as quantitative or qualitative in nature, or a combination of the two (i.e., a mixed-method approach). Mindful of the limits of categorizing SoTL research as either quantitative or qualitative, this distinction can be useful for thinking about the sorts of SoTL inquiries that can be sought in multidisciplinary settings (Drevdahl et al., 2002; Langhout, 2003; McNiff, & Whitehead, 2006; Mills, 2000). Mack, Woodson, MacQueen, Guest, and Name (2005), for example, provide a brief summary of quantitative and qualitative research approaches that can help to guide potential SoTL inquiries (see Table 2). Thus, appropriate combinations of qualitative and quantitative data sources can yield reliable and critical information to enhance SoTL (Feldman, Paugh, & Mills, 2004; Peterat & Smith, 2001). Quantitative data sources for SoTL inquiries, for example, might include a variety of survey instruments (e.g., numeric performance and participation records, check-lists, use of on-line learning tools, rating and rank-order preference scales). On the other hand, qualitative data sources for SoTL inquiries might include a variety of open-ended sources (e.g., teaching and learning observations, semi-structured and structured focus group interviews, internet searches, student response feedback forms, audio-video recordings,, examination of course syllabi, curriculum documentation and teaching journals; participant narratives etc). Huber (2006) noted that SoTL researchers often need to entertain more uncertainty as they explore a range of qualitative methods consistent with this genre of research. Essentially, qualitative and/or quantitative data sources should be selected to align with the appropriate methodology and SoTL research questions, in order to meet the specific needs and circumstances of the SoTL research context.

Table 2. Typical Characteristics of Quantitative and Qualitative Research Approaches

	Quantitative	Qualitative
General framework	<p>Seek to confirm hypotheses about phenomena</p> <p>Instruments use more rigid style of eliciting and categorizing responses to questions</p> <p>Use highly structured methods such as questionnaires, surveys, and structured observation</p>	<p>Seek to explore phenomena</p> <p>Instruments use more flexible, iterative style of eliciting and categorizing responses to questions</p> <p>Use semi-structured methods such as in-depth interviews, focus groups, and participant observation</p>
Analytical objectives	<p>To quantify variation</p> <p>To predict causal relationships</p> <p>To describe characteristics of a population</p>	<p>To describe variation</p> <p>To describe and explain relationships</p> <p>To describe individual experiences</p> <p>To describe group norms</p>
Question format	Closed-ended	Open-ended
Data format	Numerical (obtained by assigning numerical values to responses)	Textual (obtained from audiotapes, videotapes, and field notes)
Flexibility in study design	<p>Study design is stable from beginning to end</p> <p>Participant responses do not influence or determine how and which questions researchers ask next</p> <p>Study design is subject to statistical assumptions and conditions</p>	<p>Some aspects of the study are flexible (for example, the addition, exclusion, or wording of particular interview questions)</p> <p>Participant responses affect how and which questions researchers ask next</p> <p>Study design is iterative, that is, data collection and research questions are adjusted according to what is learned</p>

(Mack, Woodson, MacQueen, Guest, and Name, 2005)

CONCLUSION

Multidisciplinary faculty face significant methodological challenges when undertaking SoTL research in higher education. This essay provides critical insight to diverse methodological

approaches for conducting SoTL within and across disciplines. No one size fits all. Further, SoTL research questions and methodologies should be tailored to the needs and circumstances of the institutional/curricula/classroom research context. Communities of SoTL practitioners play a critical role to enhance issues of validity, reliability and practicality for conducting SoTL research. It is important to note, however, that SoTL research is not value free. Further it reflects approximations of the truth (acknowledging that there are multiple truths about SoTL inquiries from multiple perspectives e.g., different questions and data sources sought for different ability-based students, colleagues, and other stakeholder groups with different backgrounds, experiences and interests etc). Thus all interpretations of SoTL research require a healthy scepticism, analysis of methodological rigour, and an openness to alternative perspectives and analysis.

ACKNOWLEDGEMENTS

The authors would like to express their thanks to over two hundred multi-institutional faculty graduates (e.g., UBC, UWI, UHM, UofT, UofW, BCIT, UofCariboo, SFU, UVIC, UofA, NAU, UofOtago), whom have conducted SoTL research within the context of the 8-month *SoTL Leadership: UBC Faculty Certificate Program* (UBC FCP) at the University of British Columbia.

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