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From pedagogic innovation to publication: resituating your pedagogic research

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Biography

Kathleen M Quinlan, PhD PFHEA, is Reader in Higher Education and Director of the Centre for the Study of Higher Education at the University of Kent. She holds a PhD in Education from the Stanford School of Education and has researched teaching and learning in higher education for more than 20 years. She has led educational development programmes at The Australian National University, Cornell University's College of Veterinary Medicine, and the University of Oxford and served as Educator-in-Residence (August 2014) at the National University of Singapore.

Abstract

This essay explores the most common difficulties faced in translating classroom research on practical problems of teaching and learning into peer reviewed published outputs. Using examples from my own research, I will show how to use pedagogical literature and theories of learning, teaching, motivation or curriculum to frame local problems and questions to appeal to a wider audience. This essay is based on my invited talk at the University of Brighton's Enhancing Higher Education through Research conference on 2 February 2018.

Keywords: theory, higher education, scholarship of teaching and learning, classroom research, pedagogical research, SoTL

Introduction

There is a growing interest in researching one's own teaching practice as part of a larger movement called "the scholarship of teaching and learning"(SoTL). This movement can be traced back to Ernest Boyer's reconsideration of scholarship and the varied duties of academics (Boyer, 1990). According to Boyer, scholarship means: "stepping back from one's investigation, looking for connections, building bridges between theory and practice, and communicating one's knowledge

effectively... Specifically, we conclude that the work of the professoriate might be thought of as having four separate, yet overlapping, functions. These are: the scholarship of discovery; the scholarship of integration; the scholarship of application; and the scholarship of teaching." (Boyer, 1990, p. 16)

Teaching portfolios (Edgerton, Hutchings and Quinlan 1991) and, later, course portfolios (Hutchings 1998) were developed as ways university teachers could "step back" and "look for connections". Lee Shulman (1993) expanded on these ideas, emphasising that scholarship takes place within a community of scholars. Teaching – like research – needs to be made "community property" by opening it up for peer review within the disciplinary communities that are central to academic identities and work.

Over time, journals have been established in which the results of teachers' own pedagogical inquiry can be published, such as the *International Journal of the Scholarship of Teaching and Learning* (IJSOTL), *Teaching and Learning Inquiry* (the journal of the International Society for the Scholarship of Learning and Teaching) and *Higher Education Pedagogies* (a journal of the UK's Higher Education Academy). These journals are anchored in a conception of the scholarship of teaching (SoTL) as inquiry aimed at improving students' learning (Huber and Morreale, 2002). They cross disciplines and embrace a variety of research methodologies.

Consistent with Shulman's (1993) arguments for embedding the scholarship of teaching within existing disciplinary communities, much pedagogical inquiry is also published in discipline-specific pedagogical journals such as *Chemistry Education Research and Practice*, *Advances in Health Sciences Education*, the *Journal of Accounting Education*, the *Journal of Geography in Higher Education*, *Teaching Sociology* and so on. Various lists of journals that publish pedagogical research can be found on the web[i]. While there has been an increase in quantity of discipline-specific pedagogical research, work remains to improve the quality of this research (Quinlan et al 2013; Chick and Gurung 2009).

Researching your teaching, then, is a commitment to enhancing your own teaching and your own students' learning through a process of scholarly inquiry. It enables you to step back from and take a fresh perspective on your teaching and your students' learning. Thus it promotes both your own learning as teachers and your students' learning through the development and testing of various pedagogical approaches. Through institutional teaching and learning conferences and pedagogical research conferences, we can share our innovations, the lessons we have learned about our students, and how to best teach them. Doing so allows us to influence practice beyond our own classroom through a university-wide community of scholars.

This essay is intended to help you take the next step by presenting and publishing your research beyond the institution, thereby advancing the field of teaching and learning in higher education – in your

own field and beyond. Thus, it allows you to contribute to a larger community of scholars to enhance practice – and student learning – around the world.

I am going to discuss three main "tips" in moving from individual innovation and personal inquiry to publication. These recommendations are based on conversations with editors of two journals in the field, *Teaching in Higher Education* and *Advances in Health Sciences Education*, and my own experience as a reviewer for various higher education journals. First, the "desk rejection" rate for these journals is notable. Some 50% of papers submitted to these journals do not make it past the editor; they are not even sent out for peer review. The main difficulty at this stage is in how the research is framed and situated. Thus, I concentrate here on how to write a convincing introduction, drawing on examples from my own research to illustrate three key principles.

Principle 1: Frame the problem in ways that will be recognised beyond your immediate context

In pedagogical research, we usually start with the local and the specific. It is tempting to start our papers with this local context, along the lines of, "At Cow Crossing University, we had a problem with A, so we tried B. We evaluated it using C." The problem with this is that the reader doesn't care about Cow Crossing University or the problems the writer is having there. Worse than that, the reader may know something about Cow Crossing University, such as differences in the student body, that will cause them to dismiss your findings.

Instead, you need to state the problem your paper addresses in a way that readers will think: "Oh, yes, I recognise that problem!" You need to become familiar with the literature so you can be sure your problem is actually a more widely-shared problem, and know what others have done or tried to address this problem. So let's look at an example from one of my own published studies (Quinlan, 2000). Now, let me be clear: this isn't a 4* paper we're talking about! I present it precisely because it is a modest example parallel to that which many of you face. The process by which it arose is essentially exactly the formula expressed above, in that my colleagues and I faced a particular problem in a particular curriculum in a particular setting.

Basically, at the Cornell Veterinary College, students in our problem-based learning (PBL) curriculum complained that it was too difficult to find high quality articles to inform the independent study phase of their learning. Faculty members also complained about what students came back to sessions with when left on their own with Medline searches. So, we set up a literature database to support particular students and sought student feedback on it. So, let's look at how that example was re-written.

"Students and faculty often find the shift from a traditional curriculum to a problem based learning (PBL) curriculum difficult. In a problem based learning curriculum, students' learning is prompted by and situated in real world problems encountered in the profession. Problem based learning is structured to

help students: 1) learn important principles and key concepts; 2) develop their problem solving skills (the clinical reasoning process in particular), and 3) learn how to direct and manage their own learning (Barrows & Tamblyn, 1980; Barrows, 1988; Schmidt, 1993). The success of a problem based learning curriculum depends upon students taking responsibility for their own learning. Students, like professionals in the field, are expected to prioritize what they need to learn ("learning issues"), make choices about the resources they will consult, work collaboratively with colleagues, and organize their efforts to address learning issues in sufficient depth." (Quinlan 2000, p. 1)

In this opening paragraph, I have framed it as a challenge in teaching in a problem-based learning curriculum, not just at Cornell's Veterinary College. Anyone who is using problem based learning may be interested in this paper. Regardless of whether they are teaching medical students or undergraduate geology students or teaching in the US or the UK, they will also have students who have struggled to transition to the new demands of a PBL curriculum.

In that introduction, I have gone on to frame it in terms of the goals of problem-based learning. In doing so, other teachers who do not necessarily teaching using PBL might resonate with the problem. Many educators want students to be able to do those three things. Maybe I have captured more readers this way. Many teachers will know that students have difficulty in directing their own learning, whether PBL or some other type of curriculum. In the next paragraph I elaborate the problem of transition mentioned in the opening sentence, citing a key study that illustrates that it isn't just Cornell students who have this problem. You will cite more than this, but I did say this is a modest example!

"It can be particularly challenging for students to develop skill and confidence in directing their own learning. Among the difficulties students experience with this transition are the demands of selecting appropriate literature to address their learning issues. In a study of students enrolled in a problem based learning physiotherapy program, Solomon and Finch (1998) identified 10 stressors that were described by at least one quarter of the students in a reflective journal kept during the first semester of their program. "Search stress" difficulty with finding appropriate literature and inordinate amounts of time spent searching rather than studying was mentioned by almost one third of their students." (Quinlan 2000 p. 1)

I then showed that this isn't just a problem for students, but a dilemma for teachers to which teachers must find a resolution: "Faculty, too, may find it frustrating to watch students struggling and still missing valuable resources. On the one hand, educators wish to encourage self-directed learning, in keeping with a core philosophy and purpose of problem based learning. On the other hand, if students are spending disproportionate time and energy trying to find helpful literature or end up missing key references altogether, it can compromise another core goal of PBL that students learn the scientific principles underlying the case or problem." (Quinlan 2000, p. 1)

In sum, your first job in your introduction is to identify a shared problem and why it is important for people beyond your context. If the problem you are identifying is particular to – or particularly important to those in your discipline, then you may want to publish in a discipline-specific journal. In this case, I felt it wasn't just a problem for veterinary or even medical educators, thus I chose a journal that was addressed to a variety of disciplines. The title, though, means it is still only likely to attract those who teach using PBL, although the problem and its solution might be useful more broadly.

Principle 2: Frame the problem theoretically

I can hear the groans when I mention theory. I know many new teachers struggle to connect educational theory with practice. But we are all theorists! You have some implicit ideas and hypotheses. Often these are tacit. By discussing your problem and the solutions you think might work with others, you may be able to make those implicit assumptions more explicit. In the context of reflective practice, Brookfield's (1995) calls this process "assumption-hunting." Once you start pulling out your hypotheses, they can be matched to a published, established theory.

A theory is simply "a set of interrelated concepts, definitions, assumptions, and generalizations that systematically describes and explains regularities in behavior in educational organizations." (Hoy and Adams 2016, p 3). Thus first, theory is composed of "concepts, definitions, assumptions, and generalizations". Second, the major function of theory is to describe and explain. The "theory" I used with the evaluation of the literature database was the theory of problem-based learning, which is encapsulated in its three canonical goals. The assumption iss that these three goals guide curricular and instructional design within PBL. Thus, just as problems arise in trying to balance those goals, so solutions should also balance those goals. This is quite "light-touch" theory, which I described as a "framework" for the study. Nonetheless, these goals certainly constitute a set of inter-related assumptions that systematically define problem-based learning, thereby explaining common features of that type of curriculum.

Let's consider another definition. A theory is a written or visual presentation that, "explains either graphically, or in narrative form, the main things to be studied – the key factors, concepts or variables – and the presumed relationship among them" (Miles and Huberman 1994, p. 18). Here we see that theory stimulates and guides the further development of knowledge. In the example (Quinlan, 2000), the theory helped frame the research questions. A searchable bibliographic database of articles was created to "strike the right balance so that students are both accessing the literature that will help them learn the subject matter and developing their self- directed learning skills" (Quinlan 2000, p 1) by requiring that they search for and make choices about what to read. Key research questions that guided the design of a student survey were, "How is the database rated in terms of its usefulness in

addressing learning issues? What impact does the database have on students' self-directed learning and "search stress?"

Theories are, by nature, general and abstract. (Indeed, it is the very abstraction that new teachers may not like when they are struggling to solve concrete, practical problems in their own contexts.) Theories are not strictly true or false, rather they are either useful or not useful. They are useful to the extent that they generate explanations that help us understand. Typically hypotheses are derived from the theory to predict particular relations among the concepts. When hypotheses receive overwhelming empirical support, the accepted hypotheses become principles.

Let's turn to another example, drawn from a study of the challenges of designing interdisciplinary postgraduate curricula in which my student and I investigated two case studies of master's degree programmes (Gantogtokh and Quinlan 2017). We started by explaining that there is a movement within higher education toward interdisciplinary educational programmes to respond to complex real world problems, followed by a few examples that demonstrate that the world has lots of problems, so educators are building various educational programmes to try to address those problems.

Then we state the pedagogical problem that it is intellectually challenging to design coherent interdisciplinary curricula because of the need to integrate multiple bodies of knowledge while promoting students' higher order thinking and problem solving. We hung the paper on this key assertion. Again, we think many people beyond the two case study programmes we examined will recognise this problem.

Then we needed to define some terms – and here we became more theoretical. In the introduction we had several paragraphs of definitions of interdisciplinarity – which meant we had to define disciplines. The reviewers insisted that we do so because they thought (hypothesised) that the particular disciplines we were combining would affect how hard it was to build a coherent curriculum. That hypothesis is a fair proposition – biology and chemistry are easier to put together in a health sciences programme than trying to put, say, humanities and sciences together where people don't share methods, language, writing style or world views. Then we needed to focus the study, which meant developing, in effect, a theory of curricular coherence. We wrote:

"Combining Stark (1986) and Knight's (2001) work, we have developed a framework of four elements of coherence-building interdisciplinary curricula that we investigate in these studies: (1) logical connection-making across different courses through structuring and sequencing; (2) integrative learning, occurring through teaching and learning processes such as those DeZure (2010) suggested; (3) assessment, evaluation, and adjustment; and (4) collaborative community and environment, which provide favourable conditions for coherence-building." (Gantogtokh and Quinlan 2017, p 571).

We used this four-part framework to develop the protocols for interviews with course designers and then to structure the reporting and discussion of the results, allowing us to summarise solutions to challenges of coherence-building under these 4 headings. Ultimately, the paper implicitly generated propositions about causes and effects; if one attends to these 4 elements, using these kinds of solutions, one will be more likely to create a coherent curriculum. These propositions can be illustrated in graphic form instead of written form, using boxes and arrows connecting the key constructs.

Finally, we can think of theory as "a way of *seeing* or characterising a research object…seeing the object of empirical research in a particular way and *not in other ways*" (Ashwin 2012). To illustrate, let's consider work-based learning. At one level, we could think about what is happening in the minds of the students during work-based learning. A medical educator colleague applied self-regulated learning theory (Zimmerman 2002) to redesign a busy clinic. The basic model of self-regulated learning is that students go through three main phases of thinking and metacognition (thinking about their own thinking) during the learning process. The first phase is a planning phase in which learners analyse the task at hand, set goals and develop strategies for addressing those goals. The second main phase is performance, when they are actually doing the learning task and must exercise self-control and self-observation, applying certain strategies, observing themselves and the success of what they are doing, and making mid-course corrections. The last phase is self-reflective and should feedforward to the next cycle.

My colleague was running a busy clinic in which she was under considerable pressure to see many patients quickly. Yet, she also had medical students who were trying to learn from the experience. She needed students to regulate their own learning because she didn't have much time to attend to them. So, she asked them what their goals were for the session and agreed particular strategies for them to achieve those goals. One student might have wanted to practice his physical exam techniques, so she gave him guidance about what to observe. During the afternoon, this teacher provided space for him to perform and then facilitated a short reflective discussion at the end of the afternoon, starting with his self-assessment. The student met his specific goal and explicitly practiced self-regulation while my colleague was able to meet her goals of running an "on-time" clinic while also providing good quality educational supervision. Self-regulated learning helps us to shine a spotlight on what the student is doing mentally in that workplace learning situation. A research study might investigate how the student analyses the task at the beginning or what goals they set or what procedures they use to self-monitor. We might, for example, do a think-aloud protocol using the student's notebook from the afternoon as a prompt. This model is an appealing one for work-based learning insofar as it focuses us on helping students manage their own learning. However, every theory obscures other aspects of the learning phenomenon.

A different theory can help us to "see" the situation differently. We might, instead, apply Lave and Wenger's (1991) communities of practice model. While SRL is a psychological model, communities of practice is an anthropological theory. It views learning not as something that happens inside an individual's head, but as a social process. It sees learning as a process of developing an identity through participation in particular "communities of practice". Apprentices in this community move from the periphery (students watching from the sidelines) to the centre (e.g. the surgeon in the operating theatre). The key is that the newcomers need to be engaged in "legitimate" peripheral participation. In other words, they need to be engaged in activities that are authentic to the professional or disciplinary practice. Asking them to sweep up after the surgeon has gone home is a form of participation, but does not engage them in "legitimate" (authentic) tasks of the surgeon. Asking them to scrub and gown and enter the theatre during the procedure allows them to practice the necessary sterile procedures required in the operating theatre and allows them to begin to try out the role of doctors through participation in key professional rituals.

If we look at a work-based learning scenario through a community of practice lens, we would ask ourselves different questions, which shapes our research differently. We might ask about the norms and hierarchies within the community, how those are communicated and symbolised and where students fit into those patterns. We might study the way spaces are arranged, who sits where, how they dress and are addressed, and how all those elements of the situation affect different participants' access to the central activity or sense of identity. We might consider how medical students interact with each other and with other parts of this community, such as nurses and receptionists. We might research these questions through ethnographic observation. Thus, the theory we choose shapes our hypotheses about what supports learning, the questions we ask, the methods we use, the way we analyse the data, and the conclusions. Looking at the same learning situation through different theories has led us to, "seeing the object of empirical research in a particular way and *not in other ways*" (Ashwin 2012, p 943).

Principle 3: Think beyond evaluation designs

As teachers, we often want to know whether a given instructional strategy is better than another. This is an evaluative question. We might broaden that question to "how effectively is a given instructional intervention or strategy working?" which is the form that my evaluation of a literature database (Quinlan, 2000) took. That evaluation examined feedback from students. A variation on that format involves an analysis of students' work to determine how well they are learning as the result of an instructional intervention. For example, in another study, my colleagues and I developed a rubric of discipline-specific writing criteria to analyse student work over the course of a term to better understand how students' medical writing developed through practice and weekly feedback (Rawson et al 2005).

We can expand our questions, though, to other kinds of research (Dolan 2007). We might ask questions about what and how things are happening. For instance, there are many opportunities to explore how students understand a given concept in your discipline, what is difficult about it, how they engage with or understand the demands of a given task, and how the process of engaging with that task affects their understanding of some concept or process that is central to your discipline. A more recent example of my research (Quinlan et al 2012) – still a modest one – illustrates this approach. In that study, we sought to understand what the general thresholds (Meyer and Land, 2005) were in students' learning of engineering during their first year of study. Then we investigated what made Mohr's Circle, a particularly troublesome technique in the discipline, hard for students to understand. We used the case of Mohr's Circle as an illustration of the more general difficulty of connecting mathematical representations to physical phenomenon. We analysed student interviews, teacher interviews and textbook representations of this issue to show how difficulties with Mohr's Circle are linked to failure to understand the concept of stress, which involves both force and area and calculations rooted in trigonometry. The aim was to create a foundation for more effective teaching approaches by unpicking what is difficult about a given technique and related concepts.

Finally, we might ask questions about the mechanisms. Why is something happening? As I have become more aware of the importance of theory myself, my research more explicitly looks for underlying explanations of phenomena. For instance, in a current research project (Quinlan, under review) I want to understand what triggers students' interest in lectures. One can look at this at a specific level through qualitative data, immersed in the particulars of the lecture. For example, students became interested in a psychology lecture on attachment theory when the lecturer animatedly told a story about her two dogs' differing behaviours, illustrating insecure versus secure attachment. Knowing that this moment was particularly interesting to students is useful information for that particular teacher insofar as it confirms the effectiveness of her instructional example; she will likely use it again in that context. However, "tell a story about your dogs", is not a good general recommendation for all lecturers to enhance students' interest! By asking the right questions and analysing comparable data from student questionnaires across 12 different lectures in different disciplines, I could identify the underlying features of the lectures that stimulated students' interest. From this analysis, it would appear that this lecturers' example is effective because it helps students to see how the content is important to real life. This general principle is, in turn, illustrative of the concept of "utility value" in expectancy-value theory (Wigfield & Eccles, 2000). Put simply, increasing utility value contributes to an increase in motivation for a given task or activity – in this case, interest in paying attention to and further studying the subject of the lecture. Thus we can go from the particulars of a given lecture to a more general mechanism for how to make lectures more interesting to students (and back again). We achieve this by asking how

and why questions, rather than just evaluative (does x work?) questions and applying or developing generalisable theories.

Conclusion

Moving from inquiring about one's own teaching to presenting and writing up that research for wider audiences requires that we frame the problem in terms that are recognisable to others. We do so by acquainting ourselves with the literature and seeing how our specific problem is shared with others. Theories are tools that help us abstract from the specifics of a given case to more general concepts, patterns and explanations. Finally, theories support us as we move into different types of research questions, enabling us to explore more deeply what is happening with students and their interactions with peers, teachers, content and tasks we set for them. In sum, this essay has illustrated, through a variety of examples, three key principles for how to design, conduct and then publish classroom research beyond one's institution.

References

Ashwin, P. (2012) How often are theories developed through empirical research into higher education? *Studies in Higher Education*, vol 37, no 8, pp 941-955. doi: 10.1080/03075079.2011.557426

Boyer, E.L. (1990) *Scholarship Reconsidered: Priorities of the Professoriate*. Special Report of the Carnegie Foundation for the Advancement of Teaching. New York, NY: Carnegie Foundation.

Brookfield, S. (1995) *Becoming a Critically Reflective Teacher*, San Francisco: Jossey-Bass.

Dolan, E. (2007) Grappling with the literature of education research and practice, *CBE-Life Sciences Education,* vol 5, pp 289-296.

Edgerton, R., Hutchings, P., & Quinlan, K. M. (1991) *The Teaching Portfolio: Capturing the Scholarship of Teaching*, Washington, D.C.: American Association for Higher Education.

Gantogtokh, O. & Quinlan, K.M. (2017) Challenges of designing interdisciplinary postgraduate curricula: Case studies of interdisciplinary master's programmes at a research-intensive UK university, *Teaching in Higher Education*, vol 22, no 5, pp.569-586. doi:10.1080/13562517.2016.1273211

Gurung, R.A., Chick, N.L. and Haynie, A. (2009) *Exploring Signature Pedagogies: Approaches to Teaching Disciplinary Habits of Mind*, Herndon, VA: Stylus Publishing, LLC.

Hoy, W.K. and Adams, C.M. (2016) *Quantitative Research in Education – A Primer*, Thousand Oaks, CA: Sage.

Hutchings, P. (Ed.) (1998) *The Course Portfolio: How Faculty can Examine their Teaching to Advance Practice and Improve Student Learning*, Washington, DC: American Association for Higher Education.

Huber, M.T. and Morreale, S.P. (2002) *Disciplinary styles in the scholarship of teaching and learning:*

Exploring common ground, Menlo Park: American Association for Higher Education and Carnegie Foundation for the Enhancement of Teaching at: https://files.eric.ed.gov/fulltext/ED478800.pdf Accessed July 2018.

Lave, J. and Wenger, E. (1991) *Situated learning: Legitimate Peripheral Participation*, Cambridge: Cambridge University Press.

Meyer, J.H.F. and Land, R. (2005) Threshold concepts and troublesome knowledge: epistemological considerations and a conceptual framework for teaching and learning. *Higher Education,* vol 49, no 3, pp. 373–388.

Miles, M.B. and Huberman, A.M. (1994) *Qualitative Data Analysis: An Expanded Sourcebook*, Thousand Oaks, CA:Sage.

Quinlan, K. M., Male, S., Baillie, C., Stamboulis, A., Fill, J., & Jaffer, Z. (2013) Methodological challenges in researching threshold concepts: a comparative analysis of three projects, *Higher Education,* vol 66*,* 585-601.

Quinlan, K. M., Male, S., Fill, J., Jaffer, Z., Stamboulis, A., & Baillie, C. (2012) 'Understanding thresholds in first year engineering: digging beneath Mohr's Circle', in P. Kapranos and D. Brabazon's (Eds.), *Symposium on Engineering Education, Proceedings 4th International ISEE,* University of Sheffield, July 18-20, ISBN: 978-1-873769-14-0, pp. 108-115 at: https://s3.amazonaws.com/academia.edu.documents/43220678/paper_29.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1531756854&Signature=huc6EOkIQBRRMG3nIC4OosBEwH4%3D&response-content-disposition=inline%3B%20filename%3DUnderstanding_thresholds_in_first_year_e.pdf Accessed July 2018.

Quinlan, K.M. (2000) 'Striking the Right Balance: An Evaluation of a Literature Database to Support Problem Based Learning', Paper presented at the Annual Meeting of the American Educational Research Association at https://files.eric.ed.gov/fulltext/ED453705.pdf Accessed July 2018.

Quinlan, K.M. (under review). What makes higher education lectures interesting? Personal and situational variables associated with situational interest. *Studies in Higher Education.*

Rawson, R. E., Quinlan, K. M., Cooper, B. J., Fewtrell, C., & Matlow, J. R. (2005) Writing skills development in the health professions, *Teaching and Learning in Medicine,* vol 17, no 3, pp 233-239. doi: 10.1207/s15328015tlm1703_6339.

Shulman, L.S. (1993) Forum: Teaching as community property, *Change: The Magazine of Higher Learning*, vol 25, no 6, pp 6-7, doi: 10.1080/00091383.1993.9938465

Wigfield, A. and Eccles, J.S. (2000). Expectancy–value theory of achievement motivation, *Contemporary Educational Psychology*, vol 25, no 1, pp 68-81.

Zimmerman, B.J. (2002) Becoming a self-regulated learner: An overview, *Theory into Practice*, vol 41, no 2, pp.64-70.

[i] For example http://researchguides.library.vanderbilt.edu/c.php?g=69093&p=446509
http://pod.nku.edu/sotldisc.asp
https://teaching.uncc.edu/learning-resources/sotl/sotl-journals