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Who Is Entitled to Do SoTL?

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Abstract

Excerpt: The title of this essay derives from an earlier essay by Lee Shulman (2011) in which he asks this very question along with many others about the future of SoTL. His question was prompted by a challenge that he received from someone in the area of science education research to the effect that SoTL was inviting non-experts to attempt what is a very complex and rigorous task after very little training. When I read that essay, my reaction was "Yes, that's right! I've had that same question myself. How can we expect a discipline-based expert to develop expertise virtually overnight in order to 'do' SoTL?" So my essay is based on my own experience trying to do that very thing and my resulting attempt to answer that challenge.

Keywords

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"Who Is Entitled to Do SoTL?"

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The title of this essay derives from an earlier essay by Lee Shulman (2011) in which he asks this very question along with many others about the future of SoTL. His question was prompted by a challenge that he received from someone in the area of science education research to the effect that SoTL was inviting non-experts to attempt what is a very complex and rigorous task after very little training. When I read that essay, my reaction was "Yes, that's right! I've had that same question myself. How can we expect a discipline-based expert to develop expertise virtually overnight in order to 'do' SoTL?" So my essay is based on my own experience trying to do that very thing and my resulting attempt to answer that challenge.

For the last four or five summers it has been my privilege and my honor to serve as one of the consultants in workshops on educational research attended by 60-70 engineering faculty from across the country (Siddiqui, 2011). Over the span of 4-5 days, these faculty attempt to come up with a rigorous research design intended to answer a teaching or learning related problem in the field. For everyone (including me) it is an inspiring, exhausting, sometimes frustrating, but always informative learning experience that I think exemplifies the very point that Shulman was making.

> This raises the important question of how well someone needs to understand both the discipline and the theories and methods of educational research to be entitled to engage in the scholarship of teaching and learning. (Shulman, 2011, pg. 5)

Pedagogical Content Knowledge 2.0?

In an analogous version of these musings, Shulman's (1986) work on pedagogical content knowledge raised a similar question about high quality teaching. Pedagogical content knowledge (PCK) asserts that to teach well you really need to know both the content and pedagogy in depth in order to bring them together to address learning problems adaptively. When I first read about PCK, I thought it was a brilliant concept that explained a lot of the frustration that I had as a faculty developer.

As a faculty developer, I learned that faculty were definitely experts in their content, but in pedagogy they were pragmatists; whatever worked was good for them, and that's what they wanted me to tell them. They often chose instructional methods on that basis alone. I, on the other hand, was an expert in pedagogy and a total novice in their disciplines, including their wisdom of practice. As a result I often made suggestions and asked questions that were totally simplistic from the standpoint of understanding the content or the signature pedagogy in their discipline. Neither of us had the time or inclination to become experts in the other's field, and yet we had to work at developing some level of

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understanding of the other field in order to function. We both needed some level of pedagogical content knowledge, but had to cede to the expertise of the other.

I was confronted with the same experience while working with the engineering faculty in the workshops mentioned at the beginning of this piece. They understood their field, they had begun to think about the field from the standpoint of learning and teaching, they had the wisdom of practice, but when it came to asking research questions about teaching and learning, the level of those questions and their research design ideas were again in the realm of pragmatism. "Which of these two ways of teaching something will work better? Let's just compare performance on a common final exam." was a common question/strategy format. To them it seemed like a very reasonable question/strategy that would guide their choice of instruction in the future. To me it was an enormous question with all kinds of variables to consider, so many that answering it really required a program of research to ferret out all the situations ("better for whom and under what conditions?") and outcomes ("better in what way and by how much?) so typical of educational research. I'm sure my social scientist answer "it depends" frustrated them just as much and as often. And my simplistic attempts to reduce their very complex content to categories that could be pigeonholed into standard educational research designs ignored the nuances of their practice and the constraints of their situation, which were obvious to all of them and totally hidden to me.

So now do we have a new construct – pedagogical content research knowledge (PCRK)? To achieve PCRK in the Shulman model of PCK, one would need a knowledge of pedagogy and learning within a domain, the knowledge of the domain and how it is structured, and research designs to study the intersection of the two in rigorous ways, including all the variables that could impact their interaction. Does a person with advanced expertise in all these areas exist? In an essay published in the same issue as Shulman's (2011) essay, Heather Kanuka (2011) ponders the same question. Although, like me, she values the blossoming of SoTL research as a way of expanding not just higher education but educational research as well, she asked that

> "academics engaged in SoTL whose expertise falls outside the field of higher education will take the time to learn about educational research traditions, the extensive corpus of literature in teaching and learning in higher education that exists – not the least of which are theories of learning – and conduct SoTL in an informed manner, ensuring the scholarship stays in the scholarship of teaching and learning." (pg. 9).

In other words, she, like many other champions of SoTL, asks that domain experts develop another area of expertise or, in the case of PCRK, two other areas of expertise. Is this possible in a single academic life?

Developing Expertise

Looking back at the Shulman quote that opened this essay, we must ask ourselves what level of expertise in each of the three areas – pedagogy, the domain, and educational research – does someone need to have to do SoTL? What does it mean to be an expert? What is "expert" enough? There are many ways one can describe expertise, but most of

them involve moving beyond having a large knowledge base and extensive experience alone to requiring the ability to problem-solve in novel situations through the use of that knowledge base and experience in new ways. For example, Hatano and Inagaki (1984) contrast routine expertise (the ability to respond efficiently in familiar tasks) with adaptive expertise (the ability to use knowledge and experience creatively to tackle unfamiliar tasks because of a deep understanding of how the system operates). Bereiter and Scardamalia (1993) introduced the concept of experts as progressive problem solvers, always trying to understand why something is happening and looking for the next possible problem rather than just solving the current problem. In a different strain of work on expertise, Hayes (1985) calculated that it takes from 6-10 years of experience to be able to function as an expert. Berliner (2004) shortened that to 3-7 years to become an expert teacher, but it is still a long time in an academic attention span. And simple experience itself is not sufficient to produce expertise, according to Ericsson (2006). The path to expertise is marked by deliberate practice and reflection in order to learn from that experience. The demands of academic life don't currently have room for that level of development of another area of expertise.

Who Is Entitled to Do SoTL? Two Possible Alternative Answers (or maybe co-incident answers)

I don't presume to have all the answers to the question that opened this essay. But as a good psychologist, I choose to answer the question by saying, "Who is entitled to do SoTL? Everyone and no one." I say this because I believe that all three areas of expertise mentioned earlier are needed to do meaningful, broadly impactful research in higher education. However with the constantly increasing sophistication of all content domains, pedagogical alternatives, research methodologies, and the increasing complexity of the situational variables present in higher education, no one person can achieve the level of expertise to satisfy all of these areas. Should we give up? Of course not! We already see in the literature how some answers are beginning to take hold naturally.

Answer one - Distributed expertise: the research team

One solution to the fact that no one can know everything is distributed expertise as represented by the research team. Thinking back to my experience with the engineering faculty, I saw this very solution being suggested by the organizers of these workshops. Institutions were encouraged to send TEAMS of faculty rather than individuals. And those teams were to be made up of not just engineers, but also sociologists, psychologists, educational researchers, student development specialists, and other experts representing areas of expertise that would be needed to address their research question in depth. No one was expected to know everything, but everyone was expected to contribute something. Teams structured this way made much faster progress in their research designs than did a single person or a single discipline (in this case, engineering). It sounds so logical, but higher education has a long history of individual work rather than group work. Fortunately this is changing. I served recently as a reviewer for NSF grant applications in educational research in STEM and found that preference was given to projects that included cross-disciplinary researchers. In fact the quality of the proposals provided by those teams was much superior in theory and conceptualization than the other proposals, giving support to the notion of cross-disciplinary work.

In SoTL, the Teaching Commons (Huber and Hutchings, 2007) is one form of this idea of

collaboration. It is an expanding meeting place of minds, but not necessarily the distribution of expertise that is implied by the foregoing discussion. The CASTL project was another example of opportunities for sharing of expertise across disciplinary boundaries. A more deliberate sharing of expertise is seen in the existence of the "SoTL mentors to the world", a group of online scholars who willingly work with those who ask for advice in their areas of expertise, most of which revolve around educational research. Finally, the increase in print and online resources that support research, such as Weimer's (2006) book summarizing the literature resources and how to read them, and Gurung and Schwartz (2009) book on research methods in pedagogy, as well as the increasing number of journals such as this one, are filling in an important gap in general, understandable texts in the field. The expansion of literature making the road to understanding educational research easier for non-education experts will go a long way to assist SoTL scholars in producing high quality research.

But despite all of these excellent opportunities, their effectiveness could never compare to having a research team working regularly in the same space (real or virtual) on a common problem with a common goal. This strategy is seeing the rise of a new kind of specialist within a domain – an education specialist. Coppola (2011) offers an excellent discussion of the implications of having someone with training primarily in the discipline, but who has also developed expertise in education in that discipline. There are cautions about pursuing this strategy, but there have certainly been disciplinary experts who turn to educational questions as one focus of their work (for example, Coppola himself in chemistry or Richard Felder in engineering). There are also institutions that are establishing educationally focused, but disciplinary based departments (for example, departments of engineering education at Virginia Tech and Purdue). That kind of collaboration allows for a much deeper sharing of understanding and overlapping distribution of responsibilities that would be needed for extended, sophisticated research to which SoTL aspires. So one way of approaching the SoTL question is to expand the agent of research from the individual faculty member to a broadly based team of researchers. In fact, as noted above the National Science Foundation has had funding programs on postsecondary education that could only award grants to cross-disciplinary teams.

Answer two - Programs of research rather than single studies

There is another way to develop the deeper level of research that is needed to answer educational questions. It involves moving from single studies to programs of research. Too often in early SoTL work, research had to be done in a very short span of time – one or two semesters – without much follow-up. Many times the results were ambiguous and left that way because the time for the study had run out. The faculty member's sabbatical or grant ended and he or she had to return to the real work of the institution.

Research in all fields takes time. One rarely gets it right on the first try. Indeed most disciplinary basic research involves multiple iterations that test out different aspects of the theory that is being investigated. In fact, we are suspicious of an individual's disciplinary work if it doesn't have one or two central themes played out over several publications and years. How can a single study possibly resolve all the issues of really important research questions?

The same can be true for educational research. There are even official names for this type of research: action research or more recently design-based research. In each model, theory-based research designs are implemented over time, with careful attention to the

isolation of individual factors or the development of predictive models that test the interaction of multiple variables under successive conditions. As each variable becomes understood more clearly, it is anchored and the other variables allowed to change according to the situation. Of course, doing this type of research requires the ability to devote consistent time to it such that an individual becomes the progressive problem-solving expert mentioned earlier.

More Hands? More Time? or Both?

Returning to my dilemma in the engineering education research workshops, I believe I saw both of the above suggestions playing out across the years. The work went from individual researchers to teams of researchers representing different, but relevant areas of expertise. I saw teams returning to the workshops with more advanced questions based on what they had found the first time around. I saw in the literature engineering researchers beginning to build bodies of work around critical components in the area, such as Smith in collaborative learning or Felder in individual differences in styles for learning engineering. Institutions have established programs that highlight the value of cross-disciplinary, long-term research in discipline-based education.

In 2010 Gurung and Schwartz wrote about the waves of research occurring in the SoTL movement. They characterized the third wave of SoTL as "infiltrating the mainstream", one aspect of which was to find common cause across disciplines, looking for "better, more integrated, theoretical work" (pg.3). I agree, but I believe it cannot be done alone and it cannot be done quickly or sporadically. SoTL needs to encourage the formation of integrated teams working together over time to produce the kind of in depth scholarship that can convince others of the gravity, universality and importance of the work.

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