

University Teaching in Focus

A learning-centred approach

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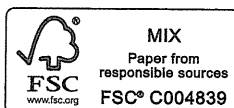
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CHAPTER 15

SCHOLARSHIP OF TEACHING AND LEARNING

Keith Trigwell

Keywords

improving student learning, SoTL, scholarship of teaching and learning, standards of scholarship, scholarly investigation

CASE 15.1 TRIALLING AN NEW APPROACH TO ENGAGING STUDENTS

When grappling with the dilemma of how to encourage her students to be more engaged with her subject matter, Miranda picked up an idea from the start of a TV program. It began with three people talking about their experience of the topic of the program. She wondered if she could ask a student, mid-way through each teaching session, to present a scenario that showed how they thought her topic was of relevance to them (and other students). She drafted an outline of how it might work – how the students would be selected, what notice they would be given, how long they would be asked to talk in each class, what she expected to happen and why? Before trying it she sent a copy by email to an experienced colleague. She explained that she thought the student experience would be enhanced because they may be able to connect more with the topic if they experienced it as being more relevant. Her colleague agreed to observe her using the idea and on judging it to have been successful, suggested she write up a two-page outline of the process as a teaching tip.

This is the first of five cases in this chapter that are illustrative examples of forms of the scholarship of teaching and learning (SoTL). In this case, Miranda is engaging at a basic level, but one that includes the key elements of SoTL. She has an idea of how to improve learning using the concepts of relevance and links to prior experience; she describes to a colleague how she hopes to help make learning happen in the subject; and the colleague peer reviews (observes) the idea in practice. Adopting the process improves her teaching and her students' learning

and leads to an artefact (a teaching tips sheet) which creates the possibility of the idea being adopted by other teachers in their own context.

While being simplistic, the form of scholarship described here may lead to a greater enhancement in student learning than the effects of most research papers in the leading education research journals. The scholarship of teaching and learning is first about improving student learning (mostly enacted through teaching) and second about scholarship (a systematic, peer-supported, research-like scholarly processes). Together they lead to higher quality teaching.

The scholarship described in most research journals is about making transparent the scholarly processes used to reach the reported research conclusions through a publicly available artefact that can be scrutinised by the peers of the researchers. This perspective is similar to the ways Shulman (1987) describes scholarship and it applies to both research and to the scholarship of teaching and learning. Andresen (2000) sees a scholarly process as involving personal, but rigorous, intellectual development, inquiry and action built on values such as honesty, integrity, open-mindedness, scepticism and intellectual humility. This also applies to scholarly work in teaching. So if teaching involves a scholarly process aimed at making learning possible, it follows that the scholarship of teaching is about making transparent, for public scrutiny, how learning has been made possible (Trigwell et al. 2000; Trigwell & Shale 2004). It is this process that is described and illustrated in this chapter.

Making transparent how learning is being made possible means describing how it is intended that learning will happen, and gathering evidence to show that learning is happening, or that an intervention is working. Alternatively, the evidence may be gathered to make transparent why intended learning may not be happening, as shown in Case 15.2.

CASE 15.2 RESEARCHING EXPLANATIONS FOR POOR STUDENT PERFORMANCE

After observing an unusually poor performance by students in the mid-semester test in their second-year law subject, Suzanne and James decided to search for reasons why. They noted that the students' answers were listings of facts, lacking internal logic and the required argument, and generally illustrative of a poor understanding. In a teaching program James had completed nearly 20 years earlier, he was introduced to the work of Perry (1970) who showed how students develop intellectually through a degree program, and how in the early years many were more likely to see knowledge as being about facts and factual accuracy rather than a consideration of a range of positions and making a case for the 'best one'. Thinking that slow development might be an explanation for the students' results, Suzanne and James consulted with the Centre for Academic Development in their university to ask how they might check this hypothesis. The advice they received was that this was unlikely to be the reason, but that Suzanne and James could look for this or other explanations by interviewing a group of current students. They decided to use a nominal group technique (a group discussion method) with nine students who volunteered to participate, and they

asked 'What are the issues that are related to your learning progress this semester?' It quickly became clear that almost all the students identified a curriculum clash as the reason for their poor test performance, as a subject they were taking in parallel had newly introduced a group project and presentation task with a high assessment weighting, timetabled over the month leading up to the time of the mid-semester test. Suzanne and James drafted a note to the Teaching and Learning Committee containing three years of test results, a summary of students' comments and a conclusion requesting that the department establish a coordinator to oversee assessment of the program as a whole. The committee were convinced by the argument and established the position. The changes resulted in improved student learning.

The process of SoTL

The first two cases, though basic in the nature of their inquiry, focus squarely on improving learning in a local (their own) context. Both cases also illustrate the key components that constitute the SoTL procedure.

The scholarship of teaching and learning, as a process, usually starts with an idea of *how* student learning might be enhanced (or made possible), and often develops through a six-step process:

- using a theory, model, framework or possibly even a substantial teaching tip to ground the initiative and provide the justification for action
- identifying an intervention designed to enhance learning, or a current practice thought to be affecting learning, or a collection of information that might lead to enhanced learning (the approaches identified are usually derived from the model or theory)
- formulating an investigative question related to teaching and/or student learning in the chosen context
- conducting an investigation (empirical, theoretical or literature-based) designed to address the question
- producing a result and some form of public artefact
- inviting peer review on the clarity of each of the theory, practice, question, method and result steps of the procedure.

There are clear parallels between this process and those that many of you will be familiar with from your own research programs. In this sense there is integration between research and teaching with the skills and ways of thinking used in high-quality research providing a substantial platform from which to build an evidence base for effective student learning.

Like good research, SoTL relies on the use of a framework, model or theory to drive the directions of change, observation and interpretation. Several examples of suitable models are used in the five cases in this chapter. In Case 15.1, Miranda's

relevance intervention could be seen as the application of cognition research, which emphasises the importance of linking new knowledge with prior understanding and of exploring relationships between the two. In Case 15.2, Suzanne and James see the work of Perry as a possible explanation for their observations, and while the explanation turned out to be more about relations between workloads and learning, it served as a way of framing their investigation. The ideas of constructive alignment and student learning models are used in the more substantial examples of SoTL in Cases 15.3 and 15.5. Getting started with SoTL means finding one or more models of teaching/learning that suit your own ways of thinking about university teaching in your context. The ‘Understanding learning: theories and critique’ chapter in this book contains many ideas (see Chapter 1, Stewart 2012).

A more complete case of SoTL, illustrating the full procedure and the ways of thinking described above, is presented in Case 15.3.

The scholarship of teaching and learning is as much about a way of thinking about teaching and learning as a practice. Table 15.1 contains 10 items from a scholarship of teaching and learning questionnaire. If you would like to check your progress in SoTL thinking and practice, note whether you agree or disagree with these statements, or whether (in some cases) you don’t know.

TABLE 15.1 Items from a Scholarship of Teaching and Learning questionnaire

Scholarship of Teaching and Learning item	Disagree	Agree	Don't know
I often ask other teachers to comment on my teaching ideas.			
I find the literature about teaching and learning useful in teaching my subjects.			
I often investigate questions related to how students learn in my discipline.			
I usually try to make public my innovative teaching ideas.			
My main aim in investigating teaching is to improve my students' learning.			
I usually try to share my scholarly teaching and learning ideas with my students.			
I usually try to find a theory or framework on teaching to work with when thinking about teaching in my subjects.			
In developing my teaching, an improvement in student learning is at least as important an outcome, as a journal article.			
I usually participate in conferences, meetings or courses about teaching and learning.			
I can explain what concepts, models or theories underpin my thoughts about teaching.			

Most university teachers who are active in SoTL respond by agreeing with all 10 statements.

A more complete case of SoTL, illustrating the full procedure and the ways of thinking described above, is presented in Case 15.3.

CASE 15.3 CONSTRUCTIVE ALIGNMENT

Li, a lecturer in engineering, has been introduced to the idea of constructive alignment (Biggs 1996; Biggs & Tang 2007). Constructive alignment is achieved when students perceive that what is being assessed is in alignment with the intended learning outcomes and the teaching/learning activities designed to achieve those outcomes. Li notices that the learning activities she provides are mostly passive, and not aligned with the actual engineering problems students address in the assessments. She decides to introduce inquiry-based learning and adopts an approach in which students work through five inquiry stages (asking, investigating, creating, discussing, reflecting) on a range of engineering issues (Sincero 2006). Her own scholarly inquiry question is holistic: What is the experience (locally) of my students, myself and my peers, and more broadly as described by other engineering teachers using inquiry-based learning? This approach is informed by Brookfield's four lenses (1995) in which the outcomes of reflections from four perspectives (students, peers, self and literature) are integrated to give a more holistic analysis. Li invites her colleagues to participate in the change process and seeks their feedback. She surveys the students for their response and does a critical self-review that includes thinking about her own satisfaction with the process. On consulting the literature, she notes that Friedman et al. (2010) report a trial of inquiry-based learning in engineering in which student learning was shown to be enhanced. Together with three of her peers, she drafts a teaching grant application to extend the inquiry-based learning idea to the teaching contexts of her three peers. The grant application is supported.

As in Cases 15.1 and 15.2, the focus of Li's work in Case 15.3 is on the learning of her students, though in this case she also has in mind her own satisfaction in teaching as an outcome. The other five SoTL procedures are all present. She uses constructive alignment as the concept behind the learning improvement plan, and changing the teaching/learning activity as the means of achievement. She addresses her investigation question using a process of multi-source reflection based on Brookfield's four lenses, and shows that learning is being made possible through inquiry-based learning. The artefacts of the process are a new subject description and a teaching grant application. Peer review is attained through the endorsement of her peers and the funding of their application by the teaching grants committee.

This view of the scholarship of teaching and learning is described by Shulman as follows:

Our work as teachers should meet the highest scholarly standards of groundedness, of openness, of clarity and complexity. But, it is only when we step back and reflect systematically on the teaching we have done ... in a form that can be publicly reviewed and built upon by our peers, that we have moved from scholarly teaching to a scholarship of teaching.

(Shulman 2004, p. 166)

In Case 15.3 (as in the first two cases) and in Shulman's description, no mention has been made of refereed publication as the artefact or outcome, and yet the scholarship of teaching and learning as presented above meets the standards of all scholarly work, as described by the Carnegie Foundation's six standards of scholarship (Table 15.2). Having a focus on student learning rather than external (journal) publication does not mean scholarship is not involved. What the Carnegie Foundation's standards suggest is that the focus on improving learning involves the same high-quality thinking, rigorous processes, critical self-reflection and peer review as are found in approaches to research.

TABLE 15.2 The Carnegie Foundation's six standards of scholarship (Glassick et al. 1997, p. 36)

Carnegie Goals	Standards
Clear goals	Does the scholar state the basic purposes of his or her work clearly? Does the scholar define objectives that are realistic and achievable? Does the scholar identify important questions in the field?
Adequate preparation	Does the scholar show an understanding of existing scholarship in the field? Does the scholar bring the necessary skills to his or her work? Does the scholar bring together the resources necessary to move the project forward?
Appropriate methods	Does the scholar use methods appropriate to the goals? Does the scholar apply effectively the methods selected? Does the scholar modify procedures in response to changing circumstances?
Significant results	Does the scholar achieve the goals? Does the scholar's work add consequentially to the field? Does the scholar's work open additional areas for further exploration?
Effective presentation	Does the scholar use a suitable style and effective organisation to present his or her work? Does the scholar use appropriate forums for communicating work to its intended audiences? Does the scholar present her or his message with clarity and integrity?
Reflective critique	Does the scholar critically evaluate his or her own work? Does the scholar bring an appropriate breadth of evidence to his or her critique? Does the scholar use evaluation to improve the quality of future work?

CASE 15.4 LITERATURE REVIEW TO INFORM LARGE-CLASS TEACHING

On returning to work after the summer break, Raphael found that he had been asked to coordinate and teach the large first-year subject in his politics department. As the idea of

'large' in his department means about 1000 students, he decided he needed to explore the consequences for student learning of such a big group. He approached the task through a synthesis of the research literature, seeking an answer to the question: Is class size related to the quality of outcomes of learning? He found that most of the early literature (from around 1960 to 1980) concluded that the consequences for student learning were more dire as the class size increased. However, the recent literature tended towards an 'it depends' conclusion. Large classes can be effective learning environments if they are taught using student-centred approaches. He wrote an overview of the literature, and extracted the information on student-centred teaching that he considered would be useful in teaching his own first-year group. He concluded that if he used a range of approaches described in the literature there did not need to be any significant diminution of learning quality. The literature review and the extracted elements used to inform the changes he made to his teaching were accepted by his colleagues as being a useful departmental teaching resource.

Knowledge outcomes

These four cases of SoTL describe the types of activities many university teachers do as part of their normal practice in attempts to improve their teaching and the learning of their students. In essence they all encapsulate a student-focused approach to teaching (Prosser & Trigwell 1999). The inquiry and peer review elements so familiar to academic staff in their research role is what shifts most of this practice towards SoTL. For some university teachers, the transition from their disciplinary research to SoTL is relatively straight forward, particularly in those cases where social science-type inquiry is their research paradigm. But in most cases, including the four presented here, SoTL is not education research and does not require the use of the educational research methods that would normally be expected of a PhD student in education or an active academic researcher in a department of higher education. But it can be research, and in those cases it does require social science research skills.

A teacher who is interested in improving student learning can investigate their practice in ways that have three quite different knowledge outcomes. They have been previously described by Ashwin and Trigwell (2004, p. 121) as follows:

- 'An investigation to inform oneself about an aspect of their teaching/learning. This will result in the production of *personal* knowledge.
- 'An investigation to inform a group within one or more shared contexts (typically department or faculty, institution) about an aspect of their teaching/learning. This will result in the production of *local* knowledge.
- 'An investigation to inform a wider (international) audience about an aspect of their teaching/learning. This will result in the production of *public* knowledge.'

These three types of knowledge are similar to Rowland’s (2000) distinction between the personal, shared and public contexts of knowledge, which he argues are resources that academics could draw upon in learning about their teaching (p. 61). The three levels of knowledge form an inclusive hierarchy: that is, an investigation to inform a wider audience (normally called research) that results in the production of public knowledge will also lead to the development of personal knowledge and should also lead to the development of local knowledge. The purposes and ways of validating these investigations are summarised in Table 15.3.

TABLE 15.3 Levels of teaching/learning investigations showing relations between the purpose, process and outcomes (adapted from Ashwin & Trigwell 2004)

Level	Purpose of the investigation is ...	Evidence gathering methods and conclusions will be ...	Investigation results in ...
1	To inform oneself	Verified by self	Personal knowledge
2	To inform a group within a shared context	Verified by those within the same context	Local knowledge
3	To inform a wider audience	Verified by those outside of that context	Public knowledge

University teachers could be engaged in all three levels. Level 1 investigations are occurring in most cases much of the time. Examples include the teacher undertaking personal reviews of the literature, monitoring and reflecting on the processes of teaching and learning, and reflecting individually on group discussions. It could be as basic as reflecting on how a class responds to a joke or a request to discuss something with a neighbouring student. If artefacts are produced at all, they include reflective journals, coursework assignments and diary notes, and similar records that reflect the development of personal knowledge. Because they do not involve peer review, Level 1 investigations are usually considered not to be the scholarship of teaching and learning, but they are a part of all good reflective teaching practice.

Level 2 investigations, as in Cases 15.1 through 15.4 above, are undertaken to inform a group (that includes the teacher–investigator) about their shared context, and results in the development of local knowledge. The processes of investigation will have implications for the context in which the teaching is taking place. As the investigator needs to satisfy others (peers) of the validity of their conclusions, this may require more than is needed to satisfy only themselves. The examples in the cases above show that these activities can include literature reviews that examine how a teaching idea might fit within a particular context, the evaluation of a learning activity within a particular context, or an analysis of barriers to learning. Artefacts include documentation of local teaching insights, portfolios produced in development courses, conference papers and reports, departmental minutes, papers, reports and articles in ‘in-house’ publications.

Level 3 investigations are undertaken to inform a wider audience about some aspect of the teaching/learning context in which the teacher has been involved. The evidence gathered and the meanings drawn, and the ways in which evidence was gathered and meanings drawn, will be verified by people from outside the context, through the peer review process. The outcomes of this research will have implications that go beyond the context in which the investigation was conducted, and the investigator needs to satisfy this wider audience of the validity of their conclusions. The full range of social science research approaches are examples of this research activity. The outcomes are found in research journals in education in the disciplines, such as the *International Journal of Science and Mathematics Education* and *Journal of Architectural Education*, and in some cases the specialist higher education journals such as *Studies in Higher Education* and *Teaching in Higher Education*.

The decisions about which level is relevant in different aspects of a teacher's role are professional decisions, to be made by individual teachers or organisational groups. There is evidence from the poor quality of some SoTL manuscripts submitted by teachers for publication that the decision about which level of investigation is appropriate is one that generally needs to be made prior to the investigation taking place, rather than as an afterthought.

Case 15.5 is an example of a Level 3 investigation. While it was designed to produce new international higher education knowledge (and it eventually yielded three international peer-reviewed journal articles) it was also designed to produce knowledge that was useful in informing a local teaching/learning context (Level 2).

CASE 15.5 THE EXPERIENCE OF LEARNING

Katherine Crawford & colleagues, University of Sydney

Through the 1990s, a group of mathematics academics and educators at the University of Sydney investigated and reported on the learning experience of their students using qualitative (interview) and quantitative (questionnaire) approaches (Crawford et al. 1994, 1998a, b). They used a 3P student learning model (Figure 15.1, Prosser & Trigwell 1999) to inform their investigation. The model suggests that there are relations between the quality of the outcomes of student learning, the ways students conceive of the subject matter they are learning, their perceptions of their learning context and their approach to learning. The investigation focused on the ways first-year mathematics students conceived of the subject of mathematics; whether those conceptions were related to learning approaches and outcomes, and if so, how they were related; and whether there was anything suggested by these relations that might be used to improve the outcomes of learning.

The interviews with first-year students revealed qualitatively different conceptions of what it meant to learn mathematics. For some students the conceptions appeared to be

'fragmented' while for others they were more 'cohesive'. When questionnaires were used to tap the extent of student use of these conceptions, along with their perceptions of workload, assessments, teaching and learning goals and the students approaches to learning, systematic relations between the elements in the 3P model were found. Students with fragmented conceptions of mathematics were more likely to be adopting a surface approach to learning and have a lower quality learning outcome than those with a cohesive conception. They also experienced a higher workload and less clarity in what was expected of them. These and other results from the study are used by staff in the Mathematics Learning Centre to support the learning of new students in their first semester.

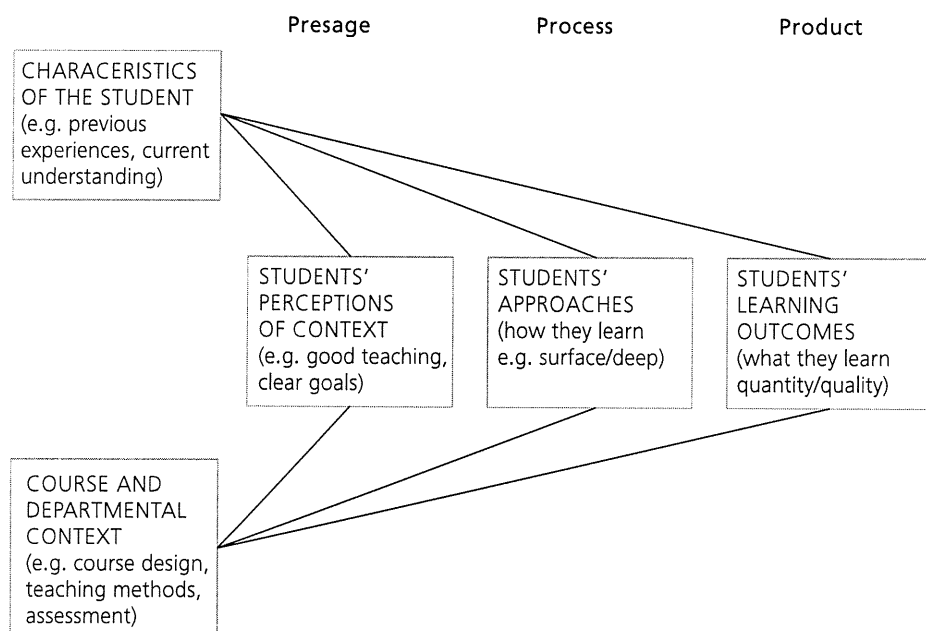


FIGURE 15.1 Presage-Process-Product (3P) model of student learning (Prosser & Trigwell 1999)

Why engage in the scholarship of teaching and learning?

Having now seen five cases illustrating the potential of SoTL to change student learning, you may also be able to see that it is at the core of professional teaching practice. As professionals, the ways teachers think about teaching are at least as important as their knowledge and skills of teaching (Kember 1997; Prosser &

Trigwell 1999). It is through the use of processes such as the scholarship of teaching and learning that academics are able to establish the grounds on which to make informed professional judgements in and about teaching. SoTL informs whether the ideas being used with students are ethical, acceptable, effective and transferable to other contexts. Gathering and using evidence in scholarly ways, with peer review, is what provides the validation for those judgements.

This view of SoTL has been presented here through the examples used in the five cases and an emphasis on student learning, rather than through a worded definition. It is a perspective shared by many authors (Boyer 1990; Hutchings & Shulman 1999; Prosser 2008; Rice 1992; Shulman 2000; Trigwell et al. 2000; Trigwell & Shale 2004) but it is not universally accepted. Some authors see different relations between most SoTL and research into teaching and learning, as found in the three publications by Kreber (2001, 2002a, 2002b) by Kreber and Cranton (2000) and by Potter and Kustra (2011). There is continuing debate about the definition of the scholarship of teaching and learning and, for most people, the one they settle upon depends on what they see to be the purpose of SoTL. In this chapter the purpose is the improvement of student learning through the evidence-based practice of student-focused teaching (Prosser & Trigwell 1999), with students being the main beneficiaries.

Teaching is student-focused when it incorporates an awareness of how the learners experience the teaching and subject matter, how they go about learning in the context of that teaching and how the teaching might need to be adjusted in the light of this information. The scholarship of teaching and learning is a sophisticated (professional) way of developing that awareness and using that awareness to make appropriate adjustments.

Getting involved

What do your responses to the questionnaire items in Table 15.1 tell you about your SoTL thinking? What do they suggest you might do to get started or make further progress? Are you already engaged in inquiries similar to those in Cases 15.1 and 15.2?

Preparing the ground for SoTL might involve:

- finding out who in your department is already engaged in SoTL
- contacting your academic development unit to see what they do
- establishing or joining a network of university teachers with whom you can share your thoughts on teaching
- becoming familiar with learning theories (see Chapter 1, Stewart 2012) and teaching ideas and frameworks (see Chapter 2, Hunt et al. 2012)
- attending research conferences that include teaching and learning in your discipline, and conferences about teaching and learning

- listing the questions related to your teaching or your students' learning that you would like to know more about.

Strategically, an important question to ask is whether you see SoTL as a solo pursuit. Some reflective elements and inquiry questions might be best addressed alone, and the skills you have in the type of thinking involved in most research processes should be sufficient to design Level 2 investigations that have the appropriate validity and usefulness. But there are benefits and rewards from sharing and collaborating in SoTL that accompany all communal learning processes.

Doing something similar to Case 15.4, on investigating a question through a literature synthesis, is a good place to start engaging with SoTL. For example, what is known about threshold concepts (see Chapter 3, Land 2012) or approaches to learning (Trigwell & Prosser 1999) in your discipline? If a literature synthesis does not already exist, such a compilation is very likely to be useful to you as well as to colleagues in your discipline. Acceptance and use of the review by your colleagues is a form of peer review.

A very useful starting resource is the guide to informed, reflective teaching entitled *A Tertiary Practitioner's Guide to Collecting Evidence of Learner Benefit* (Alkema 2011). It includes sections on how best to encourage learning, why practitioners need evidence, where to start, and a useful summary overview of evaluative data collection methods. An extract from the guide is shown in Table 15.4.

TABLE 15.4 Example investigation questions and relevant data sources (Alkema 2011, p. 8)

Possible questions	Possible data sources and collection tools
How do I know what my students already know and still need to learn in this course?	<ul style="list-style-type: none"> • diagnostic assessment (written and oral) • academic records
What progress are my students making? How do I assess the progress of my students? What do my students think of this? How much do my students know about their learning progress?	<ul style="list-style-type: none"> • formative assessment of course work • pre- and post- tests • observation of learners • data on student engagement in e-learning environments (e.g. electronic tutorials) • questionnaire • interviews • discussion • academic records • student-led reviews

The focus of most of this chapter up to this point has been on the framework or model used (a) to position and inform the scholarly investigation, and (b) to develop

the questions that the data and analytical processes might address (procedural steps 1–3). There are two reasons for this emphasis. First, these elements direct the SoTL activity towards improving student learning, and second, they are the elements most often ignored in SoTL when it is conceived of as research. Having said that, the research elements of SoTL are important, and they are addressed in the rest of this section.

A successful investigation relies on a judicious choice of sources of data and collection methods, and appropriate ways of analysing the data and interpreting the results (step 4). Books on evidence-based educational evaluation (for example, Guba & Lincoln 1985) are a rich source of ideas for investigation questions, sources of data and methodology. Similar, but more contextualised, information can also be found in texts that focus on university teaching development. Light et al. (2009), for example, include a chapter on evaluating teaching and learning which contains ideas on where to find evidence and how to use it. Short, practical guides, such as *Small Scale Research: Pragmatic inquiry in social science and the caring professions* (Knight 2002b) also provide a useful starting point.

However, an approach based on evaluation sources and methods may not be sufficient if you envisage a refereed journal publication as the peer reviewed outcomes of the SoTL process, and you decide to engage in a Level 3 investigation, as in Case 15.5. For most teachers who are not familiar with social science research, the most practical approach to a successful outcome is to be a part of a team of investigators that does include someone familiar with social science research. They might already be a member of your department, a member of an education department or in an academic development unit. They can provide guidance on methodology and interpretation and the key texts on research methods and analytical techniques, such as those by Cohen et al. (2007) and Tight (2003).

A summary of the six procedural steps involved in SoTL are provided below as a further stimulus to getting started.

1. Consider how student learning might be enhanced. What theory or model or framework can be used to ground your thinking?
2. Use the model or theory or framework to identify an intervention designed to enhance learning, or a current practice thought to be doing so, or a collection of information that might lead to enhanced learning.
3. Choose investigation question(s) related to teaching and/or student learning in the chosen context to guide the investigation.
4. Conduct a review or synthesis of the literature to determine what answers to the question(s) already exist.
5. Carry out the investigation to yield a result and some form of public artefact.
6. Have the outcome (artefact) peer reviewed on the clarity and appropriateness of each of the theory, practice, question, method and result elements of the previous five steps of the procedure.

What are the benefits and rewards of engaging with SoTL?

The major rewards and benefits for university teachers in engaging with SoTL are not in research publications, as the major focus of SoTL itself is not on research publication. Publications can be a reward, but some care needs to be taken in both the design of the study and in selecting the quality of the target journal. Many journals that have a focus on research into education in the disciplines are not highly rated by the research community, and the returns in terms of research status and impact are low. For this reason, some scholars of teaching and learning seek intrinsic rewards through the dissemination of their ideas in ways that reach the audiences likely to notice and use them. They find that through SoTL they gain greater satisfaction with the variation in their teaching, the pleasure of seeing enhanced student learning, and the stimulation derived from the inquiry process. Engagement with SoTL can accelerate growth as a teacher, provide access to a language and values that lead to more meaningful conversations about teaching and learning, and open doors to higher education networks such as the International Society for the Scholarship of Teaching and Learning (ISSOTL), the Improving Student Learning Symposium (ISL) and the Higher Education Research and Development Society of Australasia (HERDSA).

There are also extrinsic rewards and benefits, for example, through teaching awards, teaching grants, promotion opportunities and money. The University of Sydney distributes additional funds to departments, based on the extent to which teaching staff engage with SoTL activities. This is done through the Scholarship Index, the thinking behind which is described as follows:

While at Sydney we would want all teachers to 'step back and reflect systematically on their teaching' in ways that are consistent with a commitment to openness and mutual accountability, we do not expect every teacher to be publishing higher education research. Indeed, if the aim is for their peers within the University to build upon this communication, there are far more effective dissemination strategies than journal articles which academics at Sydney might be encouraged to use to communicate about their teaching ... The scheme is not intended to reward every form of SoTL, rather it seeks to support strategic SoTL activities that deliver the greatest benefit to the University.

(Institute of Teaching and Learning 2012)

Individual university teachers and whole departments accumulate Scholarship Index points annually through any or all of the following (Institute of Teaching and Learning 2012):

- preparing a teaching award application for a local (university level) or national award
- preparing a teaching grant application at a local (university) or national level
- completing a qualification in university teaching, such as a post-graduate certificate in higher education teaching or equivalent
- completing a program on research supervision
- formally mentoring a teaching colleague, for example, a participant in a formal teaching development course
- producing a full length SoTL article for a house journal or equivalent professional university teaching organisation's newsletter or magazine
- running a department-wide SoTL forum, hosted by a department of at least half a day's duration, which engages a significant number of staff in what is evaluated by participants to be a scholarly discussion about teaching and learning.

The points are linked to dollars, with the funding (in total, about AUS\$1million annually) being used differently by departments. Examples include distributing it proportionally to the individual teachers who earned it, or pooling it at the departmental level for teaching development activities including attendance at teaching and learning higher education conferences.

Being aware of and engaging in SoTL is almost certain to be a rewarding experience. It is most likely to be so if it is seen as an integral part of teaching, and engaged in, with others, as questions and issues about teaching and learning arise during practice.

References

- Alkema, A 2011, *A Tertiary Practitioner's Guide to Collecting Evidence of Learner Benefit*. Ako Aotearoa – The National Centre for Tertiary Teaching Excellence, New Zealand. Viewed 8 July 2011, at <<http://ako.aotearoa.ac.nz/download/ng/file/group-4/a-tertiary-practitioners-guide-to-collecting-evidence-of-learner-benefit.pdf>> .
- Andresen, LW 2000, 'A useable, trans-disciplinary conception of scholarship', *Higher Education Research and Development*, vol. 19, pp. 137-153.
- Ashwin, P & Trigwell, K 2004, 'Investigating staff and educational development'. Chapter 7 in D Baume and P Kahn (eds) *Enhancing Staff and Educational Development*, RoutledgeFalmer, London.
- Biggs, JB 1996, 'Enhancing teaching through constructive alignment', *Higher Education*, vol. 32, pp. 347-364.
- Biggs, J & Tang, C 2007, *Teaching for Quality Learning at University*, 3rd edn, SRHE and Open University Press, Buckingham.
- Boyer, EL 1990, *Scholarship Reconsidered: Priorities of the Professoriate*, The Carnegie Foundation for the Advancement of Teaching, Princeton, NJ.
- Brookfield, SD 1995, *Becoming a Critically Reflective Teacher*, Jossey-Bass, San Francisco.
- Cohen, L, Manion, L & Morrison, K 2007, *Research methods in education*, Routledge, New York.
- Crawford, K, Gordon, S, Nicholas, J & Prosser, M 1994, 'Conceptions of mathematics and how it is learned: The perspectives of students entering university', *Learning and Instruction*, vol. 4, pp. 331-345.
- Crawford, K, Gordon, S, Nicholas, J & Prosser, M 1998a, 'Qualitatively different experiences of learning mathematics at university', *Learning and Instruction*, vol. 8, pp. 455-468.
- Crawford, K, Gordon, S, Nicholas, J & Prosser, M 1998b, 'University mathematics students conception of mathematics', *Studies in Higher Education*, vol. 23, pp. 87-94.
- Friedman, DB, Crews, TB, Caicedo, JM, Besley, JC, Weinberg, J & Freeman, ML 2010, 'An exploration into inquiry-based learning by a multidisciplinary group of higher education faculty', *Higher Education*, vol. 59, pp. 765-783.
- Glassick, CE, Huber, MT & Maeroff, GI 1997, *Scholarship Assessed, Evaluation of the Professoriate*, Jossey-Bass, San Francisco.
- Guba, EG & Lincoln, YS 1985, *Naturalistic Inquiry*, Sage, California.
- Hunt L & Chalmers D (eds) 2012, *Preparing to teach in universities: An evidence-based approach*, ACER Press, Melbourne.
- Hutchings, P & Shulman, L 1999, 'The scholarship of teaching: New elaborations, new developments', *Change* (September/October) vol. 31, pp. 10-15.
- Kember, D 1997, 'A reconceptualisation of the research into university academics' conceptions of teaching', *Learning and Instruction*, vol. 7, pp. 255-275.
- Knight, PT 2002, *Small Scale Research: Pragmatic inquiry in social science and the caring professions*, Sage Publications, London.
- Kreber, C (ed) 2001, *Scholarship Revisited: Perspectives on the scholarship of teaching*, Jossey-Bass, San Francisco.
- Kreber, C 2002a, 'Controversy and consensus on the scholarship of teaching', *Studies in Higher Education*, vol. 27, pp. 151-167.
- Kreber, C 2002b, 'Teaching excellence, teaching expertise, and the scholarship of teaching', *Innovative Higher Education*, vol. 27, pp. 5-23.

- Kreber, C & Cranton, PA 2000, 'Exploring the scholarship of teaching', *Journal of Higher Education*, vol. 71, pp. 476-495.
- Land, R 2012, 'Discipline-based teaching', Chapter 4 in L Hunt & D Chalmers (eds) 2012, *Preparing to teach in universities: An evidence-based approach*, ACER Press, Melbourne.
- Light, G & Cox, R 2001, *Learning & Teaching in Higher Education: The reflective professional*, Paul Chapman Publishing, London.
- Perry, WG 1970, *Forms of intellectual and ethical development*, Holt Reinhardt and Winston, New York.
- Potter, MK & Kustra, E 2011, 'The relationship between scholarly teaching and SoTL: Models, Distinctions and Clarifications', *International Journal for the Scholarship of Teaching and Learning*, vol. 5 (1) pp. 1-18. Viewed 8 July 2011, at http://academics.georgiasouthern.edu/ijstl/v5n1/essays_about_sotl/PotterKustra/index.html
- Prosser, M 2008, 'The scholarship of teaching and learning: What is it? A personal view', *International Journal for the Scholarship of Teaching and Learning*, vol. 2 (2) pp. 1-4. Viewed 8 July 2011 at http://academics.georgiasouthern.edu/ijstl/v2n2/invited_essays/_Prosser/index.htm.
- Prosser, M & Trigwell, K 1999, *Understanding Learning and Teaching: The Experience in Higher Education*, SRHE and Open University Press, Buckingham.
- Rice, RE 1992, 'Towards a broader conception of scholarship: The American context', in T Whiston & R Geiger (eds) *Research and Higher Education: The United Kingdom and the United States*, SRHE and Open University Press, Buckingham. pp. 117-129.
- Rowland, S 2000, *The Enquiring University Teacher*, SRHE and Open University Press, Buckingham.
- Shulman, LS 1987, 'Knowledge and Teaching: Foundations of the New Reform', *Harvard Educational Review*, vol. 57, pp. 1-22.
- Shulman, LS 2000, 'Inventing the Future', in P Hutchings (ed.) *Opening Lines: Approaches to the Scholarship of Teaching and Learning*, The Carnegie Foundation for the Advancement of Teaching, Menlo Park, CA.
- Shulman, LS 2004, *Teaching as community property: Essays on higher education*, Jossey-Bass, San Francisco.
- Sincero, P 2006, 'What is inquiry-based learning?' Viewed 8 July 2011, at <http://www.inquirylearn.com/Inquirydef.htm>.
- Stewart, M 2012, 'Learning Theories: An introduction' Chapter 3 in L Hunt & D Chalmers (eds) 2012, *Preparing to teach in universities: An evidence-based approach*, ACER Press, Melbourne.
- Tight, M 2004, *Researching Higher Education*, SRHE and Open University Press, Buckingham.
- Trigwell, K & Shale, S 2004, 'Student Learning and the Scholarship of University Teaching', *Studies in Higher Education*, vol. 29, pp. 523-536.
- Trigwell, K, Martin, E, Benjamin, J & Prosser, M 2000, 'Scholarship of teaching: A model', *Higher Education Research and Development*, vol. 19, pp. 155-168.