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The Scholarship of Teaching and Learning: A Scoping Review Protocol

ABSTRACT

The diversity of scholars, teachers, and practitioners in the Scholarship of Teaching and Learning (SoTL) is a strength but also makes it a complex field to understand and navigate, and perhaps even more complex to contribute to, despite its youth. Beyond the ongoing efforts to define and theorize the field, SoTL needs a rigorous inventory taking and analysis that documents its highly traveled questions, topics, methods, and areas where more work needs to be done, as well as who is doing the work. We describe here our protocol for conducting a scoping review to map the range and nature of published SoTL projects. A scoping review is a first step in gathering information on areas that warrant deeper exploration. It will also allow SoTL to more fully and accurately be represented as a practice, an act of inquiry, and a type of research into teaching and learning.

KEYWORDS

scoping review, knowledge synthesis, scholarship of teaching and learning

BACKGROUND

In 1990, Ernest L. Boyer's *Scholarship reconsidered: Priorities of the professoriate* challenged traditional conceptions of faculty work, often envisioned as three distinct and hierarchical activities of research, teaching, and service, with an inherent tension between research and teaching. He instead identified four domains of scholarship: "the scholarship of *discovery*; the scholarship of *integration*; the scholarship of *application*; and the scholarship of *teaching*" (p. 16). With this reframing of the range of faculty activities as scholarly, Boyer gave new language to the eternal conversations aimed at raising the status of teaching. Following Boyer, scholars from a variety of disciplines joined the conversation, adding necessary attention to the ultimate goal of teaching by renaming it the *scholarship of teaching and learning* (SoTL). They wrote to further define it, describe its adjacencies with other forms of scholarship, situate it as a multidisciplinary field marked by internal diversity, wrestle over the outer boundaries between what is SoTL and what it is not, and identify standards of quality. Boyer and those who explicitly followed him also forged a new identity available to those who do this work, whether they are new to looking at their teaching and their students' learning in a scholarly way or they have been doing it as part of their disciplines for years. In addition to this field building, many implemented the ideas by doing the work itself—conducting SoTL projects typically (but not always) by drawing on their disciplinary expertise to investigate their own students' learning and then sharing their findings, often through publication.

Of course, this practice of studying one's own students' learning at the postsecondary level is not new, as we know from our colleagues in psychology, composition, world languages, education, and others. However, *as a field of educators, scholars, thinkers, researchers, and theorists who explicitly and intentionally self-identify as scholars of teaching and learning*, SoTL is a relatively young and dynamic field. A quick look at many of its publications, conferences, and development programs at teaching and learning centers across the world demonstrates that SoTL is always inviting—not just welcoming, but actively *inviting* newcomers. These newcomers come from across the academy. They are disciplinary and professional experts and teachers who are stepping (sometimes far) outside of their areas of expertise. They are students eager to participate and partner in this kind of research. They are non-instructional staff who have great influence on and interest in what goes on in the classroom. Such diversity makes SoTL a complex field to understand and navigate, and perhaps even more complex to contribute to, despite its youth. As librarian Margy MacMillan argued at an interest group meeting at the 2012 conference of the International Society for the Scholarship of Teaching and Learning, SoTL needs the meta-level attention of literature reviews, systematic reviews, meta-analyses, research agendas, even historiography, to help us understand and navigate the field and advance the work itself. Beyond the ongoing efforts to define and theorize itself, the field needs this kind of rigorous inventory taking and analysis that maps the field to show the highly traveled questions, topics, methods, and areas where more work needs to be done, as well as who is doing the work.

While others have begun to explore the state of SoTL literature, these literature reviews have gaps and limitations. Fanghanel et al. (2015) provide a high-level overview of definitions, characteristics, and purposes of SoTL, concluding with a list of institutional, national, and field-wide recommendations; however, their search is limited to literature published in the United Kingdom. In another recent systematic review, Tight (2017) searched only publications found in Scopus and Google Scholar and, more importantly, focused primarily on literature that treats SoTL *as a topic*, rather than on literature documenting SoTL in practice.[1] In both of these reviews, the search strategies were limited, and the reporting lacked detailed or rigorous descriptions of the review methodology. Additionally, neither focused explicitly on the nature and state of SoTL projects, practices, and studies—or *the actual work of SoTL*. In contrast, Divan, Ludwig, Matthews, Motley, and Tomljenovic-Berube (2017) investigated the research approaches used in SoTL, but their search was limited to a two-year time frame and included only studies published in three SoTL-focused journals. Booth and Woollacott (2018) also looked at SoTL-focused studies to map what they described as SoTL's "internal horizon," or its "nature, priorities, and thrusts" (p. 3), and its "external horizon," or the contexts that affect SoTL projects. However, their methodology was limited to a Google Scholar search of "Scholarship of Teaching and Learning" for articles published between 2010 and 2016.

These reviews help with high-level conversations about the field and some of its practices, but we aim to build upon their findings by taking a deeper dive into the practices and products of the field through a rigorous, systematic, and thorough review of SoTL studies. Our scoping review, together with these previous reviews—and others to follow, we hope—will more fully and accurately represent the internally diverse field of SoTL not simply as "an idea and/or a movement" (Tight, 2017, p. 11), but as a practice, an act of inquiry, a type of research into teaching and learning. For this field of scholarship to be more precisely represented, more diversely practiced, and more intentionally advanced, it requires a synthesis of projects in a rigorous, broad, and systematic manner. Scoping reviews, common in the health professions, offer a method for taking a first step.

METHODS AND ANALYSIS

Scoping reviews are "a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge" (Colquhoun et al., 2014, pp. 1292, 1294). They offer a rigorous and systematic approach to examining the range and nature of literature in a particular field, identifying the existing literature and highlighting gaps where further exploration is required (Arksey & O'Malley, 2005; Levac, Colquhoun, & O'Brien, 2010). We thus see this scoping review as a first step to gathering information on areas that warrant deeper exploration. In addition to identifying gaps in SoTL study, our scoping review will also identify areas with enough literature for others to conduct systematic reviews examining, for example, the effectiveness of a specific teaching and learning activity. Scoping reviews are descriptive in nature, tackling broader questions to map the field for those who want to do deeper dives into specific areas, such as systematic reviews. Finally, while both scoping reviews and systematic reviews involve exhaustive literature searches, in a scoping review authors do not use quality appraisal tools or meta-analysis techniques to determine the effectiveness of specific interventions. To plan our scoping review, we draw upon Arskey and O'Malley's (2005) pivotal work, as well as more recent scoping review methodology guidelines (Colquhoun et al., 2014; Daudt, van Mossel, & Scott, 2013; Levac et al., 2010; Peters et al, 2017).

In this article, we share our scoping review protocol, an explicit, step-by-step description of the plan for conducting the scoping review typically published separately and before completing the actual review. This public documentation is essential to the scoping review as a process and genre, according to Shamseer et al. (2015), for the following five reasons:

1. it supports research teams in the careful planning of their review and helps in anticipating potential problems;
2. it allows researchers to explicitly document their review plan, so others may compare the protocol and the completed review;
3. it supports other researchers in replicating the review methods, if desired, and in judging the rigour of planned methods;
4. it prevents arbitrary decision-making with respect to which items to include and exclude, and which data to extract; and
5. it reduces duplication of efforts and enhances collaboration amongst researchers with similar interests.

We will conduct our review by following six explicit stages, each described below: (1) formulating our research question, (2) identifying relevant literature based on clear inclusion and exclusion criteria, (3) selecting the literature based on these criteria, (4) charting the literature using uniform data extraction tools, (5) collating, summarizing, and reporting our results, and (6) consulting SoTL leaders and practitioners."

Stage 1: Identifying our research question

Arksey and O'Malley (2005) suggest that scoping review questions should be broad and focused on summarizing the extent of literature. Our overarching research question is ***What is the current state of SoTL research?*** We purposefully chose a wide approach to generate breadth of coverage and reduce the likelihood of missing relevant literature.

Stage 2: Identifying relevant literature

While our scoping review aims to comprehensively examine the current state and nature of SoTL, parameters are necessary to guide our literature search. We understand our broad approach may potentially generate an unmanageably large number of references, and we may have to set further parameters once we have established the volume and general scope of the field. In order to make these decisions intentionally, our review team reflected on our goals and whom this review can benefit most:

- Our goal is to provide a resource to help others understand and navigate the field and advance the work itself by showing the questions, topics, methods that appear frequently in the literature; areas where more work needs to be done; and who is doing the work.
- While we think the scoping review will be useful to many, it will be most helpful to SoTL's ongoing newcomers, providing a high-level overview of the field as it has thus far existed.
- In establishing a rigorous method for identifying SoTL-focused literature, including key terms and sources, we provide a resource for others who may wish to replicate our search strategy or conduct their own SoTL-focused literature reviews for their specific projects.
- We also aim to identify a number of areas with enough literature for others to undertake deeper exploration.

Based on the above, we next identified criteria for literature eligibility and developed a comprehensive search strategy.

Eligibility criteria

First, we will focus on literature that reports on SoTL studies, setting aside the body of work that reflects on, critiques, and theorizes the field. For the purpose of this review, these studies are projects that are guided by an

> *inquiry to understand or improve student learning in higher education and the teaching approaches and practices that affect student learning, informed by relevant research on teaching and learning, conducted by members of the educational community from across campus who draw from their disciplinary expertise by gathering and analyzing relevant evidence from the learners in their own specific contexts and sharing broadly to contribute to knowledge and practices in teaching and learning.* (Chick, 2018)

We believe this definition is broad enough to capture the diversity of projects in the field, without limitations on size, scope, method, discipline, or identity of those conducting the studies.

Next, we are interested in *the field of SoTL*: educators, scholars, thinkers, researchers, and theorists who explicitly and intentionally *self-identify* as "the scholarship of teaching and learning." This act of self-identification signals that they claim a place within an international community that both shares some experiences, discourses, and texts in common (Simmons, et al., 2013) and also supports the remarkable diversity of a "low consensus" field made up of a variety of questions, frameworks, methodologies, and standards of rigor (Lodahl & Gordon, 1972). We thus focus on literature about

projects that are named as such, those that demonstrate a place within the field by using terms such as *the Scholarship of Teaching and Learning*, *the scholarship of teaching*, or *SoTL*, or that appear in a venue (SoTL-focused journal or conference) that self-identifies as being concerned with SoTL. When we encounter articles that use the abbreviation *SoTL* (or our related keywords, below) but are not actually SoTL-focused projects as defined above, we will make the appropriate evaluations.

We wholeheartedly acknowledge significant limitations in this approach: most importantly, not all studies that may fit under SoTL's "big tent" (Huber & Hutchings, 2005, p. 30) self-identify as being *SoTL*. For instance, for a variety of reasons, many colleagues doing cognate projects intentionally self-identify not as SoTL scholars but instead as discipline-based education researchers, and others do disciplinary studies that they simply call *research* because, well before Boyer, this practice was already embedded in their disciplinary traditions. This criterion helps us narrow the field to a more manageable scope, but our primary reason for this focus is because we are particularly interested in more fully and accurately representing work that is called the Scholarship of Teaching and Learning. This criterion also sets up complementary scoping reviews, which taken together will satisfy the broader need to map all of the research on postsecondary teaching and learning.

Information sources and search strategy

Although scoping reviews are purposefully broad sweeps of a large body of literature, we must set parameters to make the project manageable and guided by purposeful choices. The key is articulating the limitations, so others may fill in the gaps. In order to conduct a comprehensive search that captures the range of disciplines in this field, our team used *Scholarship of Teaching and Learning* as a sample search term in every potentially identified database in order to determine whether to include it in our search strategy. In other words, if a database did not include an instance of the term, we assumed it would not have articles that self-identify with this term.

After this initial dip into the databases, we determined that we will be searching disciplinary and interdisciplinary databases (table 1), multidisciplinary SoTL-focused journals (table 2), and grey literature (table 3). Although we acknowledge there are numerous books and book chapters that contribute to the field of SoTL, the scope is so large that we purposefully chose not to include these in our search strategy. We do, however, recognize this as a key area for further future exploration. As primarily English speakers, we also purposefully limited our search to English publications. First, some languages (e.g., Swedish) do not have a translation of *the SoTL*, and therefore the acronym does not exist, positioning the work outside of the scope of our review. However, SoTL is certainly being published in other languages, so this limitation opens up further exploration by colleagues who follow our review. Finally, we recognize that we are omitting the many SoTL-relevant projects that end with the data analysis for the researcher's own teaching improvement or local sharing, rather than going public more broadly (Felten, 2013).

Table 1: Databases to be searched

DISCIPLINARY DATABASES	INTERDISCIPLINARY DATABASES
ABI/Business Premium Collection	Library and Information Science Source
BIOSIS Previews (biology)	Academic Search Complete
Business Source Complete	Scopus
CAB abstracts (agriculture, forestry, and health)	

CINAHL (nursing and allied health)
Compendex (engineering)
Education Research Complete
ERIC (education)
Medline (biomedicine)
PsycInfo (psychology)
SocINDEX (sociology)
Sociological Abstracts
Teacher Reference Center

Table 2: Multidisciplinary SoTL-relevant journals to be searched

JOURNAL TITLES
Active Learning in Higher Education
American Education Research Journal
Asian Journal of the Scholarship of Teaching and Learning
Assessment and Evaluation in Higher Education
Canadian Journal for the Scholarship of Teaching and Learning
E-Journal of Business Education and Scholarship of Teaching
Harvard Educational Review
Higher Education
Higher Education in Europe
Higher Education Pedagogies
Higher Education Quarterly
IMPACT: The Journal of the Center for Interdisciplinary Teaching and Learning
Innovations in Education and Teaching International
Innovative Higher Education
Insight: A Journal of Scholarly Teaching
Instructional Science: An international Journal of the Learning Sciences
International Journal for Academic Development
International Journal for Students as Partners
International Journal for the Scholarship of Teaching and Learning
International Journal for the Scholarship of Technology Enhanced Learning
International Journal of Assessment and Evaluation
International Journal of Educational Research
International Journal of Teaching and Learning in Higher Education
Journal of the Scholarship of Teaching and Learning
Journal of University Teaching and Learning Practice
MountainRise
Practice and Evidence of Scholarship of Teaching and Learning in Higher Education
Research in Higher Education
Review of Higher Education
Scholarship of Teaching and Learning in the South
Teaching and Learning Inquiry
Teaching in Higher Education
Transformative Dialogues: Teaching and Learning Journal

Table 3: Grey literature to be searched

GREY LITERATURE SOURCES
Annual Conference on Higher Education Pedagogy
EuroSoTL Conference
International Society for the Scholarship of Teaching and Learning Conference
Lily National Conference on College and University Teaching and Learning
Midwest SoTL Conference
Society of Teaching and Learning in Higher Education Conference
SoTL Commons Conference
SoTL in the South Conference
Symposium on Scholarship of Teaching and Learning
ProQuest Dissertations and Theses Global

All searches, including hand searches of conference proceedings, will be limited by year: we will begin in 1990, the year Boyer coined the term *scholarship of teaching*, and continue up to the present. We have identified five keywords that will help limit our search to self-identified SoTL literature:

1. SoTL
2. scholarship of teaching and learning
3. scholarship of teaching & learning
4. scholarship of learning and teaching
5. scholarship of learning & teaching

The search will also be limited to literature pertaining to higher education, thus excluding literature focusing on primary and secondary educational contexts. The search terms *higher education*, *college**, *universit**, *post secondary*, *postsecondary*, *tertiary education*, *graduate**, *facult**, *professor**, and *instructor**, as well as the subject headings *postsecondary education*, *higher education*, *college students*, *college faculty*, *universities*, *graduate students*, and *undergraduate students* will help with this inclusion criterion. The subject headings will be adapted for each database where appropriate.

We will export all retrieved items to EndNote v8 to manage our data, to facilitate deduplication, and to assist in the retrieval of full texts. Best practice in scoping reviews is to present a draft of a search strategy to be used for at least one electronic database, including planned limits, so that it could be repeated by others (Moher et al., 2015). Table 4 presents the results of our search strategy, conducted in ERIC on September 9, 2019.

Table 4: ERIC search strategy

#	SEARCHES	RESULTS
S1	SoTL	579
S2	"scholarship of teaching and learning"	1,339
S3	"scholarship of teaching & learning"	9
S4	"scholarship of learning and teaching"	6
S5	"scholarship of teaching"	1,685
S6	**Searches S1-S5 combined with 'OR'**	**1,720**
S7	(KW) "higher education"	448,553
S8	(KW) college*	361,408

S9	(AB) universit*	269,744
S10	(TI) "post secondary"	5,246
S11	(KW) postsecondary	142,952
S12	(KW) "tertiary education"	469,092
S13	(KW) graduate*	80,515
S14	(KW) facult*	120,650
S15	(KW) professor*	57,368
S16	(KW) instructor*	39,876
S17	(SU) postsecondary education	131,849
S18	(SU) higher education	435,470
S19	(SU) college students	150,866
S20	(SU) college faculty	49,426
S21	(SU) universities	30,899
S22	(SU) graduate students	30,534
S23	(SU) undergraduate students	35,404
S24	**Searches S7-S23 combined with 'OR'**	**711,558**
S25	**Search results S6 and S24 combined with 'AND'**	**1,666**

Stage 3: Selecting the relevant literature

To help with the remaining phases of the review, additional geographically disperse members will be invited to join our team once our search is complete. Our literature selection will occur in two phases of screening the existing literature that matches our broadest search. In the first phase, two team members will independently screen all titles and abstracts, using a uniform screening tool based on the identified eligibility criteria. Both reviewers will test the screening tool on a random selection of 100 titles and abstracts to ensure consistency and reliability. We will resolve any disagreements through discussion and bring in a third member of the research team if agreement cannot be achieved. Any literature identified as potentially relevant will be passed to the next phase of screening.

In this second phase, we will independently screen all potentially eligible full texts in pairs of two reviewers, all of whom will be trained on the second-phase screening tool prior to beginning full-text screening. These reviewers will test the screening tool on a random selection of 10 full texts to ensure consistency and reliability. Again, pairs will resolve any disagreements by discussion and bring in an additional reviewer to resolve any disagreements.

We will also develop a PRISMA flow diagram (preferred reporting items for systematic reviews and meta-analyses: Liberati et al., 2009) to demonstrate the flow of literature throughout our scoping review. To track the literature throughout our review, we will assign a unique number to all literature retrieved during our data collection process. We will use Endnote v8 to manage our search results and Microsoft Excel to facilitate our screening process with each reviewer documenting the inclusion/exclusion status for all literature.

Stage 4: Charting the literature

Our aim is to identify, record, and summarize all relevant information reported in SoTL studies identified in our review. We will collect and record information about publication demographics (year, title, genre, and journal or venue), authors (individual or collaboration, country, discipline, and position, as possible), stated research purpose, broad topic (e.g., misconceptions, collaborative learning, lecture,

mindset), research methods (quantitative, qualitative, mixed methods), data collection (evidence, data, and artifacts collected and analyzed), and research findings. We may identify additional categories as we progress, and the team will be consulted to adjust the data collection categories as needed.

Our review team will use Qualtrics to collectively develop a data collection tool that includes all variables we aim to identify in the literature, and then we will examine, record, and catalog the literature according to key findings and themes (Arksey & O'Malley, 2005). This charting of the data will be an iterative process as we continually update our tool with new key findings and themes (Levac et al., 2010). To ensure a rigorous charting process, teams of two reviewers will independently read all included literature: one reviewer will collect and chart the relevant information from all included literature, and another will verify the information collected for accuracy.

Stage 5: Collating, summarizing, and reporting the results

We aim to summarize our review findings using thematic analysis and a simple numerical count (Levac et al., 2010), mapping the current state of SoTL and identifying gaps in the existing literature that require further attention or invite study. We anticipate the literature will be heterogeneous in nature. To help identify common concepts and themes across the literature—"big ideas" in SoTL-focused research—we will utilize a data matrix to visualize our results. In this matrix, we will place key concepts in rows and studies in columns. All studies will be mapped using the matrix to help identify common concepts and themes in the literature. When studies do not address a specific theme, the cells will be left blank. Once all data is mapped to the data matrix, an overarching narrative synthesis will be created for each theme. Using a data matrix will allow us to explore how all forms of SoTL have contributed to the field while highlighting areas that require further exploration.

Stage 6: Consulting leaders and practitioners in SoTL

To develop our scoping review question and plan, we have purposely assembled a multidisciplinary review team of an international leader in the field, a skilled knowledge synthesis methodologist, and an information scientist, all of whom are experienced researchers. In the actual review, we will recruit additional experienced researchers to join the research team. Arskey and O'Malley's framework (2005) includes an optional consultation phase, which we have chosen to include in our review. Obtaining feedback from leaders and practitioners in the field of SoTL will help ensure our review findings are presented in a meaningful way for our readers (Tricco et al., 2016). In preparing our protocol, we consulted participants of the 2018 ISSOTL conference in Bergen, Norway. Our audience included newcomers, as well as practitioners and theorists with varying levels of experience, which helped us refine our protocol and identify where we need to be more explicit about the goals and methods of scoping reviews. As we work on the actual review, we plan on consulting with Margy MacMillan (author of "The SoTL literature review: Exploring new territory" [2018]), Peter Felten, (author of the heavily cited "Principles of good practice in SoTL" [2013]), and members of the ISSOTL board of directors, and we will again look to the broader ISSOTL membership at the 2019 ISSOTL conference in Atlanta, Georgia.

TIMELINE

In the spirit of transparency and accountability, we offer an estimated timeline for conducting our scoping review (table 5). We aim to balance the time necessary to conduct a thorough review of the literature while being mindful of not taking so long that the field we are reviewing passes us by.

Table 5: Scoping review timeline

STAGE OF THE REVIEW	TIMELINE
Stage 1: Identifying the research questions	completed
Stage 2: Identifying relevant literature	two months
Stage 3: Study selection	three months
Stage 4: Charting the data	three months
Stage 5: Collating, summarizing, and reporting the results	three months
Stage 6: Consultation	one month

DISCUSSION

Our scoping review is intended to map the field of SoTL, specifically its practices, practitioners, and products. Our findings will support a variety of goals by providing systematic evidence for conversations about and within the field, which can then be supported with clear evidence about what the work of this scholarship looks like, who its practitioners are, what kinds of questions they ask and about what, how they go about answering them and with what evidence, and what the published products of its projects look like.

Additionally, the patterns documented in our scoping review will help early practitioners and those advising them to more easily identify existing projects that address similar topics. Such a resource will help ground future projects in the scholarly context of existing SoTL (Felten, 2013), strengthening literature reviews (MacMillan, 2018), and preventing some of what critics have called "wheel reinvention" (Tight, 2017). While this criticism privileges assumptions of generalizability and overlooks the value of repeating similar studies across what Lee Shulman calls "multiple particular settings" (CELatElon, 2014) in order to "represent complexity well" (Poole, 2013, p. 141), our review will ensure that such repetition is intentional and explicitly connected to related studies. It will also make visible underexplored areas, invite new voices to the field, and align the field of SoTL with the broader goals of higher education.

Finally, our review will also lay the groundwork for plenty of further study. We look forward to the subsequent projects that begin with our scoping review. For instance, our limitations—such as excluding discipline-based education research that doesn't also self-identify as SoTL, publications in other languages, publications in other languages, studies reported in blogs, books, or databases not listed in the above strategies, categories that did not occur to us, and of course having to end our search while SoTL projects are still being published—call for many complementary reviews. We also envision subsequent annotated bibliographies, literature reviews, and systematic reviews on specific topics studied in SoTL projects, as well as calls to action and research agenda pieces on topics under-addressed by SoTL studies. All of this meta-work within and about the field will help us remain reflective, intentional, and critical as we advance what is known about teaching and learning in higher education.

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NOTES

1. Tight's (2017) list describing the literature concerned with "'how to do' the scholarship of teaching and learning" is not really about how to do scholarship on teaching and learning, as it includes such topics as academic development, e-portfolios, e-teaching/learning, expert teachers, institutional research, international writing groups, reward, and using theory (p. 6). In his next paragraph, to confuse things even further, he contrasts these "techniques" that are "relatively innovative and contemporary good practice" with "the more conventional practices of lectures, laboratory exercises, seminars and group tutorials" (pp. 6-7). It is not clear what these all have in common, but they certainly are not "how to do SoTL."

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