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Diverse Methodological Approaches and Considerations for SoTL in Higher Education

Abstract
The scholarship of teaching and learning (SoTL) is a distinctive form of research that is shaped by multi-disciplinary contexts and focuses on practice-driven institutional/curricula/classroom inquiries with an explicit transformational agenda. This essay provides critical insight to the importance of communities of SoTL practitioners, diverse investigations and methodological approaches within and across disciplines. For example, through an integrated and iterative process, a community of SoTL researchers plays a critical role to enhance and sustain on-going SoTL research. Equal to all forms of research endeavour, interpretations of SoTL research require a healthy scepticism, analysis of methodological rigour, and an openness to alternative perspectives and analysis.

L'avancement des connaissances en enseignement et apprentissage (ACEA) dans l'enseignement supérieur est une forme de recherche distinctive façonnée par des contextes multidisciplinaires. Axée sur la pratique, elle est centrée sur caractérisée par des enquêtes sur des institutions, des programmes d'enseignement et des classes, tout en axée sur la pratique et visant un objectif transformationnel explicite. Cet essai fournit un aperçu critique de l'importance des communautés d'intervenants de l'ACEA et des diverses enquêtes et approches méthodologiques au sein de chaque discipline et entre elles. Par exemple, grâce à un processus intégré et itératif, la communauté des chercheurs en ACEA joue un rôle essentiel en améliorant la recherche continue sur ce sujet et en la soutenant. Indépendamment du sujet considéré, l'interprétation de la recherche sur l'ACEA suppose de faire preuve d'un scepticisme sain, d'analyser la rigueur méthodologique et d'être ouvert aux autres perspectives et analyses.

Keywords
SoTL research, SoTL methodologies, SoTL research questions, data collection, SoTL research considerations

Cover Page Footnote
The authors would like to express their thanks to over two hundred multi-institutional faculty graduates (e.g., UBC, UWI, UHM, UofT, UofW, BCIT, UofCaribboo, 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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The scholarship of teaching and learning (SoTL) is a distinctive form of practice-based research within higher education. SoTL is shaped by multidisciplinary 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, 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 (Friedman, 2008; Hubball & Gold, 2007). 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 strength of SoTL researchers lie 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, faculty members from a variety of disciplines, especially those unfamiliar with 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 cross-disciplinary and multiinstitutional faculty members who 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 & Burt, 2006; Hubball & Poole, 2004; Hubball, Pratt, & Collins, 2005).

Communities of SoTL Practitioners

For many faculty members from multiple disciplines, 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; Vaughan, 2004). McKinney (2007) asserted:

> 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. (p . 54)

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 SoTL research (Kreber, 2006; Senge & Scharmer, 2008; 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 educational practice, how to engage key stakeholders

(e.g., students, colleagues, administrators) in ongoing collaborative projects, and, finally, to consider how SoTL research might be of interest to, and disseminated in the broader scholarly community (Hubball & Albon, 2007; Hubball, Clarke & Beach, 2004; Weimer, 2006). It is from this starting point, therefore, that SoTL researchers are urged to consider and frame their institutional/curricula/classroom investigations (Hubball & Pearson, 2009).

SoTL Research Questions in Diverse Higher Education Contexts

Various types of SoTL research questions are investigated in diverse institutional/curricula/classroom contexts. A starting point for developing preliminary SoTL questions tends to emerge from problematizing one's institutional/curricula/classroom practice. Thus preliminary SoTL questions typically focus around "what's going on here?", "what are the strengths and weaknesses of 'X'?", "how can I enhance 'X'"?, "why is 'X' happening?", pointing to the central intent of the SoTL investigation and the sorts of insights sought to enhance specific practices. Further to important preliminary questions, SoTL researchers are challenged to consider broader and interconnected factors (e.g., theory-practice integration, process-outcome relationships) about their practice in order to formalize their SoTL research questions for investigation (Friedman, 2008; Norton, 2009). The framework in Figure 1 has been employed to assist faculty members with the formulation of SoTL research questions in diverse higher education settings (Hubball & Albon, 2007; Hubball & Burt, 2007; Hubball & Edwards-Henry, 2009; Hubball & Gold, 2007; Iaria & Hubball, 2008; Lanyon & Hubball, 2008; Steele, Hubball, & Day, 2009).

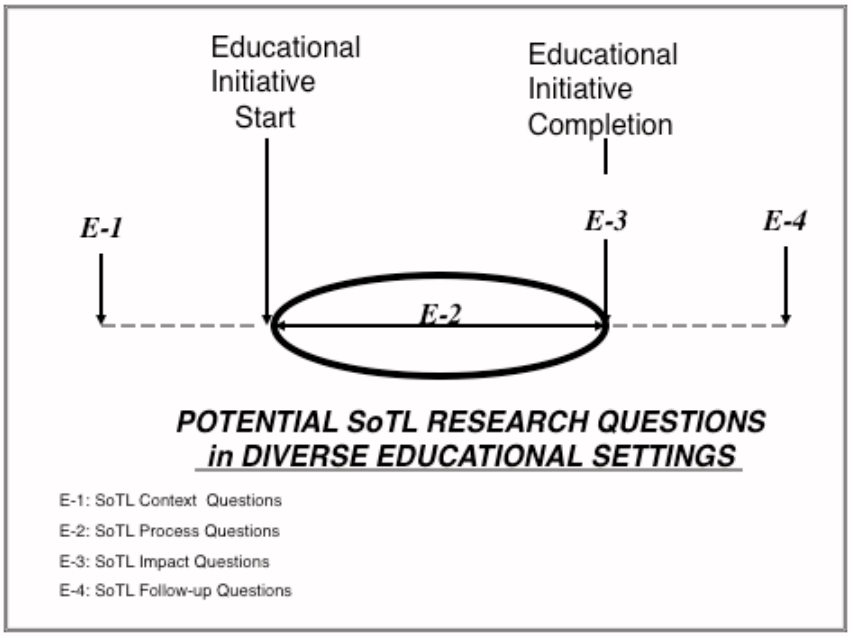

Figure 1. An heuristic model for investigating potential SoTL research questions in diverse higher education settings.

This framework takes into account complex higher education contexts and highlights a wide range of potential time-phased SoTL research questions that 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, and 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, and 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, and 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?

It is important to note that SoTL research questions should be contextualised within the practice setting (e.g., investigating learning-centred assessment practices to enhance the quality of critical thinking in a large class second year Biology course). The selection of specific SoTL research questions, therefore, is key to drawing upon an appropriate literature and determining an appropriate methodology in order to gain the sorts of critical insights sought to enhance institutional/curricula/classroom practices (Gay, Mills, & Airasian, 2009).

Diverse Methodological Approaches for SoTL

There is 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 (Bogdan & Biklen, 2006; Bullough & Pinnegar, 2001; Gerring, 2007; Janelle, Barba, Frehlich, Tennant, & Cauraugh, 1997; Stake, 2005; Strauss & Corbin, 1998).

Each methodological approach is rooted in particular ontological and epistemological assumptions, as well as embodying important ethical considerations for the processes and outcomes of conducting SoTL research (Cohen, Manion, & Morrison, 2007; D'Andrea, 2006; Hutchings, 2002; Kubler & LaBoskey 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 largely 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 researcher(s) 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 (p. 72).

Table 1 highlights a range of methodological approaches that were drawn from the UBC FCP and literature sources for conducting SoTL research in multidisciplinary settings. 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

Table 1 (continued)

SoTL research context	Central SoTL research question	Methodological approach	Data collection methods	General outcomes
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
Facilitating lifelong learning in multidisciplinary undergraduate courses (Wiersema & Licklider, 2007)	Exploration of students' perceptions of lifelong learning in multidisciplinary settings	Phenomenological study	Focus group interviews, individual interviews, student journals, and student self-assessments	Six characteristics best captured the students' perspectives of lifelong learning with implications for course design and teaching approaches

Table 1 (continued)

SoTL research context	Central SoTL research question	Methodological approach	Data Collection methods	General outcomes
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?	Quasiexperimental design with two different classes and class sizes	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
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

Methodological approaches for SoTL inquiries may 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 at least thinking about the sorts of SoTL inquiries that can be sought in multidisciplinary settings (Drevdahl, Stackman, Purdy, & Louie , 2002; Langhout, 2003;

McNiff, & Whitehead, 2006; Mills, 2000; Palys, 2003). Mack, Woodsong, MacQueen, Guest, and Namey (2005), for example, provide a brief summary of quantitative and qualitative research approaches that can help to guide potential SoTL inquiries (see Table 2).

Table 2
Typical Characteristics of Quantitative and Qualitative SoTL Inquiries

	Quantitative	Qualitative
SoTL research context (e.g., issues pertaining to: regional or institutional initiatives, educational leadership, curricula, teaching and/or student learning in higher education)	Seek to confirm hypotheses about phenomena Seek to quantify variation or predict causal relationships about phenomena Seek to describe characteristics of an educational population	Seek to explore complex phenomena in educational settings Seek to describe and explain variation and/or relationships in complex educational settings Seek to describe individual experiences and/or group norms in complex educational settings
Central SoTL research questions (e.g., context, process, impact, follow-up)	Closed-ended	Open-ended
Methodological approach	Study design is stable from beginning to end Study design is subject to statistical assumptions and conditions (e.g., experimental design to systematically explore the impact of an intervention on specified outcomes) Participant responses do not influence or determine how and which SoTL questions researchers ask next	Some aspects of the study are flexible (for example, the addition, exclusion, or wording of particular interview questions) Study design is iterative, that is, data collection and SoTL research questions are adjusted according to what is learned (e.g., using multiple methods and interpretive analysis). Participant responses affect how and which SoTL questions researchers ask next

Table 2 (continued)

Data collection methods	Numerical Instruments use more rigid style / highly structured methods of eliciting and categorizing responses to questions (e.g., questionnaires, surveys, and structured observation)	Textual Instruments use more flexible/semi-structured methods, and iterative style of eliciting and categorizing responses to questions (e.g., in-depth interviews, focus groups, field notes, document reviews, digital recordings, and participant observation)

Adapted from "*Qualitative research methods: A data collector's field guide"* by N. Mack, C. M. Woodsong, K. M. MacQueen, G. Guest, & E. Namey, 2005, Research Triangle Park, NC: Family Health International. Copyright 2008 by Family Health International.

Quantitative data sources for SoTL inquiries, for example, might include a variety of survey instruments (e.g., numeric performance and participation records, checklists, use of online 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, semistructured 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.). Appropriate combinations of qualitative and quantitative data sources can yield reliable and critical information to enhance SoTL (Feldman, Paugh, & Mills, 2004; Peterat & Smith, 2001). SoTL research is a broad umbrella for many different disciplines and interdisciplinary approaches, each of which brings different epistemologies, ethical considerations, and challenges. Huber (2006) noted, however, that SoTL researchers often need to entertain more uncertainty as they explore a range of qualitative methods consistent with the genre of SoTL 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. Through an integrated and iterative process, therefore, a community of SoTL researchers plays a critical role for conducting, authenticating, and sustaining ongoing SoTL research.

Conclusion

Faculty from a variety of disciplines 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. 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, equal to all forms of research endeavour, interpretations of SoTL research require a healthy

scepticism, analysis of methodological rigour, and an openness to alternative perspectives and analysis.

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