Signature Pedagogies in Doctoral Education: Are They Adaptable for the Preparation of Education Researchers?

by Chris M. Golde

This article describes two practices that can be considered signature pedagogies of doctoral education. one in neuroscience (the journal club) and one in English studies (the list). The practices are routinely found in there and neighboring discipliner but are not found in other fields. The journal club and the list share the goal of acquainting students with the literature of a field, but apart from that, they are very different. In addition to teaching students to work with the literature, they serve other pedagogical goals, including socializing students into disciplinary norms and identities. Thus they serve as windows into the underlying culture of their home disciplines. This article considers the value of adapting these practices into education doctoral programs and offers suggestions for how to modify the practices to suit education.

Keywords: doctoral education; doctoral pedagogy; educational researchers; graduate education; literature review

Competently working with or "knowing" the literature of a field is important for scholarship in all disciplines. although it manifests somewhat differently in different fields. All researchers and scholars work within particular traditions and build on, modify, or overturn that which has gone before. Learning the literature requires far more than simply reading widely, regurgitating key phrases and findings, and genuflecting to seminal teseatchets. It is integral to any scholarly investigation. For educational research,

> to advance our collective understanding, a researcher or scholar needs to understand what has been done before, the strengths and weaknesses of existing studies, and what they might mean. A researcher cannot perform significant research without first understanding the literature in rhe field. (Boote & Beile, 2005, p. 3)

Students of education must undertake the following (this list is not exhaustive): Absorb the content of whar they read, determine what is known and what needs to be known, identify important ongoing disciplinary debates, develop the judgment to discriminate between work of high quality and mediocre efforts, extract useful information on which to build, juxtapose multiple theoretical perspectives and explanations, connect research srudies to one another, synthesize and reappraise others' work, and learn the stylistic conventions ofwritten work, such as norms of what to say and whar to omit (Boote & Beile, 2005, 2006; Delamont & Atkinson, 2001; Kamler & Thomson, 2006; Maxwell, 2006; V. Richardson, 2006). Learning to work with the lirerature, "to canvass and interpret the field and to construct her version of its terrain," is also a form of "identity work" in which the scholar positions herself and her own work in relation to the field (Kamler & Thomson, pp. 28–29).

Despite the fact that clear and persuasive writing is essential to, and indeed an integral part of, research and scholarship (L. Richardson, 1998). writing well and wirh confidence, particularly about others' work, is a challenge for many students in every discipline (see, for example, Bolker, 1998). In education, students are expected ro write "a substantive, thorough, sophisticated literature review" for their dissertations (Boote & Beile, 2005, p. 3), but too many students simply report on the literature rather than build an argument based on the work that has come before theirs. "The Literature is neither used to locate rheir studies, nor to advance an argument about the state of the field in order to make the case for their own work," say Kamler and Thomson (2006, p. 32)—mo experrs on doctoral writing. They observe that many students seem unable to make a critique and take a stand, adding, "This is characteristic of diffident scholars who lack authority and who are literally overwhelmed by the work of others" (p. 32). The problem may he that many students are not asked to workwithliterature in the ways thar professional researchers do before confronting the dissertation prospectus itself. These skills are "often neglected or caught inadequately" (Maxwell, 2006, p. 30).

If the status quo is not working, then the question is how to teach literature work more effectively. Simply adding a class on litetature reviewing or writing (see, for example, Rose & McClafferty, 2001)—helpful as that is—may be insufficient. More radical rethinking of the structures of education doctoral programs might he in order. Ifworking with the literature effectively is crucial for every educational researcher, multiple opportunities to do so before the dissertation stage should he woven rhrough the student career. How can this he accomplished? Practices used in other programs and fields can serve as sources of inspiration.' This happens routinely in research and scholarship,

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when theories and methods from other disciplines and inquiry traditions are borrowed and adapted. The present article describes pracrices from other disciplines that could be fruitfully modified for the field of education.

Lessons From Other Disciplines

Disciplines differ in how research and scholarship are conducted, how the research enterprise is organized and funded, what counts as knowledge, and how knowledge claims are made and verified. Srudent demographics and students' post-PhD careet paths also vary (see Golde & Walker, 2006, for descriptions of six disciplines). So it is not surprising that the normative ways and settings in which students are taught differ from one field to the next. Some practices for teaching students are so idiosyncratic, habituated, and completely embedded in a particular discipline that they can he called "signature pedagogies."

The term was coined by Shulman (2005) to deswibe "the characteristic forms of teaching and learning. . . that organize the fundamental ways in which future practitioners are educated for rheir new professions" (p. 52). Examples of signature pedagogies, those "forms of instruction that leap to mind (p. 52), include the case dialogue method of teaching in law schools and bedside teaching on daily clinical rounds in medical education.

> Signature pedagogies *make* a difference. They form habits of the mind, habits of the heart, and habits of the hand. . . . [They] prefigure the culrures of professional work and provide the early socialization into rhe practices and values of a field. (p. 59)

That is what they do for students. For those of us on the outside, signature pedagogies are windows into the cultures of their fields thar reveal professional values. Signature pedagogics share three features: They are pervasive and routine; they entail public student performance; and they are marked by uncertainty, visibility, and accountability, which raise the emotioual stakes. (Shulman, 2005, pp. 56–57)

Signature pedagogies are not just intriguing oddities. They are widespread across departments within 3 particular discipline, refined by time and practice, and they meet commonly understood pedagogical purposes. Arguably, signature pedagogies are adaptively suited—to borrow language from evolutionary biology-—for the particularities of the scholarly enterprises in which they are found and therefore contribute to socializing studeuts into disciplinary norms and identities.

In this article, I will describe two very different practices that share a common overarching goal of teaching students to work with the literature in the field according to the demands and standards of rhe discipline. They cau be considered signatute pedagogies in their home (and neighboring) disciplines, one in neuroscience (the journal club) and one in English (the list). Of course, they are uor the only activities that scholars in those fields use for this purpose. And, as will he dear, these pedagogies serve other purposes as well, making each practice patticularly well suited to its discipline of origin. In the final section of the article, I will consider the adaptabiliry of these practices for education, where they seem to be unknown but might be adapted to good effect.

Method

The practices described in rhis article came to my artention through the work of the Carnegie Initiative on the Doctorate (CID), for which 1 served as research director from 2001 to 2006. Sponsored by The Carnegie Foundation for the Advancement of Teaching, the CID was an action and research project working in six disciplines: chemistry. education, English, mathematics, history, and neuroscience (see http://www.carnegiefoundarion .org/cid for more information). An outsider vantage point gave Carnegie CID staff a comparative view of the six fields. The attention to siguature pedagogics developed as we saw elements of doctoral programs that occur normally in one discipline but are unusual in others.

The research methods for this article are essentially obsemational. Over the course of rhe CID we heard faculty and students make passing reference to practices in their doctoral programs thar all others from the field immediately understood; but these were practices with which the CID ream was unfamiliar. Naturally, we began to ask more questions to tease out the essential features of these practices. The reader might imagine that we saw many signature pedagogies, but thar was not the case.[2] My discussion in this article is limited to practices that had the express purpose of mastery of the disciplinary literature. I interviewed faculty and graduate students who were familiar with the practices and were articulate observers. Several of them read and responded to a draft of this article. I also reviewed the literature on the practices (journal clubs are well studied in medical education circles) as well as dozens of handbooks and Web pages that describe the practices in use. Extensive literature reviews on doctoral education in English and neuroscience also provided background. It is from these sources that the cases below are drawn.

Case I: The JournalClub

Journal dubs are formally organized reading groups that discuss an article found in the recent research journals. A single article is at the heart of each journal club presentation and discussiou; the articles under discnssion are ones deemed scientifically important. Journal clubs are conventionally muldgenerational: they include faculty members, postdoctoral fellows, advanced graduate students, and novice graduate students as equal participants. Journal clubs are organized around specialized themes. For example, some of the journal clubs offered through the Neuroscience Training Program at the University of Wisconsin–Madison in the 2006–2007 academic year were Axon Guidance; Behavioral Neuroscience; Neural Cell Death and Survival; Cerebral Ischemic Damage; and Transmitters, Circuits, and Plasticity (University of Wisconsin–Madison Neuroscience Training Program, 2006).

Journal clubs are a customary part of departmental life in most biological sciences. Although they are not formal courses, jourual clubs are a well-understood mechanism for teaching and leatning. Participatiou is generally expected. Oue of the University of Wisconsin journal clubs advertises that it "has met continuously since 1985" (University of Wisconsin–Madison Neuroscience Training Program, 2006, "Hearing and Donuts," para. 1). In fact, many doctoral programs in neuroscience require participation iu jourual clubs (for example, the University of Pittsburgh Center for Neuroscience Graduate Trainiug Program, 2006, "5.6 Journal Club," para. 1). Less Formally, the head of a laboratory

may expect students to participate in a laboratory-based or cross-laboratory journal club.

Journal clubs typically meet weekly for approximately an hour. Each week a different person presents an anicle to the group, and all panicipants are expected to have read the anide in advance. The presentation is followed by general discussion.

The process for presenting the articles is fairly standard: Summarize the article. Locate it in the larget landscape of the field. Describe the experiment in sufficient detail that the audience can understand it without becoming overly wrapped up in the details. Explain why the article is important. Critique the artide: Do the data and their analysis withstand scrutiny? ***Are*** there contradictions or competing hypotheses? The discnssion focuses on rhe big picture: the article's strengths and weaknesses, how the anicle extends the field, potential applications of the work, and what questions need to be answeted in lighr of the current findings.

Neuroscience programs often snpport a second kind of journal dub: broad inttoductory ones for students in their early years. These are opportunities to read articles of historic importance and to learn the norms of jonrnal clubs. (Such opportunities are particularly valuable in neutoscience, as students come from disparate undergraduate majors; broad introductory journal clubs are less common in more established bioscience disciplines.) Guidelines for making presentations are provided; these serve to initiate members into the norms of journal dubs. Early journal clubs also build community among graduate students, a patticular challenge for neuroscience programs whose students work in laboratories all over campus.

Feedback mechanisms can help presenters improve and ohcn are incorporated into journal clubs for which academic credit is offered. In the Univetsity of Pittsburgh neuroscience ptogtam, all journal club panicipants use a Student Ioutnal Club Evaluation form to evaluate presenters; the form includes 13 questions covering the presenter's introdunion of the topic, description of the topic, conclusion, delivery, and overall quality of the presentation, concluding with, "As a petcentage, how much of the presentation could you explain to others?" Students also benefit from a postpresentation debtiefing with the faculty coordinator and another faculty member who serves as an "outside expert" for **that** session.

Not all journal clubs are successful. Many of the weaknesses of journal clubs are like those of any optional small-group educational activity, such as seminars or study groups. Journal clubs can face the problem of declining attendance; initial enthusiasm often wanes, particularly in the face of competing rime pressures. Participant learning suffers if participants do not prepare in advance, if articles are selected and appraised divithout dear criteria, or if participants do not have guidance in preparing presentations (Kahn, Dwarakanath, Pakkal, Brace, & Awonuga, 1999; Kahn & Gee, 1999). Sometimes a few participants dominate and others, particularly nonnative speakers or newcomers, remain silent. Some people are put off by the norms of heated scientific discourse, which can seem aggressive and combative.

What Purposes Are Served by This Practice?

Journal clubs have three well-understood and commonly described purposes. (Of course, the purposes may be, in each particular case, more or less important and explicit.) First and foremost, all members of journal clubs, from the most seasoned faculty member to the newest graduate student, use journal clubs to keep up with the literarure. This has been the primary goal of journal clubs since they were invented in 1875 (Linzer. 1987). Journal clubs provide a forum for a collective effort to promote awareness of current research findings.

Second, journal dubs teach many of the forms of sharing and evaluation of scientific findings. Students learn the written conventions for presenting science by reading articles and seeing what is well received and what obfuscates. They practice presentation skills: organizing a talk, speaking to others, sharing the appropriate level of detail, and creating effective PowerPoint slides. Journal clnbs also model how to discuss and critique work. Students learn to ask good questions, to respond to questions, and to disagree with others—even professors. They learn to appraise research, develop confidence in their own judgment, and, when selecting an artide, determine what constitutes important work

Third, journal clubs cross disciplinary and organizational boundaries. They are often interdepartmental or "interlab." Researchers in a medical school, a veterinary school, and a school of arts and sciences might share an interest in a particular brain function. Journal clubs establish connecrions across organizational boundaries that might otherwise be obstacles to advancing knowledge. When people come together, the resulting conversations can build bridges and establish trust.

How Is This Practice Suited to Neuroscience?

Why do all scientists, from advanced faculty to new graduate students, use journal dubs to stay current? Because journal clubs are a particularly efficient and effective way to help participants meet the three goals described above. The biological sciences have several distinguishing features to which journal clubs are particularly well suited.

First, this is an era of "fast science." Emerging findings make it into print very quickly; the time to publication is short (weeks or months rather than years). New information must be acquired. evaluated, and incorporated into ongoing work as quickly as possible, but the vast quantity makes it nearly impossible to do so. Consequently, scientists must always be aware of new findings and have the judgment to select relevant information from the torrent of available data. Moreover, colleagues who communicate precisely and concisely are valued. All of these skills are taught in journal club.

Second, there are clear frontiers of knowledge. There is a consensus about what constitutes "important work" so it is possible to determine which articles are of high priority.

Third, science is conducted in communal and relatively democratic ways. Scientists argue about ideas. The lively intellectual debates during journal club mimic the collaborative yet competitive culrure of the laboratory.

Founh, the norms of science must be navigated and negotiated. In principle, findings are freely shared so that others may replicate them and build on them. In reality, scientists are in competition with one another. Therefore, authors must decide when to present their science to others, garnering credit but possibly relinquishing competitive advantage. They must determine how much information is needed for publication and when to withhold same data for the next artide or proposal. Scientists also frame their questions and findings to align with the political priorities of grant making and

publication. These choices become visible when an article is discussed.

Finally, important problem areas evolve, and they do not always map well onto existing organizational units. Likewise, journal clubs often cross organizational boundaries. Insights from people in other fields or with different training can be critically important. The website for the Bioinformatics Journal Club at the University of Tennessee says, "This is a rapidly changing . . . topic area that can use insights from those with different types of training; the instructors and the students all should learn from each other" (University of Tennessee Bioinformatics Journal Club, 2003, para. 4).

These five features of neuroscience, and indeed of most biological sciences, help to explain why journal clubs are such a widespread practice. They are an effective and efficient tool for helping senior scientists keep up with the literature, and they ate equally important as a pedagogical strategy for training new scientists.

Case 2: The List

The discipline of English makes use of a very different mechanism for ensuring that students know the literature of the field. *The list* is the group of works or texts that forms the basis of the comprehensive or qualifying examination for a doctoral student in English studies.[3] Exams are usually administered in the 2nd or 3rd year. The list is long, typically containing 60 to 100 works. One work might be a collection of poems, a novel, a theoretical work, or a group of secondary sources. The examination based on the list of works demonstrates that the student has "mastered the field."

After this demonstration of breadth and mastery, students are expected to develop an idea (project) that they will pursue for the dissertation. The dissertation project builds on the specialty reflected in the list. (English studies scholars describe themselves as working on "projects," not "problems." A project has a larger scope than a set of research experiments, and its goal is reaching understanding by developing an argument rather than arriving at a solution to a problem or an answer to a question.)

Anyone in English studies who is asked to describe the list hastens to point out that it has undergone a fundamental shift in the past two decades.[4] At one time there was a single list for all students, composed of the classics of British and American literature ("from Beowulf to Virginia Woolf"); the works were understood to represent "genius" (Guillory, 1991, p. 52).

Today's English doctoral students typically are expected to pass one or more "field exams," each of which encompasses a smaller subset of the literature. Students and faculty members work together to define an individual list for each field, which is shaped to the students' interests and emerging expertise. Students make active choices of exclusion and inclusion in creating their lists. As stated in the Duke University English Department's graduate studies handbook, "you should expect to play a very active role in formulating the questions you bring to texts" (Duke University Department of English, 2006, p. 7). Although more constructed and negotiated than in the past, the lists are still relatively standardized in their own way. The theme of each list is usually dependent on a prior conceptual construction of a recognizable subfield, such as romanticism or feminist theory, that already exists in the discipline. Thus the works selected must not only be deemed "major works" but also reflect the student's own position in the field.

What does it mean to display "mastery"? The process of preparation for the comprehensive examination is a period of intensive reading and usually stretches over several months, if not an entire year. Usually the examination is oral, lasting 2 to 3 hours, and the examiners are a committee of faculty members. The examination can be on any aspect of the works on the list. It is more than an advanced *Jeopardy* quiz on authors, dates, plot points, and characters, although students would surely know all of those. The questions are broad and conceptual: Discuss this dynamic, compare and contrast, and the like. Emerging scholars must demonstrate that they "know" the literature. This includes understanding the broad contexts in which works are located and understanding the evolution of the literature and of its themes and ideas.

The reading list–based examination is persistent but certainly not perfect. The shift from "comprehensive" lists to tailored lists risks a loss of historical context and breadth, driving students too quickly to preparing for the dissertation (Delbanco, 2000). As a result, students may lack a sufficiently broad foundation on which to base subsequent projects or on which to ground their teaching.

Even with focused lists, the intensive reading period can extend for many, many months. This makes it all too easy for students to disappear from the department and lose the benefit of interactions with faculty members. The structure of, and standards for, evaluating the examination itself are highly variable among programs and individual students' committees. As a result, for some students, the examination itself can seem more like arbitrary hazing than an authentic intellectual discussion.

What Purposes Are Served by This Practice?

Three purposes are served by the creation of and examination on the list. First, students must self-define and defend their location in the field. To do so, they must enter into the discourse and commentaries surrounding the works of literature that have grown and evolved over time. Mastery of the list(s) is one step along the way toward definition of a professional identity, which has instrumental purposes in terms of getting a job but, more important, is about entering into a disciplinary community. The examination is "the bridge between coursework and the dissertation," according to the English Department handbook from the University of Illinois at Urbana-Champaign. Mastering core knowledge "makes possible productive engagement with other scholars in the field (at lectures, conferences, on e-mail discussion groups, in ptint, at job interviews)" (University of Illinois at Urbana-Champaign Department of English, n.d., "The Special Field Examination," para. 1).

Second, the list and the examination on the list are explicit preparation for the dissertation. It is the public foundation on which the dissertation is built. Quoting from the Brown University Department of English (n.d.) description of the qualifying examination,

> It is important to remember that the qualifying examination is preliminary to the dissertation and *not* to be confused with your dissertation proposal. . . . Through the examination process, you will ideally

develop the kind of familiarity with the methods and materials of your field that you will need to wage a specific argument that earns the respect of those now at the forefront of your chosen field. (p. 8)

Third, the development of the list is intimately related to the ability to teach within a broad area of the discipline. "Your exam should also help to make you a confident and fearless teacher," states another handbook (Duke University Department of English, 2006, p. 7).

How Is This Practice Suited to English?

Creating and defending a list is an important step in every English doctoral program because it helps students to meet the three goals just described. These goals are relevant for English, the quintessential humanities field.

One feature that sets humanities scholarship apart is that it remains fundamentally solo work. Contributions to literature and analysis spring from the imagination of the individual. The list is particularly at home in a discipline that requires a scholar to understand a wide swath of the field. Another defining characteristic of the humanities is that knowledge builds slowly over time. The contribution that a scholar makes to the discipline is not understood in terms of advancing the frontiers in the same way as in the scientific enterprise. Instead, scholarship involves conceiving new understandings and juxtapositions. One needs broad and deep foundational knowledge to enter the conversation.

Good work in the humanities is judged by its completeness, subtlety, and insight. Doing work quickly, beating others to the punch, is less important than getting it right and being thorough. The humanities emphasize the written word, so scholars value nuance and elaboration. Although articles and conference papers (carefully crafted narratives that are read aloud in their entirety without overheads or PowerPoint slides) are used to work through ideas in progress, the result of a project is typically a book. This process requires time and a mature perspective developed by the careful examination and reexamination of the works at hand.

The humanities maintain a clear sense of the appropriate sequence for student work. Extensive undergraduate and graduate course work build the foundation—a foundation that is publicly defended before students begin the dissertation project. Clearly, these features are emphasized in the deliberate and time-consuming process of mastering the works on the list.

Finally, English departments are financially supported in large part by the efforts of graduate students and faculty members who teach. Scholars and faculty members are expected to have the versatility needed to teach a wide range of courses. The ability to address a broad range of texts is tested in the list defense.

Can Education Usefully Adapt These Practices?

Before turning to the field of education, two more points should be made. First, not only do journal clubs and list-based examinations advance discipline-specific versions of knowing the literature, but each serves several other purposes as well. This is not unusual in doctoral education; many program elements serve several pedagogical purposes. Indeed, the forthcoming volume on doctoral education by the Carnegie Foundation CID team argues that all program elements ought to be scrutinized and, when possible, reconfigured to promote student formation along several dimensions simultaneously (Walker, Golde, Jones, Bueschel, & Hutchings, 2007).

Second, the reader certainly has seen how journal clubs and the examination on the list help to shape the professional identities of neuroscientists and English scholars, respectively. To return to Shulman, the implicit structure of these practices transmits professional attitudes and values (Shulman, 2005, p. 55). One neuroscientist described journal clubs as an avenue for scientists to "learn to play well together." These practices are forms of legitimate peripheral participation, in which novice practitioners engage in authentic practice even while they are developing a professional identity, gradually moving to more central community membership (Lave & Wenger, 1991). This is one of the most important, if generally implicit, purposes of doctoral education, instilling the "values and intellectual leanings" of the guild in its newest members (Cronon, 2006, p. 330).

I have argued that journal clubs and list-based examinations are adaptively suited to the knowledge structures and conventions of their disciplines. Their stability (they must be doing something right) makes them enticing, but wholesale adoption of these practices in the field of education may not be wise or feasible. Education is different from the humanities or the laboratory sciences, and these practices are nor likely to flourish in a new setting without modification. Education is a multidisciplinary field; it spans areas allied with the humanities (philosophy of education) and areas akin to the sciences (mathematics and science education). But most domains of education research and study are part of the social sciences, featuring yet another set of knowledge structures and practices that sometimes seem like hybrids of the humanities and the sciences. Further complicating matters, most education graduate students are markedly different from their English or neuroscience counterparts. Coming to school in midcareer, education graduate students often are older, have complex and demanding home and work lives, and enroll on a part-time basis, making the adoption of new ways of interacting especially challenging (Eisenhart & DeHaan, 2005; Golde & Walker, 2006, pp. 245–249; Labaree, 2004, pp. 83–108).

One question is whether either of these practices could be adapted into education doctoral programs to good effect. The answer may well be yes, because work at the highest level of the field, whether for the PhD or the EdD, requires knowing and working with the literature. The subsequent question is how to adapt these practices to take advantage of their strengths and minimize their known weaknesses. Instituting either or both of these practices into a doctoral program, even in a revised form, demands a reallocation of faculty and student time and energy. In conducting this thought experiment, recall the key features of signature pedagogies: They are pervasive and routine, they entail public student performance, they have high emotional stakes, and they socialize students into disciplinary norms (Shulman, 2005, pp. 55–57).

Adapting Journal Clubs

What utility could journal clubs have in the field of education? Searching widely for relevant research findings and building on them are necessary skills for all researchers. To do so is particularly challenging in education, one of the highly interdisciplinary learning sciences that draw from many literatures (Eisenhart & DeHaan, 2005). Journal clubs are a useful tool for searching out, sharing, and evaluating new findings. The current emphasis on "scientifically based educational research" demands that new researchers develop familiarity with emerging work.

Researchers must also be able to frame meaningful yet manageable tesearch questions. Although the ability to ask good questions is vital, formal attention is rarely paid to teaching this skill, and in some cases research problems are simply assigned. One strategy for learning what constitutes a good quesrion is to see examples and evaluate them. Journal clubs are one of many settings in which this can happen.

But the benefits of introducing journal clubs could be far-reaching, because they could advance several other goals particular to the field of education. Journal clubs would expand students' conception of what constitutes "expected student behavior" beyond attending classes and completing course assignments. They would connect faculty and students with shared interests and thus promote productive intellectual communities in schools of education, where all too often studenrs interact only with the peers in their cohort group. Most important, journal clubs would help socialize students into the norms and values of the profession by immersing them in an ongoing conversation about what matters in educatiou research and practice. Foregrounding and modeling scholarly argument and debate could help combat education's culture of affirmation, in which students may be reluctant to say anything that could be perceived as unsupportive or critical.

Research on journal clubs with medical residents shows that "factors associated with high attendance and longevity [of the journal club] include mandatoty attendance, availability of food, and perceived educational value by the program ditector" (Alguire, 1998, p. 351). Emphasizing public performance (with the high emotional stakes that ir entails) requires that every srudent present regularly and get feedback. Developing a rubric for teaching the appraisal of article quality can increase the quality of article selection and help studenrs learn to assess research (Burstein, Hollander, & Barlas, 1996). Incorporatiug such adaptations would be fairly simple and would help journal clubs succeed, becoming part of the departmental culture.

Journal club meetings would need to be strategically scheduled to make them available for students who are on campus only part-time while still including faculty members to preserve the clubs' essential multigenerational character. The format is flexible in time and place; a journal club could meet on Sarutday mornings in a coffee shop or as a Thursday evening brown-bag dinner before class. For cohort-based programs, incorporating students from several cohorts in a topic-based journal club—say, on the superintendency, on classroom-based research, or on community college leadership—could expand students' liorizons and provide occasions for orher kinds of peer mentorship. Given that education research is not a "fast science" field, a journal club could focus on key debates in a narrowly defined area, classical works in education, or provocative articles from other disciplines.

Adapting List-Based Examinations

The demand for specialized focus must be offset by attention to foundational breadth. Some education faculties have reorganized their curricula to include common core courses required of all students regardless of subfield; examples are the University of Southern California, the University of North Carolina, and the University of Colorado (see summaries of their work at http://gallery.carnegiefoundation.org/cid). Although faculty and students at many other schools of education may wish to define such a core, political obstacles might necessitate an intetim strategy. The middle road of negotiated lists—including classics of the field, not just texts germane to the dissertation project, and defined by the student and gatekeeping faculty experts—can esrablish an impottant shared foundation. Surely there is much that is desirable in expecting all students ro read Dewey, Thorndike, and Vygotsky (or whatever the correct list is!). The goal is not for students simply to read more, and more widely, but to read strategically. As Maxwell (2006) argues, "there may be extremely relevant theories, findings, or methods in other fields or disciplines" (p. 29). Therefore, faculty guidance is essential as students craft a broad, reasonable, and appropriare reading list.

Studying for list-based exams can drive students to isolare rhemselves, so the process must be structured to keep the intensive reading period to a reasonable duration. Retreating from the community is especially counterproductive for education researchers, who routinely pursue team projects and publish coauthored articles. The skills of collaboration should be encouraged rather than inhibited. Requiring study groups, perhaps facilitated by advanced students who have passed the exam, would be a useful corrective.

The list is driven by a vision of the scholar in conversation with the major theorists and critics in his or her specialty. To reveal that sense of connection, the list-based oral and written examinations need to be wisely structured. For instance, imagine an examination asking students to summarize persuasively the assumptions of their subfields for scholars in other areas or to defend a syllabus for a course on their topic. In any case, the exams should be collectively designed, administered, and monirored; faculty should debate and work together to develop appropriate questions and formars for the examination. In doing so, they can assess what students know while avoiding the problem of examinations' being disconnected from the dissertation, and skirting the danger of great variation in standards and expectations among individual advisors.

Rethinking Doctoral Education

Neither practice is a panacea, of course, but together, journal clubs and list-based examinations could help doctoral students learn to work witb the literature with the ease and sophistication of mature practitioners and professionals. And many additional elements could be introduced to meet thar goal. Careful study of professional education shows the value of pedagogies that require students to perform publicly with appropriate support and feedback and to do so early and often. It is vital for education doctoral programs to adopt, adapt, and develop more sophisticated pedagogies to help students learn.

Literature work is not the only aspect of doctoral education in need of atrention. The srarting point could be to focus on a programmatic element (qualifying examinations) or a desired outcome (the ability to conduct credible research). In any case, what is needed is to approach the doctoral program in a spirit of inquiry. Through the CID we asked several questions: What are the goals of the doctoral program? What knowledge, skills, and habits of mind are graduates expected to attain? Do current practices serve those goals? Would other strategies be more effective? These questions prompted rethinking in the departments participating in the

CID. Many found it useful to search far and wide, even in unrelated disciplines, for adaptable practices.

It is also important, perhaps more so for education than for any other discipline, that new pedagogies and program elements be treated as educational experiments. They must be carefully assessed and the resulting knowledge shared with those in the field so that good ideas can travel and ineffective pedagogies can be avoided.

In the CID we learned that changing a doctoral program is not easy. But it is important. Even a partial list of the forces buffeting univetsities—shifting disciplinary paradigms, shrinking public investments, rapidly changing workplaces for graduates, and demands for accountability—reminds us that complacency is not an option. Even more important, we learned that change is possible and that scholars in otiet disciplines are important colleagues in the effort.

NOTES

The other members of the Carnegie Initiative on the Docrorate team—George Walker, Andrea Conklin Bueschel, Laura Jones, and Kim Rapp—were instrumenral in the developmenr of these ideas. Carnegie Presidenr Lee S. Shulman provided inspiration, guidance, and early forums for my thoughrs. Neuroscienrists Richard Clarke and Rebecca Jakel; English srudies scholars Eric Clarke, Amy Monrz, and David Laurence; and Carnegie scholars Rose Asera, Bridget O'Brien, Mary Taylor Huber, and Andrea Conklin Bueschel gave feedback on drafts of this article. Margaret Eisenharr offered encouragemenr at a critical momenr. An early version of the article was presented at the 2005 annual meeting of the American Educational Research Associarion in Montréal, on a panel that included Lee S. Shulman, Michael Feuer, and Perer Bergerhon. Three anonymous reviewers vastly improved rhis article with their thoughtful commenrs and ideas.

[1]This is the thinking behind the exrensive Promising Practices database maintained by the University of Washington. It began as part of the Re-envisioning the PhD project, funded by The Pew Charitable Trusts (http://www.grad.washington.edu/envision/practices/index.html).

[2]Research rotations, ofren used in the laborarory sciences to help 1st-year srudents match with a research laboratory and adviset, might also be caregorized as a signarure pedagogy. We describe apprenticeship as rhe signature pedagogy of docroral education in *The Formation of Scholars* (Walker, Golde, Jones, Bueschel, & Hutchings, 2007).

[3]Terminology varies locally; exams can be called general, preliminary, comprehensive, qualifying, field, or area. Examinations mighr be oral, wrirten, or a combination, and there may be more rhan one examination.

[4]Several forces converged ro prompr this evolurion. First, the lisr itself was under attack for nor being inclusive on one hand and (by postmodernists) for being overly prederermined on the other (Guillory, 1991). Second, the shift was a response to the continuous expansion of the field—which now includes lirerarures in other langŭages and texts from other media, such as film. Another force was the increasingly tighr academic job market, which pressured studenrs ro professionalize and specialize earlier to be more competitive. Finally, the humanities are under considerable pressure to reduce the time to degree, which is longer than in the social, physical, or biological sciences.

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