# THE SOTL GUIDE

## Open Access Book Series

The **Center for Engaged Learning** (CEL) Open Access Book Series features concise, peer-reviewed books and edited collections for a multi-disciplinary, international, higher education audience interested in research-informed engaged learning practices. CEL is committed to making these publications freely available to a global audience. *Series editors, Jessie L. Moore and Peter Felten*

## Select Publications

*Inclusive Pedaoggy in Practice: Perspectives from Equity-Minded College Educators*
Edited by Amelia Koford, Corinne Castro, and Christopher Bollinger
doi.org/10.36284/celelon.oa9

*Counterstory Pedagogy: Student Letters of Resilience, Healing, and Resistance*
Edited by Adriana Aldana
doi.org/10.36284/celelon.oa8

*Online, Open, and Equitable Education: Lessons from Teaching and Learning during the Global Pandemic*
Edited by Nancy K. Turner, Nick Baker, David J. Hornsby, Aline Germain-Rutherford, David Graham, and Brad Wuetherick
doi.org/10.36284/celelon.oa7

*Becoming a SoTL Scholar*
Edited by Janice Miller-Young and Nancy Chick
doi.org/10.36284/celelon.oa6

*Writing Beyond the University: Preparing Lifelong Learners for Lifewide Writing*
Edited by Julia Bleakney, Jessie L. Moore, and Paula Rosinski
doi.org/10.36284/celelon.oa5

*What Teaching Looks Like: Higher Education through Photographs*
Cassandra Volpe Horii and Martin Springborg
doi.org/10.36284/celelon.oa4

# The SoTL Guide

## (Re)Orienting the Scholarship of Teaching and Learning

Nancy L. Chick, Peter Felten, and Katarina Mårtensson

Center for Engaged Learning at Elon University
Elon, North Carolina

Parlor Press
Anderson, South Carolina

Center for Engaged Learning at Elon University
Elon, North Carolina
www.CenterForEngagedLearning.org

Series editors: Jessie L. Moore and Peter Felten
Copyeditor and designer: Sophie Grabiec



The current edition is distributed and sold by Parlor Press with these ISBNs:
ISBN (PBK) 978-1-64317-567-6
ISBN (PDF) 978-1-64317-568-3
ISBN (EPUB) 978-1-64317-569-0

**Library of Congress Cataloging-in-Publication Data**
Names: Nancy L. Chick, Peter Felten, and Katarina Mårtensson
Title: The SoTL Guide: (Re)Orienting the Scholarship of Teaching and Learning/ Nancy L. Chick, Peter Felten, and Katarina Mårtensson
Description: Elon, North Carolina : Elon University Center for Engaged Learning, 2025 | Series: Center for engaged learning open access book series | Includes bibliographical references and index.
Identifiers: ISBN (PDF) 978-1-64317-568-3 ISBN (PBK) 978-1-64317-567-6 ISBN (EPUB) 978-1-64317-569-0 | DOI https://doi.org/10.36284/celelon.oa10
Subjects: Education, Higher—Research | College teaching
Classification: LCC LB2331 .C45 2025 | DDC 378.125

# CONTENTS

Introduction 1

**Section 1:** Getting Oriented 8
Why SoTL? 9
Why You? 25

**Section 2:** Taking the Journey 43
SoTL Entry Points 44
Meaningful SoTL Questions 70
Situating Your Work in SoTL Conversations 86
Relational SoTL Ethics 107
Designing Your Inquiry 120
Collecting "Traces of Learning" 135
Analyzing Artifacts Systematically 151
Sharing What You Learn 165

**Section 3:** Looking Ahead 187
For You as an Individual 188
For You in a Community of Scholars 205

References 223
Index 255

CHAPTER 8

# Collecting "Traces of Learning"

Your inquiry design process has prepared you for the next step in SoTL, gathering and analyzing data, evidence, or artifacts that help you respond to your question. This can be the most exciting, the most important, and sometimes the most time consuming part of the process as you carefully collect and explore what Karen Manarin calls "traces of learning" (2017, 168; more on this shortly). To do more than simply confirm your expectations, this phase of your inquiry needs to be as comprehensive, systematic, and transparent as possible. You also need to be open to surprising, perhaps even troubling findings. We'll guide you through this phase, but first a few thoughts on terminology.

## A Word about Words

You might notice that in SoTL conversations and writing there's not a consensus on what to call the information at the core of an inquiry. You might encounter *data* and *evidence* most frequently,



and you might even hear people using those terms interchangeably. Language matters, so we'd like to dig into these words briefly.

### Data

*Data* is a common term in some research fields and often is used for the raw, uninterpreted information SoTL practitioners collect from and about students. For example, in an international survey of research approaches used in the SoTL literature, Aysha Divan, Lynn O. Ludwig, Kelly E. Matthews, Phillip M. Motley, and Ana M. Tomljenovic-Berube (2017)—working in the UK, Canada, Australia, and the US—employ the word "data" to describe all quantitative and qualitative information being analyzed in these inquiries. This use of "data" is familiar to scholars in many disciplines, so it can serve as a helpful shorthand when communicating about SoTL with peers in those disciplines.

*Data,* however, is not our preferred term, in part because it doesn't acknowledge that people—students, usually—are the creators of that information. We believe that using a somewhat less common word might help us all be more conscious about the ways SoTL is always about people acting in the world.

### Evidence

*Evidence* is another common term in SoTL. Randy Bass and Sherry Lee Linkon (2008), for instance, emphasize the importance of using "evidence of student thinking and learning" in SoTL, rather than relying on "generalizations about student learning, based on the lived experience of the teacher" or "more general speculations about how students will necessarily respond" to specific situations (255). The term *evidence*, which they describe as "the 'visible

action' of student learning," prevents us from relying on faulty assumptions about what students are thinking and learning—or not (Bass and Linkon 2008, 258; Popovic and Green 2012).

Like the word *data*, in the SoTL literature the term *evidence* typically is used broadly, without any assumptions of a specific type or form of information. Our hesitation with using this word in SoTL inquiries is that, unlike the more generic *data*, *evidence* is inherently connected to a specific claim, hypothesis, or belief. In other words, returning to Bass and Linkon, SoTL inquiries investigate "evidence *of* student thinking and learning" (254; emphasis added). A presumption of what will be found is baked into the language: the collected evidence will show whether students have learned what was expected. But SoTL inquiries sometimes surprise us, creating what Michelle Yeo, Karen Manarin, and Janice Miller-Young (2018) describe as "breakthrough insights about teaching, learning, research, and themselves in a community of academics" (27). They contend that in SoTL, "we must allow ourselves to be surprised, caught off guard, brought up short" (19), so perhaps the term *evidence*—while useful in many contexts—carries some risk because it directs our attention towards what we *expect* to see, rather than what is *actually* there, or the question we emphasized in chapter 4, *what is really happening here?* Also, for a non-native English speaker like Katarina, the word *evidence* often is related to attempts to prove something, something that may not be possible.

## Artifacts

That is why we have come to favor the term *artifact*. Karen Manarin, a literary and SoTL scholar whose disciplinary perspective leads her to think deeply about questions of authorship,



prefers this word for its association with things "students create," things that are "shaped by a series of choices the student made … in a particular time and context" (Manarin 2018, 102). This act of creation, she explains, leaves "traces of learning," rather than definitive "evidence" that students did or did not perform to our expectations (Manarin 2017, 168). As she suggests, *artifact* connotes an archaeological sense of objects that are imprinted with the thoughts or actions of people within a specific time and place, and that are available for analysis outside of that specific time and place. Artifacts can also include a range of forms and formats, such as informal or formal student writings, answers to exam questions, oral presentations, comments in class discussions that are captured through observation, or recorded performances. In short, *artifact* has the benefit of describing many student-created (or teacher-created) materials, yet it doesn't carry with it the risky assumptions of *evidence* referred to above. It also emphasizes that what we're studying is work done by people—that is, particular people in a particular setting—reinforcing the contextual nature of all SoTL inquiry.

We will use *artifact*, as well as Manarin's accompanying phrase "traces of learning," in the remainder of the chapter and the book. We want to be as expansive and inviting as possible, while also staying true to some of our key principles. For instance, this language elevates the humans at the heart of this work and the importance of who, where, and when they are. The language of "traces" also broadens our field of inquiry in a way that reflects SoTL's expansive view of learning, inviting us to collect things that give us insight into students' learning experiences and processes—including what and how they're thinking before they get to the stage of *having learned something*, or not—as well as the diverse experiences that inform who they are as students.

## How We Make Meaning from Traces of Learning in the Trading Zone

As scholars, our disciplines offer a powerful lens for making meaning, and we've spent a long time developing and refining our use of that lens. This often—and appropriately—informs our inquiries into teaching and learning, creating what Huber and Morreale (2002) called the "disciplinary styles" of SoTL (see also chapter 2). These differences might be most evident in our SoTL inquiries in how we gather artifacts and make meaning from them through our analyses. In fact, in their "trading zone" metaphor for SoTL, these approaches to gathering artifacts and making meaning are among the "wares" that "scholars from different disciplinary cultures come to trade" (73).

At the same time, this diversity also presents certain challenges that are not always as salient within our disciplines, where shared methodologies and epistemologies are understood and practiced. This common ground is what makes a discipline. Yet since SoTL isn't a single discipline but instead brings together many disciplines to work toward shared goals (see chapter 1 and chapter 7), the field embraces different ways of making meaning. The result is that if you're new to SoTL, you might wonder if there's a right way to frame an inquiry, specific artifacts that should be collected, or a particular way to analyze them. Underlying these questions is a deeper one about certain disciplinary approaches and methods being more acceptable or rigorous than others. These kinds of questions sometimes leave new (or even experienced) SoTL scholars feeling that they don't have sufficient knowledge and expertise to conduct or share an inquiry.

We believe a little scholarly humility is helpful in reminding us of the limits of what—and how—we know. There's no single or



*right* way to make meaning from artifacts of learning. Academia is made up of many approaches to creating knowledge, what knowledge means, and what creating this knowledge means. This diversity of disciplines and approaches is a hallmark of higher education—and of SoTL.

We also believe that the SoTL community is made up of many colleagues who are stretching and growing, brought together by our interest in postsecondary teaching and student learning. We encourage you to see your disciplinary background as a strength in your SoTL. Rather than focusing on your methodological gaps ("If only I had more expertise in this other approach!"), we invite you to lean into the assets your disciplinary training brings to a SoTL inquiry. We also hope you will welcome the perspectives and insights of colleagues who have very different approaches from yours. The disciplinary styles of SoTL make us stronger.

## Principles for Collecting Artifacts as Traces of Learning

No matter the term you use or the ways you make meaning, your SoTL inquiry will involve collecting artifacts. To go beyond hunches, intuition, and lore (Poole 2018), you need to look for and at traces of learning. How will you decide what to collect and analyze? We offer four principles to guide your decisions in table 8.1 (also see the Collecting Your Artifacts worksheet in the Supplemental Resources section of this chapter).

### Principle 1: Use Artifacts that Are Relevant to Your SoTL Question

The first principle is perhaps obvious, but it merits emphasis because SoTL inquiries can flounder by being overwhelmed with

| **Table 8.1.** Principles for collecting artifacts as traces of learning |
|---|
| Use artifacts that are relevant to your SoTL question. |
| Use artifacts that make traces of student learning visible. |
| Use what's available. |
| Use a variety of artifacts. |

too many or less relevant artifacts. You need to be selective and focused, and a guiding principle should be alignment between an artifact and your question (Mueller 2018).

Consider, for example, what a high grade in a course demonstrates. The student who earns such a mark surely has generated traces of learning related to all of the course's goals. For some SoTL inquiries, these diverse traces might be significant. But if you're curious about how students make sense of complex readings (see the example from Salvatori [2000] below for more on this), then an overall course grade probably is not a relevant artifact for your inquiry because it is too broad. To avoid this kind of misalignment, use these two questions to guide your selection of artifacts:

- What traces of learning does this artifact make visible, precisely?
- What traces of learning does it *not* make visible?

This principle can be seen clearly in a 2022 article by Chwen Jen Chen and Chi Siong Teh. Chen and Tech noticed that, with the emergency transition to remote instruction at the start of the COVID-19 pandemic, they could no longer observe student learning behaviors in the classroom at their university in Malaysia. To better understand their students' experiences



in the online context, Chen and Teh set out to gather digital artifacts of student-instructor, student-student, and student-content interactions. They used the course's learning management system and records from a course-associated virtual messaging app to capture artifacts of these interactions. Since Chen and Teh aimed not only to document students' learning activities but also to explore students' thinking that informed course behaviors, they surveyed all of their students and conducted interviews with active, moderately active, and passive students in the course. The artifacts they collected and the conclusions they drew aligned with their goal of "discover[ing] students' unseen online interaction behaviors and experiences in order to obtain insights into ways to devise relevant online pedagogical approaches" (1). Chen and Teh report on students' preferences, affective responses, and external barriers to develop "insights into commendable pedagogical practices" that would enhance interactions with course content, the instructor, and other students (16). They do *not* offer conclusions about the effect of these behaviors on students' learning. If Chen and Teh had set out to make claims about the effect of certain online behaviors on student learning, they'd have needed to collect and analyze different artifacts, which would have been a much different inquiry. As readers of their work, we admire the crisp alignment between their SoTL questions and their artifacts.

## Principle 2: Use Artifacts that Make Traces of Student Learning Visible

As we emphasize throughout this book, meaningful SoTL inquiries can focus on students' acquisition of core disciplinary knowledge and skills, or they can explore a range of related topics

including students' emotional or social experiences in a course—both of which can profoundly influence learning. The artifacts you collect should provide traces of learning that make visible to you the aspects of students' learning experiences at the heart of your inquiry. This might include final products of student work like essays or exams, but sometimes earlier work (e.g., drafts, lab notebooks, homework, discussions, and more) can be more meaningful, depending on your inquiry. Randy Bass and Bret Eynon (2009) underscore the importance of "making student thinking visible" by looking to "artifacts that captured the intermediate and developmental moments along the way," rather than just at the end products of the learning process (9). These artifacts, which are often forgotten and "left on the cutting room floor" (16), can be rich and full of meaning in ways that speak directly to your question.

Mariolina Salvatori (2000), who you saw using students' real names in her inquiry in chapter 6, illustrates Principle 2 in an inquiry that makes visible some typically invisible moments in the learning process in her discipline. She wanted to understand what happens when her students at a university in the US read challenging texts in her literature course, so she developed the Difficulty Paper, a brief ungraded writing activity that captures students' struggles with the demands of reading by asking them "to identify something difficult in a text and describe, in detail, why they experience it as difficult" (85). As part of her inquiry, these short writings offered a glimpse into each student's thinking process as they read, including where and why they struggle and potentially what they *don't* know—all information not available in their final essays, which tend to present confident explanations of what they *do* know as the result of a completed reading process that often also includes class discussion and instruction on that



reading. Salvatori's inquiry illustrates the value of looking at artifacts that reveal what's happening when students are still developing their learning, including when they struggle with concepts and skills. Such a focus can lead to a SoTL project that provides guidance on how to help students navigate difficult moments in learning. In fact, one way Salvatori has shared this guidance is directly with students, through her textbook co-authored with Patricia Donahue, *The Elements (and Pleasures) of Difficulty* (2005).

Like Salvatori, Camille Kandiko, David Hay, and Saranne Weller (2013)—all at a university in the UK—sought to explore what's often a "lost opportunity to engage with students while they are developing their understanding," so they adopted concepts maps to "externalize" students' development of "personal learning" (72). Their SoTL inquiry focused on how students reflect on and make their own sense of course material before they started to write a final paper. In their article, Kandiko, Hay, and Weller (2013) closely analyze this trajectory in one student's concept maps at the beginning, middle, and end of a classics course (75–77; see figure 8.1, next page). By examining three artifacts of learning from the same student, the authors are able to trace over time the increasing complexity of this student's understanding of the course's core concepts, documenting the intermediate steps that not only reveal a great deal about this student's learning journey but also suggest implications for adapting and using concept maps to surface students' thinking processes—to themselves and their teachers—in other humanities courses.

## Principle 3: Use What's Available

Conducting a SoTL inquiry doesn't necessarily require you to develop new ways of collecting traces of student learning. Before

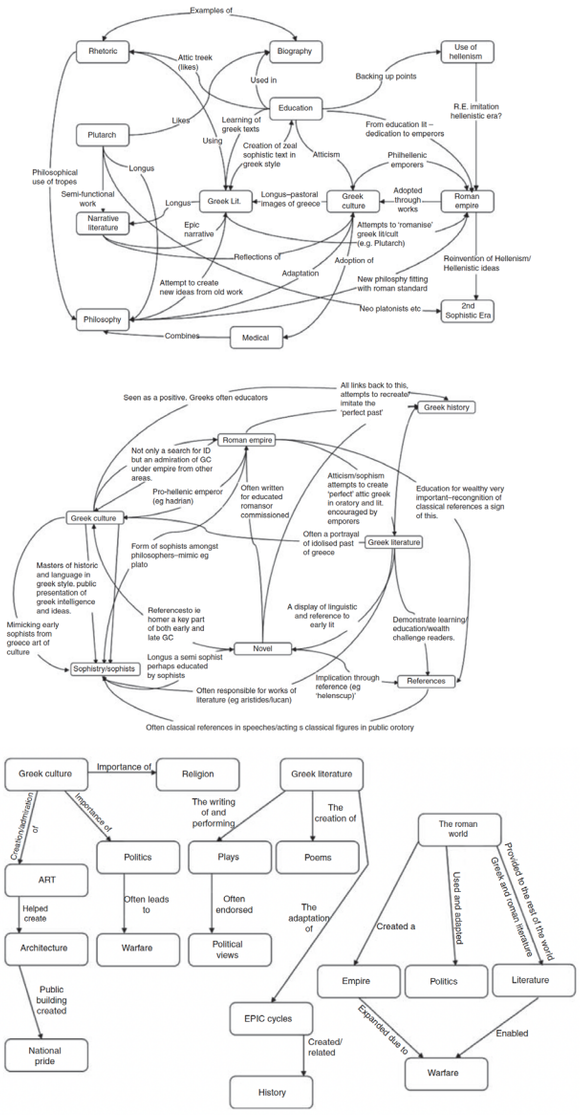


**Figure 8.1.** The traces of learning of one student throughout the semester. Reprinted by permission of SAGE Publications. Camille Kandiko, David Hay, and Saranne Weller, "Concept Mapping in the Humanities to Facilitate Reflection: Externalizing the Relationship between Public and Personal Learning," *Arts and Humanities in Higher Education* 12(1): 70–87. Copyright © 2013 by SAGE Publications.



you start to invent anything new for your inquiry, look at the materials students already create as part of the regular work of a course, such as written drafts, lab reports, problem sets, discussion board responses, calculations, quiz results, and exam answers. As student learning activities, these artifacts probably capture lots of important learning moments, and drawing from these already-available materials can keep a SoTL project simple, doable, and not too time-consuming—as long as they provide traces of learning relevant to your SoTL question. Keep in mind, though, that using students' course work also can raise ethical questions that require careful attention (see chapter 6.) Also, if you use these materials in your inquiry, you're probably looking at something more specific than the overarching learning assessed in the course, so using existing student work will require you to revisit those materials to analyze them through the lens of your inquiry, a process that's distinct from grading that work.

For example, to compare students' historical thinking at the beginning and end of an introductory history course at a liberal arts college in the US, Lendol Calder and Robert Williams (2021) focused on the formative assessment activities Calder already used in his teaching. In these activities, students reviewed historical sources and responded to specific questions that also prompted them to "explain the reasoning behind their answers in a few sentences" (11). Calder routinely collected these responses as part of the class, so gathering the artifacts didn't change his (or his students') workload at all during the semester. Analyzing the artifacts with Williams after the course ended (to avoid the ethical complications of simultaneously grading and studying students) was new work, of course, but this inquiry helped Calder better understand his students' evolving historical thinking

skills, knowledge that he and Williams then shared in an article published in one of his discipline's premier scholarly journals.

Available artifacts aren't limited to assigned course work, though. As described under Principle 1 above, Chen and Teh (2022) used analytics available in their learning management system, the course's social messaging app, and other digital tools to gather artifacts related to their students' virtual interactive behaviors, and then supplemented these with surveys and interviews to better understand how their students experienced these interactions. Sometimes institutional data about students, informal or optional course activities, and other artifacts can be analyzed in your inquiry, in combination (or not) with course specific materials. Following the principle of "use what's available" does *not* mean you're limited to what's already at your fingertips, but it does encourage you to start there.

This principle also underscores the importance of ethically collecting and storing artifacts of student learning. SoTL inquiries often involve gathering artifacts from students during a teaching term, with analysis taking place only after the term has ended. If your inquiry follows this design, then you need to plan ahead to ensure you have appropriate artifacts available when you turn your attention to analysis.

### Principle 4: Use a Variety of Artifacts

A final principle for effectively identifying artifacts for your SoTL inquiry is to aim for variety. As we've noted in previous chapters, student learning is complex, and drawing on multiple types of artifacts will more fully represent this complexity, especially when they offer complementary (or perhaps contradictory) information. Social science researchers sometimes refer to this approach



as "triangulation," or the attempt to gather diverse artifacts by "critically considering the explanatory capacity of" each (Cousin 2009, 115). In other words, as you consider each artifact closely, revisit the guiding questions from Principle 1:

- What traces of learning does this artifact make visible, precisely?
- What traces of learning does it not make visible?

Your answers to these questions will help you choose an effective variety. In the previous example, Chen and Teh (2022) illustrate this well by blending quantitative counts from online course tools with qualitative comments from surveys and interviews. Not every SoTL inquiry needs to use such a diverse array of artifacts, but often you can better answer your question or deepen your inquiry by considering complementary artifacts. Table 8.2 lists many (but not all) of the kinds of artifacts that commonly are used in SoTL projects.

In listing these, we're not suggesting you should use all of them, or that you should only consider artifacts included in this incomplete list. Instead, we invite you to start by brainstorming as many relevant artifacts as possible for your inquiry and then, after critical reflection based on the principles above, concentrate your analysis on the ones that seem most salient in relation to the SoTL question you are exploring. The more traces of learning you have, the more confidently you can make sense of what you are seeing.

At the same time, we also encourage you to remember that more isn't necessarily better. As you've seen above, Chen and Teh (2022) used an appropriately wide array of artifacts aligned with their question, while Salvatori (2000), Kandiko, Hay, and Weller (2013), and Calder and Williams (2021) concentrated on just one type of artifact that speaks to their questions. Sometimes

**Table 8.2.** Sample SoTL artifacts that make visible different traces of learning

| Types of Artifacts | Examples of This Artifact |
|---|---|
| Samples of students' regular work in the course | papers, journals, lab notebooks, projects, presentations, performances, recorded or online discussion, exam question(s), reading quizzes |
| Snapshots of students' thinking | minute paper, muddiest point, preconception check, concept maps, problem sets, clicker/polling data, reflective journals, reading annotations, difficulty papers, observed in-class comments |
| Artifacts of learning processes | think-alouds, multiple drafts of the same student paper/project,, observed/documented in-class behaviors over time, student created (or co-created) rubrics |
| Probes of what students think | surveys, interviews, focus groups |
| Behavior measures | online postings, office visits, pages read/written, hours spent studying |
| Institutional research data | grade point averages, placement exam scores/rates, admissions numbers, retention rates, campus scores on national survey data (e.g., US National Survey of Student Engagement) |



in SoTL, using less—while also going deeper in your analysis, as seen in these examples—is more. So rather than worrying about the *quantity* of artifacts you use in your inquiry, we encourage you to focus on the *quality*. Artifacts that are relevant, that make thinking visible, that are available, and that are diverse will provide a strong foundation for any SoTL inquiry.

## Questions for You

We invite you to explore these questions in individual reflection or collegial conversation:

- This chapter begins with commentary on *data*, *evidence*, and *artifacts*. Which of these terms are most familiar to you? Which seems most useful to you in SoTL? Why?
- Thinking about your SoTL inquiry, what artifacts are most relevant to your question? What traces of learning do these artifacts reveal? What other "traces" might you need to find or uncover?
- What artifacts are already available for your use? Do you need to develop any new ones?
- How could you add variety to the artifacts you use in your inquiry? Or, perhaps, how can you simplify your inquiry so you are using fewer artifacts by focusing only on the most relevant ones?

## Supplemental Materials

Worksheet: Collecting Your Artifacts