2009 TEACHING & LEARNING SYMPOSIUM
From Teaching to Learning

Exploring Signature Pedagogies — Approaches to Teaching Disciplinary Habits of Mind

Wednesday, May 20, 2009
15:00 – 16:00 h — Pyle Center

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In 2005, Lee Shulman (Carnegie Foundation for the Advancement of Teaching) discussed the concept of Signature Pedagogies in the Professions. He argued that what we do in our classrooms as instructors help our students learn certain "Habits of Mind" that characterize a profession. For example, imagine the differences in the "Habits of Mind" taught in medical schools compared with law schools. Come to learn about — and discuss — what the signature pedagogies might be in your discipline. Participants will discuss with each other the concept and identify possible elements of signature pedagogy within their own discipline.

CONTENT

15:00 – 15:10 INTRODUCTION: ways of teaching & ways of learning

Before introducing the concept of signature pedagogy, let uss take a few minutes to think about the fundamental components of our classroom environments (the subject, at-hand, the student and the teacher) and the activities we engage in as instructors to help our students learn. To do so, we will complete activity#1 (individually) and activity#2 (in small groups).

Activity#1:

Take a moment to study Figure 1 on your own. What do you "see" in it? What does this Figure convey to you? Please explain:

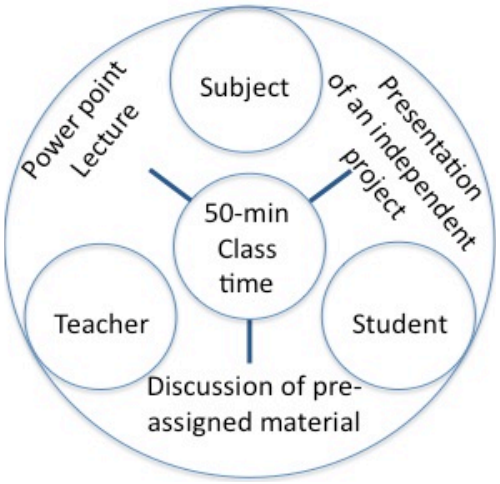

Figure 1: The essential components of a classroom environment include the subject at hand, the teacher and the student. Depending on the "teaching" method, the degree of interaction among the parts varies considerably.

Activity#2:

Consider the following three ways to spend a 50-min period (or any portion thereof): a) a power point lecture, b) student presentations of an independent project or c) the discussion of pre-assigned material, or d) any other classroom activity that is commonly used in your discipline. **With a partner next to you, choose two modes of interaction from the list above and discuss the degree to which they may foster certain (contrasting) attitudes toward— and beliefs about — the subject matter to be mastered?**

Introductory activities wrap-up: Now that we have completed activity #1 and activity#2, go back to Figure 1, and replace the word "subject" with the word "future profession" (what ever professional career your undergraduate students may aspire to). Re-doing activity#2 will help you identify what might be elements of signature pedagogy in your class(es).

15:10 – 15:20 THE CONCEPT OF SIGNATURE PEDAGOGY (Lee Shulman)

Lee shulman (2005) defines signature pedagogies as "***the types of teaching that organize the fundamental ways in which future practitioners are educated for their new profession***". Signature Pedagogy embodies what instructors of a discipline "take for granted" and are doing pervasively to instill the students of the discipline with its content, its skills and its values in order to become successful practitioners after graduation. Signature Pedagogies are important precisely because they are pervasive. They implicitly define what counts as knowledge as a field and how things become known. They define how knowledge is analyzed, criticized, accepted or discarded. Signature pedagogies exist within disciplines because they have proved effective over time. According to Schulman, signature pedagogy has three dimensions:

- It has a "surface" structure, which consists of concrete, operational acts of teaching and learning;
- It has a "deep" structure, a set of assumptions about how best to impart a certain body of knowledge;
- It has an "implicit" structure, a moral dimension that comprises a set of beliefs about professional attitudes values and dispositions.

In simpler terms, signature pedagogy identifies a discipline's:

- Habits of the "mind" (content);
- Habits of the "hand" (skills);
- Habits of the "heart" (values).

Below are three excerpts of the Schulman articles that will help us create a mental picture of the signature pedagogy commonly found in law schools, schools of Engineering and Medical schools.

A. Law School. Behold a first-year class on contracts at a typical law school, Immediately one notice that the rectangular room is designed like most lecture halls: the 120 seats are arranged in a semicircle so that most students can see many of the other students. The instructor clearly visible behind the lectern, is at the center of the long side of the rectangle. Rather than lecturing, he tends to ask questions of one student at a time, chasing the initial question with a string of follow-ups…..

B. Engineering. Now consider a lecture course in fluid dynamics as taught at a typical engineering school. The seats all face the front of the room; discussion among students is apparently not a high priority here. Although the teacher faces the class when he introduces the day's topic at the beginning of the session, soon, he has turned to the backboard, his back to the students. The focal point of the pedagogy is clearly mathematical representations of physical processes. He is furiously writing equations on the board……

C. Medical School. Consider, finally, the varieties of bedside teaching and clinical rounds used in medical schools. Here the classroom is the hospital, where a clinical trial – the patient, the senior attending physician, and the student physician – facilitates the teaching and learning. Since much of the medical pedagogy is peer-driven, only one year of training or experience may differentiate the student from the instructor….

15:20 - 15:35 EXPLORING SIGNATURE PEDAGOGIES: APPROACHES TO TEACHING DISCIPLINARY HABITS OF MINDS

Exploring Signature Pedagogies, Approaches to Teaching Disciplinary Habits of Minds is the title of a book published in the fall of 2008 (7). All authors are from the UW-Systems and are former Wisconsin Teaching Fellows or Wisconsin Teaching Scholars. The book was an effort:

- To explore and identify signature pedagogy (if it exist at all!) or pedagogies (if more than one exist) in disciplines within the Humanities, Liberal Arts, Social Sciences, Natural Sciences and Mathematics;
- To reflect on ways to improve the teaching and learning process within a discipline by (a) gaining a better understanding of one's own discipline, its "habits of the mind", and the teaching-related approaches that instructors of the discipline tend to take for granted and (b) by understanding better the values, ways of knowing, and manners of thinking of other disciplines.

Let look at three chapters of the book:

Chapter 3: Developing Habits of the Mind, Hand, and Heart in Psychology Undergraduates (B. F. Peden, C. R. Wilson Van Voorhis). The authors of this chapter highlight the recently endorsed guidelines for five learning outcomes of psychology undergraduate education. The authors performed a literature review of peer-reviewed publications to find out how psychology educators are attempting to meet the learning outcomes. The five goals were as follows:

1. *Goal 1—Knowledge base of Psychology: Students will demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.*
2. *Goal 2—Research Method in Psychology: Students will understand and apply basic research methods in psychology, including research design, data analysis, and interpretation.*
3. *Goal 3—Critical Thinking Skills in Psychology: Students will respect and use critical and creative thinking, skeptical inquiry, and, when possible, the scientific approach to solve problems related to behavior and mental processes.*
4. *Goal 4—Application of Psychology: Students will understand and apply psychological principles to personal, social, and organizational issues.*
5. *Goal 5—Values in Psychology: Students will be able to weight evidence, tolerate ambiguity, act ethically, and reflect other values that are the underpinning of psychology as a discipline.*

The review suggested that most of the teaching in psychology involves lectures, punctuated with asking students to do something with the information (activities or demonstrations). The authors concluded that this common and somewhat generic pedagogy essentially amounted to no particular signature pedagogy for teaching psychology to undergraduates at this time.

Chapter 5: Theory and Practice: Signature Pedagogies in Music Theory and Performance (Gary Don, Christa Garvey, and Mitra Sadeghpour). Gary Don, Christa Garvey, and Mitra Sadeghpour argue for a signature pedagogy of music that integrates the pedagogical activities associated with music theory and performance. For historical reasons discussed in the chapter, these activities have frequently been practiced separately, with music theory subject matter taught in a classroom setting, and performance skills taught in individual lessons and group rehearsals. Ideal music students are "complete musicians," with solid technical skills acquired through the study of voice or an instrument, and a thorough knowledge of the historical and theoretical background of the music that they perform. The authors argue that this integration can be achieved within traditional settings. For example, giving research assignments to

performance students and composition and improvisation assignments to music theory students extends the pedagogical goals of the lesson plan beyond traditional boundaries. In addition, music theory faculty can give guest presentations for ensemble rehearsals, and performance faculty can share their insights in the theory classroom. These activities emphasize the relationships between the sub-disciplines of music, and the crucial importance of integrated skills and knowledge.

Chapter 10: **Critique as Signature Pedagogy in the Arts** (Helen Klebesadel and Lisa Kornetsky). In this chapter Helen and Lisa reflect upon the values and ways of knowing and doing are shared by the arts disciplines (particularly the visual arts and theatre performance) and identify 'critique' as the shared signature pedagogy. Critique, they argue, is the primary way visual arts students develop the critical and linguistic skills that will enable them to describe, analyze, and interpret visual culture, and it is how students of performance, rooted in the analysis of text, develop the skills and techniques that allow them to interpret and embody the meaning of those texts both personally and culturally. A review of research in the field revealed a great deal of literature on the value of creative expression and active learning in the arts, but research on the pedagogical techniques for helping students find freedom of expression while developing the ability to assess the work of peers and to self-assess was minimal. The authors conclude with a call for solidly designed SoTL research and scholarly investigations into pedagogical strategies for furthering creative expression and student learning in the Creative Arts classroom.

Chapter 11: Signature Pedagogies in Agriculture, Animal and Dairy Sciences (Michel Wattiaux). In this chapter, Michel argues that graduating students in agriculture are disciplinary specialists who have gained skills considered essential to successful farming: self-reliance, problem-solving, decision-making, and leadership. A short analysis of distinct learning opportunities: **the judging contest** and the **capstone course**, serves to illustrate possible signature pedagogies in agriculture. Although the former epitomizes a pedagogy that prevailed in the 20th century, the latter embodies a vision more appropriate for the 21st century. In the latter, the classrooms provide genuine discipline-specific learning experiences in which instructors and students are fully engaged (using a scientific approach) in **decision-making and real-world problems solving**. Carefully designed capstone courses and properly constructed ("mini") capstone experiences provide unique opportunities for both the student and the teacher to appreciate the complexity of the real-world problems, to solve them with science-based knowledge, and to create a dynamic of common purpose that contribute to calling up students' higher levels of thinking.

Chapter 12: **The evolution of Teaching within Biological Sciences** (Angela Bauer-Dantoin). In this chapter Angela argues strongly for a emerging pedagogy in teaching biology that adopt a **constructivist** approach in which students are engaged in inquiry-based classrooms and laboratories (as opposed to "cookbook" labs.). She concludes that given the values and practices (experiment, rigorous, evidence-driven inquiry), that biologists and other scientists hold nearest to their heart as they approach their work in their laboratory, it is not surprising that these same values and practices have emerged as the key characteristics of their signature pedagogy, **scientific teaching**. When biology educators engage in scientific teaching, they model — and indeed engage their students in— the same habits of the mind, habits of the heart, and habits of the hand that they valued within the scientific community. According to Angela, SoTL (Scholarship of Teaching and Learning) evidence demonstrates that scientific teaching fosters the skills and mindset that not only allow students to succeed in their course work, but to enjoy it as well. Thus, as more biology educators bring the rigor of the research lab into their classrooms, a positive

result is inevitable: a dynamic, rigorous, engaging curriculum that is infused with the thrill of discovery and that contributes a highly skilled, diverse group of graduates to the field.

Chapter 15: Signature pedagogies in introductory physics (Mark J. Lattery). This chapter describes signature pedagogies in the first-year algebra- and calculus-based sequence of undergraduate physics. Signature pedagogies are designed to expose students to the "personality of the discipline." This includes *engagement* in scientific model development and revision; *emphasis* on the conceptual understanding of the content; and *employment* of peer discussion and collaboration. The chapter opens with a discussion of physics as a discipline, including its values, goals, and relation to the other disciplines. The chapter proceeds to describe traditional (or default) pedagogies and how, quite frequently, these pedagogies fail to impart the type and level of understanding that physicists value. The chapter ends with a discuss of five key signature pedagogies (Modeling Method, Peer Instruction, Interactive Lecture Demonstration, Tutorials in Introductory Physics, and Real-Time Physics) known from research to be effective for a large majority of students. Physics education research and SoTL studies suggest that when "who we are" as a discipline shows up in the classroom, the results for student learning are positive.

15:35 – 15:50 EXPLORING SIGNATURE PEDAGOGY IN YOUR OWN DISCIPLINE

In his chapter Gary and his co-authors propose a signature pedagogy of music that "*integrates the pedagogical activities associated with music theory and performance. This integration can be achieved giving research assignments to performance students and composition and improvisation assignments to music theory students. Such activities would emphasize the crucial importance of integrated skills and knowledge."*

In her chapter Helen (and her co-author Lisa) argues that *" Critique…. is the primary way visual arts students develop the critical and linguistic skills that will enable them to describe, analyze, and interpret visual culture, and it is how students of performance, rooted in the analysis of text, develop the skills and techniques that allow them to interpret and embody the meaning of those texts both personally and culturally."*

In his chapter Michel suggested that "*Dairy science programs are designed foremost to provide students with a learning environment in which they gain the knowledge, understanding, and leadership skills required to manage complex biological, economic and social systems (i.e., the farm or any part of it).*"

Activity#3:

What is the "superordinate" goal of the B.S. degree in your discipline? With a partner next to you, discuss what might be the disciplinary values and habits of mind within your discipline. Please explain and be prepared to share your thoughts with everyone.

15:50 – 15:55 RELATION BETWEEN SIGNATURE PEDAGOGY AND SoTL

Identifying the signature pedagogy of a discipline helps reflect on the essence of a teaching program. On the other hand, the scholarship of teaching and learning identifies practices that improve the alignment between teaching practices and learning objectives. In other words, it helps the teaching scholar to design and test pedagogy that may improve the desired student learning outcomes. **Seen in this light, the scholarship of teaching and learning becomes an important bridge between the signature pedagogies of the past (where they exist) and the signature pedagogy for the future**.

In addition, examining the signature pedagogies in a variety of professions (disciplines) provides examples if not "case studies" of attempts to resolve the "knotty problems", the persistent misconceptions and other "barriers" to gaining the habits of mind, hand and heart of one's chosen future path. In other words, **signature pedagogy provides the framework to guide the scholarship of teaching and learning** in better preparing those you will carry the tradition of the profession (discipline) into the future.

15:55 – 16:00 RELATION BETWEEN SIGNATURE PEDAGOGY AND PEDAGOGICAL CONTENT KNOWLEDGE

One could ask to what degree Signature Pedagogy (SP) is to a discipline what pedagogical content knowledge (PCK) is to the instructor?

PCK includes "the most useful forms of representation of [topics], the most powerful analogies, illustrations, examples, explanations, and demonstrations - in a word, the ways of representing and formulating the subject that make it comprehensible to others. Often time, PCK is construed as the sum of Pedagogical Knowledge (PK) and Content Knowledge (CK) (5). However, PCK also includes an understanding of what makes the learning of specific topics easy or difficult: the (mis)conceptions and preconceptions that students bring with them to the class (6).

CITATIONS

(3) Roblyer, M. D., Edwards, J. & Havriluk, M. A. (1997). Learning Theories and Integration Models. Chapter 3 (pp. 54-79) Integrating Educational Technology into Teaching. Saddle River, NJ: Prentice Hall

(4) Shulman, L. S. (2005). Signature Pedagogies in the professions Daedalus 134(3), 52-59.

(5) Paulsen, M. B. 2001. The Relation Between Research and the Scholarship of Teaching. Pp 19-30 in: Scholarship Revisited: Perspectives on the Scholarship of Teaching; New Directions for Teaching and Learning No 86. C. Kreber (ed); Jossey-Bass. San Francisco. (Memorial Library Call Number: LB 2332 S36 2001).

(6) Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. Educational Researcher, 15(2), 4-14.

(7) Gurung, N. Chick and H. Aeron (Eds). 2008. Exploring Signature Pedagogies: Approaches to Teaching Disciplinary Habits of Mind. R. Stylus Publishing, Sterling VA.

We must let go of the life we have planned, so as to accept the one that is waiting for us (Joseph Campbell)