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What Is Pedagogical Research?

How do we know if our students are learning? How do we know if we are teaching well? Do research methods really exist that allow us to answer these questions? We all realize the importance of understanding if our students are learning and whether we are teaching well. However, the process by which to answer these important questions is often outside the area of expertise of many academics, though if given the tools we could all head into the classroom with a greater understanding of how our methods of teaching influence students' learning.

In addition to learning the tools and methods available to conduct pedagogical research, we also need to gain an understanding of the existing literature in which many scholars have emerged as pioneers in the field of scholarship of teaching and learning. We must identify those pioneers and use the knowledge gained from their research and use that to develop our own pedagogical investigations. When examining student learning and optimal teaching, the disciplines of education and educational psychology provide a good starting point for our look at how to examine teaching and learning. Although we will draw strongly from these areas, we will also be tapping into many other disciplines that focus on how teaching and learning can be improved. As much as the field of education and educational psychology seem to have cornered the pedagogical research market, the big difference is that researchers in those areas treat the classrooms of others as their laboratory. The pedagogical research we will examine puts *your own* classroom, teaching, and learning under the microscope. But we digress. What is pedagogical research? Why should you care?

Pedagogical research can be easily defined as research on teaching and learning. It can provide the answer to a wide range of questions, such as why a class goes awry, or why students fail to grasp the concepts taught, or

why despite our best efforts students exhibit no signs of creative thinking or higher learning. Changes in higher education are also driving up interest in teaching and learning. The composition of our classes is changing, there are different national priorities, greater public accountability, and changing pedagogical techniques (Huber & Morreale, 2002). Clearly, we need to pay attention to pedagogical research. It is the umbrella term that encompasses a number of other terms such as *action research*, *scholarly teaching*, and, a term we hear more and more often, *SoTL*.

By now you have probably heard the acronym SoTL. Some pronounce each letter and call it S-OH-T-L, others So-till, and still others, Su-till (as in "subtle"). Although it may look like yet another of the myriad acronyms that dot the educational landscape, in recent years we have seen a number of publications heralding the worthiness and proliferation of the scholarship of teaching and learning (e.g., Becker & Andrews, 2004; Cambridge, 2004; Hatch, 2006; McKinney, 2007; Savory, Burnett, & Goodburn, 2007), though few publications place SoTL into the greater context of educational research. This introductory chapter traces the development of pedagogical research from *before* the time Boyer first coined the phrase SoTL in 1990 (there was pedagogical research long before the use of the phrase) to the present day. Along the way we will provide critical reviews of the extant literature on SoTL and also disentangle the many related terms that have been used to describe similar pursuits (i.e., action and teacher research and scholarly teaching).

First a little more on why we use the phrase *pedagogical research* for describing the systematic investigation of teaching and learning. After reading a variety of sources and being exposed to a number of terms (to be reviewed briefly), we believe pedagogical research is the phrase that best captures the essence of scholarly work that is conducted to optimize teaching and learning. We also believe that this term is less value-laden than SoTL and other variations on the theme. In our view, pedagogical research encompasses SoTL, action and teacher research, scholarly teaching, and essentially any other phrase used in this arena. There is a lot of debate about what constitutes SoTL, and, rather getting into the detail of that we will focus on what we know about optimal teaching and optimizing learning, and the steps needed to achieve it. This optimization is what teachers care about. Our goal is to show you how to do it in the easiest, most reliable and most valid way possible. Along the way we will also expose you to the results of years of pedagogical research as well as highlight many unanswered questions and issues. We hope to stimulate your intellectual curios-

ity in elucidating quandaries, which will catalyze both your teaching and your own pedagogical research.

A number of different academic areas explore pedagogical research with an emphasis on research from the fields of education and psychology and the work of a wide array of scholars (e.g., Entwistle, Hestenes-Hake, Huber, Perry, Shulman). Just as a rose by any another name is still a rose, so too research on teaching and learning is still essentially *pedagogical research*, no matter what discipline the research is based in. In many disciplines, the methodologies formerly used by faculty for research are now recognized as valuable resources to assess methods of teaching. This transformation has only slowly emerged over the last decade but it is spreading and growing exponentially. as general questions of inquiry lead to more and more refined questions.

Multidisciplinary Roots of Pedagogical Research

Research on teaching and learning has a long history in various disciplines and is more widespread than one may have imagined. In a recent review of the history and diversity of pedagogical research, Maryellen Weimer (2006) notes that almost all the major disciplines have pedagogical journals. By giving one of the most comprehensive listings of publication outlets for pedagogical research, Weimer's work clearly shows that, if one wants to learn more about how to optimize teaching and learning, there are many places to look. There are also many outlets to publish your own pedagogical research. There are journals and magazines written for higher-education audiences such as *Academic Medicine*, *Journal of Economic Education*, *Teaching Philosophy*, and *Teaching Sociology*, and a number of discipline-based pedagogical journals written for educators at various levels. Some examples of this second group include *Art Education*, *History Teacher*, *Business Education Forum*, and *Physics Teacher*. Weimer also identifies cross-disciplinary publications written by and for faculty in different fields (e.g., *Journal of College Science Teaching*) and theme-based journals written by and for postsecondary educators (e.g., *Active Learning in Higher Education*).

As a testament to the (mostly unknown) longevity of pedagogical research, the earliest journal articles on teaching and learning were published back in 1924 with the first edition of the *Journal of Chemical Education*, a publication still in press today. Many of the journals that began a

long time ago started as newsletters (e.g., *Teaching of Psychology*;, conversely, many pedagogical publications are not published on paper at all: a number of outlets exist in online form only. A recent example is the *International Journal for the Scholarship of Teaching and Learning (IJSOTL)*, a peer-reviewed electronic journal published twice a year by the Center for Excellence in Teaching at Georgia Southern University, the first issue of which appeared in January 2007.

Examining Definitions of Scholarship

Do you want to optimize student learning but don't know how to do it? If you have always wondered if your efforts to improve your teaching and trials and errors in the classroom actually have a name, this section is for you.

We introduced the term pedagogical research to avoid the snares and snafus of definition arguments. But as academics we cannot shy away from a good debate. What is SoTL? Is SoTL the same as education research or teacher research? Is it different from pedagogical research? The phrase Scholarship of Teaching and Learning entered the national higher-education consciousness in 1990. It is not that this type of work did not exist before then. It is just that the events taking place that year, and Boyer's (1990) exploration of the diverse nature of scholarship, raised awareness of pedagogical research. SoTL is often referred to as a new field, in which research focuses on the assessment of student learning in connection to particular teaching practices, but (as we will illustrate shortly) research on student learning or pedagogical research in one form or the other has been taking place from the beginnings of formal education. In fact, the view that scholarship is primarily synonymous with research and does not encompass the examination of teaching and learning is a relatively recent (postwar) phenomenon (Rice, 2005).

People have been talking about pedagogical research and SoTL (though not using the same terms) for over a hundred years. The Harvard psychologist William James was asked to give a few public lectures to Cambridge teachers in 1892. In his talk, he not only expressed how knowledge of psychology could help the teachers teach better and understand their students better, but he asked teachers to "deem it part of your duty to become contributors to psychological science or to make psychological observations in a methodical or responsible manner" (James, 1899/2006, p. 9). The

concepts and ideas were present, but no term was coined at the time or specific field of research identified. Some years later, in his inaugural address as the fifth president of the University of Chicago in 1928, Robert Maynard Hutchins essentially suggested faculty should carry out pedagogical research on their students (Thompson, Nelson, & Naremore, 2001). These two examples suggest that the concept of SOTL existed long before Boyer popularized the term.

The emergence of the now ubiquitous acronym SoTL is more the reflection of a political uprising of sorts. As the story goes, there were rumblings of discontent in the academy. The late 1980s saw issues such as assessment, active learning, cost containment, and accountability coming to the fore (Edgerton, 2005). In addition, colleges and universities began to take a closer look at faculty priorities. In early 1990 a study of 23,000 faculty, chairs, and administrators showed that teaching received too little emphasis in comparison to research (Gray, Froh, & Diamond, 1992). This project helmed by Syracuse University showed that this sentiment was commonly held across universities (Diamond & Adam, 2000) and led to major institutions such as Stanford University and the University of California System taking a close look at faculty rewards and what constituted scholarship.

Boyer's (1990) somewhat incendiary *Scholarship Reconsidered*, which used the phrase "scholarship of teaching," was released into this whirlpool of change. His thesis that scholarship needed a broader definition catalyzed extensive examination of the work done on teaching and learning and flexed the political muscle of organizations such as the Carnegie Foundation for the Advancement of Teaching. The results are staggering (O'Meara & Rice, 2005). For example, shortly after its publication 62 percent of chief academic officers in colleges reported that *Scholarship Reconsidered* had influenced decisions regarding faculty reward (Glassick, Huber, & Maeroft, 1997). National studies also illustrated that Boyer's report influenced the reform of the faculty reward system and especially the recognition of scholarship on teaching (e.g., Braxton, Luckey, & Holland, 2002). Most recently, the American Association for Higher Education (AAHE, now defunct), building on strong testimonies at its annual Forum on Faculty Roles and Rewards conferences, launched a two-year project that both surveyed chief academic officers nationwide and gathered best practices of encouraging the scholarship of teaching from entire institutions. The result, *Faculty Priorities Reconsidered: Rewarding Multiple Forms of Scholarship*, nicely illustrates how the scholarship of teaching and pedagogical research is fostered nationwide (O'Meara & Rice, 2005).

The call to give teaching a place in the broader vision of scholarship was enthusiastically acted on by many eager to increase a focus on teaching and learning and was soon supported by a rich body of publications. For example, Lee Shulman wrote a motivating piece in *Harvard Educational Review* (1987), Angelo and Cross (1993) jumpstarted classroom assessment with their classic compendium of Classroom Assessment Techniques (CATs), and more attention was paid to developing new ways of evaluating teaching, giving rise to the greater use of teaching portfolios (Seldin, 1997). Near the end of the decade, Bransford, Brown, and Cocking (1999) at the National Research Council released *How People Learn: Brain, Mind, Experience, and School*, a tour de force report on what was known about cognition and learning that provided additional dimensions for pedagogical research.

It has been nearly twenty years since *Scholarship Reconsidered* was published, and today SoTL is a well-known phrase used by multiple national and international organizations such as the International Alliance for Teaching Scholars (IATS) and the International Society for the Scholarship of Teaching and Learning (ISSOTL). Labels are empowering entities. Akin to the political force, visibility, and ownership that the politically correct terms such as Asian American and African American gave members of the related ethnic groups, SoTL has provided faculty interested in pedagogical research a rallying cry and a flag to follow. As the following chapters will show, with the publicizing of the phrase SoTL in response to Boyer and subsequent work of his Carnegie colleagues (e.g., Shulman and Hutchins) among others, this type of research has been recognized only recently in most disciplines as a legitimate area of scholarship, worthy of recognition equal to that of more traditional lines of research and inquiry. However as Kuh (2004) notes, this "new" line of research, is really a new spin on what researchers in certain fields of study have focused on for decades. So what has been going on in other fields? It is time for a short excursion into the history of pedagogical research.

The Other SoTL: Action Research and Teacher Research

As previously stated, educators have been examining their own teaching long before the advent of the phrase SoTL. Two major movements, *action research* (as it is more commonly referred to in North America) and *teacher*

research (as a similar movement is more often referred to in the United Kingdom), also involve the systematic examination of teaching and learning. These investigations primarily conducted in K-12 settings are consequently off the radar of most higher-education faculty but provide many useful parallels and procedures.

Action research. Action research is any systematic inquiry conducted to gather information about how schools operate, how they teach, and how well their students learn (Mills, 2007). The origins of action research are obscure, but Kurt Lewin in the mid-1940s constructed a theory that described action research as "proceeding in a spiral of steps, each of which is composed of planning, action and the evaluation of the result of action" (Kemmis & McTaggert, 1990, p. 8). Lewin argued that in order to "understand and change certain social practices, social scientists have to include practitioners from the real social world in all phases of inquiry" (McKernan 1991, p. 10). This construction of action research theory by Lewin made action research a method of acceptable inquiry, and it grew in prominence worldwide. In the United States, action research had its roots in the progressive education movement and the work of John Dewey. In the United Kingdom action research fostered curricular reform and increased professionalism in teaching, and in Australia, action research brought about collaborative curriculum planning (Mills, 2007). Currently, action research is the preferred modus operandi for teacher-researchers.

The teacher-researcher movement. The simple combination of the words "teacher" and "researcher" serve as an upfront indicator of the twin thrust of this movement. While teachers educate as subjective insiders involved in classroom interaction, researchers traditionally design studies to answer questions of interest and are merely objective outside observers of classroom processes (MacClean & Mohr, 1999). But when teachers become teacher-researchers, the "traditional descriptions of both teachers and researchers change. Teacher-researchers raise questions about what they think and observe about their teaching and their students' learning. They collect student work in order to evaluate performance, but they also see student work as data to analyze in order to examine the teaching and learning that produced it" (Maclean & Mohr, 1999, p. x).

Originating in the United Kingdom with the work of Stenhouse (1975) and the Humanities Curriculum Project, teacher-researchers are now found worldwide. Stenhouse felt that all teaching should be based upon research, and that research and curriculum development were the preserve

of teachers (McKernan, 1991). Other significant teacher-researcher developments include the Ford Teaching Project, the Classroom Action Research Network, and work supported by the National Writing Project.

How is action or teacher research different from SoTL? Apart from the superficial labeling difference where the former terms are more often used for K-12 and secondary-school-level research on teaching and learning whereas the latter is applied to higher education, SoTL tends to emphasize the use of disciplinary-specific methodologies. As we move into the next generation of SoTL research, these disciplinary differences are diminished. Faculty are more likely to want to use the best method to answer their pedagogical questions and not limit themselves to the methodologies of their home fields, which can prove limiting. In fact, the current literature documents traditional and traditionally problematic pedagogies. We hope this book will inspire the movement toward re-envisioning disciplinary-based pedagogies through the lens of how students actually learn and seeking evidence for that learning. We present a framework for the next stage of SoTL whereby scholars connect their own work on teaching and learning to the work already out there on traditional pedagogies and learning in their disciplines.

Beginnings

Although the term SoTL is a somewhat relative newcomer to the scene, people have been thinking about how to improve teaching and learning for centuries. In a recent history of the field of educational psychology, Berliner traces the modern trend of thinking about individual differences, development, the nature of the material being taught, problem solving, and assessment to the ancient Jewish rite of the Passover (2006, p. 4). The leader of the Passover service told the story of the Passover each year but differently to each of his sons according to the sons' own specific aptitudes. Plato and Aristotle discussed such topics as the role of the teacher, the relations between teacher and student, and the means and methods of teaching (Watson, 1961). Berliner (2006) similarly describes how writers down the centuries from the Roman Quintilian (first century), Juan Luis Vives (fifteenth century), Comenius (sixteenth century), Herbart (eighteenth century), to the philosopher Joseph Scwhab (1973) have given serious thought to, and written about, education. Education psychologists also have identified a "father of research on teaching," Joseph Mayer Rice

(1912), who conducted empirical classroom-based research, and a "grand-father," William James (1842–1910), mentioned previously, who was asked to present Cambridge educators with lectures on the new psychology (James, 1899/2006). Other psychologists have tackled education. G. Stanley Hall, the first president of the American Psychological Association, was professor of psychology *and* pedagogy at Johns Hopkins University. John Dewey, like Hall, was a former classroom teacher who respected the complexity of teaching and also contributed greatly to the methodological study of education (Dewey, 1910).

Researchers in the area of student development take a completely different tack. focusing primarily on the psychosocial development of the student and how the level of development influences student learning. To measure student development, a number of inventories were developed to assess how students change and develop during their college years, including the Iowa Student Development Inventory (Hood, 1986) and the Student Developmental Task Inventory (Prince, Miller, & Winston, 1974). However, this field includes a wide range of areas of study, and some of particular interest to us, including an examination of the knowledge and cognitive skills that students are expected to acquire during the college years. In this area of the field of student development we measure the development of cognitive skills such as higher-order thinking and reasoning abilities. Research by Perry (1970), Gilligan (1982), and Wood (1983) led to the development of assessment tools to measure higher-order thinking. Interestingly, results from this line of research illustrated the limited cognitive skills of most entering first-year college students. This in turn led to discussions of how to teach these students given their level of cognitive development when entering college. Therefore, the question of pedagogical choices and their impact on student learning is not a new field of inquiry. However, in past decades the majority of those involved in this area of scholarship were in the field of higher education and/or psychology. In particular, students at the undergraduate level who are "majoring" in the field of education learn how one chooses effective teaching strategies, focusing on the questions of interest to scholars in the area of SoTL. Interestingly, this is rarely a component for students at the graduate level who are obtaining a doctoral degree, many of whom will be teaching at colleges and universities across the globe.

Fortunately, in more recent years, this line of research is one of interest to academics across all fields who are interested in determining just how effective they are at teaching.

The foremost champion of SoTL is undoubtedly the Carnegie Foundation for the Advancement of Teaching, which, since 1905, has carried out a wide range of activities and research that has helped to support and advance the work of teachers at all levels. In 1998, the Carnegie Academy for the Scholarship of Teaching (CASTL) was established when Lee Shulman became president of the Carnegie Foundation. CASTL was formed to provide faculty with ways to optimize postsecondary teaching and learning. The program has three parts. CASTL funds faculty as "Carnegie Scholars" and has them conduct research on specific pedagogical topics, offers campus programs for colleges and universities to foster SoTL, and provides initiatives with disciplinary groups aimed at fostering SoTL within their disciplines. The first program has involved over 150 faculty as fellows at the CASTL advanced study center in Palo Alto, California, and the other two initiatives have initiated a number of publications and conferences (see Huber and Hutchings, 2005, for a detailed report). A great deal of the advancement of the field of SoTL can be credited to the many individuals involved with CASTL. This foundation started the support, and continues to do so, necessary for this line of line of research to become a viable component of the academic culture on campuses both nationally and internationally. Through the efforts of those involved with CASTL, teaching is no longer a private endeavor but instead a topic of discussion that involves critical analysis of how we foster learning in the classroom.

Why is this is an important questions for all instructors to ask? As Shulman states, "an educator can teach with integrity only if an effort is made to examine the impact of his or her work on the students" (2002, p. vii), an obligation that he refers to as the pedagogical imperative. Like many others who are active in the field of SoTL, Shulman points out that assessment of our pedagogical choices should be an inherent component of our teaching.

There are other champions of pedagogical research. The Lilly Foundation has long been a supporter of teaching enhancement and has been funding faculty scholars nationwide since the 1970s. It also supports an international conference, as well as four national conferences around America. Although now defunct, the AAHE (American Association of Higher Education) also sponsored many initiatives over the years to advance teaching and its scholarship, as has the Pew Foundation.

Still others have greatly contributed to pedagogical research, but are not linked to foundations such as the Carnegie and Lilly Foundations. Maryellen Weimer for example, one-time associate director of the National Center

on Postsecondary Teaching, Learning, and Assessment and editor of the *Teaching Professor* newsletter on college teaching, has greatly helped guide and foster pedagogical research (see Menges, Weimer & associates, 1996; Weimer, 2006). Going beyond the previously discussed traditional sources, it is important to also include a look at how SoTL is conducted and defined outside America. For example Hounsell and Entwistle spearhead the British Enhancing Teaching and Learning (ETL) Project, which seeks to develop subject-specific conceptual frameworks to guide institutional and faculty or departmental development of teaching-learning environments. This group has developed a number of useful tools for pedagogical research and has also mapped out key variables that influence learning. We shall discuss work from the ETL Project in greater detail in later chapters.

Why Is Pedagogical Research Important?

Every discipline survives by training new minds to carry on the work. Although only a small number of majors may go on to graduate work, research, and teaching in the same area as their undergraduate degrees, it is upon their shoulders that academic traditions rest. Every discipline gathers and creates knowledge in different ways. The art historian combs through ancient manuscripts in foreign tongues. The chemist titrates liquids and analyzes mass spectrometry. For the philosopher, logic reigns supreme, whereas for the biologist empirical data may be the Holy Grail. That said, research is only one part of what we do as educators in academic settings. We all teach. We all step into classrooms (or virtual realities if teaching online) to help our students learn.

Those who teach far outnumber those who do basic or applied research. For example whereas only about 3,000 Ph.D.s in psychology are granted in a given year, one and a half million students take introductory psychology every year. Those who teach therefore carry a great responsibility. It is upon them that we rely to convey the basics about our various disciplines. Through general education and via requirements for the majors and minors, teachers nationwide help students learn about the different areas that make up the academy. But it is not only on the doctorate holders that we rely on to educate. Men and women with many levels of education – those in K-12 education, secondary schools, community colleges and four-year colleges and universities – all work to teach students and help them learn. This shared common goal, to educate our students no matter what

the discipline or topic, is what unites all educators. Yes, there are those who *want* to teach and others who just *have* to teach, but at some level all teachers want their students to learn. You can vary in what evidence you will accept to say that learning has taken place. You can vary in how much you care about whether learning has taken place. You can vary in the extent to which you assume learning has taken place. But at the heart of it all is still the goal to have students learn. How do we know if the students are learning? Beyond the simple rubric of exam grades and appreciative nods of understanding lies the challenge we all face as teachers: the challenge to establish that our teaching is working and our students are learning.

A Teaching Hierarchy

Is pedagogical research for everyone? If you want to optimize your teaching and your students' learning you will want to do pedagogical research at some level. Doing this research (and calling it "research") does not have to entail the use of complex statistical models (chapter 4 will give you an introduction to the varieties of statistics that can be used) or hours of interviewing or content analysis of student writing. You could do all that, but the method you use will depend on your question (chapter 2 will discuss how to make that important connection). It is more important to decide where you want to be on the teaching hierarchy (see figure 1.1).

We have little doubt that if you're reading this book, you reside higher up on our pyramid. However, there are many instructors who are essentially just *going through the motions* of teaching. They pick a textbook for their classes with little thought of the quality of the textbook but perhaps go on what they have heard many others use or the urging of a particularly persuasive textbook representative. Their syllabi contain only the most basic information and they do not really pay too much attention to what a good syllabus should contain and less attention to what students need to get from a syllabus. They go to all their classes and make their way through the material often using lecture materials they have written a long time before and reused, and material written more with an eye towards what they find interesting and capable of teaching than what the course and students really require. They mostly lecture, include little if any active learning strategies, and make no effort to improve their teaching. They are often sticklers for rules, not willing to take the time to listen to students
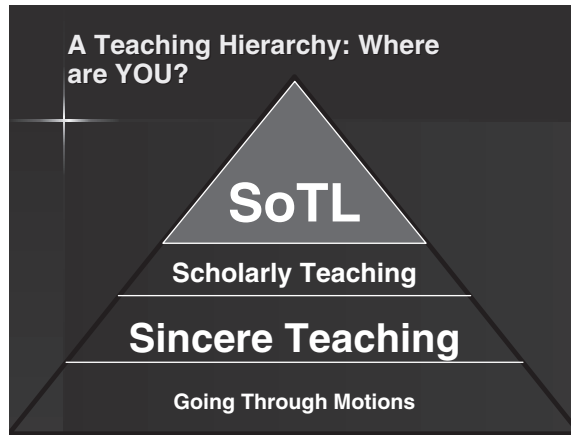
Figure 1.1: ··

who may have valid reasons not to stick to their mostly ambiguous but still rigid syllabi, and once a lecture, class period, or the semester is over, they do not think much of the class and may not even read their course evaluations (if they even use them). This scenario may seem somewhat extreme but we have both heard of and even talked to some instructors who are truly just going through the motions.

A nice notch up are instructors who are involved in s*incere teaching.* These instructors care about students and are sincere about doing a good job at teaching. They spend time looking at all the textbooks available for their classes and then take the time to read through textbook options before deciding on one. They make sure they check their university requirements to ensure their syllabi include everything they should. They check the syllabi of colleagues and spend time revising their syllabi with an eye towards the students who read and rely on such documents. They also spend time on their lectures. They may change lectures often to make sure they are including the most up-to-date material. They take pains to search for visuals and examples to bring the lectures to life and they also try and ensure that their students have an opportunity to participate in class, allocating time to discussion of the material. They may also willingly incur the load of grading by assigning papers and using short-answer or essay-exam questions in lieu of the easier-to-process multiple-choice exam. These instructors reflect on their performances and adapt and change in response to bad days or lectures that do not go well. Instead of plodding on ahead

with their set plans for the class, they take the time to modify delivery or format to better serve their students. Not only do they pay close attention to their student evaluations, they may even have students evaluate them at many times during the semester to make sure they are doing a good job. They keep good tabs on the grade distributions and take pains to examine the causes of anomalous student performance. We believe that a significant portion of educators are teaching as described here. As you can see, this location on the hierarchy sounds pretty good and is clearly a far cry from the person going through the motions.

But there is more. Some instructors go beyond their gut reactions and the counsel of friends and colleagues in course design, the syllabi, what they do in class, how they prepare lectures, and how they evaluate learning by actually conducting formal or informal studies of their teaching. These instructors often rely on the published literature on teaching and learning to modify their own teaching and almost always use some basic rudiment of the scientific method. Essentially, they start by identifying a problem, then review the literature to see if and how the problem has been dealt with, then modify what they do, and then measure student outcomes to see if the changes they have made have resulted in changes in student learning. This basic process, which we shall elaborate on in the next two chapters, is the core of the scientific method and is one that provides rigor. Instructors who are not only teaching (such as those in level two) but who are methodologically working to improve teaching and learning are *scholarly teachers*. Well described by Richlin (2001, 2006), this type of teacher may create a course design portfolio to document their systematically collected observations for further reflection and course modification. This allows for the identification of problem areas, and, unlike the teacher who may also informally analyze student problem areas, the scholarly teacher takes pains to venture into the pedagogical publications in search of solutions. This use of an organized methodology is primarily done for the teachers' own benefit, to make their next class better. The results of their reflections and course modifications may be written up in a teaching portfolio (Seldin, 2004) and may be used to review the instructor for merit or promotion, but is not sent out for publication or even shared with peers.

Conducting formal investigations of teaching and learning (regardless of method), placing the results in the context of relevant published pedagogical literature, and then submitting it for peer review and subsequent publication makes the scholarly teacher into one involved in the Scholar-

ship of Teaching and Learning (SoTL). Currently, it is the actual dissemination of one's own investigations using a peer-reviewed procedure (as compared to posting your own work on your own website and emailing it to a listserve or colleagues) that entitles one to the SoTL stamp. Does one need to climb to this level of the hierarchy? Given that the only real distinction between scholarly teaching and SoTL is peer-reviewed publication, students will probably be as well served by scholarly teachers and teachers as by practitioners of SoTL. That said, the exposure to best practices, innovation, and pedagogical literature that being in the top two levels affords will undoubtedly make one a better teacher and hence serve students better. Furthermore, it is likely that exposing one's work to the scrutiny of peer review of SoTL will ensure that flaws are minimized, loopholes are identified, and methodologies are watertight.

The disciplines of conducting SoTL and being a scholarly teacher have many benefits, and both fall squarely into our conceptualization of pedagogical research. We believe it is important to use the best methods possible to examine your own teaching and to optimize your students' learning. If you are not familiar with the methods you need to test your specific questions or are unsure of what sort of observations or evidence of learning you need to collect, the key is find the resources to fill the gaps. That is where this book comes in. If you are in the second level, a passionate, caring teacher who wants to conduct pedagogical research, regardless of whether you want only to optimize your class and students (and be a scholarly teacher) or to publish your findings to add to the knowledge base of the discipline and field (and conduct SoTL), the ensuing chapters have all you need to get started. Scholarly teachers can take pains to read the pedagogical literature and change the way they teach based on what they find, but if they do not do any systematic assessment of whether the changes they implemented made a difference, then they are not really doing pedagogical research. Even if the scholarly teacher does decide to do pedagogical research, unless they disseminate their findings to a wider audience (preferably via a peer-reviewed publication), few would consider their own classroom innovations and assessments SoTL. In this book, we will refer to any peer-reviewed pedagogical publications or work aimed for wide dissemination as SoTL. Personal investigations of one's own teaching or one's students' learning (even formal examinations and assessments) will be referred to by the more general term "pedagogical research," as it need not be published or planned for publication (though one hopes the work is robust enough to be publishable).

A Caveat

We would be remiss if we urged SoTL without a word of warning. We must acknowledge the existence of resistance towards SoTL at different levels in different institutions (whether the faculty, the administration, or the Board of Regents). There are schools where doing pedagogical research is seen as a distraction from the "main area of research." There are schools where tenure decisions are not aided by SoTL. In the last chapter we will discuss some of the possible reasons why SoTL has generated resistance and discuss institutional contexts that have embraced SoTL, including works by Cox (2001, 2004) in which transformation of higher-education institutions into learning communities is discussed.

The academic community is changed when SoTL becomes a valued priority, both at the undergraduate level, where faculty use SoTL in the classroom, and at the doctoral level, where programs are shaping the next generation of faculty. We believe that pedagogical research in general and SoTL in particular can lead to new models of teaching and learning and in turn can create an environment in which discussion of teaching and learning is the norm and these exchanges can further improve the academy.

What do you want your students to learn before leaving your class? This is perhaps one of the most prudent questions that teachers should ask. There are clearly others (e.g., How can you get students to pay attention? How can you get students to read the book?). All of these questions can be asked and then addressed using pedagogical research.

How Can Pedagogical Research Be Useful to You?

After the preceding caveat some good news is in order. There is a veritable bounty of benefits to doing pedagogical research.

Effective teaching. By its very nature, SoTL directly influences how effective your teaching is in terms of student learning. Engaging in pedagogical research will help you become a more effective teacher, as you become increasingly aware of your classroom practices and make strides toward systemic change. You will learn to be mindful of your teaching practices and gear everything you do to clearly assessable outcomes. Another big benefit to thinking about how you teach and diving into the literature on teaching is that it will serve to energize you for the classroom. A number

of our mid-career colleagues have reported that engaging in pedagogical research has given them a fresh look at the classroom and injected their teaching with new life and energy. You may be surprised by what even reading the literature on teaching and learning can do for your own attitude towards teaching and your course design.

Research opportunities. Being energized to teach from reading the literature can also make you really want to do pedagogical research of your own and on your own classes. Pedagogical research is real, quantifiable, and rigorous research. More and more departments are counting SoTL publications toward decisions about tenure and promotion, though this is not yet universal (McKinney, 2007).

Tenure and promotion. Teaching effectively is one thing, but proving your effectiveness is quite another. Pedagogical research makes it easy to demonstrate your practices in the classroom and highlights your active interest in improving your teaching. Outcomes from pedagogical research make natural components of teaching portfolios, which are often used in tenure and promotion decisions. What are the methods of your discipline? What are the shortcomings? What are the advantages? The portfolio and your mindful consideration of teaching in your discipline can provide all the answers.

Beyond these major benefits, engaging in pedagogical research can be very satisfying. It allows you to solve the mysteries that may plague your non-conscious mind, those little things you wonder about after you leave a class (more so after a really difficult class – why did it go that badly? – but also after a particularly exceptional one – why did that go so well?). Most of us wonder about our techniques, our course designs, and how our students perform and behave, but not all of us take the time to investigate the issues in depth. Pedagogical research provides us with an understanding of a myriad of issues and helps us gain perspective on the complex interplay of factors that is education. If you take your explorations into the realm of SoTL (beyond scholarly teaching) you also stand to inform your colleagues in academe, the administration, and the tax-paying public.

Whether you are someone who has been teaching for 30 or more years or are someone who has still to step in front of a classroom of students, we hope the topics discussed in this book will give you a lot to think about and at least something to work on. You will probably run into some things you are familiar with, but we trust you will also encounter many things that will be somewhat new.