

Conference Workshop Proceedings: Developing a Scholarship of Teaching and Learning Portfolio in Applied Horticulture

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ABSTRACT. Preparing faculty to conduct quality teaching is critical to maximize student learning and the educational experience. As increased attention to faculty effectiveness and effect of their teaching program is observed, the more important it becomes for faculty to engage in the scholarship of teaching and learning (SoTL). The workshop “Developing a scholarship of teaching and learning portfolio in applied horticulture” was conducted at the 2022 American Society for Horticultural Science conference in Chicago, IL, USA, and featured a panel of teaching scholars who provided insight and guidance for developing, enhancing, evaluating, and promoting SoTL for both traditional classroom teachers and extension educators.

Many faculty are discipline experts and effective teachers, excelling in scholarly teaching. However, SoTL is the systematic inquiry about student teaching and learning in the classroom, followed by publishing or disseminating those findings to enhance and improve teaching practices (Shulman 2000). Examples of SoTL activities include publishing instruction-related results or outcomes in refereed education-related or discipline-specific journals; writing competitive educational-focused grants for funding, equipment, supplies, or other resources to support instructional activities, student-authored publications that result from courses taught; and so on.

Many scholarly teachers may not conduct SoTL formally in their careers. This is unfortunate, as faculty

and instructors with significant experience and effective teaching practices often retire or leave the profession without ever disseminating their techniques. Professionally, engaging in SoTL gives faculty the opportunity to apply the principles of scholarship to teaching. SoTL is an opportunity for faculty and educators to extend their disciplinary and pedagogical expertise, demonstrate their research skills, and then share their work with other faculty (McKinney 2007). This work has the potential to motivate and inspire peers to improve and achieve teaching excellence. Student learning and teaching practices evolve continually, and SoTL that is conducted can work to update excellent teaching and learning practices. Demonstrating excellence in teaching and its impact is critical because it affects promotion and tenure processes, especially for faculty with considerable teaching responsibilities (Gilpin and Liston 2009).

Interestingly, although there has been significant discussion about teacher quality in elementary and secondary school grades (i.e., kindergarten through grade 12), including public policy for teacher training and measuring the impact of instruction, there has been minimal attention to these factors for faculty in higher education (Baum and McPherson 2019). It is often argued that attention to improving teaching effectiveness detracts from research productivity. However, Woosnam et al.

(2020) noted, in fact, the opposite occurred. When faculty were recognized for their SoTL efforts, their research productivity increased. Similarly, Shortlidge and Eddy (2018) researched the trade-off with graduate doctoral students’ effective teaching training programs and research skills and found there to be a synergistic effect in investing in both teaching and research training. On the contrary, Jasick (2010) reported an inverse relationship was found between universities offering a teaching preparation course and research productivity. However, that relationship was dependent on different factors—notably, whether it was a public or private institution.

More institutions are recognizing the fact that increased effort in faculty training, preparation, support, and evaluation of SoTL activities is needed. Increasingly, more universities are recognizing and understanding scholarly teaching strategically and actively (Shapiro 2006). As an example, as a part of the Kansas State University 2025 Visionary Plan, an explicit goal in the Undergraduate Experience section is to “Develop, promote, reward, and support excellent teaching and teacher development by: a) recruiting and retaining superior and diverse faculty with demonstrated excellence in teaching, advising, and mentoring; b) revising evaluation practices, including promotion and tenure, for faculty and staff engaged in teaching to recognize and reward teaching, advising, and life-long learning/professional development; c) promoting good teaching skills, both online and in the classroom; and d) implementing comprehensive, effective professional development programs targeted to improving the quality of teaching” (Kansas State University 2022).

Workshop overview

The overarching goal of the workshop was to provide an opportunity for American Society for Horticultural Science (ASHS) members with significant teaching and extension responsibilities to engage in discussions about how to develop and strengthen a teaching portfolio, demonstrate SoTL impact, and enhance annual review, promotion, and tenure documents. This workshop was especially relevant for pretenure faculty, nontenure track faculty with significant teaching appointments, and graduate students who may be entering academia in the near future. Moreover,

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the workshop provided a valuable opportunity for administrators who may not have extensive experience with SoTL to learn more about and gain insight into how to value and evaluate SoTL. The workshop consisted of a diverse panel of experts with significant experience in SoTL, including individuals in administrative roles and award-winning SoTL faculty members. The panelists encompassed different areas of horticulture, providing a breadth of experience. Dr. Chad Miller (Kansas State University, Manhattan, KS, USA), ASHS Teaching Methods Workshop Chair, served as discussion moderator. The panelists included Dr. Richard L. Harkess, Professor and University Grisham Master Teacher, at Mississippi State University (Mississippi State, MS, USA) and Consulting Editor for the *HortTechnology* Teaching Methods section; Dr. Amy Wright, Associate Dean for Instruction and Professor of Horticulture in the College of Agriculture at Auburn University (Auburn, AL, USA); Dr. Kimberly Williams, Professor and University Distinguished Teaching Scholar in the Horticulture and Natural Resources Department at Kansas State University (Manhattan, KS, USA); and Dr. Cindy Haynes, Professor in Horticulture and Faculty Fellow at the Center for Excellence in Learning and Teaching at Iowa State University (Ames, IA, USA).

Each panelist briefly described their professional roles and SoTL experiences. After the panelists shared their information, workshop attendees engaged in a question-and-answer period that resulted in fruitful conversation. Ideas, concerns, challenges, successes, and other anecdotal information were shared between the panelists and the audience. The following is a summary of information discussed and shared in the workshop.

Incorporating SoTL into your professional portfolio

WHY CONDUCT SoTL? SoTL can serve many functions (McKinney 2007), but one of the best reasons to pursue this form of scholarship is for its potential to improve student learning. Improving teaching and instructional methods naturally follows from assessing learning. For example, evaluating student learning from a specific

assignment or classroom activity provides assessment of its effectiveness; if it does not improve student learning, the assignment or activity can be modified or discontinued.

Many faculty and instructors are likely already performing some type of scholarly teaching but are not aware that by formalizing their work and making it public, it becomes SoTL that is easily accentuated in evaluation documents. During the workshop, discussion centered around the role of SoTL in adding presentations and publications that can be readily counted on performance evaluations, granting teaching faculty credit and recognition for the work they are doing. As such, it is essential to identify and annotate clearly scholarly teaching and SoTL in annual evaluations, curriculum vitae, and promotion and tenure documents.

The workshop discussion also focused on the value of discipline-specific SoTL that is carried out by university teachers vs. projects conducted by educational researchers. Tension between discipline-based educational researchers and educational scientists can occur when faculty with no experience or training in research with human subjects conduct pedagogical research within their disciplines that lacks attention to existing educational literature and the identification of a theoretical framework (Kanuka 2011; Larsson et al. 2017). However, disciplinary SoTL conducted by the teacher with students in the classroom vs. an educational researcher is analogous to research by a medical professional working directly with patients vs. a medical researcher in a laboratory. Although the laboratory setting offers experimental controls and broadly applicable results, the medical professional is applying the knowledge gained in the field, working directly with patients across a wide range of backgrounds and abilities. And so it is in the disciplinary classroom: Educational theory and research results are implemented and tested in broad, real-world applications. Ultimately, great benefit ensues from both types of research, and often even more so when collaborations of faculty between the two research landscapes occur. Teachers of horticulture should not discount the value of their discipline-specific SoTL.

SoTL AS COLLABORATIVE SCHOLARSHIP. University faculty should not underestimate their ability to design meaningful and effective SoTL projects. However, there are many reasons to collaborate with others. Working with colleagues who have expertise in pedagogical research, human subjects research, and survey design is valuable and can foster a SoTL project. Horticulture faculty are typically not trained in social or education science; therefore, seeking partnerships with faculty in those fields may help provide guidance in conducting valid and reliable studies that yield information to advance instructional practices. Likewise, faculty learning communities can be a valuable approach to improving teaching among faculty members within a discipline, especially when they are facilitated by pedagogical experts (Cordie et al. 2021). A teaching academy provided to faculty members in the College of Agriculture at Auburn University provided opportunities for regular and sustained collaboration in teaching over time, and faculty members were able to refine approaches to instruction and improve their own learning.

Graduate student teaching assistants are excellent partners on SoTL projects. Mentoring graduate students to participate in SoTL broadens graduate student training and better prepares future faculty (McKinney 2007). Graduate student involvement in SoTL also benefits them by building their curriculum vitae before competing for teaching positions.

GETTING STARTED WITH SoTL. Examples of SoTL projects from our classrooms abound. Annually, ASHS awards an Education Publication Award, and this is a good place to start when seeking model SoTL projects. Case studies, innovative assignments, and classroom activities, and evaluation of the effectiveness of recruitment activities are all examples of projects. Resources are available to guide the process of developing a SoTL project (e.g., Bishop-Clark and Dietz-Uhler 2012; McKinney 2007). One important note is to be aware of your university's institutional review board policies for conducting classroom research before beginning the project. Procedures and documentation can vary, and it is essential to have proper approval for future publication of the work. Relevant publication outlets include ASHS's

HortTechnology and *HortScience* journals. Illinois State University also maintains a LibGuide that provides a comprehensive list of SoTL publishing outlets (Illinois State University, Milner Library 2022). In addition, the North American Colleges and Teachers of Agriculture (<https://www.nactateachers.org/2022>) serves as a platform for the scholarly exchange of teaching and learning innovations specific to agricultural disciplines.

Insight on publishing SoTL from the consulting editor of *HortTechnology*: “Teaching Methods” section

Academic professorial faculty are expected to engage in scholarship in their teaching practice (Gilpin and Liston 2009; Weiser 2004). The expectations can vary depending on several factors, including the faculty’s department, institution, specific appointment, and so on. Scholarship is the creative, systematic, and rational inquiry into a topic and the application or detailed explanation of conclusions drawn from that inquiry. Scholarship builds on existing knowledge using critical analysis and judgment to enhance understanding. As such, SoTL is more than just scholarly teaching (Shulman 2000). SoTL results in materials or knowledge gains that are shared with others and are subject to peer review. Research on learning fosters new forms of inquiry into teaching. Greater understanding of teaching through research enhances student learning (Weiser 2004).

As mentioned previously, *HortTechnology* is a publishing outlet for horticulture-focused SoTL. It is a peer-reviewed publication appropriate for sharing classroom discoveries, innovative pedagogy, creative teaching tools and/or aides, use and efficacy of new education technology, educational research, and original or inventive laboratory and classroom exercises. Currently, manuscripts on teaching and learning are greatly underrepresented in *HortTechnology* (R.L. Harkess, personal observation). A great opportunity exists for faculty to further their careers through peer-reviewed publication of work they may already be doing (Shulman 2000; Weiser 2004). However, simply submitting a description of a teaching method may not meet the basic premise of SoTL, which is to

foster new forms of inquiry into teaching or to advance our current understanding of teaching (Kanuka 2011; Shulman 2000).

SoTL should meet the following inquiries or meet the following needs: Does the work require a high level of discipline-related expertise? Is it innovative, breaking new ground? Can it be replicated and elaborated? Can it be documented? Can it meet the criteria of peer review? Does it have significance or impact (Kreber 2001)? Weiser (2004) stated more simply that scholarship is something new that is validated by peers and communicated. SoTL helps provide an evidence-based foundation for teaching and frequently has strong external validity, indicating it can be extended to other similar classrooms and settings (University of Minnesota 2022). SoTL projects may fall into one of four categories: empirical research, conceptual articles (teaching methods), reflective essays, or opinion pieces (Healey et al. 2019). Teaching methods, or pedagogy, are at their best when there is evidence the pedagogy works.

Although there is no single, magical formula for an SoTL publication, research articles typically include an abstract, introduction, literature review, methods, results, discussion, and a conclusion (Healey et al. 2019). The following are generally accepted publication guidelines that can be applied to most SoTL manuscripts. The most difficult part of developing an SoTL publication starts with defining the problem clearly. This begins with a statement of the problem being researched or the expected learning outcomes. What is the research question or what will students be able to achieve after implementation of the activity or pedagogy (Richlin 2001)? This should be followed by an adequate summary of what is already known (i.e., review of the literature). The publication should include research methodology or a comprehensive description of the project and how it was implemented. This should be followed by results and discussion or an evaluation and discussion of the efficacy of the project. The authors should provide, when possible, evidence of success and effectiveness, and an explanation of what makes the pedagogy unique. The manuscript should conclude with a brief summary of the major findings and how they relate to the original problem/

objectives or how they satisfy the initial expected learning outcomes.

SoTL: Expectations and insights at the college administration level

Historically, departments of horticulture and colleges of agriculture have established minimum expectations for scholarly products such as peer-reviewed publications, grants, and graduate student mentorship to demonstrate productivity and scholarship in the disciplinary research portion of a faculty member’s appointment. The same has not necessarily been true for the instructional or extension components of a faculty member’s appointment. Take for example, a faculty member with a 60% research and 40% teaching appointment. Would that faculty member only be expected to demonstrate scholarly activity and productivity for 60% of their time? Instead, it would seem appropriate that departments and colleges also establish certain minimum expectations for scholarly productivity associated with a teaching appointment and/or an extension appointment. Thus, faculty members would be expected to demonstrate scholarly productivity and scholarship in all areas of their appointment. It is imperative these expectations are communicated clearly, reducing any ambiguity of the requirements for evaluation.

Certainly, institutions expect teaching faculty members to provide scholarly teaching in which faculty members deliver high-quality classroom, laboratory, abroad, or online instruction consistently as demonstrated by a variety of efforts (Table 1). As noted previously, the expectations for scholarly teaching and SoTL can vary for a variety of reasons.

As described earlier, scholarly teaching is what we would expect from an outstanding instructional program. However, these efforts do not necessarily rise to the level of SoTL. The migration from scholarly teaching to SoTL occurs when teaching practices become public and are available for review and adoption by peers (McCarthy and Higgs 2005; Shulman 1998).

Historically, SoTL has most often referred to peer-reviewed publications regarding innovative teaching methods and their effect on student learning (A.N. Wright, personal observation).

Table 1. A sampling of scholarly teaching activities that can provide high-quality classroom, laboratory, abroad, or online instruction that can lead to the scholarship of teaching and learning activities, which are open to peer review and disseminated publicly.

1. Regularly incorporating new, improved, and/or innovative materials, activities, and techniques into courses taught, such as field trips, laboratory exercises, group projects, writing assignments, ePortfolios, research, and other high-impact learning opportunities
2. Consistently incorporating new knowledge, discovery, and developments from relevant fields into classroom, laboratory, and online instruction. Examples include scientific discoveries, technological innovations, and policy developments
3. Occasionally creating and developing new course offerings or revising existing courses substantially as needs change to ensure students are prepared to enter graduate school or a professional career
4. Regularly receiving a comprehensive peer review of teaching that reinforces successful teaching practices and recommends opportunities for improvement
5. Participating in and/or attending instruction-related workshops, seminars, and training offered on campus (e.g., university centers for teaching and learning, provost's office)
6. Contributing to departmental efforts in academic program assessment as appropriate

Certainly, this is a clear example of SoTL. Realizing that faculty members may not have the capacity to deploy new teaching methods and publish corresponding results consistently or regularly, restricting recognition of SoTL to this one form, can be limiting for faculty members. In addition, most faculty members are not trained in educational research and may lack the collaborators necessary to develop such research on teaching methods fully. So as not to discourage faculty from pursuing SoTL by defining it narrowly as just described, and to help faculty members understand and appreciate SoTL as appropriate to their programs, it can be useful, even advantageous, to widen the recognition of instructional activities that may be used to develop scholarship in one's instructional program.

We recognize that scholarship involves "knowledge creation, synthesis, and application" (Culp 2009) that is "public, susceptible to critical review and evaluation, and accessible for exchange and use by other members of

one's scholarly community" (Shulman 1998). More specifically, we recognize that publication of teaching methods papers is not the only form of public evaluation of scholarly efforts in teaching. In addition, we can likely acknowledge that many, if not most, instructional faculty members already have scholarly teaching, if not SoTL, as part of their instructional programs, yet they may not have received guidance or possess the language needed to characterize it as such. Explaining SoTL more broadly can aid faculty members in documenting scholarly instructional productivity and articulating instructional scholarship for the purposes of annual faculty evaluations and even promotion and tenure consideration. Keeping in mind that SoTL must include efforts that are public and open to peer review, Table 2 provides examples of faculty efforts that demonstrate scholarly teaching and SoTL.

Departmental and college administrators would be well-served to develop expectations, guidelines, and examples of SoTL and scholarly

instructional products and provide them to instructional faculty members. In doing so, they will likely encourage faculty engagement in these efforts and, perhaps even more importantly, will give instructional faculty members the ability to document and demonstrate adequately the SoTL in which they are already engaged.

Advancing SoTL from the perspective of a faculty fellow of the Center for Excellence in Learning and Teaching

At the institutional level, SoTL aligns with intuitional goals because it is a powerful way to enhance student learning and success (Hutchings et al. 2011). Many universities use centers for learning and teaching to engage faculty and staff in professional development activities to improve and refine both teaching and learning in and out of the classroom (Frantz et al. 2004, Schumann et al. 2013). During the pandemic, university teaching and learning centers frantically assisted

Table 2. Examples of scholarly teaching activities and avenues to develop the scholarship of teaching and learning (SoTL), including scholarly teaching efforts that are public and open to peer review, and constitute and demonstrate SoTL.

1. Receiving internal or external awards recognizing excellence in instruction, student advising, or mentoring
2. Having awards or other recognition (e.g., fellowships) received by undergraduate or graduate students mentored or advised, such as student research competitions, scholastic collegiate competitions, and society student competitions
3. Contributing to instruction-related conferences (e.g., North American Colleges and Teachers of Agriculture) or the education section of a discipline's society by presenting papers, publishing abstracts, or serving as elected chair of a related section (e.g., education, poster)
4. Advising undergraduate research fellows or supervising undergraduate research that results in public presentation
5. Having pedagogical innovations or curricula adopted by peers
6. Writing competitive grants for funding, equipment, supplies, or other resources to support instructional activities
7. Publishing instruction-related results or outcomes in refereed education-related or discipline-specific journals
8. Developing assessment tools and demonstrating improvement in student learning
9. Developing and delivering high-impact learning opportunities such as experiential learning, service learning, multidisciplinary teams, club activities, and study abroad
10. Authoring textbooks, laboratory manuals, and other instructional materials
11. Publishing student-authored manuscripts that result from courses taught

faculty and staff with different teaching techniques and digital technologies to increase scholarly teaching in an online environment (Schlesselman 2020). Scholarly teaching, although impactful in teaching and learning excellence, is not the only objective of university centers. Finding value in the balance between scholarly pursuits and the commitment to teaching excellence, positions centers uniquely to promote interdisciplinary collaborations for SoTL research (Singer 2002; Schumann et al. 2013). Transitioning faculty and teaching staff from scholarly teaching to SoTL is often a programming priority for these university centers. In fact, of the 51 teaching and learning centers at land-grant universities, 34 (68%) mention SoTL resources, workshops, or grants to promote SoTL research (C.L. Haynes, personal observation). The SoTL process is often familiar to faculty with research appointments because the steps are similar to their disciplinary research (Haynes et al. 2019). However, faculty are often less comfortable with the SoTL process because they are rarely trained in teaching methods and assessing the impact on students. Fortunately, the vast majority of university centers at land-grant institutions have experts in education, pedagogy, and andragogy to offer assistance or foster more meaningful collaborations in SoTL activities.

In addition, some university centers administer grant programs or monthly workshops to foster SoTL projects and offer incentives to encourage this process. In the past 25 years, Iowa State University has funded more than 200 SoTL projects with more than \$3 million of mini-grant funds to faculty in the Miller Faculty Fellowship to enhance their scholarly work and develop innovative approaches to improve learning. As more faculty practice SoTL in their disciplines, the number of artifacts, such as refereed publications, also increase, which leads to an increased value of SoTL and teaching and learning on campus (Marcketti et al. 2015). From 2009–19 at Iowa State University, more than 49% of tenured faculty have had at least one SoTL artifact (e.g., refereed publication, presentation, proceeding, grant) documented on their vita for promotion to associate or full professor. More than 500 refereed

publications, 600 external and internal grants, and 1900 regional, national, or international presentations on SoTL projects have been conducted at Iowa State University (Gansemer-Topf et al. 2022).

Because university centers for teaching and learning have the ability to institutionalize certain SoTL projects, they can be excellent places to start collaborations with colleagues from other disciplines to help overcome barriers in methods and dissemination of impacts. Scholars have called for the institutionalization of SoTL as a means for innovating the academy (Cruz 2014) and broadening its visibility and impact (Bernstein 2018; Hutchings et al. 2011). Intentional, collaborative campus initiatives that focus on best practices in teaching and learning, regardless of discipline, should be undertaken to ensure that SoTL research is integrated and valued by all disciplines. An example at Kansas State University was a 20-month faculty development program with the goal of fostering broad, institution-wide adoption of teaching practices that focus on brain-based learning (Lavis et al. 2016). Institutions that want to promote the value of scholarly teaching and SoTL must ultimately value it at all levels and across disciplines (Gansemer-Topf et al. 2022).

Conclusions

Many teaching efforts can be characterized as scholarly teaching or SoTL. Scholarly teaching is the practice of effective teaching whereas SoTL results in materials or knowledge gains that are shared with others and are subjected to peer review. For promotion and tenure, SoTL provides faculty with the opportunity to produce scholarship, such as peer-reviewed materials and publications, receive recognition for their efforts, and enhance their promotion portfolio. SoTL contributes to the knowledge of teaching and learning, thereby furthering the teaching mission of the university by improving student learning. Similarly, the discipline-specific SoTL conducted in horticulture classrooms applies advances in pedagogy to horticulture students. Considering these benefits, we encourage colleges and universities to develop or continue to develop and reward faculty for their scholarly teaching efforts. Moreover, we hope this SoTL workshop piqued the interest, answered

questions, and provided insight and ideas to participants and readers for engaging in research in teaching and learning.

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