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Supporting SoTL development through communities of practice

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Supporting SoTL Development through Communities of Practice

ABSTRACT

Increasingly, academics are engaging with the Scholarship of Teaching and Learning (SoTL). However, within United Kingdom higher education, the definition of and activities that constitute SoTL remain open to debate. In this article, we explore SoTL through four career histories that give insight into how SoTL has developed and played a role in the careers of four life sciences-based, teaching-focused academics in UK universities at different points in their careers. The recurring themes in the career histories include collaboration; professional development; sharing and dissemination; and funding. The career histories also highlight aspects of and the importance of communities of practice. We reflect on the role of communities of practice in supporting SoTL and discuss how communities of practice external to one's home institution can play a role in developing SoTL and teaching practice. Internationally there is a growing focus on SoTL, and although the four career histories presented here are authored by academics based in UK institutions and focused on the UK context, the themes they reveal are widely applicable.

KEYWORDS

SoTL, communities of practice, scholarship, professional development, life sciences

INTRODUCTION

Despite a growing body of literature, a precise definition of the Scholarship of Teaching and Learning (SoTL) is still debated within UK higher education (Fanghanel et al. 2016). Boyer (1990, 23) proposed that this form of scholarship occurs when teachers are "well informed and steeped in the knowledge of their field." Trigwell, Martin, Benjamin, and Prosser (2000, 163) propose that SoTL has four dimensions: two of those dimensions (informed and communication) deal with SoTL as research and publication, while the other two dimensions promote SoTL as the development of a philosophical viewpoint (reflection and conception). The dimensions of reflection and conception are worthy of further investigation: reflection as a strategy for effective teacher development is widely supported (Kreber and Castleden 2009; Schön 1983) and the "reflective practitioner" is regarded as a prerequisite for scholarly teaching. Similarly, a student- centred conception of learning (Biggs 1999) is considered a sign of a mature, reflective teacher and is the result of reflection on practice; investigation of one's own teaching and learning context; and an underpinning of pedagogic literature.

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Trigwell and Shale's model of scholarship has three components: considering knowledge, practice, and outcomes as the basis for the scholarship of teaching (2004, 530, figure 1). The interaction of these three components, made public for peer scrutiny, is the scholarship of teaching. Each of the components is composed of a number of elements, shown in table 1.

Table 1. Trigwell and Shale's (2004) three-component approach to scholarship (based on Figure 1, 530)

Knowledge	Practice	Outcomes
Knowledge of the discipline	Teaching	Student learning
Knowledge of teaching and learning	Evaluation / investigation	Documentation
Conceptions of teaching and learning	Reflection	Teacher learning
Knowledge of context	Communication	Teacher satisfaction
	Learning	

In one of the seminal pieces on scholarship, Glassick, Huber, and Maeroff (1997) offer requirements for scholarship that act as a guide for anyone engaging in SoTL. Their six steps—clear goals, adequate preparation, appropriate methods, significant results, effective communication, and reflective critique—guide practitioners through the stages of conducting a scholarly study.

SoTL, then, could be seen to have a wide definition, combining both research and a philosophical understanding of what it means to be a teacher. However, there are still challenges to be overcome in facilitating this wider definition, especially when institutions place emphasis on pedagogic research rather than the combination of both research and the philosophical understanding of what it means to be a teacher. Pedagogic research may also present its own challenges, as teaching-focused academics wrestle with unfamiliar paradigms that may be at odds with their disciplinary background, as well as a disjointed sense of identity (Miller-Young and Yeo 2015; Oliver, Nesbit, and Kelly 2013). One particular challenge is that of using education theory—what Hutchings (2007) calls "The Elephant in the Scholarship of Teaching and Learning Room." Webb and Tierney (2019) highlight that when moving from a disciplinary perspective, engaging with educational and pedagogic literature can be problematic. There can be a separation between the disciplines, and practitioners may confine themselves to SoTL research within their own discipline, finding work undertaken by education researchers "off-putting and troublesome" (Webb and Tierney 2019, 7).

Definitions of SoTL also differ across global higher education systems. National and institutional structures and goals for teaching and learning can lead to differences in how SoTL is perceived, undertaken, and recognised—impacting the definition of SoTL at an institutional and national level, and leading to differing approaches. Mathany, Clow, and Aspenlieder (2017) found that practitioners from different faculties and career stages in a Canadian university had different understandings and expectations of what constitutes SoTL. MacKenzie and Meyers (2012) discuss how the definition of SoTL in different countries and higher education systems may encompass different

aspects of teaching and learning, be subject to different pressures, and affect international collaboration. Chng and Looker (2013) argue that discussion around teaching and learning is not free from cultural contexts, and practitioners need to consider cultural context and "what works where" when undertaking SoTL. Manarin and Abrahamson (2016, 1), discussing SoTL with practitioners from the US and the UK, note that practitioners "identified competing visions of education both in terms of disciplinary practices and institutional demands." They also highlight differences in terminology; one UK practitioner had not come across the term *SoTL*, yet when it was described as "learning and teaching improvement," understood what it entailed (Manarin and Abrahamson 2016, 2).

SoTL in the disciplines

There can be a tension between theory and practice in SoTL. Those starting out in SoTL may, for example, be unfamiliar with the research styles, methods, and the language used in papers and journals. Practitioners may have an interest in undertaking SoTL, but not have any formal training in or experience of it. Research tools may be focused on qualitative research, which can be unfamiliar to, for example, life scientists (Freestone 2014; Lawson 2013). Differences in language and the presentation of research in journals and at conferences may leave those new to the field feeling out of their depth, a disconcerting experience for those who have reached a certain recognised level of expertise within their discipline-based research (Kelly, Nesbit, and Oliver 2012; Mathany, Clow, and Aspenlieder 2017; Miller-Young and Yeo 2015).

Meyer and Land (2003) consider threshold concepts to be portals that open up a new way of thinking, a transformation in understanding without which the learner could not progress. Tierney (2017, 166), exploring threshold concepts within SoTL, notes, for example, the tensions in moving from research in the life sciences to educational research, where life scientists are unfamiliar with the language and research methodology of SoTL. Thus, they may be less comfortable with the methods of data gathering—for example the use of face-to-face interviews and qualitative surveys. Miller-Young and Yeo (2015) encourage those involved in SoTL to look beyond the research methods, language, and perspective commonly used in their own discipline; they also acknowledge that discourse in SoTL needs to exhibit more awareness and acceptance of this disciplinary diversity.

Differences between SoTL and discipline-based research can also be highlighted by quality-assurance processes such as the Research Excellence Framework (REF) and its precursor, the Research Assessment Exercise (RAE) in the UK. Cotton, Miller, and Kneale (2017) highlight some of the issues in submitting pedagogic research for the REF, including questions regarding its suitability for inclusion. They also highlight another tension within SoTL, where academics may consider scholarship to be being informed by, but not necessarily to be undertaking, primary research. Considering scholarship to be informed by, but not undertaking, research ties in with Boyer's (1990, 23) proposal that the scholarship of teaching occurs when teachers are "well informed and steeped in the knowledge of their field."

There can also be concerns surrounding the quality of pedagogic or education research. Cotton, Miller, and Kneale (2017), reviewing submissions for the REF at 13 UK higher education institutions, noted that those involved in the submissions for the REF found that pedagogic research at their institution could be limited in quantity; had not met the quality threshold; or were small-scale and localised studies; and thus they were rarely included in the REF submissions. They noted key concerns

that the research submitted used small sample sizes and made limited use of current theory (Cotton, Miller, and Kneale 2017).

However, practitioners involved in SoTL have noted how it can enable reflection on their disciplinary research, encouraging a different way of thinking about how research may be conducted and presented in their discipline. Manarin and Abrahamson (2016, 3) highlight the experience of one academic: "this participant went on to identify the larger questions animating her SoTL work, her disciplinary scholarship, and her classroom practices. SoTL allowed participants to learn more about their disciplines, ask questions about the value of their disciplinary work, and challenge assumptions about the norms of the academy."

Those who approach SoTL with a disciplinary focus and those coming to SoTL from a range of disciplines can also bring new perspectives, ideas, and angles or approaches that could resonate with and be more accessible to others from the same or similar disciplines.

Why focus on SoTL?

Across the UK, increasing numbers of academic staff are being hired specifically to teach. Data from the Higher Education Statistics Agency (HESA, 2018) shows 11 percent of full-time and 59 percent of part-time academic staff in UK universities were employed in teaching-only roles in 2016-17, whereas combined teaching and research roles employed 59 percent of full-time and 27 percent of part-time academic staff. Similar trends in increasing numbers of teaching-only roles can be seen in, for example, Australian universities (Department of Education and Training 2016).

Quality assurance processes and student tuition fees in the UK are also highlighting aspects of teaching and learning, SoTL, and student satisfaction with teaching. The Teaching Excellence Framework (TEF) and charging tuition fees to many UK students is placing more of a spotlight on teaching and student learning within higher education in the UK. While tuition fees for UK universities are variable and depend on the student's home country and the institution at which they are studying—each of the four home nations (England, Scotland, Wales, and Northern Ireland) has a different fee structure—tuition fees have focused attention on teaching and student attainment. The TEF aims to assess and recognise the quality of teaching in universities in England (universities in Scotland, Wales, and Northern Ireland can opt in if they wish). The TEF, which reported in July 2017, while not explicitly mentioning SoTL, has put a focus on teaching within UK universities. With links between engagement with SoTL, and student learning and skills development (Fanghanel et al. 2016, 27), this could provide an opportunity for promoting and engaging with SoTL. Mårtensson, Roxå, and Stensaker (2014) propose that quality assurance processes have the potential to improve teaching and learning by enabling reflection on practice in a systematic and scholarly way. However, the process needs to take into account academic interests and activities (i.e., learning and teaching) instead of focusing on governance and accountability. The TEF is increasing its scope, and among its stated aims are to "recognise and reward excellent teaching" and "raising esteem for teaching" (Department for Education 2017, 7). The measurements of teaching quality include aspects of student engagement; valuing teaching and scholarship; research; and professional practice.

Changes to career pathways and promotions within universities may have an impact on the way teaching and SoTL are viewed. An increasing number of institutions in the UK are requiring staff who teach to, for example, be a Fellow of the Higher Education Academy (HEA). Fellowship of the HEA enables academics to demonstrate their previous and continuing work in supporting teaching and

learning, and the criteria for applying for fellowship focus on aspects of SoTL. Fellowship encourages reflection on teaching practice and involvement in SoTL, for example a Fellow must demonstrate "successful incorporation of subject and pedagogic research and/or scholarship . . . as part of an integrated approach to academic practice" (Higher Education Academy 2018). Similar national level schemes that recognise teaching as part of the academic profession are in place or proposed in, for example, the Netherlands, Ireland, Austria, and Norway (Gaebel and Zhang 2018).

Promotion criteria within UK universities are also developing a greater focus on teaching. Career paths and promotion criteria often run on three "tracks" within UK universities: researcher, teacher/scholar, and a combined researcher and teacher pathway (Cashmore, Cane, and Cane 2013, 17). This can provide opportunities for those on a teaching-focused career path to gain recognition for their work within teaching, learning, and SoTL. Cashmore, Cane, and Cane (2013, 11) note that between 2009 and 2011 there was an increase across all UK university mission groups (e.g., the then 1994 Group, Russell Group) in the use of teaching and learning criteria for promotion to professorial levels.

However, although there is recognition of the teacher/scholar pathway, promotion committees used to discipline-based research, but unfamiliar with teaching and learning and SoTL, may struggle to apply the criteria. For example, Fanghanel, Pritchard, Potter, and Wisker (2016) examined teaching and learning in promotion criteria, including promotion via a learning and teaching route; publication of research; and issues around citation and impact factors. They noted that teaching and learning-focused journals may have lower impact factors than do discipline-related journals, potentially affecting promotion. They also noted the smaller research grants associated with research on teaching and learning, again potentially having an impact on promotion. Cashmore, Cane, and Cane (2013, 21) highlight instances where teaching-focused academics have struggled to gain promotions on the basis of teaching activity, and where practitioners have been told that in order to progress they need a discipline-based research profile in addition to their teaching activity.

We should also consider, alongside the benefits to practitioners and to the university, the benefits of SoTL to students. Students could be seen to be one of the main beneficiaries of SoTL. As Miller-Young and Yeo (2015, 39) propose, "SoTL should be defined by the goals of deepening our understanding of student learning." Mathany, Clow, and Aspenlieder (2017) discuss instances where new teaching staff saw SoTL as a professional responsibility, enabling them to develop their expertise in teaching and become a more effective teacher through SoTL. Students can experience new and improved teaching methods that have been tried and tested by teaching staff and informed by research from a world-wide teaching community. Teaching staff can develop their teaching practice with methods and ideas from outside their home institution. Trigwell and Shale (2004) specifically highlight sharing of practice and student learning as part of their model of SoTL.

Students can also become involved in the work of SoTL. At the most basic level, teaching staff can consider how student feedback informs and changes teaching practice. Brew (2003) proposes that students be involved in SoTL. If there is student involvement in discipline-based research in their department, through for example research projects and lab work, why not involve students in SoTL as partners and active participants? (Fanghanel et al. 2016, 24; Felten 2013).

Supporting SoTL

Williams, Verwood, Beery, Dalton, McKinnon, Strickland, Pace, and Poole (2013, 49) argue that for SoTL to "take root" there must be: (1) effective communication and dissemination of activity across all levels, (2) well-established social networks and links between these levels, and (3) sustained support by senior administration. These three elements can all be found within and supported by communities of practice.

Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly (Wenger 1998, 73). Communities of practice can bring together those with a wide range of experiences, skills, and knowledge that can be shared and exchanged for mutual benefit and provide a network of support and encouragement. They can support SoTL in a variety of ways, for example, through sharing experiences, sharing knowledge (both formal and informal), and providing a supportive atmosphere or environment for these activities. Healey (2000) discusses the potential for discipline-based communities to support SoTL. The potential for interdisciplinary communities of practice should also be considered. As discussed previously, life scientists starting out in SoTL may be unfamiliar with the research and analysis techniques used. A cross-discipline community of practice can provide an invaluable opportunity for practice sharing with those more familiar with, for example, qualitative research techniques used in SoTL (Tremonte 2011).

Wenger (1998, 73) considers communities of practice to have three main elements: (1) mutual engagement, (2) joint enterprise, and (3) shared repertoire. Engagement has to be actively facilitated and encouraged in order for members of the community to feel valued and included. Joint enterprise gives members a sense of ownership. Communities of practice also need not be geographically local. Within academic settings, individual members may be in different departments, institutions, or countries, yet the community can still work if members have opportunities to engage. This engagement may not necessarily be in person. Social media, for example, gives opportunities for communities to form online and support communities whose members are geographically distant (Wenger 1998, 175).

THE FOUR CAREER HISTORIES

Looking at how practitioners have implemented SoTL can give insight to others. For those new to SoTL, it can give a starting point and encouragement. For those with more experience, it can provide an opportunity to reflect on their practice, continuous enhancement, and objective thinking about SoTL and its use in teaching and learning.

To this end, we asked four colleagues in the life sciences at different stages in their careers, currently based at four different UK universities, to articulate how SoTL had been an influence on their careers as teaching-focused academics. At various stages in their careers, each has been influenced by, and engaged with SoTL in a variety of ways. In each case, when they started on their "SoTL pathway," their focus was not necessarily SoTL or teaching and learning, hence they were not focused solely on undertaking or being involved with scholarly research. The career histories illustrate how these life scientists have moved onto a SoTL path and what had supported them to do this when it was not initially their key role.

Each practitioner was asked to author a short career history with a focus on how teaching and learning and SoTL had influenced them. They were given four questions to prompt reflection:

1. How has SoTL influenced your academic career?
2. What would you identify as the important steps that you took in your career as a teaching-focused academic?
3. Where did you receive support in your career as a teaching-focused academic?
4. What advice would you give to other teaching-focused academics?

The resulting career histories are included verbatim and in full below. In the discussion that follows, we highlight links between the career histories and common themes (following Hubbard et al. 2015), to illustrate the range of pathways to SoTL and to highlight the commonalities in engaging with SoTL.

Career history 1: Starting out

"The transition from postdoctoral scientific research into teaching in HE [higher education] has been an enjoyable challenge and a steep learning curve over the past four years. In the first two years in the position as a University Teacher (UT), I completed a Postgraduate Certificate in Academic Practice (PGCAP), which introduced the concept of SoTL and this now forms a major part of my professional practice. The case studies I completed for my PGCAP focused on student feedback and assessment, two topics that have remained a key part of my professional development and practice. Student feedback greatly influences my practice and is the basis of many changes I have made to the courses that I coordinate and Learning and Teaching (L&T) research projects I undertake.

Following on from my PGCAP, SoTL is now integrated within my role in many different forms. The Performance Review process within my university allows for yearly self-reflection and recognises both teaching and scholarship elements within the development of a UT. I have found collaboration with like-minded colleagues key; with time always being a limitation, ideas and key tasks can be shared. An example of a collaborative L&T project I am now involved in is the development of integrated digital media resource, including a bespoke app to complement a molecular course, designed by undergraduate Computer Science students for undergraduate Life Sciences students. Student focus groups and feedback inform the design and content, with further e-resources being developed in collaboration with graduate teaching assistants. This project has been funded by my University's Learning and Teaching Development Fund, and it is hoped that funding can be sought from other agencies so the project can be continued. Funding L&T projects is a challenge, with limited funds available for them. Sharing this research at national conferences has been of great benefit to me, allowing engagement with the wider L&T community and generating interesting ideas and discussions that impact on my practice.

Looking to the future, I am now considering career progression within my role. I am taking part in the Athena Swan mentoring programme as a mentee, with a hope to gain advice and support in career planning, while considering work-life balance. Scholarship will be a fundamental part of this planning process, moving towards disseminating the L&T research I have been involved in, for example through publication, and creating a profile out-with [outside of] the University in terms of collaboration and obtaining external grant funding."

Career history 2: Gaining momentum

"A career focused solely on research seemed a natural progression after my successful postdoctoral research experiences in the USA and UK. However, a fortuitous opportunity to teach at my current institution was the start of an unexpected but satisfying career path. Encouraging students to become independent learners has been fundamental to my teaching philosophy, and engaging with SoTL forms the basis of my professional practice.

Over the years, funding from institutional, national and international bodies were invaluable in introducing scholarly-based developments in learning and teaching. These projects included: placements and their role in employability; enhancing the international student learning experience; effective practices in assessment and feedback; open education resources; and the role of MOOCs (Massive Online Open Courses). The outcomes of these projects challenged some of my colleagues' assumptions about teaching and led to better engagement with assessment and feedback practices within the department. The inspiration for many of these initiatives stemmed from the HEA Centre for Bioscience networking events and the opportunity to share good practice with colleagues across the sector. These events were also invaluable in encouraging new collaborations on projects. Engaging with SoTL has also inspired the development of new modules and international postgraduate programmes, aimed at enhancing employability, leading on to international workshops on curriculum development, assessment and feedback.

Institutional changes to career progression in 2008 meant that I was one of the first to be promoted under the new criteria of learning and teaching to a Senior Teaching Fellow. This role has given me the opportunity to make a wider impact on the L&T environment, particularly in terms of advocating the importance of SoTL in driving policy changes or implementation of education initiatives (for instance, in academic promotion cases based on L&T or through the L&T Quality Committee). Advocating engagement with SoTL, not only for professional practice but also personal development, is also fundamental to my role in supporting colleagues at earlier stages in their careers."

Career history 3: Evolution and revolution

"I'm never happier than when I'm challenged by something new. The routine and the familiar anaesthetise my imagination and so I do put some effort into not following the same paths too slavishly. If, like me, you have ever had to triple teach the same practical in a single day you will recognise the urge to engineer novelty into each session; to embody [for the students] the excitement of discovery that laboratory investigation should deliver. For me the essence of SoTL is encapsulated as: a process of personal inquiry within the context of existing research. I keep faith with old wisdom and first consider what the learners already know, then, what new knowledge I wish them to acquire, how I will determine their success (a proxy for my own success) and only then, what I will do to achieve that outcome.

SoTL began to influence me through a willingness to take on problems. Several times I've been invited to revise assessment strategies, laboratory practicals, tutorials, even entire units, perceived to be 'problems'—a perception deriving most often from the results of student feedback questionnaires. It has often been my experience that reform of learning and teaching is

incremental, an evolution rather than a revolution. Colleagues are more willing to adopt a model that has been successful elsewhere, especially if the model is supported by research reports that describes an approach with control and intervention groups, hard numbers and statistics. This epistemic bias provided the initial SoTL motivation.

The internet was becoming useful as a vehicle for educational material when I was appointed (1996) and with the help of educational technologists in my institution, I explored how it might support learning. This interest led to an invitation to represent my faculty on a new group—the e-learning advisors network. This group has academic representation from all faculties, as well as the Education Support Unit, Information Systems, Graduate School of Education, and the Student's Union, and it serves to advise the Education Committee. An unexpected value of this group was the insight gained from discussion of problems. Over this time I have collaborated with colleagues to trial several innovations that are all connected by the same simple idea—engagement.

In 2012, an article in the Times Higher Education (Schwartz, 2012) set me on a path that ultimately lead to enrolment on a masters course in the Graduate School of Education. The article was called 'Get back in the saddle' and the notion of GRIT, the underlying thesis, became the subject of my masters dissertation. The idea is simple—to succeed one has to be able to accept failure and learn from it, to remain focused and engaged over time.

Most recently I have helped to develop a new cross-school, second year unit that is designed to develop key skills that are highly valued by employers. In this context, I've found it surprisingly hard to convince students of two things, 1) skills are as important as degree-specific knowledge and 2) the development of skills requires practice. I've not gathered the data to test this, but my intuition is that we [staff] don't spend sufficient time with our students to engender the trust necessary to encourage engagement when the validity of the aims and/or the means has not been accepted by the students. The potential for a link between contact time and [reciprocal?] trust is focus of my current SoTL inquiry."

Career history 4: Recognition and promotion

"For many years I was a post-doctoral scientist working in the area of iron acquisition by bacteria. During this time I really enjoyed any interaction I had with students, through final year research project supervision, and other areas of teaching. For three years I held a joint post-doc/teaching fellow position and this enabled me not only to develop innovative teaching, but allowed me to complete an MA in Higher Education Practice. Through this programme I developed a different set of research skills in the social sciences, as it directly applied to SoTL. I felt that these skills were complementary to those I had as a bench scientist. They allowed me to evidence learning gain by students who took my new, innovative modules. I successfully published my work around students' skill acquisition in research-led teaching scenarios, and this was of vital importance as it allowed me to learn about writing papers in the areas of SoTL, and the Journals associated with this area. I had a good mentor on my MA programme, who acted as a critical friend in my early attempts at writing social science research. I became a full-time lecturer, focusing on teaching in 2006, and achieved my professorial chair in 2014. The development of research areas linked to pedagogy, in my view, has been key to my career progression, and although it was not easy to develop these skills and to establish a new research

area, it has been highly rewarding and fulfilling. I firmly believe that social science research skills should be taught as an option to science undergraduates, and I have recently established a Science Communication Research Project module, which will allow our students who are interested in social science research to acquire these skills.

I continue to learn the craft of social science research, and I work with a number of colleagues across the university and indeed at other institutions on a variety of projects. My advice would be to challenge yourself: if you enjoy the process of research and are passionate about SoTL, then this is right for you. Find someone within your institution who has done something similar and arrange to have a coffee to talk."

THEMATIC ANALYSIS

The career histories presented above give an insight into how SoTL has played a role in the careers of four life science academics with an interest in, or focus on, teaching and learning.

Thematic analysis is used here as a method for identifying, analysing, and reporting patterns and themes within textual data. Following Braun and Clarke (2006), we conducted a thematic analysis of the career histories. Our analysis yielded the following themes:

- Communities of practice and collaboration
- Professional development
- Mentoring
- Sharing and dissemination
- Funding issues
- Student participation
- Novelty and enjoyment

We noted that within each of these thematic areas, the career history authors identify practices, support, and attitudes toward SoTL that have supported and benefited them in their SoTL journey and career. Each of the four academics started within the life sciences and have subsequently moved toward (or are moving toward) teaching and learning and SoTL as a focus of their careers. They were not already immersed in SoTL, but are reflecting on their individual situations and working environments, and how they have carved a SoTL path although it was not initially part of their key role.

The analysis also highlights overarching aspects of, and the importance of, communities of practice within SoTL. Below we explore each of these thematic areas in more detail.

DISCUSSION

Communities of practice and collaboration

Communities can form in departments, across an institution and wider—nationally and even potentially internationally. Within the career histories, we noted an emphasis on the ways that working, interacting, discussing, sharing, and collaborating with others external to their department, subject area, and institution supported them in their SoTL journey.

The career histories reflect the three elements, noted above, identified by Wenger (1998, 73) as dimensions of practice within a community: (1) mutual engagement, (2) joint enterprise, and (3) shared repertoire. Fanghanel (2013, 65) envisages SoTL itself as a form of community: "SoTL is a community of practice engaged in testing and critiquing pedagogical principles across disciplines."

Below we look at each of the identified themes from the career histories in turn, taking the opportunity to explore how the themes relate to communities of practice and how communities of practice can support, enable, and promote SoTL among practitioners. Communities of practice have been shown to support practitioners in SoTL. For example, Cox (2013) discusses a number of studies where involvement in communities of practice has had a positive impact on early-career academics' interest in the teaching process and SoTL. Mathany, Clow, and Aspenlieder (2017) highlight instances where communities of practice support SoTL development and involvement, particularly among those new to SoTL. Hubball, Clarke, and Poole (2010) discuss how mentoring as part of a community of practice helped to support members of the community from a diverse range of disciplines when undertaking SoTL.

Collaboration was a common and consistent theme through all the career histories:

- "I have found collaboration with like-minded colleagues key; with time always being a limitation, ideas and key tasks can be shared" (1).
- "These events were also invaluable in encouraging new collaborations on projects" (2).
- "Over this time I have collaborated with colleagues to trial several innovations that are all connected by the same simple idea: engagement" (3).
- "[A]nd I work with a number of colleagues across the university and indeed at other institutions on a variety of projects" (4).

Collaboration is an important aspect of SoTL and communities of practice (Wenger 1998, 123). Collaboration could be with like-minded colleagues who are not necessarily within a "home" department or research group. We noticed the authors mentioned collaboration between groups for specific projects, for example:

- "An example of a collaborative L&T project I am now involved in is the development of integrated digital media resource . . . designed by undergraduate Computer Science students . . . with further e-resources being developed in collaboration with graduate teaching assistants" (1).
- "Most recently I have helped to develop a new cross-school second-year unit that is designed to develop key skills that are highly valued by employers" (3).

These "ready-made" communities of practice set up for a specific project could last beyond the duration of the project; provide an opportunity to gain views, ideas, and expertise from different departments and disciplines; and can also directly involve students. Collaboration and working with students was also a theme across the career histories, for example:

- "[D]esigned by undergraduate Computer Science students for undergraduate Life Sciences students. Student focus groups and feedback inform the design and content" (1).
- "This interest led to an invitation to represent my faculty on a new group, the e-learning advisors network. This group has academic representation from all faculties . . . and the Student's Union and it serves to advise the Education Committee" (3).

Communities of practice involving collaboration with students, where students were designing and working on resources and project outputs, are described in two of the career histories. Brew (2003) proposes communities of practice focusing on teaching and learning that involve both students and academics as active participants. This could benefit students' learning and skills development by

engaging them both in teaching and learning, and in research (in this case, SoTL) (Healey, Flint, and Harrington 2014, 19).

Collaborative projects can work to bring together different communities—for example, different departments and students—to work on a single project. Career history 3 notes how a collaboration across departments on a specific project (formal setting) lead to an "unexpected benefit" of opportunity to discuss problems. Again, in this instance, the community of practice formed for a specific project expanded beyond the duration and scope of that project. Svinicki (2012) argues for the benefits of cross-discipline groups in SoTL and teaching and learning-focused projects (with each discipline bringing different ideas and expertise, enabling exchange of ideas) after seeing how cross-disciplinary research teams made faster progress than individuals or single-discipline groups in addressing teaching and learning-focused research.

Collaboration outside of their home university was discussed in two of the career histories:

- "[M]oving towards disseminating the L&T research I have been involved in, for example through publication, and creating a profile out-with [outside of] the University in terms of collaboration and obtaining external grant funding" (1).
- "The inspiration for many of these initiatives stemmed from the HEA Centre for Bioscience networking events and the opportunity to share good practice with colleagues across the sector. These events were also invaluable in encouraging new collaborations on projects" (2).

This highlights the importance of practitioners developing networks outside of their university—creating a profile within the wider learning and teaching community that can lead to forming communities of practice; exploring other opportunities for SoTL, such as collaborative projects and funding; and sharing practice across a wider field. This could be seen as important within the life sciences, where academics starting out in SoTL may have less experience of the research skills used in SoTL (Freestone 2014; Miller-Young and Yeo 2015). Collaboration with individuals and groups in different disciplines, and with those in the life sciences further on in their SoTL journey, could lead to an invaluable sharing of expertise and experience.

Involvement in external networks and groups can lead to collaborative SoTL projects and the formation of communities of practice. A key benefit is finding colleagues who have similar problems outside of internal networks, who can then share practices, ideas, and problems. This highlights the importance of having opportunities to meet with colleagues outside of home departments and institutions, whether through meetings, conferences, or social media. MacKenzie and Meyers (2012) describe a programme that supported the formation of international collaborations focusing on SoTL. Collaborations could be difficult to maintain. However, where practitioners maintained contact, although few collaborative projects were forthcoming, there was an exchange of ideas and an informal mentoring system developed between participants.

Professional development

All of the career histories discussed elements of professional development in relation to their SoTL journey. Three of the practitioners had undertaken postgraduate qualifications with a focus on teaching and learning or education practice:

- "I completed a Postgraduate Certificate in Academic Practice (PGCAP)" (1).

- "[Lead to enrolment on a masters course in the Graduate School of Education" (3).
- "[A]llowed me to complete an MA in Higher Education Practice" (4).

Courses such as the MA and Master's courses discussed in the career histories can support practitioners in developing their skills surrounding SoTL, in these cases, giving life science academics the opportunity to explore SoTL and learn about how SoTL is undertaken (Hubball, Clarke, and Poole 2010). Mathany, Clow, and Aspenlieder (2017) discuss how teaching staff in Canadian universities found formal training, such as graduate education and certificate programs, increased their ability to conduct SoTL research. Formal development opportunities were seen as a key factor in leading teaching staff from being a practitioner to a SoTL researcher. Gaebel and Zhang (2018) surveyed 299 European higher education institutions and found that over three-quarters of them offered courses to enhance teaching skills, and two-thirds were trying to systematically establish research into learning and teaching. Courses such as these could also provide practitioners with a "ready-made" community of practice, giving the opportunity to meet others interested in teaching and learning or SoTL from outside their home department or institution. Meeting colleagues they do not necessarily see on a day-to-day basis can provide novelty and new perspectives on SoTL. Kent, Berry, Budds, Skipper, and Williams (2017) describe a writing retreat course aimed at early career academics in which one of the aims is to form enduring communities of practice. The community formed during the course and subsequently continued, supporting the participants in their academic writing. Healey, Marquis, and Vajoczki (2013) describe an international collaborative SoTL writing project where participants felt that the process of collaborating and writing together on an initial project could lead to further collaborations.

Professional development can support promotion and career development via a learning and teaching and SoTL route. This could eventually lead to policy and departmental changes as those who are promoted have the opportunity to influence promotions criteria and encourage SoTL within a department. Part of this could entail creating an environment where communities of practice relating to SoTL can form. As one career history author described, "[I was] promoted under the new criteria of learning and teaching to a Senior Teaching Fellow. This role has given me the opportunity to make a wider impact on the L&T environment, particularly in terms of advocating the importance of SoTL in driving policy changes or implementation of education initiatives (for instance, in academic promotion cases based on L&T or through the L&T Quality Committee)" (2).

Support—and maybe, more importantly, visible support—for SoTL within a department could lead to more sharing and discussion of practice, more opportunities for communities of practice to form, and the benefits of SoTL being seen on a wider scale. Fanghanel (2013) proposes that the approach of SoTL—a focus on processes, boundary (discipline) crossing, and making findings public—makes a useful and sophisticated methodology for professional development.

Mentoring

Formal mentoring was discussed in two of the career histories:

- "I am taking part in the Athena Swan mentoring programme as a mentee" (1).
- "I had a good mentor on my MA programme, who acted as a critical friend in my early attempts at writing social science research" (4).

A formal mentoring programme can give the opportunity to meet others, share, collaborate, and offer support. As does taking professional development courses, it can provide a ready-made community of

practice. Taking on a mentoring role and supporting colleagues in engaging with SoTL provides an opportunity to promote SoTL and share ideas. Andrews and Clark (2011) found that peer mentoring supported students in higher education. One of the most valuable roles of peer mentors was supporting their mentees in "learning how to learn" at a higher level and promoting independent learning. Hubball, Clarke, and Poole (2010) found that effective mentoring in SoTL as part of a community of practice had a positive influence on research outcomes and was particularly beneficial for those unfamiliar with social science methodologies. Mathany, Clow, and Aspenlieder (2017) discuss how formal mentoring programmes and informal mentoring supported SoTL development: formal mentoring increased practitioners' ability to undertake SoTL research, whereas informal mentoring was perceived to offer an opportunity for a more diverse exchange of ideas across faculties. A mentor from a different discipline, department, or institution, or a life scientist already engaged with and working in SoTL, could offer a very different perspective on SoTL. They could offer a different understanding of education research and be a guide through the threshold concepts with which a life scientist starting out in SoTL might not be familiar or comfortable, including terminology and research methods of SoTL. This is highlighted in career history 4, where the author discusses a mentor who was able to act as a critical friend while the author was first writing social science research.

More informal mentoring can take the form of supporting colleagues on an ad hoc basis: there is no formal mentor-mentee relationship, but practitioners are supported in their SoTL journey by more experienced colleagues:

- "Advocating engagement with SoTL . . . is also fundamental to my role in supporting colleagues at earlier stages in their careers" (2).
- "[W]ith the help of educational technologists in my institution, I explored how it might support learning" (3).

These interactions can form the basis of a community of practice.

Sharing and dissemination

Sharing and dissemination can be seen as an intrinsic part of SoTL (Glassick, Huber, and Maeroff 1997; Trigwell et al. 2000) and of communities of practice (Wenger 1998, 73); external networks and meetings provide an ideal opportunity to share practice, potentially forming a community of practice. As noted above, the interaction of the three components of Trigwell and Shale's (2004) model of SoTL—knowledge, practice, and outcomes—made public for peer scrutiny is what they consider the scholarship of teaching. Trigwell, Martin, Benjamin, and Prosser (2000) also highlight the dissemination and publication of pedagogic research outputs.

Sharing and dissemination were a common theme in the career histories, and dissemination of practice both inside and outside of a home department or institution was frequently mentioned:

- "Sharing this research at national conferences has been of great benefit to me, allowing engagement with the wider L&T community and generating interesting ideas and discussions that impact on my practice" (1).
- "[M]oving towards disseminating the L&T research I have been involved in, for example through publication, and creating a profile out-with [outside of] the University in terms of collaboration and obtaining external grant funding" (1).

- "The outcomes of these projects challenged some of my colleagues' assumptions about teaching and led to better engagement with assessment and feedback practices within the department" (2).
- "Colleagues are more willing to adopt a model that has been successful elsewhere, especially if the model is supported by research reports that describe an approach with control and intervention groups, hard numbers, and statistics" (3).

The "wider L & T community" highlighted in career history 1 could itself be seen as a community of practice. Sharing and disseminating beyond practitioners' own departments and institutions, for example at national and international conferences where there is an opportunity to meet and share within this wider community, is an important aspect of dissemination. Spreading ideas more widely gives not only food for thought and opportunity for reflection, but ideas for others to take back and share within their own communities. MacKenzie, Bell, Bohan, Brown, Burke, Cogdell, Jamieson, McAdam, McKerlie, Morrow, Paschke, Rea, and Tierney (2010) describe the formation of a cross-departmental community of teaching-focused staff, required to engage in SoTL. The community enabled discussion and idea sharing had a positive impact on its members' approaches and attitudes toward SoTL. Healey (2000, 183) raises the possibility of discipline-based networks to support SoTL through communication, encouraging those who teach to "develop a scholarly approach to the way they teach, and the way they research and write about their teaching and their students' learning." Cox (2004) describes the formation of Faculty Learning Committees (FLCs) in a university, where staff across a faculty interested in learning and teaching were brought together in informal settings to meet, share, and discuss. Although not a formal mentoring programme, the FLCs enabled sharing of practice and expertise in various areas across disciplines and supported development of both staff and students.

Conferences and meetings can give the opportunity to form groups that can then follow up discussions later after the conference (for example using social media) leading to collaborations on projects. Follow-up meetings can then reinforce these communities. Social media can support both the sharing and dissemination of practice, and the forming and maintaining of communities of practice. Fanghanel, Pritchard, Potter, and Wisker (2016, 14) notes that academics engaged in SoTL can make their work available online through blogs and social media. These can be very visible, easy to access, and offer individual reflection and ideas to other academics interested in SoTL. Wenger (1998, 175) discusses the potential for online communities to expand the reach of communities of practice. Pearce, Weller, Scanlon, and Ashleigh (2010) highlight the potential for online technologies to support collaboration with more—and a wider field of—colleagues, and for the results of these collaborations to be made available to a wider audience.

Sharing and disseminating research, and practice supported by research, can engage others. Research with data and statistics can draw in those less familiar with some of the types of research found in SoTL. Sharing more formal research (as opposed to anecdotal) could be done in an informal setting with a colleague over a coffee, in a departmental or university seminar, when putting together a new course module, or at a national conference. All these have the potential to draw others in and form a community of practice.

Funding issues

The role of funding from external sources was highlighted in two of the career histories (1 and 2). In these, funding from sources external to the university was explicitly mentioned as either supporting SoTL projects, or in supporting a practitioner in developing a profile in SoTL:

- "[I]t is hoped that funding can be sought from other [non-university] agencies" (1).
- "Over the years, funding from institutional, national, and international bodies were invaluable in introducing scholarly based developments in learning and teaching. The outcomes of these projects challenged some of my colleagues' assumptions about teaching and led to better engagement with assessment and feedback practices within the department" (2).

Funding from external sources can enable practitioners to become known outside of their own department and institution for their work in SoTL. For example, MacKenzie and Meyers (2012) describe a SoTL project that put together an international community of practice, which while not necessarily leading to collaborative SoTL-focused projects, did lead to exchange of ideas and informal mentoring type relationships. Obtaining funding from external sources could also support practitioners in exploring SoTL. Seeking funding and the bodies who offer funding for SoTL could expand practitioners' knowledge of the different communities undertaking SoTL both nationally and internationally. This is highlighted in career histories 1 and 4:

- "[M]oving towards disseminating the L&T research I have been involved in, for example through publication, and creating a profile out-with [outside of] the University in terms of collaboration and obtaining external grant funding" (1).
- "[A]nd I work with a number of colleagues across the university and indeed at other institutions on a variety of projects" (4).

Funding can enable collaborative SoTL projects to be undertaken across different departments and institutions, building and expanding communities of practice. Some funding opportunities may also encourage—or indeed require—external collaboration. However, sourcing external funding for SoTL and teaching and learning–focused projects can be problematic. The amounts of funding offered can be small (particularly in comparison with funding offered for research projects within the life sciences), and this can have a negative impact on academic career progression and promotions (Cashmore, Cane, and Cane 2013, 12; Mathany, Clow, and Aspenlieder 2017). Smaller grants can also be problematic in that they do not provide the funding to pay for the time needed to undertake SoTL projects (Svinicki 2012).

Student participation

Students see and experience the benefits of SoTL following the development of new modules, courses, practicals, and fieldwork. Their feedback can influence design and redesign of, for example, modules, practicals, and even entire courses. Perhaps it is worth thinking of, for example, a tutorial group, as a community of practice where feedback and ideas from the students can influence how tutorial sessions are run in the future.

- "An example of a collaborative L&T project I am now involved in is the development of integrated digital media resource . . . designed by undergraduate Computer Science students for undergraduate Life Sciences students. Student focus groups and feedback

inform the design and content, with further e-resources being developed in collaboration with graduate teaching assistants" (1).

- "Student feedback greatly influences my practice and is the basis of many changes I have made to the courses that I coordinate, and L&T research projects I undertake" (1).
- "[A]nd led to better engagement with assessment and feedback practices within the department" (2).
- "Several times I've been invited to revise assessment strategies, laboratory practicals, tutorials, even entire units, perceived to be "problems," a perception deriving most often from the results of student feedback questionnaires" (3).
- "[A]llowed me to evidence learning gain by students who took my new, innovative modules" (4).

Students are also involved as active partners in groups and communities of practice within universities that have a direct influence on teaching and learning (Cook-Sather, Bovill, and Felten 2014). Two of the career histories (1 and 3) highlight instances where students are involved in the design and development of teaching resources and advising the education committee in an institution.

- "[D]evelopment of integrated digital media resource . . . designed by undergraduate Computer Science students for undergraduate Life Sciences students" (1).
- "This group has academic representation from all faculties as well as the Education Support Unit, Information Systems, Graduate School of Education and the Student's Union and it serves to advise the Education Committee" (3).

Involving students as partners in SoTL can have a variety of benefits. Brew (2003) proposes communities of practice focus on teaching and learning that involve both students and academics as active participants. Hubbard, Brown, Deans, García, Pruna, and Mason (2017) describe a student partnership project where undergraduate students were actively involved in the design and development of teaching resources for an undergraduate biosciences practical. Both students and teaching staff benefited from the project, and teaching staff felt that their involvement in student partnership projects could make a difference to future teaching.

Novelty and enjoyment

Although not necessarily linked to communities of practice, all of the authors of the career histories expressed enjoyment or satisfaction in various aspects of SoTL, for example the enjoyment of new challenges and of developing new research areas:

- "The transition from postdoctoral scientific research into teaching in HE has been an enjoyable challenge" (1).
- "[F]ortuitous opportunity to teach at my current institution was the start of an unexpected but satisfying career path" (2).
- "I'm never happier than when I'm challenged by something new" (3).
- "[N]ot easy to develop these skills and to establish a new research area, it has been highly rewarding and fulfilling" (4).

Trigwell and Shale (2004) consider teacher learning and teacher satisfaction to be key aspects of SoTL. Various models and definitions of SoTL also consider the teachers themselves to be learners, for example Boyer (1990, 23) considers that "teaching can be well regarded only as professors are widely

read and intellectually engaged"; indeed in Trigwell and Shale's (2004) model of SoTL one of the elements of SoTL is teacher learning.

CONCLUSIONS

The career histories we present highlight themes and examples of how communities of practice have supported the authors in their SoTL journey. Specifically, communities of practice can support those who are moving onto a "SoTL pathway," but were not initially trained in education or scholarly practice. These individuals have come to it either after seeing the impact it can have, or because of an interest in pedagogy and SoTL. There are a number of examples highlighting the value of working with colleagues and practitioners outside of an academics' own department and institution. Interwoven with the individuals' histories is an acknowledgment that different higher education systems can influence practitioners' uptake, implementation, and involvement in SoTL. For example, pressures to conform to institutional definitions of SoTL can have an impact on practitioners' external interactions, driving them to embrace external communities of practice.

The recurring themes highlighted in the career histories suggest that giving opportunities to form communities of practice both within and outside of departments and institutions provides valuable support for SoTL, and to academics already undertaking or interested in starting out in SoTL. Indeed, it is sometimes the case that external communities of practice offer support not immediately available within a locality.

The growing focus on teaching and learning in higher education and increasing numbers of teaching-only staff in universities highlight the importance of SoTL. Communities of practice have the potential to support SoTL development locally within a department or institution, nationally, and internationally.

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