

The scholarship of teaching and web-based representations of teaching in the United States: definitions, histories, and new directions

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The relationship between the scholarship of teaching and practitioner inquiry is characterized both by questions of definition (what ‘counts’ as scholarship and who can produce it) and execution (how to facilitate the representation, interpretation and analysis of teaching). This article addresses both issues by beginning with an overview of the somewhat ambiguous origins and evolution of the scholarship of teaching in the United States and then describing a series of web-based representations of practice that have emerged out of one approach to the scholarship of teaching. Although many of these web-based representations may not ‘count’ as either the scholarship of teaching or practitioner inquiry, they may offer new means and mechanisms for representing teaching in ways that can allow anyone to learn from it and build upon it

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Questions of history, origins, and definition

Strictly speaking, whether or not something like the scholarship of teaching qualifies as practitioner inquiry should be fairly obvious. Using conventional dictionary definitions of the terms ‘practice’ and ‘inquiry’, practitioner inquiry involves a person who is engaged in some form of practice (often related to a particular occupation or profession) and it entails some form of examination of facts or principles.¹

Nonetheless, when looking at specific examples, things can get more complicated. In this case, a consideration of the scholarship of teaching as a form of practitioner inquiry raises a number of questions about what criteria inquiries have to meet in order to be considered scholarship and whether these scholarly inquiries have to be conducted by teachers in the course of teaching in order to ‘count’ as the scholarship of teaching.

If one defines the scholarship of teaching as scholarship *about* teaching, then the term would cover all kinds of scholarship that take teaching as a focus. That would include work carried out by teachers inquiring into their own practice, but it would also encompass research carried out by scholars from any discipline who focused on issues of teaching (perhaps even including historical, aesthetic and critical portrayals

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of teaching that might meet the criteria for scholarship in the Humanities but not in many scientific disciplines). In contrast, however, if one defines the scholarship of teaching as inquiries undertaken by teachers who are examining their own practice, then much of the research and scholarship on teaching would not ‘count.’ Put another way, one can see the scholarship of teaching as a particular subset of practitioner inquiries (others of which might not be classified as ‘scholarship’) or as an overarching set of studies of teaching of which practitioner inquiries serve as one example.

Given these ambiguities, this article begins by describing two different ways of looking at the definition, origin, and evolution of the scholarship of teaching over the past 15 years in the United States. One version presents the scholarship of teaching as a relatively new form of scholarship in higher education that encompasses a wide range of studies of teaching of which practitioner inquiries are one example. But another version sees the scholarship of teaching as a part of, and a subset of, a long tradition of practitioner inquiry, encompassing work carried out in relatively similar ways by teacher-scholars in both K–12 and higher education. Rather than resolving what should ‘count’ as the scholarship of teaching, however, in the first part of the article I seek to explore the implications of viewing the scholarship of teaching in these varied ways. In particular, I suggest that underlying these different views are different theories of action about how to improve teaching and learning that reflect the different character of teaching in K–12 and higher education contexts.

In the second part of the article, I shift from looking at the origins and evolution of the term to looking towards the future, suggesting that, despite these differences in definition and theory, in practice, all versions of the scholarship of teaching will have to grapple with two fundamental questions about how to represent and learn from teaching:

- How can teaching be represented in ways that reflect the practitioner’s perspective and respect the complexity of teaching?
- How can audiences, particularly novice teachers and others who have limited experience in teaching, learn from complex and sophisticated representations?

To explore these questions, I describe one series of efforts to develop web-based representations of teaching that grew out of work on the scholarship of teaching begun at the Carnegie Foundation for the Advancement of Teaching. Although, in some ways, that work may not ‘count’ as either the scholarship of teaching or practitioner inquiry, these kinds of web-based representations of teaching may serve as a foundation for both in the future.

Part 1: the short and long history of the scholarship of teaching

Looking at the history and origins of the term provides one way to get a handle on this issue of what ‘counts’ as the scholarship of teaching. Rather than settling the matter, however, what one takes as a legitimate part of the history – and how far back one views its origins – only reinforces different points of view.

A ‘short’ version of the scholarship of teaching

While the use of the term ‘scholarship of teaching’ now extends around the world and connects to a variety of issues including those related to faculty development in higher

education in countries like England and Australia, credit for the introduction of the term ‘scholarship of teaching’ often goes to Ernest Boyer, President of the Carnegie Foundation for the Advancement of Teaching at the time, and colleagues including Eugene Rice and Mary Huber (Bass 1999; Bender and Gray 1999; Huber and Hutchings 2005). The Carnegie Foundation for the Advancement of Teaching is one of the oldest operating foundations in the United States. As an operating foundation, the Carnegie Foundation devotes resources to activities related to their mission: ‘to do and perform all things necessary to encourage, uphold, and dignify the profession of the teacher and the cause of higher education.’ (In contrast to other charitable foundations, operating foundations in the United States are not required to give away a portion of their income to others). Boyer, a former University President, was particularly concerned with the quality of higher education institutions in the United States, and he and his colleagues wrote about the scholarship of teaching in *Scholarship Reconsidered* (Boyer 1990) as a means of redefining and expanding definitions of the work of faculty and of providing a better balance between research and teaching and other aspects of faculty life.

Adding to the complications around the current uses of the term, however, the subsequent President of the Carnegie Foundation, Lee Shulman, and colleagues like Pat Hutchings and Mary Huber have used ‘the scholarship of teaching’ in a somewhat different way from Boyer (Hatch 2006). For Boyer, the term the scholarship of teaching is more or less synonymous with what some have called ‘scholarly teaching.’ In other words, from Boyer’s perspective, teaching itself is a scholarly act that helps to communicate to students what the scholar has learned through what Boyer terms ‘the scholarship of discovery.’ As Boyer puts it, ‘inspired teaching keeps the flame of scholarship alive ...’ (1990, 24). Not surprisingly, this usage grows out of Boyer’s own history, where much of his career focused on higher education, and it reflects his concern with what he and others saw as an overemphasis in many universities and colleges on research and traditional scholarship, to the detriment of other functions of institutions of higher education.

The work of Shulman and colleagues at the Carnegie Foundation shifts the focus and boundaries of Boyer’s usage. Their work suggests that to engage in the scholarship of teaching, teaching well is not sufficient. Correspondingly, they blur the lines between the scholarship of discovery and the scholarship of teaching by suggesting that the scholarship of teaching, like other forms of scholarship, should render teaching public, amenable to critique and peer review, so that others can build upon it (Hutchings and Shulman 1999). Drawing on his work in K–12, higher education and professional education, for Shulman the scholarship of teaching should help to bring to teaching the same status and respect accorded to other professions; but it should also help to build a knowledge-base of teaching that can advance the entire field, not just recognize and reward good teaching.

Toward that end, in 1997 Lee Shulman and Pat Hutchings established the Carnegie Academy for the Scholarship of Teaching and Learning (CASTL) (which I also worked on as a member of the Carnegie Foundation staff). CASTL was designed to promote the scholarship of teaching through:

- the establishment of the CASTL scholars program that gave a small number of faculty in higher education a fellowship to pursue the scholarship of teaching;
- the launching of the CASTL Campus Program (in conjunction with the Association for the Advancement of Higher Education), which sought to develop a

network of campuses that were committed to supporting the scholarship of teaching; and

- partnerships with scholarly societies such as the American Historical Association and the Mathematical Association of America.

From 1998 to 2005, CASTL supported five cohorts of individual scholars (a total of 140). Since 1998 more than 200 institutions have participated in the Campus Program or the partnerships, and work on the scholarship of teaching continues on a variety of institutions participating in the Campus Affiliates Program.

Taking Boyer's usage and the subsequent emphasis on the term by Shulman and colleagues at the Carnegie Foundation as the origin of one trajectory for this history of the scholarship of teaching suggests that there has been a fairly remarkable explosion of the scholarship of teaching over the past 18 years both nationally and internationally. Thus, work on the scholarship of teaching in higher education in the United States has coalesced with related efforts in a number of other countries – including England, which has developed its own network of teaching fellows and Centres for Excellence in Teaching and Learning. These connections, in turn, have contributed to the establishment of the International Society for the Scholarship of Teaching and Learning in 2004, a related annual conference that has been held in the United States, Canada, and Australia, and the creation of a journal the *International Journal for the Scholarship of Teaching and Learning*.

Further evidence for the emergence of the scholarship of teaching as a distinct form of inquiry comes from significant growth in the number of related publications. A search in ERIC for works containing the phrase 'scholarship of teaching' turned up 163 publications of all types. Of those, only 23 appeared before the year 2000, while 143 have been produced in the past eight years. Furthermore, in a sign that the scholarship of teaching may be creeping into the mainstream, it has even made it to Wikipedia. There, one can find reference to the scholarship of teaching and learning (now commonly referred to as 'SoTL') that seems to straddle both the Boyer and Shulman renditions. Thus SoTL is referred to as '... a growing movement in post-secondary education. SoTL is scholarly inquiry into student learning which advances the practice of teaching by sharing this research publicly' (Wikipedia 2008). In this formulation, the scholarship of teaching seems to be both broad in the sense that it may apply to any 'scholarly' inquiry into student learning that advances teaching, but is also narrower as the term seems to have been captured by those involved in post-secondary education.

A longer view of the history of the scholarship of teaching

When taking a longer view, a different sense of the history of the scholarship of teaching and its focus and scope emerges. Thus, one could argue that, rather than constituting some new and distinct form of research that focuses on teaching, the scholarship of teaching is really consistent with, perhaps even synonymous with, many other forms of practitioner inquiry, particularly teacher research. In fact, this is the way the Carnegie Foundation approached the scholarship of teaching when launching the Carnegie Academy for the Scholarship of Teaching and Learning for K-12 Teachers and Teacher Educators (for which Ann Lieberman and I served as Co-Directors). From this perspective, the scholarship of teaching extends long before Boyer used the term and it builds on the work and traditions of many teacher-scholars

who have been studying teaching for some time. This view blurs the boundaries between the scholarship of teaching and other forms of practitioner inquiry, suggesting that the scholarship of teaching might be a useful umbrella term for many of these different forms.

While embedding the scholarship of teaching in the longer history of practitioner inquiry links it to the many forms that teacher research has taken around the world, the work of the CASTL K–12 Program (which included three cohorts of a total of 42 scholars) focused particularly on K–12 teachers in the United States and in building connections with other national organizations that were engaged in practitioner inquiry. Thus, CASTL drew in teachers from groups like the National Writing Project precisely to suggest that the scholarship of teaching was not a new practice that was somehow distinct from or an improvement upon other forms of teacher research. In fact, several of the other authors in the present issue of *Educational Action Research* served as nominators for CASTL scholars; and the work of the CASTL scholars reflected their involvement with several of the groups reflected in this issue including the Philadelphia Writing Project, action research groups in Wisconsin, and participatory action research groups in California.² In addition, we purposely produced a reader of the scholarship of teaching that included both the original works of the CASTL K–12 scholars as well as reprints of articles or chapters produced before CASTL was established (Hatch et al. 2005). From this perspective, then, the evolution of the scholarship of teaching among K–12 teachers is synonymous with the development of the many different forms of practitioner inquiry pursued around the world for many years, including those represented in this volume.

The scholarship of teaching today: correspondence and conflict

This brief excursion into the short or long history of the scholarship of teaching suggests that related work is going on in both K–12 and higher education in the United States that might ‘count’ as the scholarship of teaching, but that the terms, definitions, and aims of that work remain somewhat ambiguous (Kreber 2001, 2002). In response, future work might seek to address this ambiguity and attempt to define the scholarship of teaching more specifically. In fact, in higher education, where that term has taken on a life of its own, a number of scholars continue to pursue questions of definition – and the relationship between the scholarship of teaching and scholarly teaching – and have begun to take aim at what they see as the ‘serious undertheorizing’ of the term (Huber and Hutchings 2005). At the same time, some authors advocate for a ‘big tent’ approach to the topic that largely leaves aside questions of definition to encourage scholars from many levels and traditions to share their insights about teaching and learning and build on one another’s work. Following in that model, one can imagine the scholarship of teaching and learning as both a specific movement in higher education and a general description of a broad range of practitioner inquiries into teaching and learning at all levels of education.

From that dual perspective, many initiatives to examine and improve teaching and learning in both K–12 and higher education appear to be complementary. Broadly, these efforts include inquiries in which groups or individuals reflect on their practice for their own personal or professional development as well as those carried out for the purposes of curriculum development, evaluation or school improvement. Thus, in K–12 in the United States, one could argue that the scholarship of teaching encompasses the work of K–12 faculty who are producing portfolios of their teaching as part

of their involvement in teacher education programs or the National Board for Professional Teaching Standards (2007); examining videos of their classroom practice or studying examples of student work (Sherin 2004; Seidel 1998); or conducting individual or collaborative inquiries as part of school improvement efforts or teacher inquiry groups (Cochran-Smith and Lytle 1993). Similarly, in higher education one can see the scholarship of teaching in the work of faculty involved in conducting classroom research (Cross and Steadman 1996); those developing teaching portfolios or leading 'pedagogical colloquia' as part of hiring and evaluation processes (Shulman 1995); those reflecting on their practice as part of faculty development initiatives (often supported by the work of the Centers for Teaching and Learning that have emerged on many US campuses); as well as those experimenting with new ways to document and demonstrate what their students are learning.

Part of the power of such a 'big tent' approach comes from the fact that many of these different efforts reinforce the ideas that teaching – at every level – is demanding, complex, intellectual work, and that teachers are professionals whose work is worthy of recognition and reward. Despite this shared struggle against many prevailing assumptions about the simplistic nature of teaching, efforts to support the scholarship of teaching and practitioner inquiry in K–12 and higher education, however, also reflect fundamentally different contexts and concerns that need to be taken into account. For example, the use of the term 'faculty' in higher education suggests that 'teacher' fails to capture the wide variety of roles that 'faculty' play; as a consequence, for some in higher education, the label 'teachers' seems not only inappropriate but demeaning. Correspondingly, while teachers in elementary and secondary schools have to deal with the expectation that their primary role is to teach not to do research, faculty in higher education are faced with the opposite expectation: that scholars teach as a sidelight to their primary work as researchers (for further discussion of divergent assumptions about scholars and teaching, see Hatch 2006).

Differences can also be seen in some of the major concerns expressed and reforms debated in discussions of K–12 and higher education. Where tests and assessments and teacher preparation dominate many reform discussions in elementary and secondary education, hiring and promotion and the creation of new incentives for faculty to devote time and attention to teaching and to create a better balance between teaching and research pervade discussions of teaching on college and university campuses. Of course, part of the resistance from faculty in higher education to new calls for accountability and demonstrations of the 'value added' of a college education stems from what they perceive as the potential loss of autonomy and professionalism so often associated with K–12 teaching. (It is also worth noting that these same tensions are evident in the relationships between full-time faculty and adjuncts, lecturers and others hired primarily for teaching and between research universities and other higher education institutions, such as community colleges, where teaching may already occupy a more central place in the institutional mission.)

Most importantly, conventional educational practices reflect very different assumptions about the extent to which teachers in elementary and secondary schools and teachers in higher education have the kind of specialized expertise that might be worth articulating and exchanging with their colleagues or developing into the scholarship of teaching. For example, for the most part, in higher education, faculty who have the qualifications to carry out research in their discipline are treated as if they also have sufficient tacit knowledge and intuitive understandings to teach effectively. Thus, despite some recent changes in the education of graduate students, for the most

part colleges and universities expect professors to become teachers with relatively little explicit training and without needing the guidance of existing research on pedagogy or student learning. Higher education institutions treat these individuals as qualified to teach because they possess specialized knowledge that even well-educated members of the general public are not expected to have, and, correspondingly, assume that only their peers are capable of passing judgment on their qualifications.

In contrast, elementary and secondary teachers work in a system that treats teachers as if they have neither sufficient tacit knowledge nor intuitive understandings to teach effectively. Thus, teachers in elementary and secondary education have to master the bodies of knowledge their students need to know, learn how to implement teaching strategies that researchers believe are effective, and deliver curriculum that districts and states have recommended or mandated. Correspondingly, many K–12 institutions and policies act as if most teachers do not need to be involved in developing new knowledge that might be of use to their colleagues or to their field as a whole.

These differences in the way conventional educational systems treat faculty in higher education and in elementary and secondary education could contribute to the development of approaches to the scholarship of teaching that, in some ways, may be in conflict. For example, one could attack the prevailing assumptions in higher education by arguing that effective teaching depends on the abilities to understand and apply the ideas and methods of traditional disciplines, but that teaching and the scholarship of teaching within the disciplines requires a different set of abilities and understandings than those required to do conventional research. From this perspective, the specialized knowledge of teaching and the scholarship of teaching rests in the disciplines. However, supporting the documentation, review and exchange of the expertise of higher education faculty on that basis may do little to support those who teach children and younger students or even those who teach general education, basic skills or remedial courses in high schools and colleges. Conversely, the argument that those who teach in elementary and secondary education and those who teach more general courses have some other kind of specialized knowledge calls into question the assumption that the specialized knowledge of the disciplines somehow qualifies scholars in higher education to teach.

Ultimately, if people do not believe that by making teaching public, subjecting it to critical review, and exchanging it with others, teachers – whatever the level and whatever the subject – can develop specialized skills, habits, and understandings that go beyond those possessed by the average person or even by those who conduct traditional disciplinary research, then there will be little need for the scholarship of teaching. The irony is that in order to support and appreciate the need for practitioner inquiry and the scholarship of teaching, people have to be able to see into the classroom and get a better understanding of what teaching entails; but unless the educational system provides support for practitioner inquiry and the scholarship of teaching, people may never be able to get anything more than a superficial glimpse of what goes on in the classroom.

Part II: the development of web-based representations of teaching

One approach to the dilemma of building support for practitioner inquiry and the scholarship of teaching grows directly out of the work with CASTL scholars established at the Carnegie Foundation for the Advancement of Teaching. As part of the CASTL initiative, the Carnegie Foundation established the Knowledge Media Lab in

1998, with a mission to help both the K–12 and higher education CASTL scholars use multimedia and new technologies to carry out their inquiries and present the results to others.

These efforts began with the premise that traditional texts and research genres fail to provide adequate means for documenting and representing the important work that goes on inside and outside the classroom. In contrast, multimedia, web-based, representations can capture many different aspects of teaching practice at once and make it possible to examine those aspects from a number of different perspectives (Brophy 2004; Derry and The STEP Team, forthcoming ; Le Fevre 2004; Spiro et al. 1988, 1992; Wetzel, Radke, and Stern 1994).

In the remainder of this article, I focus on describing the evolution of the Carnegie Knowledge Media Lab's work on developing new web-based means of documenting teaching. This work shifts the focus from an emphasis on who carries out inquiries and what might 'count' as the scholarship of teaching to an emphasis on the development of new means and mechanisms for representing teaching in ways that can allow anyone to learn from it and build upon it. In describing this work, I focus on two related challenges that are particularly germane to practitioner inquiry and the scholarship of teaching: the challenge of representing teaching in ways that respect the complexity of teaching yet make it accessible to a wide range of audiences, and the challenge of developing activities and pedagogies that enable those audiences, particularly novice teachers, to interpret and learn from those representations.

Developing representations that respect the complexity of teaching

The initial efforts of the Carnegie Knowledge Media Lab sought to address two aspects of the challenges of representing teaching using multimedia and new technologies. First, while new technologies offered the possibility for sharing vast amounts of material related to teaching in many different media, simply collecting that material and making it available for review presented viewers with the daunting (if not impossible task) of sorting through all the material in order to make sense of it (Lampert and Ball 1998). Second, there were no established web-based forms for sharing those materials that could make them easily comprehensible. In response to these problems, members of the Carnegie Knowledge Media Lab explored the development of a number of different formats for using multimedia and the web to represent aspects of teaching that are difficult to capture in traditional texts and print-based research reports.

Many of these early web-based representations took forms consistent with the nature of the scholars' inquiries or the needs and expectations they faced. In higher education, for example, the website of Dennis Jacobs, a Professor of Chemistry at the University of Notre Dame, drew on the traditional organization of scholarship in the sciences and shared his research on the use of cooperative learning methods in his introductory chemistry course by organizing materials into traditional sections for methods, findings, and discussion. (See Appendix 1 for links to these projects and all the websites mentioned in this article.) The website of Mills Kelly, an Assistant Professor of History at Texas Tech University, took the form of an electronic course portfolio that he could use as part of his file for promotion and tenure.

Among the K–12 teachers, the website of Heidi Lyne, a middle school teacher, offered viewers video and supporting materials from a documentary Lyne produced

on the development of standards at a new school in Boston, the Mission Hill School (an alternative public school started by Deborah Meier, founder of Central Park East Elementary School in New York City and a nationally known pioneer in the movement to create small schools in cities and states across the United States). Websites for several other K–12 teachers followed an ‘inquiry’ format that provided examples of or reflections on different stages of teachers’ inquiries as well as the products of those inquiries. For example, a website documenting the inquiries of Sarah Capitelli – a first/second-grade teacher in a bilingual school in Oakland, California – offered video from an inquiry she undertook with her students, examples of narratives she produced over the previous few years, and her reflections on the inquiry process and the development of her thinking about English language instruction.

In addition to these websites designed to share the results of the inquiries of the Carnegie scholars, the members of the Carnegie Knowledge Media Lab also began to explore the development of web-based formats and genres that focused directly on what these accomplished faculty members were doing in their classrooms. These classroom-focused rather than inquiry-focused representations included the development of a format dubbed a ‘class anatomy’ (Shulman 1998) that could be used to document teaching in a variety of different contexts. Class anatomies were designed specifically to try to respect the complexity of teaching while helping viewers to both get an overall sense of a teacher’s work in one classroom and provide manageable entry points for investigating their teaching in greater depth.

A website focusing on the work of Yvonne Hutchinson, a veteran teacher in inner-city Los Angeles and a CASTL scholar, during a single ninth-grade English class, provides a good example of the contents of a typical ‘class anatomy’:

- a brief description of the class (in which Hutchinson engaged her students in a discussion of the meaning and significance of passages from *A Call to Assembly*, an autobiography of the jazz musician Willie Ruff);
- an overview of Hutchinson’s approach and the context in which she was teaching;
- curriculum materials and the assignment Hutchinson used to scaffold the students’ reading and discussion;
- Hutchinson’s written and audio-taped reflections on the class;
- video clips that illustrate how the class unfolded;
- a video of the entire two-hour class session; and
- a focus group discussion in which several students reflect on the class.

Formats like the ‘class anatomy’ were designed to compress the large amounts of video, curriculum artifacts and other teaching materials needed to represent teaching without reducing them to a simplistic lesson plan or outline of the class. This process of compression is central to many scholarly disciplines, where methods and genres have evolved to enable scholars to turn large amounts of data and information into forms that others can understand and examine. At least in part, scholarly genres exist to facilitate the exchange of ideas and information within and across different disciplinary and research communities and contexts, and, in many ways, these formats for web-based representations of practice can serve the same purpose. (See *Making teaching public: A digital exhibition* by Hatch and Pointer-Mace (2007) for further discussion of the K–12 CASTL Program and the early development of these web-based representations.)

Creating arenas and activities for learning from web-based representations of teaching

Although much of the initial work from the Carnegie Knowledge Media Lab focused on the development of web-based formats that would provide a new outlet for faculty in both K–12 and higher education to ‘publish’ the results of their inquiries, questions about the use of those representations quickly arose. In particular, the fact that most viewers had relatively little experience with this medium and there were no established criteria for judging these representations meant that it was difficult for viewers to examine and evaluate these web-based representations and for their designers to get good feedback.

Adding to the complications, the interpretation of these representations made considerable demands on viewers. In particular, viewers needed prior knowledge in a number of areas in order to make sense of and critique the teaching represented:³

- knowledge of the specific contexts in which these teachers worked;
- experience with the subjects, topics and pedagogical approaches represented; and
- knowledge of how to ‘read’ or view these kinds of web-based representations of teachers’ practice (Derry and Hmelo-Silver 2002).

As a consequence, representations like these cannot simply stand on their own; they need to be viewed and interpreted in contexts and communities that help to provide some of the prior knowledge, experiences, and scaffolding that can open them up to interpretation, examination and application.

A group of teacher educators, including Pam Grossman, Anna Richert, and Kathy Schultz., confronted this challenge of interpretation when they sought to use several of these websites in their courses. These teacher educators felt that these web-based representations of teaching could provide their students with a ‘vision of the possible’ and with an unusual opportunity to engage in collective examinations of some rich and common examples of practice. However, given the fact that many of the students in their classes had spent little or no time teaching (much less working in the classrooms of teachers like the CASTL scholars), their students often had little relevant experience and prior knowledge in the needed areas. As a result, these teacher educators had to devote significant time and planning in order to select the ‘right’ sites and find and adapt their use of the materials on those sites to fit their goals and student needs.

In order to address some of these issues of interpretation and to explore further the possible uses of these kinds of web-based representations of practice in teacher education, the Carnegie Foundation launched the Quest project – in which a number of different teacher educators used one or more of these web-based representations of teaching in their own courses. The teacher educators documented their use of these representations in their own websites that brought together curriculum materials and videos from their classes, their reflections, and, in some cases, student work and reflections – see *Inside Teaching* (2008), an online exhibition that brings together many of these sites.

Anna Richert, for example, a teacher educator at Mills College in Oakland, California, documented how she used several of the Carnegie websites in an ‘Adolescent Development’ course for students studying to get a Master’s degree. As Richert explained it on her own website:

A dilemma I face in teaching Adolescent Development is how to make it clear to my students why learning about adolescent development is so critically important to secondary school teaching. Whereas it is obvious to most students that to teach adolescents well one has to know them well, it is less clear what 'knowing them' might mean and/or look like when it comes to teaching practice. (Richert 2006)

In order to address this dilemma, Richert then incorporated the websites into many aspects of her course, including a series of guided investigations in which the students explored what the accomplished teachers in several of the Carnegie websites knew about their learners, how they developed this knowledge, and how they applied this knowledge in their classrooms. In addition, Richert used the websites to highlight for her students how practicing teachers could integrate their own inquiries and reflections on their practice into their own teaching. To document this process, Richert created her own website, which includes her syllabus, relevant assignments, her reflections, and video-taped excerpts from her class.

Pam Grossman, at Stanford University, took a different approach. She focused a portion of her course 'Curriculum & Instruction in Secondary English' around one website – Yvonne Hutchinson's – and one major assignment. For Grossman, Hutchinson's website presented an opportunity to help students develop a deeper understanding of how to create the conditions to support engaged discussions of literary texts – the kinds of discussions her students rarely had a chance to observe in their field placements with practicing teachers. In order to help her students to develop their understanding of how Hutchinson supported group discussions, Grossman developed an assignment in which students collaboratively examined different aspects of Hutchinson's teaching, identified practices that they tried out in their own field placements, and then reflected on their experience both in written assignments and class discussions. To document what she learned through this experiment, Grossman's own website included her syllabus and assignment, descriptions of her approach, video-taped excerpts from the class, and student reflections.

The work of the Quest Project participants like Richert and Grossman demonstrated that it is possible to 'curricularize' these web-based representations of practice, but also revealed several key problems with their use in teacher education. For one thing, most of the early web-based representations focused on the work of highly accomplished, and often very experienced, teachers. This made it difficult for teacher educators to find examples that provided novice teachers with both a 'vision of the possible' and some insights into the steps that it might take to achieve that vision. In addition, not all of the web-based representations and other 'finished' products produced by the CASTL scholars were relevant for teacher education courses. Contributing to this problem, many of the websites that grew out of the CASTL scholars' own inquiries focused on what they were learning about the process of inquiry and about themselves as learners, not on issues of teaching and learning. Thus, while these teachers' websites were especially useful in foundations courses that focused on teacher inquiry, many critical issues of teaching and learning were left unaddressed, making them less useful in methods courses like Grossman's.

Building on these realizations, members of the Quest Project and colleagues at the National Center for Restructuring Education, Schools and Teaching (NCREST) began to create a second generation of web-based representations of practice. The NCREST websites were designed with a specific use – to enhance the learning of novice teachers – and specific contexts – the teacher education courses of the Quest participants – in mind. Among those websites, two were designed explicitly to complement the

Hutchinson website by focusing on high school English teachers in their second and third years of practice: those of Travis Bristol and Emily Venson. Because Bristol and Venson had been students in the ‘Curriculum & Instruction’ course that Grossman designed around Hutchinson’s website, documenting and representing their work also made it possible to explore what two novice teachers had learned from the use of a web-based representation of practice.

While Bristol and Venson’s websites document that these novice teachers drew on some of the ideas and strategies used by Hutchinson, Bristol and Venson themselves discussed the fact that they initially gravitated to those aspects of Hutchinson’s practice that seemed most immediately relevant for their student teaching; they did not notice or remember many other aspects of Hutchinson’s practice until they returned to her website as part of the process of documenting their own teaching. Furthermore, Bristol and Venson paid attention to different aspects of Hutchinson’s practice. Bristol focused particularly on how Hutchinson connected academic content with issues in students’ own lives, while Venson focused particularly on some of the specific strategies Hutchinson used to get students to analyze texts and share their perspectives in discussion. Only after two or three years of teaching did these teachers feel they were in a position to begin to pay attention to more than one or two aspects of Hutchinson’s practice (Hatch et al. 2008 ; Hatch and Grossman 2009).

Current and future directions for web-based representations of practice

Whatever the initial goals, over 40 of these web-based representations of practice have been produced through the Knowledge Media Lab, the Quest Project, and NCREST’s Images of Practice in both K–12 and teacher education. Some grow directly out of practitioner inquiries, while others have been developed largely by researchers drawing on the reflections of teachers. Some were designed as instruments and vehicles for scholarship; some with a general audience in mind; and some specifically for use by novice teachers in teacher education.

In some ways, the discussion of these web-based representations of teaching ranges far from questions about the nature of the scholarship of teaching and its relationship to teacher inquiry. Nonetheless, the efforts to create web-based representations of teaching raise central issues for practitioner inquiry of all kinds – including how practitioners can develop and share their perspectives and expertise, and how other practitioners and a wider audience can learn from their experience.

The inter-related nature of the challenges of representation and interpretation also reveal both some of the potential as well as some of the problems with web-based representations of teaching that need to be addressed in the future. On the one hand, part of the value of the web-based representations, like many examples of practitioner inquiry, lies in the fact that they are situated in real educational contexts in the work of specific teachers. On the other hand, the fact that the representations are so specific and ‘local’ can make it more difficult for viewers like teacher educators and novice teachers to connect those representations to their own experiences and to use those representations for their own purposes.

These experiences suggest that producing a few ‘model’ web-based representations of practice will not suffice. Instead, teachers, researchers and others could benefit from the development of a host of new representations that document teaching in different contexts and for different purposes. In turn, the development of these representations may help to establish some of the support and infrastructure needed to

pursue inquiries of all kinds into teaching and learning. In particular, the different forms and formats that these websites take – such as portfolios, inquiries, and class anatomies – provide ways of bringing together multimedia materials and representing teaching for many different purposes. For example, the class anatomy could provide an alternative to traditional lesson plans by bringing together in one place class outlines, assignments, content resources, student work, reflections, and video-taped examples that allow for rich representation of what goes on in a particular class or unit and what teachers are thinking in the process.

In addition to the development of new forms of representation, a number of different projects have been developed to create or take advantage of web-based representations of practice as a vehicle for further inquiries and examinations of teaching. In many cases, these efforts provide new supports for teacher-scholars to inquire into their own teaching or to engage in collaborative inquiries with colleagues. In higher education, for example, several of the CASTL scholars themselves have gone on to establish their own projects. Bill Cerbin, a Psychology Professor at the University of Wisconsin-Lacrosse, has gone on to establish a project modeled on Japanese Lesson Study, in which the faculty develop websites that document their teaching of a particular ‘lesson’ or class and their reflections on it. Dan Bernstein, a Professor of Psychology at the University of Nebraska-Lincoln, led a ‘peer-review project’ that engaged faculty from a number of institutions in preparing and reviewing electronic course portfolios. Randy Bass, a Professor of American Studies at Georgetown, launched the Visible Knowledge Project, designed to engage faculty across disciplines and institutions to produce electronic ‘posters’ that enable them to share data and collaborate in conducting research into their own practice. In addition, under the direction of Toru Iiyoshi, the Knowledge Media Lab of the Carnegie Foundation went on to develop a tool that faculty anywhere can use to develop websites that document their teaching and share them with others on their own campuses or in their own groups or with anyone who has an Internet connection.

The efforts to develop digital exhibitions also illustrate the kinds of new presentation and publication opportunities that could be created to take advantage of web-based representations. For example, a recent session at the American Educational Research Association focused on an examination of the websites of Hutchinson, Grossman, Bristol, and Venson. Instead of leading to the publication of traditional conference papers or journal articles, that session contributed to the development of ‘Learning from the Practice of Veteran and Novice Teachers’, a digital exhibition produced in conjunction with an issue of the *Journal of Teacher Education*. By allowing for the inclusion of classroom materials as well as other media, these kinds of digital exhibitions may provide a format more conducive for the representation and sharing of results of some kinds of practitioner inquiries that traditionally have difficulty finding a place at conventional research conferences and in traditional academic publications.

Ideally, the development of more web-based representations of practice and the creation of new means of presenting, ‘publishing,’ and sharing those representations will create new conversations that focus specifically on what goes on in classrooms today. Like the conversations that grow out of the exchange of scholarly papers, the joint examination of web-based representations of practice creates an opportunity for people from many different perspectives to develop the language and to define new terms that, in turn, can help deepen understanding of teaching and learning. For example, opportunities for faculty from different levels to share and examine common

pedagogical practices like Socratic seminars, inquiry projects, or group discussions may serve as a foundation for professional development, research, or both. Similarly, forums might be created to stimulate the comparison and discussion of effective teaching practices across international contexts.

Although many of these current efforts to develop and share web-based representations of practice involve educators and researchers, representations and forums for exchanging them could be adapted for wider public use and examination. For example, a number of websites in the United States focus on providing parents with test score information and related demographic and performance data on local schools and districts. Unfortunately, these sites rarely present any information on the content or character of teaching and learning. However, these sites could include web-based representations of practice designed specifically to help parents see and reflect on the kind of instruction their children receive.

Regardless of who produces them or whether they ‘count’ as scholarship, these kinds of web-based representations of teaching may be particularly useful because they help to demonstrate one of the key ideas that underlies all of the work on the scholarship of teaching and practitioner inquiry: teaching is a complex activity that demands significant skill and understanding. Thus, for the most part, when people view websites such as Yvonne Hutchison’s, Travis Bristol’s, or Pam Grossman’s, they begin to see all of the work that goes into teaching. These representations help to make the point that teaching is something worth examining and thinking about carefully, and, ideally, teachers should be among those involved in the investigation.

Of course, there are major challenges in pursuing any of these future directions. These include the ethical and intellectual property issues that affect all kinds of practitioner inquiry as well as those that arise specifically because of the use of video, the Internet, and other technologies (for overviews of some of these issues, see Hatch 2006; Hatch and Pointer-Mace 2006). But if these issues can be addressed, web-based representations of teaching inquiry may help to create the means and mechanisms to make teaching public and to develop wider understanding of the complexity of teaching and the nature of the expertise needed to teach effectively. In the end, the key issue goes far beyond the form that inquiries take or who carries them out. The key issue is the content: What is teaching? Where can we find it? And how do we represent it so that we can all examine it, learn from it, and improve it?

Notes

1. See for example, ‘Inquiry’ in the Merriam-Webster Online Dictionary. <http://www.merriam-webster.com/dictionary/inquiry>.
2. It is also worth noting that one of the higher education CASTL scholars has also gone on to establish a center for lesson study in higher education. For more information, see Lesson Study Project, located at the University of Wisconsin-LaCrosse. <http://www.uwlax.edu/sotl/lsp/>.
3. See Bransford, Brown, and Cocking (2000) for a discussion of the centrality of prior knowledge in comprehension and understanding in general.

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Appendix 1. Website addresses

- Dennis Jacobs, An approach to teaching chemistry: http://gallery.carnegiefoundation.org/collections/castl_he/djacobs/index2.htm
- Mills Kelly, Western Civilization: A course portfolio: http://gallery.carnegiefoundation.org/collections/castl_he/mkelly/welcome.htm
- Heidi Lyne, The Mission Hill School: http://gallery.carnegiefoundation.org/collections/castl_k12/hlyne/index.html
- Sarah Capitelli, Learning from our conversations in English: http://gallery.carnegiefoundation.org/collections/castl_k12/scapitelli/index.html
- Yvonne Hutchinson, A friend of their minds: <http://www.goingpublicwithteaching.org/yhutchinson/>
- Making teaching public: A digital exhibition: <http://www.tcrecord.org/makingteachingpublic/>
- Inside teaching: <http://gallery.carnegiefoundation.org/insideteaching/>
- Anna Richert, Learning about adolescents from teachers who teach them well: <http://quest.carnegiefoundation.org/~arichert/>
- Pam Grossman, Curriculum and instruction in English: <http://quest.carnegiefoundation.org/~pgrossman/>
- Travis Bristol (fall 2005). Exploring Othello in a tenth grade classroom: <http://www.tc.edu/ncrest/teachers/bristol/>
- Travis Bristol (spring 2006), A discussion of *Ode to the west wind*: http://www.tc.edu/ncrest/teachers/bristol_march/
- Emily Venson, Literature circles: <http://www.tc.edu/ncrest/teachers/venson/>
- Lesson Study Project: <http://www.uwlax.edu/sotl/lsp/>
- The Peer Review of Teaching Project: <http://www.courseportfolio.org/peer/pages/index.jsp>
- Visible Knowledge Project: <http://cndls.georgetown.edu/crossroads/vkp/about/overview/what.htm>
- Images of Practice: <http://www.tc.columbia.edu/ncrest/images.htm>
- KEEP Toolkit: <http://www.cfkeep.org/index.php>
- Learning from the practice of veteran and novice teachers: A digital exhibition: <http://www.tc.edu/ncrest/exhibitions/learningfrompractice/index.html>

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