



Promote Data-Informed Teaching Through the Scholarship of Teaching and Learning



Creating a Culture of Inquiry

Scholarship of Teaching and Learning Encourages Evidence-Based Pedagogy

As institutions consider how to encourage faculty to further develop their teaching practice, an often-overlooked tactic is facilitating the scholarship of teaching and learning (SoTL). A concept first developed by Ernest Boyer (1990), SoTL is a synthesis of teaching, learning, and research. It brings a scholarly approach to classroom activities to improve student learning outcomes. Recent surveys of educational developers demonstrates the growing importance of such research across different institutional types.

Scholarship of Teaching and Learning Brings Rigor to Teaching By:



Allowing faculty to reflect on their teaching practice



Providing data for assessments, program reviews, and accreditation



Allowing faculty to understand the impact of their pedagogy on student learning



Maintaining and facilitating a scholarly approach to teaching

SoTL A Growing Priority Across Different Institution Types

Percentage of CTL Directors who Indicated Expanding SoTL Support is a Top-3 Priority, By Institution Type

43%

Liberal Arts Colleges

30%

Comprehensive Universities

22%

Research and Doctoral Universities



"We support colleagues who are not learning scientists, but who are experts in their own discipline. They have ideas from the literature...or technology tools they want to try. **It's natural to want to know if it works, how it works, where it works, and where it doesn't work so they can make appropriate and targeted improvements.**"

Marsha Lovett, Associate Vice President for Educational Innovation and Learning Analytics and Director of the Eberly Center, Carnegie Mellon University

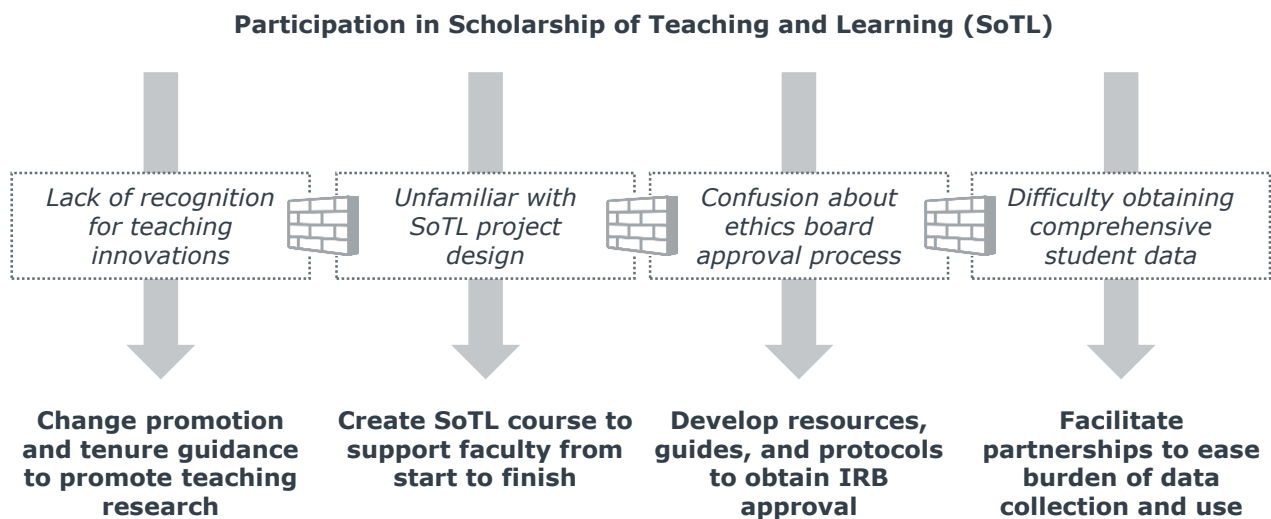
Conducting SoTL allows faculty to test the impact of a pedagogical change on student learning, make appropriate and targeted improvements, and share their results with the broader academic community. Moreover, depending on the research design used by faculty, it can also create an opportunity for students to participate in research. However, despite these benefits of conducting SoTL there are important barriers that prevent it's widescale adoption.

Source: Research Ready: Scholarship of Teaching and Learning, Center for Innovation in Research and Teaching, Grand Canyon University; A Scholarly Approach to teaching, Vanderbilt University; Boyer, E. L. (1990). Scholarship reconsidered: Priorities of the professoriate. Princeton, N.J.: Carnegie Foundation for the Advancement of Teaching. EAB interviews and analysis.

Four Barriers to SoTL Expansion

Concerns about Recognition, Methodology, and Data Limits Participation

There are numerous pain points throughout the SoTL research process that may limit faculty participation. One of the most pressing barrier is the lack of recognition for teaching innovation through promotion and tenure. With the ticking tenure clock, faculty deprioritize research on teaching and learning to focus on more traditional disciplinary research. Another important barrier to participation is unfamiliarity with the specifics of designing a SoTL research project, especially for faculty who do not regularly conduct research with human subjects.



”The current institutional structures and processes of colleges and universities are not designed to facilitate the development, testing, sharing, and adoption of evidence-backed practices which improve student success. The IRB process is just one (very painful) example. The disincentive for faculty on the tenure treadmill is another.”

- Michael Feldstein, *e-Literate* blog

A corollary of this problem is the need to obtain ethics board approval for such research. Many faculty members have never had to navigate the bureaucracy of their institutional review boards which disincentivizes their participation in SoTL. Lastly, while faculty may be able to obtain some data about the students in their courses through their learning management systems, they may need to coordinate with other institutional offices like the registrar to develop a more robust research model. Each of these elements create structural and procedural barriers to broader interest in conducting research on teaching and learning.

Strengthening the Teaching-Tenure Link


Encouraging Departments to Value Teaching And Learning Innovations

To encourage teaching and learning innovations, some institutions are experimenting with new approaches to promotion and tenure. In July 2016, the University of Windsor updated their promotion and tenure guidelines by developing Research and Teaching Evaluation Frameworks. Individual departments are encouraged to consider adapting these frameworks to establish evaluation criteria for renewal, tenure, and promotion. As such the School of Computer Science, History Department, and Faculty of Law have incorporated these frameworks into their tenure and promotion guidelines.

Updated Promotion and Tenure Guidelines Encourage Departments to Reward SoTL

University of Windsor Teaching Criteria

- 1 Design and planning of learning activities
- 2 Instructional methods
- 3 Assessment and feedback to students
- 4 Developing effective environments, student support, and guidance
- 5 Integration of scholarship, research, and professional activities in support of learning
- 6 Improvement-oriented self-assessment and continuing professional development
- 7 Professional and personal effectiveness



University of Windsor

Possible Indicators Include:

- ❑ Engagement in professional development related to teaching and learning (including engagement in teaching and learning scholarship related to discipline)
- ❑ Incorporates teaching and learning scholarship into teaching practice and curriculum development

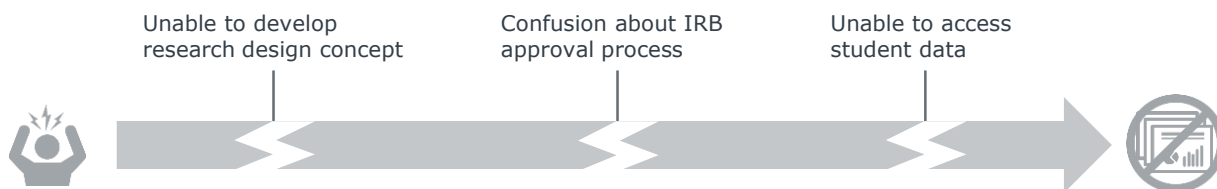
University of Windsor's updated teaching evaluation framework comprises of seven criteria, each with corresponding indicators and suggested sources of evidence. Most notably, it includes a criterion evaluating the integration of scholarship, research, and professional activities in support of learning. This evaluates the extent to which faculty engage in teaching and learning scholarship and whether they incorporate such scholarship into their pedagogy. While departments are not mandated to adapt this framework to their disciplinary needs, the revised framework demonstrates that teaching and learning is an institutional priority.

Teaching Disciplinary Experts to Conduct SoTL

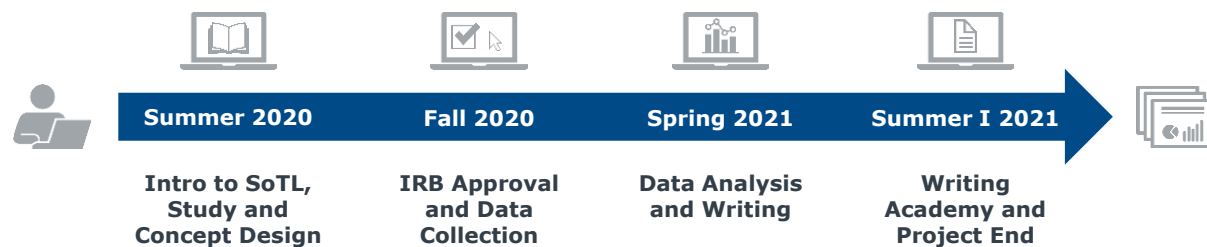
Asynchronous, Online Course Walks Through Every Element of SoTL Research

Even for faculty who might be interested in conducting teaching and learning research, unfamiliarity with the process may disincentivize participation. Faculty who have never conducted this type of research may not know how to investigate their research question. Similarly, they may not know about the ethical considerations of conducting SoTL and may be confused by the institutional review board (IRB) approval processes. To address these challenges, the center for teaching and learning at Kennesaw State University launched a SoTL Scholars program in January 2019 which is an asynchronous, year-long course that guides faculty through every stage of the research process.

Unfamiliarity with Research Processes Prevent Faculty from Engaging in SoTL



SoTL Course Gives Faculty Timely Advice Throughout Research Process

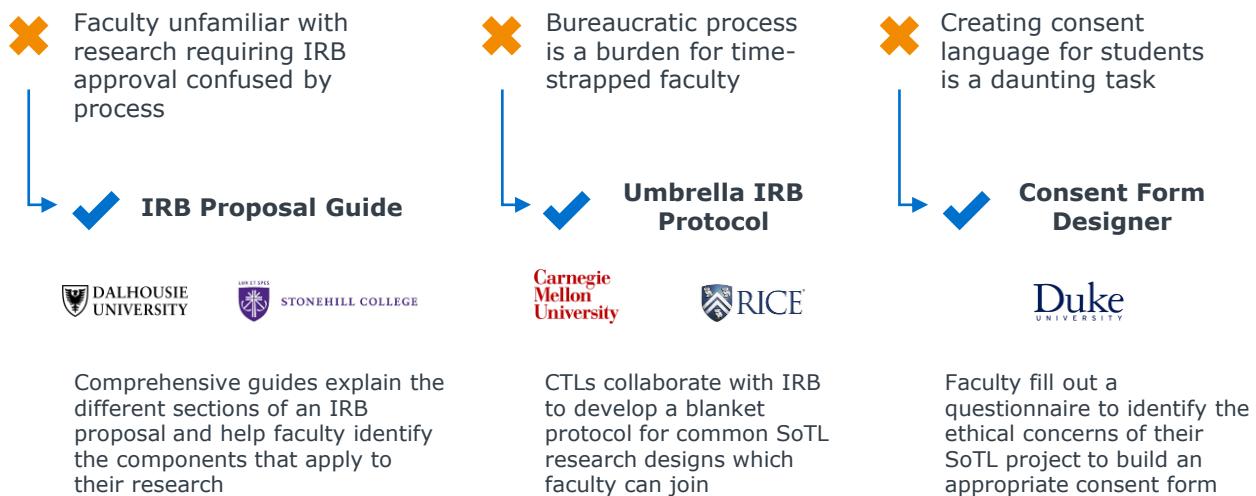


Faculty with a research interest in student learning, regardless of prior SoTL experience, can apply to participate in the program. Once selected faculty enroll in the course which is organized around the key stages of the SoTL process from the development of a research question to dissemination through publication and presentation. While enrolled in the program, faculty conduct their SoTL research projects and receive timely advice through monthly check-ins, monthly readings, videos, expert consultations, and peer review of assignments. Faculty spend an average of 3-4 hours a month on coursework, not including time spent conducting their research.

Overcoming the IRB Hurdle

Develop Guides, Tools, and Protocols To Save Faculty Time with IRB Approval

Institutions that cannot develop a comprehensive SoTL course can create self-service tools and resources that help faculty navigate the complexities of the process. One such hurdle is the need to obtain ethics board approval for research involving human subjects. For faculty who are unfamiliar with the process, this can be a barrier to studying the impact of their pedagogy. To that end, many institutions have developed tools and resources to help faculty apply for IRB approval.



“We are happy. The faculty are happy. The IRB is happy because they don’t have to support as many faculty who are unfamiliar with the process and yet are essentially applying for the same procedure... I think this IRB component is really key.”

Marsha Lovett, Associate Vice President for Educational Innovation and Learning Analytics and Director of the Eberly Center, Carnegie Mellon University

The centers of teaching and learning at both Carnegie Mellon University and Rice University, have collaborated with their respective IRBs to create a blanket IRB protocol for SoTL research based on common study designs. Through these protocols, instructors can join a study already in progress which removes the hurdle of applying for separate approval and reduces the time needed to secure it. Similarly, at Duke University, faculty can fill out a questionnaire to help them develop an appropriate consent form for their research. All these resources help streamline the research process and encourage faculty to participate in SoTL.

Source: Dalhousie University, research Ethics Board User Guide on the Scholarship of Teaching and Learning; Stonehill College, Human Subjects in SOTL Research: The IRB; “Hoe One Professor Made Her Assignments More Relevant”, *The Chronicle of Higher Education*, February 21, 2019; Beckie Supriano, “Rice Eliminates the Red Tape to Encourage Research on Teaching”, *The Chronicle of Higher Education*, October 21, 2018; EAB interviews and analysis.

Self-Service Tool to Support SoTL

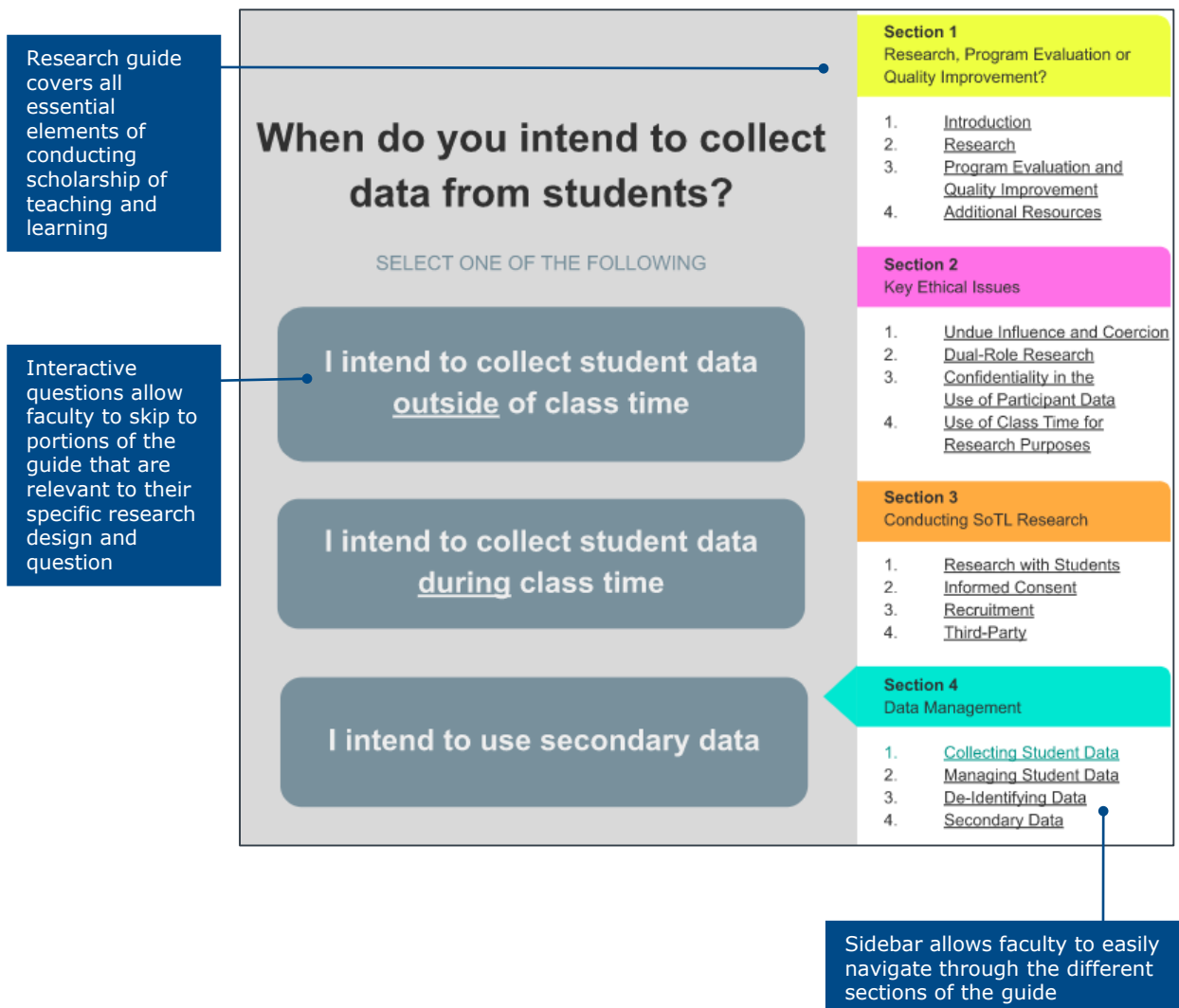
Comprehensive and Interactive Research Guide Eases Faculty Burden

Dalhousie University's Research Ethics Board has created an interactive User Guide on SoTL. It describes the key ethical considerations of conducting SoTL, helps faculty account for those considerations when developing and conducting their projects, helps them navigate the process of collecting, managing, and using student data, and directs them to additional available resources. This guide serves as a one-stop-shop for initial questions and concerns about conducting SoTL.

Interactive Guide and Navigation Pane Helps Faculty to Access Relevant Resources



Image of Dalhousie University's Research Ethics Board User Guide on SoTL¹



1) Full guide available [here](#)

Supporting Ethical SoTL Research

Consent Form Builder Highlights Risks and Generates Sample Form Language

Duke University has made their We Are Learning Too (WALTer) online informed consent builder publicly available through the Empirical Educator Project, a network of individuals and organizations that works to improve teaching and learning in higher education. The template provides interested CTLs with the survey logic, sample questions, and the ability to customize the content to their university's unique context.

Duke | Learning Innovation

Survey **highlights ethical considerations** that typically involve specific IRB requirements

Please indicate if the following apply to your research project (check all that may apply):

- ☐ My project involves **more than minimal risk**. The primary risk to research participants in educational research is an inadvertent disclosure of data.
- ☐ My project involves **deception**. Deception is when you do not tell participants the real purpose of a project or activity.
- ☐ My project involves collaborators **outside of [your university]**. This includes anyone not currently affiliated with [your university].
- ☐ My project involves **compensation to students**. This includes payments, class credit, lottery or drawing entries, and anything else of value given to participants
- ☐ I plan to retain **identifying information**. This applies if you want to retain identifying information - including demographic data - in your data set for analysis.

Tool **develops customized consent form** based on research design

The generated consent document can be distributed on paper, electronically through email or through the institutions learning management system. The project and relevant consent documents still need to be approved by an institution's IRB before students participate. However, the form builder eases the burden of conducting SoTL.

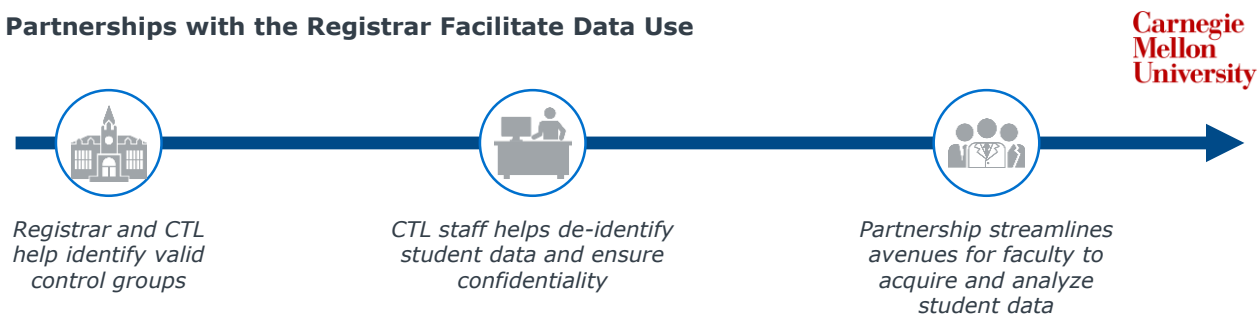
Source: Empirical Educator Project, Educational research IRB Infrastructure.

Two Data Partnerships Aim to Expand SoTL

Internal Registrar Helps CMU Faculty, While New Open Initiative Serves Field

Another SoTL hurdle that faculty struggle with is obtaining all necessary student data from disparate data sources across campus to create empirically robust research studies. To help solve this problem, Carnegie Mellon University's (CMU) Eberly Center for Teaching Excellence and Educational Innovation has created a data partnership with the registrar to help faculty identify valid and comparable control groups for their research while still maintaining student confidentiality.

Partnerships with the Registrar Facilitate Data Use



LearnSphere Serves as Hub for External Data Resources

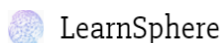
DataShop
Repository with analysis and visualization tools

DataStage
Online learning platform that collects students' interactions with course material

Tigris
Workflow tool for research projects

DiscourseDB
Analysis tool for discussion-based learning, like chats, discussion threads, and wikis

LearnSphere



LearnSphere by the Numbers

9

Linked repositories for existing datasets

7

Linked data tools

1550+

Datasets available through DataShop

Faculty who are interested in teaching and learning research more broadly can tap into external data resources for their research. One such data hub is LearnSphere which was developed partially out of CMU's Simon Initiative, a project that seeks to build a learning engineering ecosystem across the country. LearnSphere helps researchers share, analyze and collaborate across a variety of educational data. Such a comprehensive source of educational data is essential in facilitating learning science research and promoting evidence-based pedagogy.



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