

## Genres of Empirical Research in Teacher Education

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*Is empirical research on teacher education really so bad?* Critics decry its inconsistent quality and inability to respond convincingly to some of the field's most vexing problems. At the same time, teacher education is a relatively new field of study. Those who have traced its development observe that rigorous, large-scale research on teacher education is difficult, time-consuming, and expensive to conduct; thus, some of the theoretical and methodological advances seen in more mature fields, e.g., research on student learning, are just beginning to emerge in research on teacher education. When we reviewed empirical research and reviews of research in teacher education (Borko, Whitcomb, & Byrnes, in press), we noted an excitement associated with working on the frontier of establishing a field of study, a willingness to critique the methodological rigor of our work, and a desire for our scholarship to have a constructive impact on teacher education policy and practice. As editors of this journal, one of the most important contributions we can make is to help push the field forward – to improve the quality and impact of empirical teacher education research.<sup>2</sup>

In keeping with that goal, we organized our *JTE*-sponsored session at the 2006 AACTE annual meeting to focus on *Enhancing the Scholarship of Teacher Educators' Practice*. This issue of the journal continues the conversation begun at that session, as we feature articles by

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<sup>1</sup> As an editorial team, we write editorials collaboratively. To reflect the nature of this joint work, we rotate order of authors with each journal issue.

<sup>2</sup> Portions of this editorial are based on a chapter about genres of research in teacher education (Borko, Whitcomb, and Byrnes, in press) to appear in the *Handbook of research on teacher education: Enduring issues in changing contexts* edited by M. Cochran-Smith, S. Feiman-Nemser, and J. McIntyre and published by Lawrence Erlbaum. In the chapter we present a more extended discussion of each genre, addressing the intellectual roots, affordances, and constraints for each. Missing from both this editorial and the chapter is a discussion of theoretical and conceptual scholarship, and genres rooted in the humanities (e.g., historical and philosophical). Scholarship in these genres has made and will continue to make valuable contributions to research on teacher education.

session presenters, Jean Clandinin, John Loughran, and Ken Zeichner. In an effort to broaden and stimulate the conversation, we offer our assessment of four genres that have been central in empirical teacher education research, namely (1) effects of teacher education, (2) interpretive, (3) practitioner, and (4) design. The first two – effects and interpretive – are established genres that have contributed substantially and over many years to the knowledge base on teacher education. The latter two – practitioner and design – are more recent additions. While the three articles featured in this issue address only one of these genres – practitioner research – we highlight it, because as an emerging genre, practitioner scholarship is both of great interest to many teacher educators and more variable in its quality and impact. We conclude by comparing and contrasting possibilities of the four genres and suggesting worthwhile avenues for teacher education research.

#### “Effects of Teacher Education” Research

“Effects of teacher education” research refers to a body of scholarship concerned with understanding the relationships between teacher education experiences and student learning. With roots in the scientific method of the natural sciences, this research genre seeks to identify generalized patterns of relationships between characteristics of teacher candidates, features of teacher education practices and programs, and learning of teacher candidates and k-12 students through experimental, quasi-experimental, and correlational research methods. Its establishment as a major genre of research was assured by E.L. Thorndike’s argument in the early part of the 20<sup>th</sup> century that experimental psychological research and statistical analyses should guide educational research. As he explained in his introduction to the *Journal of Educational Psychology*’s first issue,

A complete science of psychology would tell every fact about every one's intellect and character and behavior, would tell the cause of every change in human nature, would tell the result which every educational force – every act of every person that changed any other or the agent himself – would have” (Thorndike, 1910, p. 6).

The legacy of this cause-and-effect orientation is evident in the process-product studies that dominated inquiry in teaching and teacher education in the late 1960s and 1970s. These studies were grounded in the logic of the descriptive-correlational-experimental loop. They sought to describe phenomena of teaching practice, isolate variables correlated with student achievement scores, create interventions to train teachers to engage in identified teaching behaviors, and conduct experiments to study the effect of these interventions (Brophy & Good, 1986). Research on the effects of teacher education broadened over time to include studies examining the impact of components of teacher education such as subject matter preparation, foundations and methods courses, and field experiences.

Recently, calls to identify “what works” in teacher education have spawned renewed interest in this genre. The quasi-experimental and experimental designs frequently employed in effects of teacher education research appeal because they reflect the U.S. federal government's recent “*de facto* definition of good research as consisting of experimental studies that yield prescriptions for action” (Hostetler, 2005, p.16). Educational decision makers find research in this genre useful and attractive because of the relevance and validity of its findings as a basis for designing and evaluating teacher education programs. The compatibility of the language and assumptions of policy with the language and assumptions of effects of teacher education research also helps explain the intimate relationship between the two. As Marilyn Cochran-Smith (2004) explains, when teacher education is constructed as a policy problem the evidence desired to

address this problem comes from “experimental or correlational studies with sophisticated statistical analyses, which indicate that certain aspects of teacher preparation do or do not have a systematic and positive impact on pupils’ learning or on other outcomes” (p. 112). As a cautionary note, however, Susan Florio-Ruane (2002) reminds us that the quest for generalizability within the effects of teacher education tradition is often thwarted by the contextual, local, situated nature of teaching and learning. Further, the knowledge generated through this research may be too abstract and general for direct application to specific local situations, programs, and individuals.

### Interpretive Research

Interpretive research is, at its core, a search for local meanings. Unlike effects of teacher education research, it aims for particularizability, not generalizability (Erickson, 1986). It seeks to describe, analyze, and interpret features of a specific situation, preserving its complexity and communicating the perspectives of participants. Interpretive researchers attempt to capture local variation through fine-grained descriptions of settings and actions, and through interpretation of how actors make sense of their socio-cultural contexts and activities. The implications of an interpretive study may address any or all of the following: improving practice, including program design; informing policy by outlining salient contextual features that shape policy formulation or by illustrating successes and flaws in policy enactment; and shaping theory development. Responsibility falls to readers to determine what explanatory power a study has within their local context.

Interpretive studies of teaching and teacher education came to the fore as the shortcomings of process-product research became more apparent (Shulman, 1986). In the 1980s, interpretive studies gave the field an image of teaching as a complex intellectual endeavor that

unfolds in an equally complex socio-cultural context. As the diversity of the student population increased, attention turned to how teachers made sense of both the socio-cultural organization of the classroom and the learning and development of students whose lived worlds and experiences were different from their own. One logical extension of this deepened understanding of teaching practice was inquiry into how beginning teachers learn to teach and how different contexts and teacher educators' practice shape teacher candidates' learning. This redefined purpose for inquiry in teacher education – what Cochran-Smith and Fries (2005) have called the “learning problem” – was well suited for an interpretive approach. Since the early 1980s, teacher education has seen a dramatic increase in the number of studies conducted within the interpretive tradition.

Consistent and distinguishing features of interpretive research include the privileging of “insider’s” perspectives and a focus on understanding socio-cultural processes in natural settings in which individuals learn to teach. Participant’s voice and discourse are critical to capture, so researchers record interactions in naturalistic settings, conduct interviews, and review written artifacts such as reflective journals and web-based communication. Data analysis is a recursive process that begins during data collection; themes and patterns are developed both inductively from the data and deductively from the conceptual framework. Readers of interpretive studies judge their quality using criteria such as credibility, applicability, transferability, dependability, and confirmability.

Teacher educators have drawn upon interpretive research to answer questions about how teacher candidates make sense of learning to teach and manage the complexities of teaching and learning. Studies have illustrated the importance of candidates’ beliefs and knowledge (e.g., beliefs about teaching and learning; beliefs about culture, race, and language; subject matter knowledge), demonstrating how beliefs and knowledge shape and mediate their teacher

education experiences. Interpretive studies have contributed to our understanding of what occurs within methods courses and field experiences, the practices of teacher educators, and features of high quality teacher preparation programs. Taken together, studies within this genre have given teacher educators a more nuanced understanding of teacher candidates as learners, and a complex portrait of the impact of teacher education programs and teacher educators' practices on candidates' learning to teach.

A central limitation of research in the interpretive genre is the lack of shared conceptual frameworks and designs, which makes it a challenging task to aggregate findings and to draw comparisons across studies, even when those studies are of similar phenomena. Another limitation is that the body of interpretive research that has accrued has focused primarily on the perspectives of teacher candidates, teacher educators, and school-based personnel involved in teacher preparation. Broadening our empirical eye to include other stakeholders – e.g., university administrators, legislators and school board members, district administrators, those in state departments of education, parents, and k-12 learners – may yield important findings that speak to the current policy demands to link teacher preparation with student learning.

### Practitioner Research

In Zeichner's (1999) assessment of scholarship in teacher education, he observes "research about teacher education [that] is being conducted by those who actually do the work of teacher education" as "probably the single most significant development ever in the field of teacher education research" (p. 8). This genre, which we label "practitioner research," includes action research, participatory research, self-study, and teacher research. Like interpretive research, it aims to understand human activity *in situ* and from the perspective of participants; however, it differs in two critical ways – the role of the researcher and the overarching purpose

for the research. Practitioner research examines practice from the inside; instead of research *on* teacher education *by* an outside party, it is research *by* teacher educators *about* their practice. The knowledge generated through practitioner inquiry is intended primarily to understand and improve practice within a local context. This knowledge may also prove useful beyond local contexts, for example by communicating the complexity of teacher education to the larger community of educators and scholars.

The defining feature of practitioner research is the teacher educator's dual role as practitioner and researcher. In all of its variants, the researcher's professional context is the site for inquiry, and problems and issues within professional practice are the focus of investigation. Because the practitioner is a researcher and the professional context is the site for inquiry, the boundaries between research and practice often blur, creating unique opportunities for reflection on and improvement of the practice of teacher education.

All versions of practitioner research also share the features of intentionality and systematicity (Cochran-Smith & Donnell, 2006). Intentionality refers to the planned and deliberate nature of practitioner research, which can be contrasted to other versions of reflective practice that are typically more spontaneous in nature. Systematicity refers to organized ways of gathering information, keeping records of experiences and events, and analyzing the information that has been collected and recorded. The power and authenticity of practitioner research requires multiple approaches to inquiry – multiple sources of data and approaches to data analysis – as well as assurances that the researcher articulates and examines his or her biases and how they may affect data collection and analysis.

One way researchers in this genre ensure quality and rigor is by considering their work to be community property and therefore available to others for review and critique (Shulman,

2000). For this to occur, reports of the research must follow basic conventions of reporting, e.g. clearly stating research questions, providing sufficient detail regarding the conditions and contexts in which the study was conducted, and spelling out data collection and analysis procedures. As Lee Shulman reminds us, by striving to make our documentation and analysis of teaching more public and accessible we not only support the improvement of our own teaching, but also increase the likelihood that the work will be useful to our professional peers.

Practitioner research provides immediate benefits to the teacher educator who is studying his or her practice – benefits such as an increased understanding of content and pedagogy, commitment to a variety of teaching methods, confidence in one’s own ability, and willingness to listen to and learn from students and others. These understandings and commitments derive from teacher educators’ courage to confront and reflect upon “the shortcomings in their work and the gaps between their rhetoric and the reality of their practice” (Zeichner, 1999, p. 12).

The benefits of practitioner research can extend beyond the teacher educator, for example by demonstrating to teachers and prospective teachers that learning to teach is inherently connected to learning to inquire and providing a model of the kind of inquiry teacher educators hope they will engage. Practitioner research has the potential to foster educational innovations and to open doors for collaboration between K-12 school practitioners and schools of education. It can also benefit the teacher education program, institution of higher education, and wider community of educators, scholars, and policymakers.

Teacher educators who engage in research on their own practice are often called upon to address significant critiques of this research genre. Cochran-Smith and Lytle (Cochran-Smith & Lytle, 2004) organize the critiques into five categories: the knowledge critique, the methods critique, the science critique, the political critique, and the personal/professional development

critique. While a discussion of these critiques is beyond the scope of this editorial, it is important to note that they are fundamentally tied to questions about what counts as knowledge, evidence, effectiveness, and even research. Despite these questions and critiques, Zeichner's prediction has clearly come to pass: The genre has continued to grow in scope and impact.

### Design Research

Design research is perhaps the most recent genre to be used in the study of teacher education and learning to teach. In the educational arena, design research began as a reaction to traditional psychological experimentation, conducted under carefully controlled laboratory conditions. Committed to addressing questions about what works in practice, design researchers explore learning in context through the systematic design and study of instructional strategies and tools (DBRC, 2003). This genre is characterized by an intimate relationship between the improvement of practice and the development of theory: The research team works to simultaneously improve practice and contribute to theory by creating models of successful innovations and developing explanatory frameworks about both the processes of learning and the tools that are designed to foster learning (Brown, 1992; Cobb et al., 2003). In the realm of teacher education, these teams design and enact educational opportunities for preservice teachers and study participants' development in the context of those opportunities.

A central feature of design research is its iterative cycles of design, enactment, analysis, and redesign. These cycles are theory-driven; researchers begin with an initial set of conjectures about ways to foster learning. Conjectures are refined as they are supported or refuted by systematic collection and analysis of data. New conjectures are similarly subjected to testing and refinement, resulting in iterative cycles of intervention and revision. Design research is process focused; researchers trace changes in an individual or group by examining successive patterns in

their reasoning and learning, and the impact of features of the instructional intervention on that reasoning and learning.

The success of design research in educational settings depends on the knowledge and efforts of practitioners as well as researchers. Thus, researchers typically collaborate closely with teachers or teacher educators to develop, enact, and revise an educational intervention. The researchers' ongoing, direct involvement in the setting is essential. They must have a clear view of anticipated learning trajectories, a firm grasp of potential means of support, and a deep understanding of the educational setting. These understandings enable them both to facilitate logistics of the innovation and to conduct regular debriefing sessions in which past events are analyzed and future ones are planned.

Design research is often multileveled. In teacher education, innovations typically involve multiple elements such as the tasks or problems preservice teachers are asked to solve, pedagogical materials that support learning, norms of participation and discourse that are established, and instructional practices that teacher educators use to orchestrate relations among tasks, materials, and participation norms. In addition to these classroom-level elements, innovations may incorporate activities or structures in the teacher education program.

Data collected during design research typically include a comprehensive record of the design process as well as information about the learning processes and outcomes and the means by which learning is organized and supported. This genre features two distinct levels of data analysis, ongoing and retrospective. Ongoing analyses occur during the course of a design experiment and are oriented toward supporting participants' learning through modifying conjectures and refining the intervention. Retrospective analyses occur after the intervention is completed and aim to place the design experiment in a broader theoretical context.

Design research in teacher education is conducted around specific interventions in specific contexts. However, the explanatory frameworks developed through ongoing and retrospective analyses enable researchers to compare different enactments of the innovation with respect to key features of the context, teaching and learning practices, and outcomes. These analyses contribute to contextualized theories of teacher learning – theories that have implications for teacher education policies and practices (Cobb, 2000; DBRC, 2003).

From a practical perspective, the goal of design research is not to develop innovative programs that can be replicated in the same way in different contexts; rather, design research is grounded in a conception of teacher educators as professionals who continually adjust their plans on the basis of ongoing assessments of individual and collective activity. The explanatory frameworks for analyzing an innovation make it possible to enact the innovation in different settings in ways that preserve its essential elements while adapting to specific features of those settings – i.e., ways that do not constitute “fatal mutations” (Brown, 1992).

A key strength of design research is that it enables researchers to test theories and investigate educational innovations as they are enacted in real-world settings. This genre is not well suited to examine the broader sociopolitical context of reform, or to understand an individual’s cognition independent of situation and purpose. Design research is labor intensive and costly. An appropriate time frame for studying teacher development is probably several years – comprising both a long intervention and a long period for retrospective data analysis (Cobb, 2000; Shavelson et al., 2003).

#### Challenges and Opportunities for Established, Emerging, and Blurred Genres

We return to our opening question, *Is empirical research in teacher education really so bad?* As the discussion above reveals, the four dominant genres in the field reflect different

intellectual traditions, different tools of analysis and rules of evidence, different primary audiences, and focus upon problems of different levels or “grain sizes.” Each, when done well, has potential to produce knowledge that informs policy and practice. Variations in quality reflect, we believe, the relative newness of the field, the complexity of the teacher education endeavor, the uneven preparation teacher educators receive with regard to research (Wilson, 2006), funding availability, and the working conditions under which most scholars of teacher education, who are themselves practicing teacher educators, labor. Interpretive and practitioner research have been the most dominant modes in the last decade because these genres lend themselves to study the teaching/learning processes, a topic of deep interest to most teacher educators; additionally, studies within these genres often can be conducted by individual scholars and without external funding. Yet, as Zeichner’s article in this issue argues, these small-scale studies are difficult to aggregate and are quickly dismissed by those outside the teacher education community. While these genres may be not be well suited to respond to current policy challenges to teacher education, they have built a convincing argument for the complexity of teaching and learning to teach. Researchers in the next decade must do more to tease out that complexity and relate it to broad notions of student learning. Cochran-Smith (2005) characterizes the goal of such a research agenda as building a chain of evidence that links teacher preparation, teacher candidates’ learning, their classroom practices, and their pupils’ learning. She warns us, “[E]ach of these links is complex and challenging to estimate. When they are combined, the challenges are multiplied” (p. 303).

To address these challenges – to build this chain of evidence – our research must be multidisciplinary and pluralistic in its methods. As Zeichner (2005) writes in the concluding chapter of the report of the AERA Panel on Research on Teacher Education, “Given the

complexity of teacher education and its connections to various aspects of teacher quality and student learning, no single methodological or theoretical approach will be able to provide all that is needed to understand how and why teacher education influences educational outcomes” (p. 743). The field will need to draw upon established genres such as effects of teacher education and interpretive research; to continue to develop and experiment with practitioner and design research genres; and to blur genres in studies using mixed methods.

We must also take advantage of methodological advances to design and conduct more complex studies. New technologies for gathering, recording and storing information make larger data sets available. New statistical techniques and tools enable multi-level analyses of complex data sets. The digital revolution gives researchers the ability to gather and store high-quality audio and video records of teaching and learning activities, and computer software provides new tools to code and analyze textual and video data.

There is also great potential in conducting research that blurs the boundaries between genres. Research that incorporates multiple methods in a single project goes by many names – for example, multiple methods, mixed methods, multiple or mixed approaches, multiple or mixed models, or integrated methods (Smith, 2006). Such research is typically driven by practical concerns; taking a pragmatic approach, researchers choose multiple methods and combine them in unique ways that offer the best opportunity to address thorny problems. In previous decades, larger conversations within the educational research community informed developments in genres of teacher education research. We expect that current discussions of multiple methods will similarly contribute to the field of teacher education research.

To conclude, we offer the following recommendations to guide decisions about genres of research in the study of teacher education.

- *Select research genres and methods of inquiry appropriate for the research questions and continue support for multiple genres of research in teacher education.* Several sound research genres are available to the teacher education research community, each genre better suited for some questions than others. The researcher's first and most essential role is to pose questions of practical and theoretical significance. Researchers then should evaluate which genre or combination of genres best fits the question(s) and the resources available to conduct a well designed study. That many teacher educators have specialized in research methods most attuned for interpretive and practitioner studies means that as a field, teacher education has less ability to design studies that both speak to policymakers' concerns and reflect teacher educators' deep knowledge about learning to teach. No single genre can address the varied and complex questions we pose about learning to teach. No matter what genre they claim as their area of expertise, researchers can help to ensure the vitality of the field by recognizing the affordances and limitations of each genre and by championing the legitimate contributions each makes to illuminate persistent dilemmas in teacher education.

- *Build capacity to conduct collaborative research.* To conduct the multi-faceted, large scale studies of teacher education being called for by many policymakers will require collaboration among researchers with different areas of expertise. In addition to the challenges associated with any collaboration, teams conducting mixed-methods research will need to respond to methodological issues such as the conceptual coherence of knowledge claims that are derived from different methods, and the practicalities of conducting studies that combine multiple designs and procedures. While we encourage more attention to mixed-methods design, we recognize that this complex approach to research is still relatively new terrain for researchers

in teacher education – terrain whose navigation will require listening and negotiating across disciplinary boundaries (Eisenhart & Borko, 1991).

- *Demonstrate a strong commitment to rigor in both the conduct and the reporting of research.* The value of research hinges on the quality of the design and conduct of each study. As scholars, we must demand that data collection and analysis are carried out with attention to the genre’s major assumptions and quality criteria. Further, research methods and findings must be reported in sufficient detail that quality is evident to consumers. The recently released *Standards for Reporting on Empirical Social Science Research in AERA Publications* (AERA, 2006) provide useful guidance.

An emphasis on quality is especially relevant to practitioner and design research, as the field is still developing criteria for rigor that honor the innovative features of these emerging genres. As a contribution to this effort, the featured articles in this issue illuminate the challenges and opportunities of practitioner research. Zeichner’s article summarizes recent debates regarding criteria to judge quality of practitioner research; at the same time, he argues that a deliberate effort by self-study researchers to “build upon each other’s work conceptually, theoretically, and methodologically,” will allow studies in this genre to have more impact policy debates within the field. Loughran examines the tensions that inhere in self-study work between the primary audience for the study, the self who aims to improve practice and candidate’s learning, and the larger audience of teacher educators. A second tension he explores is the “continual interplay between research and practice within the practice setting.” He advances “trustworthiness,” making one’s “methods available for scrutiny and critique,” and demonstrating how the researcher actively sought to see “beyond the self” as key practices to negotiate these tensions. Jean Clandinin, Debbie Pushor and Anne Orr offer eight elements

comprising a framework for designing and carrying out narrative inquiries; these provide a set of criteria for rigorous inquiry in this domain.

For teacher education research to influence the crafting of wise policy, the improvement of practice, and the development of theory, we must ensure that it draws from multiple disciplines, is pluralistic in its methods, and is rigorously conducted and reported. Similar recommendations recently have been offered by many other scholars (cf. Borko, 2004; Cochran-Smith & Fries, 2005; Shavelson & Towne, 2002; Sleeter, 2001; Whitcomb, 2003; Wilson, Floden, & Ferrini-Mundy, 2001; Zeichner, 2005). Nonetheless, they bear repeating, as they are essential to ensure that practitioners and policy makers turn to research for guidance as they attempt to address the numerous and complex challenges that face teacher education today. And, what better role for *JTE* – with its explicit focus on policy, practice, and research – to play, than to encourage researchers, practitioners, and policymakers to work together in designing and enacting programs and policies to address these challenges?

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