

TEACHER AS RESEARCHER – EXAMPLES OF THE SCHOLARSHIP OF TEACHING AND LEARNING (SOTL)

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ABSTRACT

Studying and changing your own teaching approach, more formally known as the “scholarship of teaching and learning” (SoTL), is a promising new idea. We will define and illustrate it to show how easy, practical, and beneficial such research can be. This is intended to encourage faculty to start up their own SoTL projects. The scholarly study of one’s own pedagogical assumptions promises a double payoff: better teaching and more publications. This paper introduces the main idea and the purposes of SoTL, and presents an easy-to-follow example of a SoTL research project that grew out of efforts to solve a practical pedagogical problem. This is intended to give readers a feel for how to get started with a research project based on their own teaching practices. We conclude by placing SoTL in a larger context of academic policy-making.

THEME AND OBJECTIVE

This paper is intended as an introduction and overview of the Scholarship of Teaching and Learning (SoTL). We first introduce SoTL and then provide a case example of it to demonstrate how easy it is to start up SoTL projects. Next we speculate about alternative explanations of our simple classroom experiment’s findings. In this way we hope to show faculty how they can both improve their teaching and get publication credit too. In short the action oriented, scholarly study of one’s own pedagogical assumptions promises a double payoff: better teaching and more publications.

INTRODUCTION

SoTL is a new and innovative idea that attempts to combine teaching/learning with research in order to improve student learning and

to enhance a teacher's research and publishing capability. The first section provides an overview of what SoTL is, its origins, and its main goals. The next section describes the start up and initial phase of a SoTL project that grew from practical problems with project work in a computer science class. Then we explore alternative explanations of our findings. In the concluding section we point out some of SoTL's policy implications.

What is SoTL?

How do I improve my teaching? This is a question with a thousand answers – none of them is universally accepted. Studying and changing your own teaching approach, more formally known as the “scholarship of teaching and learning” (SoTL), is a promising new idea that will be defined and illustrated so that readers can formulate their own SoTL projects.

If the purpose of the teaching is to improve student learning, then the purpose of SoTL is to advance the practices of teaching through scholarly inquiry into one's own pedagogical assumptions and practices. Also known as “classroom research” SoTL starts with a teacher questioning what actually is happening in the classroom. It could be as simple as wondering how to get a point across or about some persistent problem with student achievement. A basic starting point could as simple as a question about how is student learning occurring. Then the teacher tries to conduct classroom research within a systematic framework and methodology. The outcome of the research will be peer reviewed by other teacher-researchers. This work can be open to the public and be built on. The results will be publicized. Thus, the outcome is a better teacher and improved student learning and development. This way, the overall teaching and learning process gets support and improvement, and faculty research benefits. This can be done in groups of interdisciplinary communities of teachers. (Bass 1990, Hutchings 2000, Bennett 2001, and *website* SoTL-UW-L 2003)

In the early 1990's, the term "scholarship of teaching," became popular with the publication of Ernest Boyer's creative work “*Scholarship Reconsidered*” (Bass 1990, Boyer 1990, Boyer 1997, Hutchings et. al. 2002).

A number of different definitions and meanings have been given to this term but most of them equate it to innovation in teaching based on systematic research. In past decade, or so, The Carnegie Foundation for the Advancement of Teaching and its president, Lee S. Shulman have sponsored and fostered the process to create research work that initiates a teacher inquiry into learning and education to improve student learning.

The Carnegie Academy for the Scholarship of Teaching and Learning (CASTL), a primary initiative of the *Carnegie Foundation*, was launched in 1998 in cooperation with the American Association for Higher Education (AAHE). The idea was to implement and build on the work proposed in 1990 on the concept of teaching as scholarly work (for more detailed descriptions see CASTL – AAHE, 2005). This concept was proposed by the former Carnegie Foundation president Ernest Boyer in his publication *Scholarship Reconsidered* 1990, and the follow-up publication *Scholarship Assessed* by Charles Glassick, Mary Taylor Huber, and Gene Maeroff in 1997 (Boyer 1990, Glassick et. al. 1997). CASTL interests include fostering and supporting scholarly works in teaching and learning, and establishing settings, forums, and basis for teaching/learning scholarships to be exchanged and built upon widely. The two main tracks in CASTL are *Higher Education* and *K–12*. The higher education track contains three programs:

- Carnegie Scholars Program.
- Campus Program.
- Scholarly and Professional Societies Program.

The CASTL Campus Program is one way in which CASTL works with and helps higher education institutions to support and foster better teaching and learning. This program provides an action oriented structure so that campuses committed to fostering scholarly work in teaching and learning can have a structure to support their commitments and to exchange views, experiences and thoughts with each other. More than 200 institutions indicated, as of 2002, that they are working actively to foster the scholarship of teaching and learning. CASTL is now organized into 12 “*Clusters*” each specializing in a different aspect of SoTL. The special themes of each cluster taken together indicate SoTL’s main developmental thrusts at present:

- Advancing the Scholarship of Teaching and Learning as a Networked Community Practice,
- Critical Thinking for Civic Thinking,
- Communities of Practice: Pooling Educational Resources to Foster Scholarship of Teaching and Learning,
- Creating a Multi-Institutional Framework to Advance the Practice of Teaching Through Scholarly Inquiry into Student Learning,
- Mentoring Newer Scholars of Teaching and Learning,
- Organizing to Foster the Scholarship of Teaching and Learning,
- The Research University Consortium for the Advancement of the Scholarship of Teaching and Learning,
- Scholarly Inquiry about Active Pedagogies,
- Scholarship of Multicultural Teaching and Learning,
- Scholarship Supporting the Cognitive-Affective Relationship in Teaching and Learning,
- Supporting Scholarly Work at Learning-Centered Universities,
- and Sustaining the Student Voice in the Scholarship of Teaching and Learning

Each Cluster has several colleges or universities as members. Our university (*University of Houston – Clear Lake*), for example, is a member of the fifth cluster (*Mentoring Newer Scholars of Teaching and Learning*) which includes seven campuses: Rockhurst University (Cluster Leader), Creighton University, Columbia College Chicago, Morehead State University, University of Houston - Clear Lake, University of Texas at El Paso, and Truman State University (for more detailed information on clusters see Bender et. al. 1999, Carnegie Foundation Website 2005, CASTL-AAHE 2005, IUB-SoTL 200, Hutchings et. al. 2002, Shulman 2000). Each Cluster is relatively autonomous in managing its own affairs. Our cluster, for example, sponsors a 3 day annual “Institute” where faculty new to SoTL present their research project or design as a “work in progress” and receive mentoring (see, for example, SoTL – Rockhurst, 2004).

SoTL Goals:

The goals of SoTL can be summarized in the following points (Carnegie Foundation Website 2005, CASTL-AAHE 2005, IUB-SoTL 200, Hutchings et. al. 2002):

- Improving student learning and development. Also improving faculty teaching and learning.
- Creating groups of interdisciplinary communities of faculty who are interested in investigating and researching the various teaching and learning inquiries and issues.
- Fostering teacher investigation into learning and teaching.
- Supporting existing interdisciplinary communities working on teaching and learning research.
- Supporting and publicizing teaching and learning research projects that focus on how to improve student learning.
- Promoting and conveying the outcomes of the outstanding teaching and learning research projects to benefit as many as possible.
- Providing tools and means to increase creativity and innovations in teaching and learning among teachers of higher education.

Example: Starting Up with SoTL

What does a SoTL project look like in practice? We briefly describe the beginning stages of a project to demonstrate how easy it is to get started. A more complete description, along with other works in progress, was presented at our cluster's annual SoTL Institute held in Kansas City, Missouri in the summer of 2004 (*website: <http://cte.rockhurst.edu/rockhurstuniv.aspx?pgID=1514>*). This example illustrates the concept and objectives of SoTL and demonstrates how easily faculty can get started with a SoTL project.

THE PRESENTING ISSUE:

The project started because of our experience with practical problems that reoccurred with disconcerting regularity semester after semester: students seemed unable to complete assignments in a timely, quality manner.

PROJECT DESIGN

In response to these difficulties we hit upon several simple techniques that dramatically reduced the problem. They all were voluntary, non-credit "*housekeeping*" assignments that helped students

manage their projects better. Initially students were asked to define their project's goals and plan. They then periodically reported progress against plan. Our feedback consisted of noting the reported progress and making encouraging comments to support further progress. It is important to note that these progress reports and feedback on them were procedural not substantive. The focus was on project management processes not substantive progress in project content. This report preparing process can, very well, act as a reminder (*checkpoint*) and boost self-evaluation where the student assesses her/his working pace and adjusts to a working pace that results in an increased achievement and improved learning from the assignment. In effect, students were benefiting from improved project management without any formal instruction in it.

We applied this method in two sections of a graduate level course for three semesters. The goal was to compare and analyze the results with the prior three semesters of the same course in which no such intervention technique was applied. Data were collected by recording and analyzing the number of students:

- (a) asking for project deadline extensions,
- (b) submitting incomplete projects, or
- (c) not submitting projects.

Then, we compared the data with the same data from prior semesters without this technique.

DATA ANALYSIS AND FINDINGS

Project completion and submission rates increased on average by 15%, and hence grades and learning from the projects improved significantly (see Table 1). The learning improvement was verified by analyzing students' grades in the course before and after applying these "intervention" techniques. Grades improved by an average of ~9% shifting the whole grading curve to a higher range.

Table 1
Improvement results after applying our “*intervention*” technique.

| Criteria | Improvement | Comments |
|--------------------|--------------------|--|
| Project completion | up 15% | <i>Number of students finish project increased 15% after applying the “interventions”</i> |
| Course grade | 9% higher grades | <i>After applying the “intervention” method, grade levels increased by an average of 9%.</i> |

We should mention here that, the improvement in grades in graduate level courses, usually, are much lower than in undergraduate courses. This implies that the improvement of ~9% higher grades that we achieved can be considered significant in the case of graduate level technical course. Table 2 shows other improvements observed after applying the *intervention* technique (for more details refer to SoTL-Rockhurst 2004). Despite the simplicity of this technique, its results are encouraging and warrant further research.

DISCUSSION

Although we had demonstrated the practical educational effects of our “process intervention,” we still lacked the explanation of *why* it worked. We sought deeper insight into causal dynamics of the phenomena we had observed in part out of a desire to understand — as a pure research question. We also sought to identify a relevant theoretical framework which could help us formulate specific research issues and link us up with existing research streams.

Table 2
Other Improvements observed after applying our “intervention” technique.

| Criteria | Observation | Comments |
|--|--------------------|---|
| Project grades | higher | <i>The average and median project grade improved significantly after applying the “interventions”</i> |
| Requesting extension of project deadline | reduced | <i>After applying the “intervention” method, number of students asking for deadline extension was reduced considerably.</i> |

Since we were concerned with interventions that helped students manage their projects better, it was natural to look to the management literature for relevant concepts and theories. We investigated three sets of ideas: the *Hawthorne effect* (reinterpreted), *motivation theory*, and “*punctuated equilibrium*.”

Perhaps no single research project has influenced the development of management thinking as much as the well-known *Hawthorne* studies have. In contrast to scientific management thinking, work was after Hawthorne understood as a social process where group norms had major consequences for behavior and productivity. The research was designed to allow researchers to observe work group dynamics in a realistic and natural setting where field experiments could be conducted. Over five years, researchers experimented with changes in working conditions, job design, the timing of lunch and coffee breaks, and group vs. individual payment plans. The best known and most impactful finding was that money was not as much a factor in determining output as were group attitudes and norms. A subsequent

interpretation, however, is of interest here. It argued that workers in the experiment received special treatment and attention from management and researchers. In this interpretation the attention of authority figures was an important causal variable and is known as the “Hawthorn Effect.” Does special attention by a key authority figure, the professor, explain student behavior we observed?

Alternatively, the student’s behavior could be linked to increased motivation. One widely supported idea in explaining motivation is that it depends on the value of the goal sought to the seeker and the likelihood that expending effort will produce the desired effect. In other words, you are motivated when you expect to achieve valued goals. Known therefore as “expectancy theory” (Vroom, 1964), this approach would suggest that making students more aware of the “effort – performance” and “performance – reward” linkages in tracking the progress of their project explains the increased motivation. From another perspective, the interventions also raised the salience of goals, in part because students were asked to set their own goals regarding project phases. Goal setting theory has shown that specific and challenging goals, if authentically accepted, can be highly motivating (Locke, 1990, and Naylor and Ilgen, 1984). Feedback and commitment enhance the effects of goal setting on performance. This approach suggests that merely asking students to set goals and monitor progress (with “process” or non-substantive feedback) could explain the increased performance.

The third set of explanatory concepts comes from the idea of “punctuated equilibrium” (Gersick, 1989). In field studies of project teams, Gersick found that teams started their project with a particular way of operating in terms of leadership, communication, scheduling, etc. which formed a stable pattern or equilibrium that persisted until things reached a point where the team realized that if they continued operating in this way the project would not be successful. This realization “punctured” the existing equilibrium and resulted in a new equilibrium at a higher level of effectiveness. The puncturing typically occurred at the mid point in the project’s time line. Apparently people tended to realize that half the time had gone but they were not half way through with the project. Could it be that our interventions served to punctuate the students’ complacency or lack of attention to progress in the project?

CONCLUSION

Clearly the interventions made a positive impact on the presenting problem but we cannot explain, with confidence, why. This project was more in the nature of a pilot study. It helped somewhat in resolving a problem in the classroom but more research is needed if we are to make progress on these type classroom problems or add significantly to theory based knowledge. We do have grounds for several hypotheses which warrant further research. Thus further study could begin with a more comprehensive review of relevant literature as the basis for a more rigorous and better theoretically situated hypotheses and research design.

SUMMARIZING OUR INTRODUCTION TO SOTL

We have presented the concept, origins, and goals of SoTL and described a simple, easy-to-follow example of how to start a SoTL project. SoTL is a new, innovative approach to improving teaching and learning in higher education. It centers on the idea of faculty researching their pedagogical assumptions about their own teaching. The outcomes are extremely useful: improved teaching, better student learning, and more research publications. Furthermore, although SoTL is a relatively new interdisciplinary field in higher education it is rapidly becoming well established and is supported by major institutions including hundreds of colleges and universities.

SoTL also has implications for academic accreditation. We have recently gone through accreditation in each of our schools (Business and Science and Computer Engineering) separately and for the university as a whole. One of the implications common to all three accreditations was a strong emphasis on producing more and better research. At the same time, accreditation seems to be moving in the direction of emphasizing quality of teaching and learning through, in part, requiring more rigorous and relevant assessment of learning. Initially these twin pressures may seem to accentuate the old dilemma of teaching vs. research. SoTL resolves the dilemma by promoting research on one's own teaching to improve student learning.

In short, SoTL has a lot to offer. It has multiple payoffs – e.g. in teaching, research, and assessment / accreditation. It is a new but growing interdisciplinary field – well supported by an emerging network of foundations, associations, and colleges and universities. There's easy access to data – you are your own research stream. And it encourages faculty learning communities where professors from different disciplines but with a shared background in research design and methodology can support each other's classroom research.

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