

Lee S. Shulman

Signature pedagogies in the professions

The psychoanalyst Erik Erikson once observed that if you wish to understand a culture, study its nurseries. There is a similar principle for the understanding of professions: if you wish to understand why professions develop as they do, study *their* nurseries, in this case, their forms of professional preparation. When you do, you will generally detect the characteristic forms of teaching and learning that I have come to call *signature pedagogies*. These are types of teaching that organize the fundamental ways in which future practitioners are educated for their new professions. In these signature pedagogies, the novices are instructed in critical aspects of the three fundamental dimensions of professional work – to *think*, to *perform*, and to *act with integrity*. But these three dimensions do not receive equal attention across the profes-

sions. Thus, in medicine many years are spent learning to perform like a physician; medical schools typically put less emphasis on learning how to act with professional integrity and caring. In contrast, most legal education involves learning to think like a lawyer; law schools show little concern for learning to perform like one.

We all intuitively know what signature pedagogies are. These are the forms of instruction that leap to mind when we first think about the preparation of members of particular professions – for example, in the law, the quasi-Socratic interactions so vividly portrayed in *The Paper Chase*. The first year of law school is dominated by the case dialogue method of teaching, in which an authoritative and often authoritarian instructor engages individual students in a large class of many dozens in dialogue about an appellate court case of some complexity. In medicine, we immediately think of the phenomenon of bedside teaching, in which a senior physician or a resident leads a group of novices through the daily clinical rounds, engaging them in discussions about the diagnosis and management of patients' diseases.

I would argue that such pedagogical signatures can teach us a lot about the personalities, dispositions, and cultures

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of their fields. And though signature pedagogies operate at all levels of education, I find that professions are more likely than the other academic disciplines to develop distinctively interesting ones. That is because professional schools face a singular challenge: their pedagogies must measure up to the standards not just of the academy, but also of the particular professions. Professional education is not education for understanding alone; it is preparation for accomplished and responsible practice in the service of others. It is preparation for 'good work.' Professionals must learn abundant amounts of theory and vast bodies of knowledge. They must come to understand in order to act, and they must act in order to serve.

In the Carnegie Foundation's studies of preparation for the professions, we have gone into considerable depth to understand the critical role of signature pedagogies in shaping the character of future practice and in symbolizing the values and hopes of the professions. We have become increasingly cognizant of the many tensions that surround professional preparation, from the competing demands of academy and profession to the essential contradictions inherent in the multiple roles and expectations for professional practitioners themselves. The importance of the particular forms of teaching that characterize each profession has become ever more salient in the course of our inquiry. Above all, we have found it fruitful to observe closely the pedagogy of the professions in action.

Behold a first-year class on contracts at a typical law school. Immediately one notices that the rectangular room is not 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. At certain points, he will turn his attention to another student, and stick with her for a while. Again and again he asks a student to read aloud the precise wording of a contract or legal ruling; when confusion arises, he repeatedly asks the student to look carefully at the language. The instructor may use the board or the overhead projector to record specific phrases, to list legal principles, or to note the names of court cases or precedents. Throughout the hour, the law professor faces the students, interacting with them individually through exchanges of questions and answers, and only occasionally writing anything on the board. The students can see each other as they participate, and can respond easily if the professor solicits additional responses. But it's relatively rare for students to address one another directly.

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 his class when he introduces the day's topic at the beginning of the session, soon he has turned to the blackboard, 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, looking back over his shoulder in the direction of the students as he asks, of no one in particular, "Are you with me?" A couple of affirmative grunts are sufficient to encourage him to continue. Meanwhile, the students are either writing as furiously as their instructor, or

they are sitting quietly planning to review the material later in study groups. There is very little exchange between teacher and students, or between students. There is almost no reference to the challenges of practice in this teaching – little sense of the tension between knowing and doing. This is a form of teaching that engineering shares with many of the other mathematically intensive disciplines and professions; it is not the ‘signature’ of engineering.

Quite a different classroom style is evident when one visits a design studio that meets in the same building of the same engineering school. Here students assemble around work areas with physical models or virtual designs on computer screens; there is no obvious ‘front’ of the room. Students are experimenting and collaborating, building things and commenting on each other’s work without the mediation of an instructor. The focal point of instruction is clearly the designed artifact. The instructor, whom an observer identifies only with some difficulty, circulates among the work areas and comments, critiques, challenges, or just observes. Instruction and critique are ubiquitous in this setting, and the formal instructor is not the only source for that pedagogy.

Consider, finally, the varieties of bedside teaching and clinical rounds used in medical schools. Here the classroom is the hospital, where a clinical triad – the patient, the senior attending physician, and the student physicians – facilitates the teaching and learning. Since much of medical pedagogy is peer driven, only one year of training or experience may differentiate the student from her instructor. The ritual of case presentation, pointed questions, exploration of alternative interpretations, working diagnosis, and treatment plan is routine. The patient may be physically present or rep-

resented by a case record or, these days, by a video. There is no question that the instruction centers on the patient, and not on medicine in some more abstract sense. The dance changes as we move from the patient’s first visit to the follow-up, but the basic moves remain the same.

In the Carnegie Foundation’s studies, we have spent a lot of time observing, analyzing, and documenting how teaching and learning occur in many kinds of settings. We not only watch and record, but also meet with faculty members and students individually and in focus groups. We review teaching materials and the examinations used to evaluate the progress of students. To the extent that we identify signature pedagogies, we find modes of teaching and learning that are not unique to individual teachers, programs, or institutions. Indeed, if there is a signature pedagogy for law, engineering, or medicine, we should be able to find it replicated in nearly all the institutions that educate in those domains.

Signature pedagogies are important precisely because they are pervasive. They implicitly define what counts as knowledge in a field and how things become known. They define how knowledge is analyzed, criticized, accepted, or discarded. They define the functions of expertise in a field, the locus of authority, and the privileges of rank and standing. As we have seen, these pedagogies even determine the architectural design of educational institutions, which in turn serves to perpetuate these approaches.

A signature pedagogy has three dimensions. First, it has a *surface structure*, which consists of concrete, operational acts of teaching and learning, of showing and demonstrating, of questioning

and answering, of interacting and withholding, of approaching and withdrawing. Any signature pedagogy also has a *deep structure*, a set of assumptions about how best to impart a certain body of knowledge and know-how. And it has an *implicit structure*, a moral dimension that comprises a set of beliefs about professional attitudes, values, and dispositions. Finally, each signature pedagogy can also be characterized by what it is *not* – by the way it is shaped by what it does not impart or exemplify. A signature pedagogy invariably involves a choice, a selection among alternative approaches to training aspiring professionals. That choice necessarily highlights and supports certain outcomes while, usually unintentionally, failing to address other important characteristics of professional performance.

We can see the relevance of all these features if we examine, for example, the signature pedagogy of legal case methods. This signature pedagogy's *surface structure* entails a set of dialogues that are entirely under the control of an authoritative teacher; nearly all exchanges go through the teacher, who controls the pace and usually drives the questions back to the same student a number of times. The discussion centers on the law, as embodied in a set of texts ranging from judicial opinions that serve as precedents, to contracts, testimonies, settlements, and regulations; in the legal principles that organize and are exemplified by the texts; and in the expectation that students know the law and are capable of engaging in intensive verbal duels with the teacher as they wrestle to discern the facts of the case and the principles of its interpretation.

The *deep structure* of the pedagogy rests on the assertion that what is really being taught is the theory of the law and how to think like a lawyer. The subject matter

is not black-letter law, as, for example, in British law schools, but the processes of analytic reasoning characteristic of legal thinking. Legal theory is about the confrontation of views and interpretations – hence the inherently competitive and confrontational character of case dialogue as pedagogy.

The *implicit structure* of case dialogue pedagogy has several features. We observed several interactions in which students questioned whether a particular legal judgment was fair to the parties, in addition to being legally correct. The instructor generally responded that they were there to learn the law, not to learn what was fair – which was another matter entirely. This distinction between legal reasoning and moral judgment emerged from the pedagogy as a tacit principle. Similarly, the often brutal nature of the exchanges between instructor and student imparted in rather stark terms a sense of what legal encounters entail. These lessons might also be called the hidden curriculum of case dialogue pedagogy.

Finally, we can examine what is missing in this signature pedagogy. The missing signature here is clinical legal education – the pedagogies of practice and performance. While these pedagogies can be found in all law schools, they are typically on the margins of the enterprise, are rarely required, and are often ungraded.

I would also call our attention to three typical temporal patterns of signature pedagogies in the professions: the pervasive initial pedagogy that frames and prefigures professional preparation, as in the law; the pervasive capstone apprenticeships, as in the clinical bedside teaching of medicine or in the comparatively brief period of student teaching in teacher education; and the sequenced and balanced portfolio, as in the medley

of analysis courses, laboratories, and design studios in engineering, or in the interaction of hermeneutic, liturgical, homiletic, and pastoral pedagogies in the education of clergy.

Up to this point, I have emphasized the distinctive characteristics of signature pedagogies – the characteristics by which we can tell them apart. In spite of the differences among their surface structures, signature pedagogies also share a set of common features. These features may help explain the relative durability and robustness of these approaches to teaching and learning. Indeed, I believe these features evolved precisely because they facilitate student learning of professionally valued understandings, skills, and dispositions. Enumerating them will help to explain the persistence and generality of signature pedagogies in the professions.

First, as observed earlier, signature pedagogies are both pervasive and routine, cutting across topics and courses, programs and institutions. Case dialogue methods in law, for example, are routinely encountered by law students in nearly all their doctrinal courses – torts, Constitutional law, contracts, civil procedure, and criminal. Teachers and students can be inventive or creative within the boundary conditions of these teaching frameworks, but the frameworks themselves are quite well defined.

Of course, everyone understands the danger of routine, but routine also has great virtues. Learning to do complex things in a routine manner permits both students and teachers to spend far less time figuring out the rules of engagement, thereby enabling them to focus on increasingly complex subject matter. Also, the pedagogical routines differ in purpose: legal education routines develop habits of the mind, whereas clergy

education routines also develop habits of the heart, and clinical education routines develop habits of the hand.

Pedagogies that bridge theory and practice are never simple. They entail highly complex performances of observation and analysis, reading and interpretation, question and answer, conjecture and refutation, proposal and response, problem and hypothesis, query and evidence, individual invention and collective deliberation. To the extent that the substance of these complex performances changes with each session, chapter, or patient, the cognitive and behavioral demands on both students and faculty would be overwhelming if it were not possible to routinize significant components of the pedagogy. To put it simply, signature pedagogies simplify the dauntingly complex challenges of professional education because once they are learned and internalized, we don't have to think about them; we can think with them. From class to class, topic to topic, teacher to teacher, assignment to assignment, the routine of pedagogical practice cushions the burdens of higher learning. Habit makes novelty tolerable and surprise sufferable. The well-mastered habit shifts new learning into our zones of proximal development, transforming the impossible into the merely difficult.

But habits are both marvelous scaffolds for complex behavior as well as dangerous sources of rigidity and perseveration. Thus we shall also see that the very utility of habit that is a source of signature pedagogies' power also contributes to their most serious vulnerability: Signature pedagogies, by forcing all kinds of learning to fit a limited range of teaching, necessarily distort learning in some manner. They persist even when they begin to lose their utility, precisely because they are habits with few coun-

tervailing forces. Since faculty members in higher education rarely receive direct preparation to teach, they most often model their own teaching after that which they themselves received. This 'apprenticeship of observation' is powerful even among precollegiate teachers who do undertake pedagogical training. Moreover, since the physical layout of classrooms so typically tracks the premises of a field's signature pedagogies, the very architecture of teaching encourages pedagogical inertia. Only the most radical of new conditions – such as sharp changes in the organization or economics of professional practice or in the technologies of teaching – are sufficient forces to redirect that inertia.

Another feature of signature pedagogies is that they nearly always entail public student performance. Without students actively performing their roles – as interlocutors in legal dialogues, as student physicians reporting on cases in clinical rounds, as designers of artifacts, or as active critics in the engineering studio – the instruction simply can't proceed. This emphasis on students' active performance reduces the most significant impediments to learning in higher education: passivity, invisibility, anonymity, and lack of accountability. The pedagogies command student vigilance, which in turn causes learners to feel highly visible in the classroom, even vulnerable. Again, the case dialogue method will provide our example: at any moment the law professor may call on students (the infamous 'cold call') to answer questions about the case prepared for a given class, or for arguments or counterarguments in discussion of a case. Because so much depends on student contributions – in dialogue, in diagnostic work-up, in the design of artifacts, in practice teaching, or in therapeutic encounters – there is also an in-

herent uncertainty associated with these situations: the direction the discussion takes is jointly produced by the instructor's plan and the students' responses, elaborations, and inventions.

Indeed, in these signature pedagogies, students are not only active but interactive. Students are accountable not only to teachers, but also to peers in their responses, arguments, commentaries, and presentations of new data. They are expected to participate actively in the discussions, rounds, or constructions; they are also expected to make relevant contributions that respond directly to previous exchanges. Signature pedagogies are pedagogies of uncertainty. They render classroom settings unpredictable and surprising, raising the stakes for both students and instructors. Interestingly, learning to deal with uncertainty in the classroom models one of the most crucial aspects of professionalism, namely, the ability to make judgments under uncertainty.

Finally, uncertainty, visibility, and accountability inevitably raise the emotional stakes of the pedagogical encounters. Uncertainty produces both excitement and anxiety. These pedagogies create atmospheres of risk taking and foreboding, as well as occasions for exhilaration and excitement. Indeed, I would argue that an absence of emotional investment, even risk and fear, leads to an absence of intellectual and formational yield; Alison Davis used to refer to "adaptive anxiety" as a necessary feature of learning. However, teachers must manage levels of anxiety so that teaching produces learning rather than paralyzing the participants with terror. When the emotional content of learning is well sustained, we have the real possibility of pedagogies of formation – experiences of teaching and learning that can influence the values, dispositions, and characters

of those who learn. And when these experiences are interactive rather than individual, when they embody the pervasive culture of learning within a field, they offer even more opportunity for character formation.

Howard Gardner has proposed the concept of 'compromised work' to describe forms of professional practice in which the fundamental ethical principles of a profession are violated. I would propose a parallel concept of 'compromised pedagogy' to describe a somewhat different phenomenon. Instead of recognizing only the tensions between the technical and the ethical dimensions of professional learning as those that are regularly compromised, I would argue that a sound professional pedagogy must seek balance, giving adequate attention to all the dimensions of practice – the intellectual, the technical, and the moral. Pedagogy is compromised whenever any one of these dimensions is unduly subordinated to the others – even when an adequate intellectual preparation is subordinated to an ethical perspective (which rarely happens outside the preparation of teachers and clergy).

Professional action is often characterized by a tension between acting in the service of one's client and acting in a manner that protects the public interest more broadly. Thus lawyers are torn between acting as zealous advocates or as officers of the court. They can also experience the tension between acting in their own self-interest or in the interests of either their client or the greater society. Engineers can design to reduce costs and maximize profits, or to increase safety and environmental protection. Physicians can order tests and interventions that maximize the potential benefits to their patients, or can act to control costs and the likelihood of overprescrip-

tion. Teachers can maximize their perceived efficacy by teaching to the benefit of those students most likely to earn high test scores, or can teach in ways that equalize educational opportunity and emphasize educational ends whether or not they are externally examined.

Every profession can be characterized by these inherent tensions, which are never fully resolved, but which must be managed and balanced with every action. As John Dewey observed about many of the problems of science, "we don't solve them; we get over them." Responsible professional pedagogy must address these tensions and provide students with the capabilities to deal with them.

Since individual professions adapt to their own signatures, which, however effective, are prone to inertia, we can learn a great deal by examining the signature pedagogies of a variety of professions and asking how they might improve teaching and learning in professions for which they are not now signatures. What might laboratory instruction in the sciences learn from examining the studio instruction of architecture and mechanical engineering? How might the challenges of integrating the texts of legal theory and the enactment of legal practice profit from taking seriously the clinical education of physicians, or the learning of homiletic by clergy? The comparative study of signature pedagogies across professions can offer alternative approaches for improving professional education that might otherwise not be considered. Indeed, I believe that education in the liberal arts and sciences can profit from careful consideration of the pedagogies of the professions.

I have written about signature pedagogies as if they are nearly impossible to

change. There are, however, several conditions that can trigger substantial changes in the signature pedagogies of professions. The objective conditions of practice may change so much that those pedagogies that depend on practice will necessarily have to change. A dramatic example is developing in medicine and nursing: Bedside teaching became these fields' signature pedagogy at a time when a much larger percentage of patients were hospitalized, and for much longer periods of time. Under those conditions, patients – the teaching material for clinical instruction – remained in place long enough to provide extended teaching opportunities. Today, by contrast, we find far more medicine and surgery practiced either as outpatient procedures or with much shorter hospital stays. For example, surgical removal of the gallbladder once entailed at least a week's hospitalization; that procedure is now done laparoscopically, and patients do not even remain overnight. Recovery now takes a few days instead of several weeks. Under these kinds of changing conditions, the signature pedagogies of medicine will have to change.

New technologies of teaching via the Internet; Web-based information seeking; computer-mediated dialogues; collaborations and critiques in the design studio; powerful representations of complex and often unavailable examples of professional reasoning, judgment, and action – all create an opportunity for reexamining the fundamental signatures we have so long taken for granted. In surgery, the signature pedagogy for learning new procedures has been 'watch one, do one, teach one' – an approach that is undeniably fraught with the likelihood of error and significant danger to the patient. Now new forms of simulation, the use of surgical mannequins and robotlike models, cog-

nitive task analysis, and cognitive apprenticeship create opportunities to make substantial changes in that pedagogy, and therefore to dramatically modify its signatures.

Finally, severe critiques of the quality of professional practice and service, which occur with great frequency these days, can accelerate the pace with which the most familiar pedagogical habits might be reevaluated and redesigned. The ethical scandals that have beset many professions – well illustrated by our colleagues in the GoodWork Project – may create the social conditions needed to reconsider even the most traditional signature pedagogies.

One thing is clear: signature pedagogies make a difference. They form habits of the mind, habits of the heart, and habits of the hand. As Erikson observed in the context of nurseries, signature pedagogies prefigure the cultures of professional work and provide the early socialization into the practices and values of a field. Whether in a lecture hall or a lab, in a design studio or a clinical setting, the way we teach will shape how professionals behave – and in a society so dependent on the quality of its professionals, that is no small matter.