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Since the scholarship of teaching and learning entails the design of, and evidence-based inquiry into, teaching, learning and pedagogical practice – faculty new to this field face the challenging task of mastering perspectives, processes and practices that can be disparate to their disciplinary foundations. This paper offers an introductory overview of some essential ideas that help shape the design and intention of SoTL activities, and provides guidelines for undertaking SoTL projects.

Keywords

Pedagogical content knowledge, Scholarship of teaching and learning, Scholarly teaching

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Navigating the SoTL Landscape: A Compass, Map and Some Tools for Getting Started

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Abstract

Since the scholarship of teaching and learning entails the design of, and evidence-based inquiry into, teaching, learning and pedagogical practice – faculty new to this field face the challenging task of mastering perspectives, processes and practices that can be disparate to their disciplinary foundations. This paper offers an introductory overview of some essential ideas that help shape the design and intention of SoTL activities, and provides guidelines for undertaking SoTL projects.

The SoTL landscape is presented and discussed here in terms of three interrelated elements: i) a compass that represents four essential points of reference to guide the design of SoTL activity; ii) a map of the various domains of research and scholarly inquiry that inform each of these points; and iii) some tools and processes for undertaking SoTL activities within specific teaching and learning contexts.

Keywords: pedagogical content knowledge, scholarship of teaching and learning, scholarly teaching

An introductory orientation to SoTL

The scholarship of teaching and learning (SoTL) is an invitation to look closely into pedagogical practice, and to engage deeply in an evidence-based analysis of how our students learn effectively. Our intention as SoTL practitioners is thus to undertake a process of 'going-meta' – a kind of standing back from daily teaching and learning activity in order to deliberately frame and investigate what works, and what doesn't, in relation to deepening learning, improving teaching, and advancing practice (Hutchings and Shulman, 1999; Kreber, 2005; Paulson, 2002). This endeavour entails rigorous intellectual work and is *not* a soft option (Andreson, 2000). On the contrary, scholarship brings into view the close and mutually informative nature of the teaching-research relationship (Barnett, 2005; Rice, 2007). The same rigorous processes of research apply to scholarship: design, inquiry, collection of evidence, analysis, documentation, contribution to knowledge, and critical review. The SoTL practitioner is at once a scholar of his or her discipline *and* a scholar of learning and teaching within that discipline.

In what way is SoTL different to the (possibly exemplary) teaching and learning activities you may already be doing?

Scholarship of teaching is essentially an inquiry-oriented process characterised by four distinctive attributes (Huber and Hutchings, 2005; Hutchings and Shulman, 1999). The first of these is an overarching *concern for students* and their learning.

SoTL scholars are driven by questions such as: what enables students to learn; what will my students need to grapple with, overcome, achieve, and finally demonstrate in order to master this subject area; what will help them to do this more effectively? SoTL activities are anchored in these central questions, but are tailored to suit the specifics of particular disciplinary and pedagogical contexts.

The second quality of SoTL is the presence of a *deliberate design* for how teaching and learning may proceed on the basis of these initial concerns. What can the teacher (as the designer of learning) do to enable learning? A design is deliberate when it draws from the work of other scholars or is informed by research into teaching and learning. Such designs seek primarily to enable the kinds of interactions and experiences most likely to enhance learning. Innovations and applications drawn from the literature (or one's imagination!) are put to work to achieve particular teaching and learning intentions.

The third quality of SoTL entails the *systematic implementation, analysis and evaluation* of the design, again with reference to the central concern for student learning. Continuing the inquiry, SoTL scholars investigate the extent to which a particular design enhances and enables learning within that context, for the subject matter, given the challenges that characterise their setting. In doing so they seek evidence to support their findings and to inform the claims they will make. This quality is a distinctive point of difference between good teaching, scholarly teaching, and scholarship of teaching – SoTL activities are directed toward the ongoing advancement of pedagogical practice through *evidence-based* inquiry (Hutchings and Shulman, 1999; Perry and Smart, 2007).

SoTL scholars orient not just to the enactment of good practice or to an innovative design but also to establishing the *effectiveness* of that design for learning as *evidenced* by the data they collect in the evaluation of that design, and in relation to *pedagogical intentions*. The notion of scholarship as “mak[ing] transparent how we have made learning possible” (Trigwell, Martin, Benjamin, and Prosser, 2000:156) captures this intention wonderfully.

Each of these qualities accumulates and provides the basis for the fourth quality of SoTL activity – *contribution to SoTL knowledge and practice*. SoTL scholars seek to make significant contributions to our collective knowledge about effective teaching and learning practice through documentation, publication and critical peer review. This requires the complementary processes of reflection and reflexive thinking – what have we learned, and how can this inform others and advance practice? What would we advise our colleagues to do or not do? Are there gaps or points of relation in the SoTL community that this activity can now contribute to or connect with?

How then does one get started in SoTL activities?

The SoTL landscape is wide, varied, and richly detailed. In his recent treatise of SoTL within contemporary higher education, Eugene Rice (2007) evokes an image of SoTL as a path of mindful practice, the purpose of which is to encounter the unknown and to deliberate over what we discover. Taking this path is undeniably invigorating, but requires some preparation. Faculty new to SoTL may benefit from an overview of the field and a little local knowledge.

The aim of this paper is to provide an initial orientation to the SoTL landscape, and a basis from which to conceptualise and design a preliminary SoTL activity. The sections that follow offer what I hope is an accessible entry point and overview of SoTL ways of thinking, doing and being. There are three main components to this orientation.

The first is a 'compass' comprising four central points of reference. These points of reference are a set of interrelated questions that offer direction for the conceptualisation, implementation and evaluation of SoTL projects and activities. The questions represent a foundational way of thinking and being a SoTL scholar. You can use this compass as a touchstone and template for your own SoTL projects.

Second, I have sketched out a 'map' summarising the various areas of literature and informative research that can further guide you through each of the points on the compass. Maps - as seasoned travellers know - offer an overview of the terrain, assist in planning a journey, inform decisions about destinations and places to return to or spend more time in, and provide shortcuts when needed. You can use this map to identify areas of potential relevance for your current teaching and learning context. In turn a deeper understanding of these areas can inform and shape the design of your SoTL activities, the kinds of evidence to collect, and key points of reference for evaluation and review.

Maps also allow us to periodically take the 'helicopter view' of the landscape and our position within it at anytime we may need to. Taking this view is particularly valuable for identifying the contribution to SoTL knowledge that a specific project can make once completed.

Third, I have provided some preliminary tools for getting started on SoTL activities. However in keeping with the metaphor of the traveller, the best kinds of tools are often the ones we discover along the way.

The SoTL Compass

A compass has value because it assists the user to establish significant directions from any point on a landscape, and provides guidance and bearings throughout a journey. There are four points of reference that are essential to SoTL work, and since SoTL is primarily an inquiry into teaching and learning, I have framed these points of reference as questions. The SoTL Compass (Figure 1) represents each of these questions as a cycle of interrelated areas of inquiry that together comprise a SoTL approach.

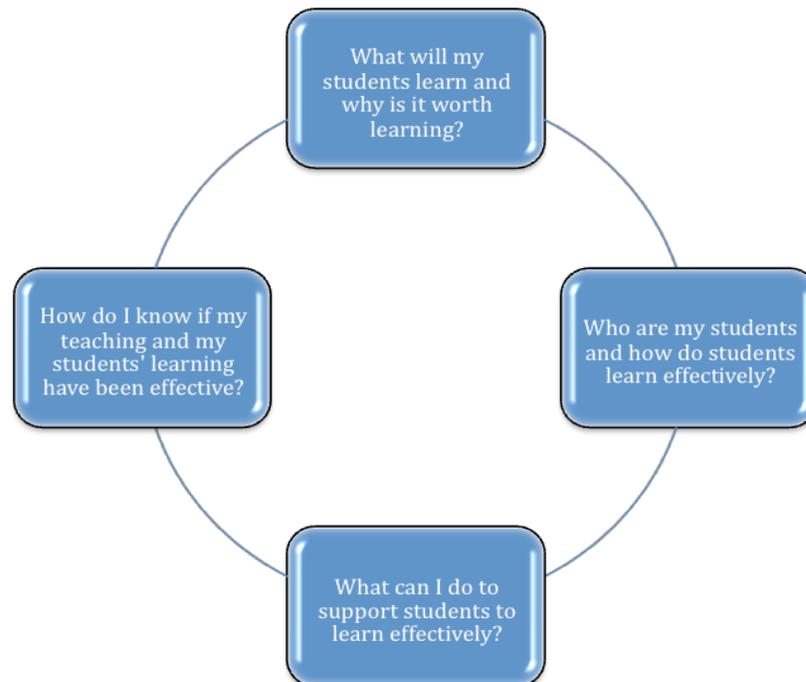


Figure 1: The SoTL Compass

Enabling SoTL Ways of Thinking, Being and Doing

While faculty are familiar with the nature of inquiry, the 'northern star' of SoTL inquiry is the enablement of learning. This should not be seen as a narrow prescription, but rather an overarching intention that guides thinking and practice. The four questions in the SoTL Compass are central to the SoTL scholars' way of thinking and provide useful reminders of this focus: What do my students need to learn and why is it worth learning? Who are my students and how will they learn effectively? What can I do to support my students to learn effectively? How do I know if my teaching and my students' learning have been effective? By placing a concern for student learning at the centre of SoTL inquiry and practice, the integration between the SoTL teacher's pedagogical intentions and student learning emerges as the central focus for pedagogic enquiry. Trigwell and Shale (2002) have described this link as "the bridge between teaching knowledge and the student learning that results from that knowledge...constituted in the individual acts of teaching" (p. 532). On a macro level the SoTL Compass orients us to this essential learning-focused perspective, the overarching intention to enable learning. At the micro level each of the questions in the compass work together to guide the design of scholarship activities that fulfill this intention, a point that is worth elaborating on here.

A Template for SoTL Projects and Activities

Inquiry can have many starting points and methods for data gathering and analysis, and this remains the case for scholarship of teaching and learning. However, SoTL inquiries primarily seek "to understand and improve student learning in specific curricular contexts" (Gale, 2008: 41). As straightforward as this appears, sustaining such a focus amidst the complexity of classroom research (and the Pandora's box it can open) is a challenge all SoTL scholars aim to master. The SoTL compass offers a

template that consistently returns our attention to this aim. Each of the questions provides both a point of entry into the teaching and learning setting, and a doorway to further inquiry. The SoTL Compass lends itself to both classroom settings (at the learning activity or course level) *and* broader initiatives (across a year level, sequence of study, or within extra-curricular experiences).

If you are a beginning SoTL scholar, this may be a valuable place to pause and commence your inquiries, albeit in a preliminary way. A brief moment of contemplation on each of the four questions, as they relate to, and draw some, preliminary thinking about your current teaching and learning setting, will provide useful groundwork for the next steps.

The Centrality of Pedagogical Content Knowledge in SoTL

Assuming you have just taken some time to reflect on the questions in the SoTL Compass; we could say that in doing so you have evoked an area of teaching expertise and knowledge that is highly valued, yet often overlooked, within higher education. When you think carefully about what students must learn and why it is significant, and when you deliberate over what they must do in order to learn, and what you (as the teacher) can do to support and further enable their learning; you are activating the knowledge you have about the subject matter, about the students, their learning, and the problems they may face; and the potential strategies that you can implement to facilitate effective learning. These different but interrelated domains of knowledge *intersect* as we reason through pedagogical challenges and they *inform* our pedagogical intentions and actions (O'Brien, 2008; Wilson et al, 1987). This point of intersection, and the various domains of knowledge that comprise it, is a distinct area of teaching expertise referred to as *pedagogical content knowledge*.

Pedagogical content knowledge is thus the specialised configuration of teacher knowledge that sits at the "nexus between content and pedagogy" (Paulsen, 2001:20). Originating from Shulman's seminal work, pedagogical content knowledge "lies...in the capacity of the teacher to transform the content knowledge he or she possesses into forms that are pedagogically powerful and yet adaptive to the variations in ability and background presented by the students" (1987:15). More recently, research indicates that such knowledge is related to teachers' disciplinary ways of thinking, general conceptions of what knowledge intends, and particular orientations to teaching and learning (O'Brien, 2008). It's important to note that pedagogical content knowledge derives from an essentially reflexive process, in that it both shapes and is shaped by our pedagogical experiences and thinking. As such, it is a dynamic and iterative form of expertise that, when given due attention, continuously reformulates throughout one's professional life.

Comprehending the nature of pedagogical content knowledge as an aspect of your personal teaching expertise is central to the SoTL endeavour. The interrelated knowledge bases that comprise pedagogical content knowledge are, when taken together, the foundation on which SoTL rests (Hutchings and Shulman, 1999; Paulsen, 2001; Rice, 2007). Cultivating pedagogical content knowledge *development*, via the deliberate and mindful contemplation of the learning-oriented questions in the SoTL Compass, will begin to foster that essential aspect of scholarship that Trigwell and Shale term "pedagogic resonance" (2004: 529). That

is, a dynamic interconnection between pedagogical intention and student learning that manifests in the learning experience. This is an important basis from which to build and extend SoTL expertise.

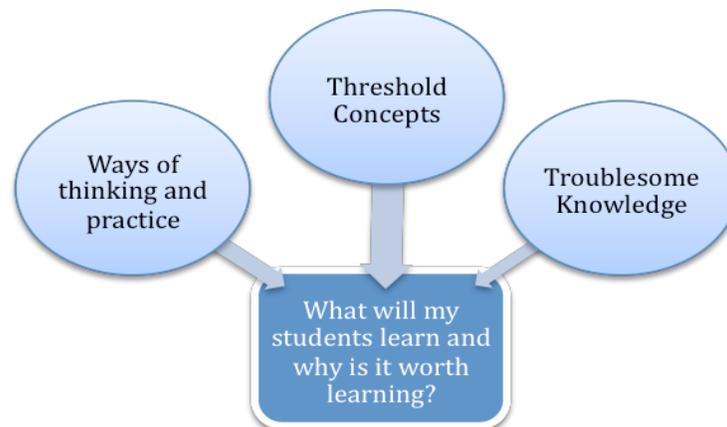
The SoTL Compass Engages Scholars in Domains of Research That Can Inform SoTL Practice

As well as orienting scholars to the essential questions that SoTL is concerned with, the SoTL Compass points to areas of research and scholarly practice that can further inform and lay open a SoTL inquiry. Each of these areas comprises richly detailed locations on the SoTL landscape that can only be accorded a broad-brush in this paper. Nevertheless, an overview of each area via the metaphorical 'maps' presented in the following sections should provide the new SoTL scholar with a generative starting point.

Mapping the SoTL Landscape (1) – What Will My Students Learn and Why Is It Significant?

It is a common misperception that when we consider what it is that students will learn we are thinking about 'content' (that is, theories, concepts, principles, formulae and information). And it is a further misapprehension that the clever presentation of content will in itself constitute a teaching achievement. This is not to negate the central place that learning about theories, concepts, principles, formulae, information, etc. have in mastering a subject area, nor the creativity of the teacher. Rather, it is to signal the wealth of research that illustrates the limitations that this kind of approach has for engaging students in any meaningful way (Entwistle, 2007). When we think about 'what' students must learn, and why it is worth learning, we need to begin by lifting our eyes above this notion of 'content', even if momentarily.

Since higher education is concerned with educative intentions that reach well beyond those of schooling (Short, 2002), the question of what students will learn and why it is worth learning has intrigued teachers, researchers and philosophers alike. This section of the SoTL Landscape maps some of the recent research and scholarly thinking that seeks to question received wisdom about what is worth learning. The ideas reviewed here are only preliminary openings that require further consideration within your own context. Three broad areas of current discussion and thinking are presented in Figure 3: Mapping the SoTL landscape on 'what' students will learn, and discussed further in the sections that follow.

Figure 2: Mapping the SoTL Landscape on 'what' students learn

Ways of Thinking and Practice

To begin, it is useful to note that there is general acceptance across the academy that knowledge is itself a construction of particular social and cultural communities (Berger and Luckmann, 1967); and that all such communities orient to the specific and shared aims, activities and ways of achieving them that comprise and make distinctive that community (Wenger, 1998). That this is the case for academic disciplines and communities of research and practice has been well documented within the higher education context (see for example Becher and Trowler, 2001; Donald, 2002; Huber and Morreale, 2002; Middendorf and Pace, 2008); and is a domain of scholarly work that offers intriguing reading for the interested. The proposition for teaching and learning then is this: since communities of research and practice are comprised of, and distinguished by, particular ways of thinking, building knowledge, knowing and acting, what then do students learn?

A recent project undertaken by researchers across the UK set out to examine similar questions (by investigating curricula and teachers' intentions across several disciplines) and found that a) disciplines have vastly different priorities and conceptions about what must be learned and why; but that b) they each entail the essential and distinctive *ways of thinking and practice* that constitutes that discipline (Entwistle, 2005). Collaborators in this research, McHune and Hounsell elaborate:

"[ways of thinking and practice comprise] ...the richness, depth and breadth of what students might learn through engagement with a given subject area in a specific context. This might include coming to terms with particular understandings, forms of discourse, values or ways of acting which are central... anything that students learn which helps them to come to terms with what it might mean to be part of a disciplinary community..." (2005:257-8)

Thus, Entwistle (2005) suggests that the answer to the question 'what will students learn?' lies within the ways of thinking and practice of the discipline, profession or community of research and practice the students are being inducted into. This means that since disciplines are comprised of "more than bundles of concepts"

(Perkins, 2006:41), learning entails the particular ways of verifying and justifying knowledge claims, of attending to problems and issues, of conducting inquiry, and of designing and validating products, perspectives and outcomes.

Barnett, Parry and Coate (2001) offer a similar proposition, but explicitly evoke the performative emphasis that contemporary education philosophy tends to foreground. That is, the 'what must be learned' question should orient to the related question of 'what use is this?' (p. 436) and be answered within frameworks that portray the 'knowing how, problem-solving, and applied actions' that are most relevant to particular disciplines (p. 437); articulated in terms of disciplinary-specific ways of 'knowing, doing, and being' (p. 439).

All of this is to say that when we ask the question 'what will my students learn and why is it significant,?' SoTL scholars open up to possibilities that reach well beyond 'content' alone. Instead they seek to identify what is *authentic* for learning (Kreber, 2007), given both the *disciplinary contexts* and broader *sociocultural* concerns (Perry and Smart, 2007), within a *critical perspective* of what counts as knowledge and why it is of value (Barnett, 2005; Delanty, 2001; Kreber, 2005).

What are the 'ways of thinking and practice' that comprise your discipline or community of research and practice? What will students need to learn in order to

become a member, to think critically, to act appropriately, to demonstrate mastery, to contribute to thinking? Of what use is it?

Threshold Concepts

Another important and generative way of thinking about 'what must be learned' is the proposition that within each discipline such ways of thinking, knowing and doing are grounded within concepts that are *central* to that discipline's way of constructing knowledge and viewing the world. Because these concepts are fundamental to a discipline, and because they provide a doorway or 'threshold' through which other ways of thinking in that discipline become accessible, the term '*threshold concept*' was coined. Initially introduced and exemplified by the work of Meyer and Land (2003; 2005; 2006), threshold concepts are described as concepts that:

- Represent fundamental ways of thinking and knowledge within the field or discipline;
- Are transformative, in that learning about them changes the way students think about the phenomena or area of application;
- Once understood open up a deeper level of thinking that in turn affords access to other important concepts within the field.

The notion of threshold concepts has provided a particularly generative heuristic for many discipline scholars seeking to consider the question 'what will students learn?' (see for example the many examples and expositions of disciplinary threshold concepts in Meyer and Land, 2006; and in Land, Meyer, and Smith, 2008). SoTL scholars could make good use of the threshold concept heuristic summarised above

to articulate the 'what must be learned (and why it is significant)' within their own classrooms.

Troublesome Knowledge

The transformative nature of threshold concepts leads to the next area of scholarly thinking that can inform a question of what must be learned. Meyer and Land's use of the term 'transformative' is deliberate and aims to reflect the depth of *change* that characterises such learning (Meyer and Land, 2005). Transformative learning entails the questioning of taken-for-granted assumptions and informal understanding, and occurs via the significant re-arrangement of existing knowledge and frames of reference (Mezirow, 1996). Given this substantial process, it is not surprising to note that learning such concepts can prove *troublesome* for students.

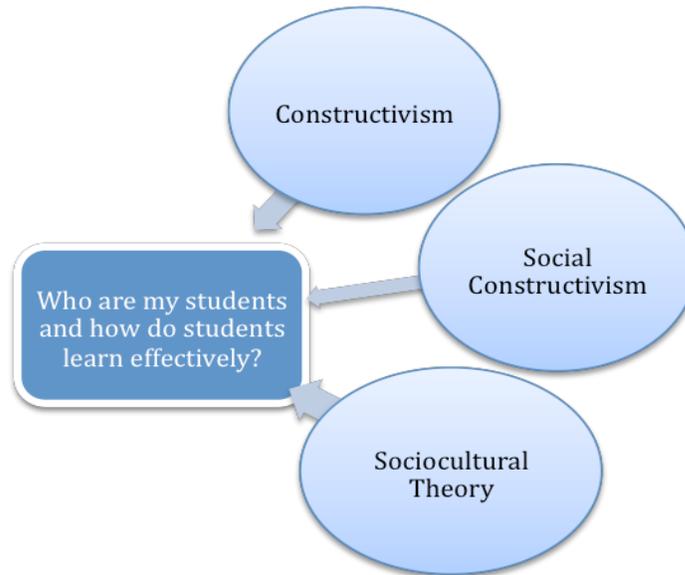
Identifying the kinds of trouble students can encounter whilst engaging in a particular subject area is familiar terrain for SoTL scholars, as it is a foundational pillar of pedagogical content knowledge (Shulman, 1987; Wilson et al, 1987). However, Meyer and Land's threshold concepts brings into view aspects of troublesomeness that are less about difficult concepts and more to do with the challenges inherent within a change to one's inner landscape, perspective and worldview (O'Brien, 2008; Perkins, 2006; 2007). Pinpointing exactly where these trouble spots are, and indeed, fully comprehending the epistemological and ontological aspects of the threshold concepts within our own discipline, pose potentially new challenges to teachers (O'Brien, 2008).

What are the threshold concepts within your discipline, research field, community of practice, subject area, course? In what way are they foundational, transformative, and integrative to other concepts? What is difficult, challenging and troublesome for students? What lies in the way of fully comprehending that concept and hence, from effectively accessing other important ideas and knowledge in your field?

Mapping the SoTL Landscape (2) - Who Are My Students and How Do They Learn Effectively?

Articulating an in depth understanding of who our students are and how they learn is central to SoTL activity. There is much research into student learning and while the field is diverse and varied, theories of learning can offer a valuable foundation for identifying focal points for evidence-based SoTL practice (Hutchings, 2007; Marsh, 2007). Since there have been reviews of learning theory within recent SoTL literature (Gerhard and Mayer-Smith, 2008; Marsh, 2007) I have compiled an alternative but complementary framing of the field in this paper; one that I also hope continues the thread of thinking established by the SoTL compass and landscape thus far.

In the following section three foundational theories of learning are reviewed. Each offers a distinctive theoretical view of how we might see students, and how they manage to learn effectively. An illustrative summary of these domains as they have been mapped within the SoTL Landscape is presented in Figure 3: Mapping the SoTL Landscape on 'how' students learn.

Figure 3: Mapping the SoTL Landscape on 'how' students learn

Constructivism and the Individual Learner

As a theory of learning, constructivism is primarily concerned with the individual learner and his/her process of learning. Constructivist theory asserts that students learn by constructing and reconstructing their understandings about the world and phenomena, via a process of actively attempting to make sense of one's experiences (Duffy and Jonassen, 1992; Perkins, 1999; Phillips, 1995).

Constructivist theories have influenced adult learning theories and are particularly visible in the experiential learning literature (Kolb, 2000). Here researchers provide insights into how effective learning can entail a process of experiences that include: engaging in a context or issue, identifying their understanding, encounter limitations or problems, seek new knowledge, reconfigure and accommodate new knowledge in an expanding knowledge schema.

Taking the constructivist view, and thinking of your students as individual learners – How will they construct or reconstruct an understanding of the subject matter? To what extent does their existing knowledge and thinking influence their learning? What will you do to engage them in a process of actively constructing or reconstructing knowledge?

Social constructivism and learning with others

As well as learning by making sense of individual experiences and an internal reconstruction of meaning, people can be seen to learn much from each other. The process of learning through working with others is the domain of social constructivism, whose tenets are anchored in the premise that learning is a highly social process that occurs when we interact with others (Marshall, 1996).

Social constructivist theorists foreground the importance of viewing learning as a process of *social* construction, that is, knowledge and meaning are collaboratively

constructed by two or more counterparts rather than an individual working alone. Effective learning is thus a matter of engaging with others, collaborating over a problem or challenge, sharing thoughts, and adding to/taking from a collective idea. Taking the social constructivist view, and positioning students as learners who learn from each other – How and when will your students share knowledge and learning? What will elicit a collective discussion or collaborative construction of meaning? Who will the learning experience involve, and in what roles?

Sociocultural Theory and Learning in a Social/Cultural Context

Having briefly reviewed the nature of individual learning and of collaborative learning, consider the proposition that learning is an outcome of one's participation in our surroundings: that we learn 'to do, to be, to act' by being part of the particular context in which we find ourselves. Familiar contexts find us slipping comfortably into known activities; unfamiliar contexts leave us feeling like 'fish out of water', at least until we learn the ropes or figure out how things operate.

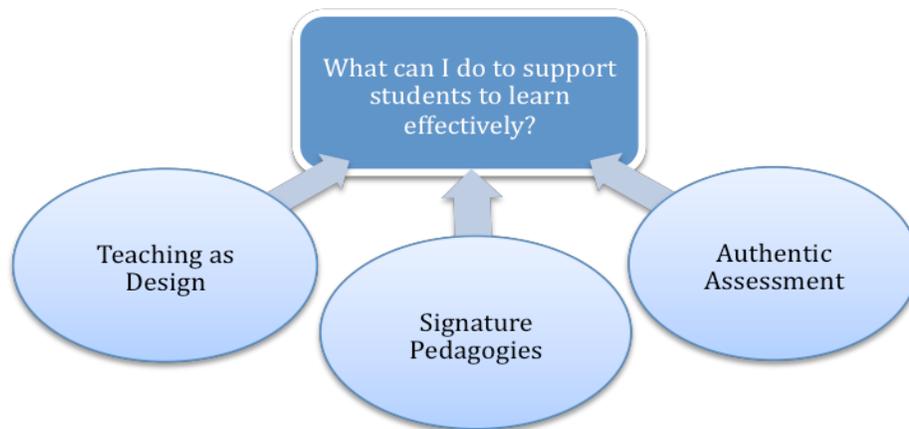
This interdependence between learner and context is the distinctive domain of sociocultural theory (John-Steiner and Mahn, 1996). For sociocultural theorists, learning is an outcome of participation in social and cultural contexts (such as classrooms), in which the students are engaged in learning 'to do, be and act' in ways that are most appropriate for that particular context (Werstch, 1991). In this view effective learning is an experience of "individual participation within culturally organised practices" (Cobb and Yackel, 1996:1). Thus learning entails engagement in the use of tools, processes, skills and activities of a particular social and cultural group. These could include: working scientifically towards an outcome; constructing an alternative perspective or critical viewpoint; weaving an intriguing narrative; performing a specialised clinical procedure. For sociocultural theorists, students are not simply constructing knowledge or sharing meaning, they are learning to become competent members of a particular community (Wenger, 1998).

Taking the sociocultural view – What is the nature of the social and cultural context in which you aim to engage students? What are the processes, ways of thinking, and intentions of that community? How will you provide opportunities for authentic activity and participation? How will students engage in, and what will they learn from, that sociocultural context?

Mapping the SoTL Landscape (3) – What Can I Do to Support Students to Learn Effectively?

As we elaborate on our understanding of students and their learning, so too can we expand and reconsider our role as teachers. Since SoTL scholars seek to open up assumptions about teaching and learning practice, and to "building vital bridges between themselves, their students and their 'subject matter'" (Kreber, 2007: 3), I have selected three areas of pedagogical thinking that specifically seek to broaden our thinking about the question: 'what can teachers do to support students to learn effectively?' These areas are summarised in Figure 4, Mapping the SoTL Landscape on 'what we can do' to support student learning.

Figure 4: Mapping the SoTL Landscape on 'what we can do' to support student learning



Teaching as Design

In a recent compelling essay, Larry Spence (2001) argues that while ordinarily people are highly effective learners they do *not* learn well within teaching-focused classrooms. To redress this challenge, Spence proposes that teachers of higher education must “become designers of learning experiences and not teachers” (2001:12).

The distinction between teaching and ‘teaching-as-design’ is significant and most discernable by the scope and depth by which teachers view their pedagogical role. Teaching-as-design entails thinking about learning and teaching well beyond the lecture or follow-up discussion – it is a view that teachers plan a *curriculum* (Hicks, 2007) not just a course document or occasional lectures (Fraser and Bosquant, 2007). Instead, teachers consider the whole of the learning experience in an integrated manner (Cambridge, 2007; Fink, 2003). Teaching-as-design is focused

on the design of tasks, situated activities, and learning outcomes (Goodyear, personal communication, May 2008). In this approach teachers articulate provisional and fluid plans that are focused on the design of students’ actions and interactions, and their engagement in activities towards outcomes (Goodyear, 2004).

SoTL scholars can consider questions such as: What will students in my classroom *do* to engage in learning? What kinds of tasks will they participate in? Who will they work with and when? What kinds of tools, artefacts and resources will they need? What are the anticipated learning outcomes of such activities? These questions open up our thinking towards the ‘teaching-as-design’ approach.

Signature Pedagogies

Another recent and powerful concept that triggers the pedagogical imagination is Shulman’s recent work on *signature pedagogies* (2005). Signature pedagogies are “modes of teaching that have become inextricably identified with preparing people for a particular profession (2005:9) and entail three characteristics:

1. They are distinctive to that profession (such as clinical practice in the health sciences, medical rounds in medicine, and studio pedagogy in architecture);
2. They are pervasive in the curriculum, and cut across programs, courses and institutions (and therefore cumulative);
3. They are general to the entire profession, entailing representations of 'learning to think like...' that are relevant for the profession.

Since nearly all higher learning has some intended (though not necessarily exclusive) applicability to a profession, the value of signature pedagogies lies in the potential modelling of, and immersion into, important ways of working and practicing for students. That is, SoTL scholars can develop pedagogical strategies that are based on the ways of working and practice that have high relevance for their students' anticipated graduate destinations. Doing so would extend the sociocultural approach described in the preceding section – in which teachers create opportunities for students to be engaged in the cultural and social practices of particular communities and professions.

SoTL scholars can consider what these may entail and design scholarly inquiries into the implementation of signature pedagogies within particular disciplines. This work is emergent, and, if the idea has some resonance in your discipline, is an area of scholarship in need of elaboration. What would the signature pedagogies in your discipline entail? How would students engage in them?

Authentic Assessment of Learning

Assessment plays a critical role in student learning. While it is common to see assessment as having both diagnostic and evaluative purpose – assessment also *motivates* student learning (Cannon and Newble, 2002) and can *drive* student approaches to study (Kember and Gow, 1994). An assessment task portrays the nature and significance of what must be learned to students. This aspect of teaching is linked to the first question on the SoTL compass but warrants an explicit place in the discussion of what teachers can do to support learning. Wiggins (1990) argues that assessment tasks should reflect some aspect of *authentic* practice and ways of working. This emphasis sits well within the SoTL emphasis on authentic practice and our endeavours to engage students in "what matters crucially" (Kreber, 2007:2).

An assessment task is authentic when it "directly examine[s] student performance on worthy intellectual tasks" (Wiggins, 1990:1). Such a task would present an intellectual challenge that requires students to respond with a full array of required knowledge, and in ways that reflect the kinds of knowledge and knowing that is both significant for learning (Kreber, 2007), authentic to a community of practice (Wenger, 1998) and personally relevant to student experiences (Stein, Isaacs and Andrews, 2004).

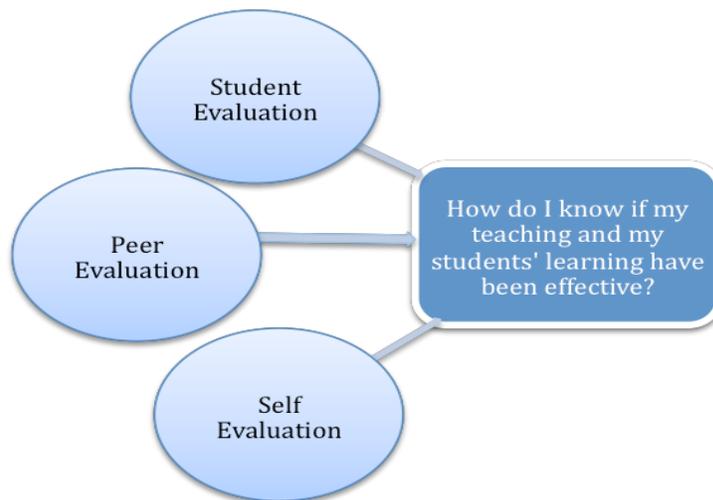
Projects that inquire into the design and development of authentic assessment tasks are a valuable and potentially rich source of scholarly work. SoTL scholars could consider: What constitutes an *authentic* assessment of my students' learning in this course, for this field? What kind of *assessment task* can I design to adequately

capture learning as a demonstration of authentic practice? How might the design of such a task *influence learning*?

Mapping the SoTL Landscape (4) – How Do I Know If My Teaching and My Students' Learning Have Been Effective?

As an *evidence-based* practice (Perry and Smart, 2007), SoTL inquiries gather data about *how effective* learning has been towards a *transparent account* of how learning was made possible (Trigwell et al, 2000). In this section of the SoTL landscape the question 'how do I know if my teaching and my students' learning has been effective?' directs our attention to this evidence-based dimension of SoTL practice. Since this paper is an introductory one, I have oriented the reader to three potential sources of evidence: ourselves, our peers, and our students. Scholarship should be based on sound evidence gathered from a breadth of sources (Cannon and Newble, 2002). This overview, summarised in Figure 4, Mapping the SoTL landscape on evaluating teaching and student learning, provides a preliminary outline of how data from these sources can inform the ongoing endeavour to improve learning and advance practice.

Figure 4: Mapping the SoTL Landscape on 'evaluating teaching and student learning'



Student Evaluation

Students offer the most widely used source of data available to teaching scholars. Student evaluations of teaching, learning experiences, and of course and subject matter are popular, sometimes mandatory mechanisms within the accountability processes of most universities (Cannon and Newble, 2002; Marsh, 2007). Data about students' experiences are generally collected via surveys in which students respond to a number of items related to their experience of the course and of explicit teaching behaviours (Marsh, 2007). Most teachers use this data as a source for gauging their 'performance' on various dimensions (e.g. effectiveness of feedback, interest of materials, perceived accessibility to students) and for making adjustments

to their practice. However the data provided in student evaluations of teaching can be further elaborated.

Student evaluations can provide information about what appears to be working well (which invites an examination of why) or what is not (which invites the development of an innovation or change in practice). Both are good starting points for SoTL activity. However, since surveys are often critiqued as limited in scope and depth, they point to areas in need of more in depth data gathering methods (such as focus groups, tailored questionnaires, interviews and focused observations). Students can be a very rich source of information and data for SoTL projects since their learning and experiences are essential points of reference for SoTL work.

Peer Evaluation

Academic colleagues or peers are a well known but overlooked source of information, and are particularly valuable since they offer a 'knowledgeable' perspective. Teachers can seek feedback and comments from academic peers, disciplinary peers or professional associates on the design of learning materials and assessment, the relevance of such materials for the discipline or field, the significance of subject matter and tailored (signature) pedagogies, the value of certain qualities required of graduates.

Peer evaluations can be conducted using a range of processes, some particularly developed for the scholarship of teaching (Hutchings, 1996). These processes can include focused observation of practice, analysis of learning materials, feedback of assessment designs etc. A partnership with academic colleagues, disciplinary peers or professional associates has the potential to bring perspective and authenticity to the design of SoTL activities and practice.

Self Evaluation

Using ourselves as a source of evaluation and evidence can provide an alternative and complementary aspect to scholarly work. Taking time to think critically about how teaching and learning is progressing is an essential aspect of scholarly work (Hutchings and Shulman, 1999). We can turn this important task into potential data and evidence by formalising our processes – writing our thoughts and experiences down. Course memos and teaching journals are two examples of useful self evaluation processes, as are records of conversations with colleagues, and written rationales about your teaching philosophy and approach presented in teaching portfolios for review or promotion.

When we consider the question 'how do I know if my teaching and my students' learning have been effective?' there is a range of data we should draw from. The important thing is to base claims we make about learning and teaching on the *evidence* this data presents (Cannon and Newble, 2002). Even better, to seek to build an understanding of what is happening and why on the basis of *several* sources of data (Perry and Smart, 2007). An effective evaluation of learning and teaching will need to be planned ahead of time, at the outset of a SoTL inquiry. There are many resources that assist scholars in creating such a plan, and in devising specific techniques for specific purposes. Angelo and Cross (1993) is a particularly comprehensive, highly regarded resource and starting point.

Concluding Comments

In this paper I have provided an introductory overview of the scholarship of teaching and learning for teachers and scholars new to the field. I indicated the centrality of pedagogical content knowledge in the SoTL endeavour, and described how an earnest engagement in the SoTL compass, maps and tools had the potential to facilitate further development of pedagogical expertise and thinking. I hope this paper encourages faculty new to teaching scholarship to press forward and embrace this endeavour, and provides a framework to guide new scholars in the design and implementation of a SoTL activity or project. These processes have drawn on Glassick's (1997:36) description of scholarship as being comprised of: clear goals, adequate preparation, appropriate methods, significant results, effective presentation, and reflective critique.

To close, I return to Shulman's original conception of scholarship, in which he invites us to consider ourselves as "members of active communities: communities of conversation, communities of evaluation, communities in which we gather with others in our invisible colleges to exchange our findings, our methods, and our excuses" (1993:6). This is a significant endeavour since it is this collective knowledge and communal endeavour that provides the basis on which the transformation of teaching and learning continues to turn.

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