

The Knowledges of Teacher Education: Developing a Critical Complex Epistemology

By Joe L. Kincheloe

The first decade of the twenty-first century is an exciting and frightening time for supporters of a rigorous, practical, socially just, and democratic teacher education. It is a time of dangerous efforts to destroy teacher education and of brilliant attempts to reform it. A sense of urgency permeates discussions of the topic, as studies indicate that presently there is a need for more teachers in a shorter timeframe than ever before in U.S. history. About 1,025 teacher education programs graduate around 100,000 new teachers annually. The problem is that over the next few years 2 million teachers are needed in U.S. elementary and secondary schools. Many analysts argue that the problem will be solved by lowering standards for teacher certification or simply doing away with the certification process and admitting any one who breathes regularly into the teaching ranks (U.S. Department of Education, 1998). Such capitulation to short-term needs would be tragic.

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I wish I had a dollar for every time someone in higher education or the professions reacted condescendingly upon learning that the individual with whom they were conversing was a professor of teacher education or pedagogy. Understanding the history of teacher education, one is provided with plenty of reasons to look at the domain askance — but not any more than other elements of higher/professional education. Too often the condescension toward teacher education and teacher educators is harbored for all the wrong reasons. Contempt for

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teacher education and pedagogy emanates not from knowledge of their historical failures but from a generic devaluing of the art and science of teaching as an unnecessary contrivance. “As long as one knows her subject matter,” the clichéd argument goes, “she doesn’t need anything else to teach.” Anyone who makes such an assertion should be mandated to teach the fourth grade for six weeks. Such a crash immersion may induce a reconsideration of the platitude, as the complexity of doing such a job well becomes apparent.

Indeed, the complexity of the pedagogical process and the intricacies of a rigorous teacher education are central concerns of this article. What is a critical complex teacher education? What types of knowledges should professional educators possess? In a climate as hostile as the first decade of the twenty-first century the ability of teacher educators to articulate a case for particular knowledges is not merely important, it may just be a survival skill. In its devaluation, pedagogy has been rendered invisible in many higher educational settings. Teacher educators, teachers, and teacher education students must not only understand the complexity of good teaching, but stand ready to make this known to political leaders and the general population. If we are not successful in such a political effort, we will witness the death of the scholarly conception of teacher education to the degree it now exists. While such articulations of teacher education are not dominant, many scholarly, rigorous, and democratic teacher education programs exist and produce excellent teachers. At the same time in countless mediocre programs great teacher educators ply their trade in unfavorable conditions, turning out good teachers despite the circumstances.

The Critical Complex Vision: Teachers as Scholars and Policy Makers

The vision on which this essay is grounded involves the empowerment of teachers in an era where teacher professionalism is under assault. I want universities to produce rigorously educated teachers with an awareness of the complexities of educational practice and an understanding of and commitment to a socially just, democratic notion of schooling. Only with a solid foundation in various mainstream and alternative canons of knowledge can they begin to make wise judgments and informed choices about curriculum development and classroom practice. In this context they can craft a teacher persona that enables them to diagnose individual and collective needs of their students and connect them to their pedagogical strategies and goals. It is naïve and dangerous to think that teachers can become the rigorous professionals envisioned here without a conceptual understanding of contemporary and past societies and the socio-cultural, political, and economic forces that have shaped them. Such knowledges are essential in the process of both understanding and connecting the cultural landscape of the twenty-first century to questions of educational purpose and practice (Bruner, 1997; Ferreira & Alexandre, 2000; Horn & Kincheloe, 2001; McGuire, 1996; McNeil, 2000).

Few seem to understand the demands of high-quality teaching of a critical democratic variety in the twenty-first century. After listening, for example, to former mayor of New York, Rudolph Giuliani and other high ranking city officials chastise and degrade New York City teachers over the last decade, I understand the anger and cynicism these teachers harbor as they open their classroom doors to start the day. The emotional complexity of their lives haunts me as I engage them in rigorous graduate school analyses of the various knowledges demanded by the critical complex vision. “Why learn this,” they sometimes ask me, “when the system won’t let us apply it in our deskilled classrooms?” This is a tough question. I struggle for the right words, for inspirational words to let them know the value of the vision. Literally, there is little hope for educational reform if they do not gain detailed insight into:

- ◆ the context in which education takes place;
- ◆ the historical forces that have shaped the purposes of schooling;
- ◆ the ways dominant power uses schools for anti-democratic ideological self interest;
- ◆ how all of this relates to the effort to develop a democratic, transformative pedagogy;
- ◆ the specific ways all of these knowledges relate to transformative classroom teaching in general and to their particular curricular domain in particular.

Only with these and similar insights and skills can teachers build rigorous communities of practice (Edwards, 2000) that empower them to develop more compelling ways of teaching and conceptualizing pedagogy. And just as importantly, in these communities of practice they can mobilize the political power to educate the public about the nature of a rigorous, democratic education and the types of resources and citizen action that are necessary to making it a reality. Given the political context of the twenty-first century with its “reeducated” public and corporatized information environment, the friends of democracy and education have no other choice. Thus, critical complex teaching involves teachers as knowledge producers, knowledge workers who pursue their own intellectual development. At the same time such teachers work together in their communities of practice to sophisticate both the profession’s and the public’s appreciation of what it means to be an educated person. They ask how schools can work to ensure that students from all possible backgrounds achieve this goal (Bereiter, 2002; Horn, 2000; Smyth, 2001; Steinberg, 2001). In this context, such educators engage the public in developing more sophisticated responses to questions such as:

- ◆ What does it mean “to know” something?
- ◆ What is involved in the process of understanding?
- ◆ What are the moral responsibilities of understanding?
- ◆ What does it mean to act on one’s knowledge and understanding in the world?
- ◆ How do we assess when individuals have engaged these processes in a rigorous way?

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Teachers as scholars demand respect as they engage diverse groups in these and other questions about education in a democratic society. They alert individuals to the demands of democratic citizenship that require the lifelong pursuit of learning. In such a context no teacher, no concerned citizen is ever fully educated; they are always “in process,” waiting for the next learning experience. As they claim and occupy such an important socio-political role, critical complex teachers dismantle the Berlin wall that separates educational policy from practice. Those who make educational policy almost never engage in classroom practice. These policy makers, especially in the recent standards reforms, have in many cases completely disregarded the expertise and concerns of classroom teachers and imposed the most specific modes of instructional practice on them (Elmore, 1997; Schubert, 1998). This type of imposition is unacceptable. Teachers in a democratic society have to play a role in the formulation of professional practice, educating the public, and educational policymaking.

Categorizing the Multiple Forms of Pedagogical Knowledge: Developing a Meta-Epistemological Perspective

We are asking teachers and teacher education students to gain complex understandings not previously demanded of educational practitioners. What follows is a delineation of the types of knowledges required in a critical complex teacher education. This delineation is conceptually wrapped in what might be called a meta-epistemological package that grounds many of the categories of knowledges teachers need to know. A meta-epistemological perspective is a central understanding in a critical complex conception of teacher professionalism (Strom, 2000). Simply put, such an insight helps us approach the contested concept of a “knowledge base for education.” In our meta-epistemological construction, the educational knowledge base involves the recognition of different types of knowledges of education including but not limited to empirical, experiential, normative, critical, ontological, and reflective-synthetic domains.

Such an assertion challenges more traditional and technical forms of teacher education that conceptualized teaching as a set of skills — not a body of knowledges. Thus, in the framework promoted here, teaching before it is anything else is epistemological — a concept that wreaks havoc in the pedagogical world. As an epistemological dynamic, teaching, as Hugh Munby and Tom Russell (1996) contend, “depends on, is grounded in, and constitutes knowledge” (p. 75). If the teaching profession doesn’t grasp and embrace this understanding, as well as the different types of knowledge associated with teaching and the diverse ways they are taught and learned, teacher education will continue to be epistemologically bankrupt and viewed as an Philistine vocation. In the meta-epistemological domain critical complex teacher educators avoid this Philistinism by analyzing the epistemological and other types of tacit assumptions embedded in and shaping particular articulations of practice.

Empirical Knowledge about Education

Empirical knowledge comes from research based on data derived from sense data/observations of various aspects of education. Throughout my scholarship I have expressed reservations about the positivist version of empirical knowledge and its uses—but not about the concept of empirical knowledge itself. A critical complex teacher education demands more sophisticated forms of sense observational knowledges of education. A thicker, more complex, more textured, self-conscious form of empirical knowledge takes into account the situatedness of the researcher and the researched—where they are standing or are placed in the social, cultural, historical, philosophical, economic, political, and psychological web of reality. Such insight respects the complexity of the interpretive dimension of empirical knowledge production.

A critical complex empiricism understands that there may be many interpretations of the observations made and the data collected, that different researchers depending on their relative situatedness may see very different phenomena in a study of the same classroom. Power dynamics such as ideological orientation, discursive embeddedness, disciplinary experience, *ad infinitum* may shape the research lenses of various researchers in diverse and even contradictory ways (Kincheloe, 2003). Once we understand these dynamics we can never be naïve researchers again. Empirical knowledge about education enters into an even more complex realm when educators ask what it tells them about practice. Since such knowledge has such a complex interaction with and multidimensional relationship to practice, there will always be diverse articulations of its practical implications. Too many teacher educators have not understood these dynamics.

A critical complex empiricism understands that knowledge about humans and their social practices is fragmented, diverse, and always constructed by human beings coming from different contexts. Such a form of knowledge does not lend itself to propositional statements—i.e., final truths. Indeed, a critical complex empirical knowledge does not seek validation by reference to universal truths. Rather it remains somewhat elusive, resistant to the trap of stable and consistent meaning. The way it is understood will always involve the interaction between our general conceptions of it and its relationship with ever-changing contexts. Thus, our conception of empirical knowledge is more dialectical than propositional. Simply put, there is not one single answer to any research question and no one question is superior to all others. Particular empirical descriptions will always conflict with others, tensions between accounts will persist, and alternative perspectives will continue to struggle for acceptance. As Elvis might have put it: “Man, you better believe this stuff is complicated.”

The technical rationality of positivism failed to heed Elvis’s warning. In this articulation of the empirical project there was nothing too complex about educational knowledge production and its role in teacher education: researchers defined

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educational problems and solved them by rigorous fidelity to the scientific method. These solutions were passed along to practitioners who put them into practice. A critical complex empiricism avoids this technical rationality and the certainty that accompanies it. It never prescribes precise content and validated instructional techniques for teachers' use. In the critical complex perspective there is no certain knowledge about:

- ◆ what subject matter to teach;
- ◆ the proper way to develop a curriculum;
- ◆ the correct understanding of students;
- ◆ the right way to teach. (Center for Policy Research in Education (CPRE), 1995; Pozzuto, Angell & Pierpont, 2000; Report of Undergraduate Teacher Education Program, 1997)

The relationship between such knowledge and practice in its complexity is always open to discussion and interpretation.

In this discussion a critical complex empiricism refuses to undermine other types of educational knowledges and exclude them from the process. For example, the experiential knowledge teachers derive from teaching is deemed very important in this context. Traditional positivist perspectives created a chasm between empirical knowledge and experience, as they excluded teachers from the knowledge production dimension of the profession. The concept of great teachers as virtuosos who produce brilliant pieces of pedagogical performance/knowledge was alien to the positivist conception of empirical knowledge about education. In a positivist context teachers were expected to follow empirical imperatives, not to produce masterpieces (Britzman, 1991; Horn, 2000; Segall, 2002). If teachers don't belong at the conference table of knowledge production in education, then the table deserves to be dismantled.

Critical, complex empirical knowledge about education avoids the positivist tendency to represent itself as a distinct, autonomous object — a thing-in-itself. Here critical, complex knowledge always acknowledges the contexts of its production and interpretation. Valuing the relationships that connect various knowledges, researchers in the complex domain ask how education experience is constructed and educational meaning is made (Cannella & Kincheloe, 2002; Day, 1996; Denzin & Lincoln, 2000). In such explorations they walk through a star gate into a more pragmatic dimension of empirical research. Understanding the contexts of knowledge production and the nature of its relation to practice, critical complex educational researchers study the half-life of their data in terms of its implementation. How could it be used to improve education? How is educational improvement defined? Did it promote professional awareness? How does professional relate to practice? Within such analyses, reflections, and inquiries a new dawn breaks for the role of empirical knowledge in education.

Normative Knowledge about Education

Normative knowledge concerns “what should be” in relation to moral and ethical issues about education. What constitutes moral and ethical behavior on the part of teacher educators and teachers? How do we develop a vision of practice that will empower educators to embrace these behaviors without fear of reprisals? Such questions began the theoretical work necessary to the development of a democratic, egalitarian sense of educational purpose. Such normative knowledge is central to the effort to establish just and rigorous colleges/schools/departments of education and schools of various kinds. Such knowledge is not produced arbitrarily but in relation to particular social visions, power relations, and cultural/historical contexts. With these concerns in mind we ask questions about the nature of education, the role of schools in a democratic society, and the philosophical issues raised in this process.

The “critical” in our critical complex teacher education is directly related to normative knowledge. Critical theorists such as Max Horkheimer, Theodor Adorno, and Herbert Marcuse directly addressed this normative dimension when they wrote about the concept of “eminent critique.” Moral and ethical action, they argued, cannot take place until one can envision a more desirable state of affairs, alternatives to injustice. In this context, they argued, any domain of study is ethically required to examine not only “what is” but also “what could be” — the notion of eminence. In critical pedagogy — the educational articulation of critical theory buoyed by the work of feminist theorists and Brazilian educator, Paulo Freire — advocates have confronted the positivistic, decontextualized, and depoliticized education often found in mainstream teacher education and higher education in general, and elementary and secondary schools on normative grounds. These institutions, critical analysts maintain, have often failed to develop an ethical vision for the pedagogical process in a democratic society.

From the critical complex perspective developed in this essay, educational rigor and social justice cannot be ethically separated. Questions of oppression and empowerment are always implicated in visions of scholarship. When positivistic schools, for example are set up to serve the needs of individuals abstracted from their social, cultural, political, and economic context, the privileged will be rewarded and the marginalized punished. Thus, the critical perspective develops a language of critique to expose the way contemporary democratic societies maintain disparate social relations and in turn how these relationships shape pedagogy. The complex part of the critical complex equation insists that these dynamics are even more complicated than originally understood and that advocates of critical pedagogy must be consistently vigilant about their own oppressive tendencies. In this complex normative context they must always be reflective about modes of oppression growing up around their own relationship to issues of race, class, gender, sexuality, religion, geographic place, etc.

As critical professionals develop these modes of normative knowledge, they

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begin to understand how ethical concerns are often hidden in everyday life and professional practice. They observe such masking processes at work in many cultural sites, in many colleges of education, and in secondary and elementary schools. In this cloaking process educators are induced to accept the organizational structure and daily operations of schools as if they could be no other way. This hidden normative curriculum moves critical complex teacher educators to be concerned with positivist forms of educational knowledge production and the role it plays in this great denial of the moral and ethical dimensions of pedagogy. Moved by this concern criticalists argue that all of the other educational knowledges must be produced in close connection to normative knowledges.

Empirical knowledge produced outside of such normative concerns takes on the pseudo-neutrality of positivism that promotes an unexamined normative agenda even as it claims it does not. Moreover, as we clarify the distinctions between normative knowledge and empirical knowledge, we begin to realize that positivistic requests for empirical proof of what are normative questions are epistemologically naïve and misguided. One cannot “prove” a normative statement about educational purpose or professional ethics (Aronowitz, 1988; Fischer, 1998; Giroux, 1997; Goodlad, 1994; Hinchey, 1998). No study empirically proves the inadequacy of an educational purpose — this is a different form of knowledge. Teacher educators concerned with social justice and democracy have been confronted with such epistemological inconsistencies for decades. In my own work around issues of social justice in teacher education I have often been asked by colleagues to provide empirical evidence of the validity of such concerns. From the perspective of such educators, there was only one form of professional knowledge about education — empirical. If pedagogical insights could not be empirically proved or disproved, then they were relegated to the epistemological junk heap.

All educational programs and curricula are built on a foundation of normative knowledge — even if such knowledge is hidden or even not fully understood. This is what is so often not understood in teacher education and in schooling. Thus, a key dimension of the work of teacher education is to bring these norms, these ethical and moral assumptions, these visions to the light of day so they can be analyzed and discussed. Because many in teacher education have not conceptualized and talked about normative knowledge, those operating within a positivist culture of neutrality often view this analytical process with great discomfort. When we discuss concepts such as a political vision undergirding teaching, this often is heard as a “politicization of education.” More attention to normative types of knowledge can sometimes clear up these misunderstandings.

When one claims neutrality and promotes a view of education that doesn’t attend to effects of human suffering, exploitation, and oppression in relation to the teaching act, a serious contradiction arises. By failing to address such issues one has taken a distinct moral position. Such orientations in the analysis of normative knowledge are revealed and problematized. Indeed, critical complex educators consider it an ethical

duty to disclose their normative perspectives, to admit their value structures, and to help students understand how such allegiances affect their teaching. Critical complex teacher education openly embraces democratic values, a vision of race, class, gender, and sexual equality, and the necessity of exposing the effects of power in shaping individual identity and educational purpose. This is not an act of politicization of education; education has always been politicized. Critical complex teacher educators are attempting to understand and act ethically in light of such politicization.

Critical Knowledge about Education

Critical knowledge is closely associated with normative knowledge, as it focuses on the political/power-related aspects of teacher education and teaching. In the context of critical knowledge the charges of politicization heard in the normative domain grow louder and often more strident. Critical complex teacher educators maintain that it is impossible to conceptualize curricula outside of a socio-political context. No matter what form they take all curricula bear the imprint of power. When teacher education students are induced to study the curriculum outside of such horizons, they are being deceived by a claim of neutrality concerning the production of knowledge. The culture of positivism defines the curriculum as a body of agreed-upon knowledges being systematically passed along to students as an ever evolving, but neutral, instructional process.

Critical complex teacher educators know too much to be seduced by the sirens of political neutrality. As a deliberate process, the curriculum is always a formal transmission of particular aspects of a culture's knowledge. Do we teach women's and African-American history in eleventh grade social studies? Do we read Toni Morrison and Alice Walker in twelfth grade literature? In colleges of education do we teach the history of Horace Mann's crusade for public education from a political economic perspective? These are all sociopolitical questions — this means they involve power and its influence. In this context critical complex teacher educators understand the need to build a teacher education that infuses this critical knowledge into all phases of professional education. As this takes place, teacher education students gain a far more rigorous and nuanced understanding of why education exists in its present form.

Teacher educators don't have to look very far to uncover critical knowledges in education, the exercise of power in shaping "the way things are." Colleges of education, themselves, are implicated in power relations shaped by interest-driven legislative intervention in academic life. Responding to the needs of business and corporate leaders, legislators often impose policies that presuppose a view of an educational profession that acts in the power interests of managerial elites. Appreciating such dynamics, critical complex teacher educators ground their curriculum on the notion that the socio-educational world has been constructed by dominant power and thus can be reconstructed by human action and savvy political organization. Thus,

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critical complex teacher educators inject a literacy of power into their professional education curriculum. Such an orientation studies critical knowledges such as hegemony, ideology, discursive power, regulatory power, disciplinary power, etc.

With these critical knowledges critical complex teacher educators gain greater familiarity with diverse cultural expressions and the ways teacher education and schooling brush against them. As researchers and knowledge workers they develop the analytical ability to expose the insidious ways dominant cultural inscriptions in educational contexts marginalize culturally diverse and lower socio-economic class groups. Thinking in terms of race, class, and gender differences, critical complex practitioners survey their classes for patterns developing along these lines. The critical respect for diversity allows such teachers the ability to conceptualize multiple perspectives on issues such as intelligence, student ability, evaluation, community needs, and educational justice. Such perspectives allow for the acceptance of a diversity of expressions that exposes the fingerprints of power, in the process bringing more parents and students to the negotiating table of educational purpose.

Appreciating that all knowledges about education, all disciplinary knowledges are produced in discourses of power, critical complex teacher education understands there is no neutral ground. Imbued with such critical knowledges, they see through positivistic technical rationality and its claim that objective researchers produce educational knowledge and theory which is then applied to neutral sites of practice. In the technical rational context the assumption of ideological innocence on the part of researchers and educational policymakers leads to unproblematized hierarchical assumptions between the educated and the uneducated. Wearing the badge of neutrality such hierarchies can quickly mutate into schooling as a neo-White Man's Burden where educational missionaries attempt to deliver the civilizing "gospel" of European high culture to the poor and/or "off-white" masses.

Ontological Knowledge in Education

There is nothing new in asserting that the ways one teaches, the pedagogical purposes one pursues is directly connected to the way teachers see themselves. At the same time, the ways teachers come to see themselves as learners, in particular the ways they conceptualize what they need to learn, where they need to learn it, and how the process should take place shape their teacher persona (CPRE, 1995). Such a persona cannot be separated from the various forms of knowledge delineated here and the larger notion of "professional awareness." Too infrequently are teachers in university, student teaching, or in-service professional education encouraged to confront why they think as they do about themselves as teachers — especially in relationship to the social, cultural, political, economic, and historical world around them. Teacher education provides little insight into the forces that shape identity and consciousness. Becoming educated, becoming a critical complex practitioner necessitates personal transformation.

With such dynamics in mind, critical complex teachers are asked to confront their relationship to some long-term historical trends rarely discussed in the contemporary public conversation. Critical complex teacher educators maintain these trends hold profound implications for the development of both professional awareness and a teacher persona. In my own case the understanding of my personal historicization in light of five centuries of European colonialism from the fifteenth to the twentieth century — and new forms of economic, geo-political, cultural, and educational colonialism picking up steam in the contemporary era — is essential knowledge. Indeed, everyone in the contemporary U.S. is shaped by this knowledge in some way whether or not they are conscious of it. We cannot contemplate our professional awareness without reference to these last five hundred and some years and their effects. I was born in 1950, in the middle of the post-colonial rebellion against this half millennium of colonial violence emerging in Africa, Asia, Latin America, and throughout the indigenous world.

While anti-colonial activity continues into the twenty-first century, such discontent reached its apex in the U.S. in the 1960s and early 1970s finding expression in the civil rights, women's, anti-Vietnam war, gay rights, and other liberation movements. By the mid-1970s a conservative counter-reaction was taking shape with the goals of "recovering" what was perceived to be lost in these movements. Thus, the politics, cultural wars, and educational debates, policies, and practices of the last three decades cannot be understood outside of these efforts to "recover" white supremacy, patriarchy, class privilege, heterosexual "normality," Christian dominance, and the European intellectual canon. I must decide where I stand in relation to such profound yet muffled historical processes. I cannot conceptualize my teacher persona outside of them. They are the defining macro-concerns of our time, as every topic is refracted through their lenses. Any view of education, any curriculum development, any professional education conceived outside of their framework ends up becoming a form of ideological mystification. Once we turn our analysis to the examination of ontological knowledges vis-à-vis such historical processes, we set the teacher "self" in question. As self-images, inherited dogmas, and absolute beliefs are interrogated, teachers begin to see themselves in relation to the world around them. They perceive the school as a piece of a larger mosaic. With such a conceptual matrix, teachers start to see an inseparable relationship between thinking and acting, as the boundary between feeling and logic begins to fade from the map of teacher thinking — a map redrawn by the cartography of teacher education and its ontological knowledges. In such an ontological context, teachers derive the motivation to produce their own knowledge. If teachers hold power to produce their own knowledges, then they are empowered to reconstruct their own consciousness. The top-down tyranny of expert-produced interpretations of tradition and its oppressive power can be subverted and our futures can be reinvented along the lines of a critical complex system of meaning making.

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If positivism prevails and successfully excludes ontological, normative, and critical knowledges from professional education, teaching will too often remain a technical act. These issues of self-production will be removed from the consciousness of prospective teachers, as they memorize the generic theories and the fragments of the “knowledge base.” Relegated to a static state of being, teachers in the technicist paradigm are conceived as a unit of production of an assembly line — historically abstracted selves located outside of a wider social context. Standards reforms that decontextualize students in this manner are molded by the dynamics of history and social structure (Kincheloe & Weil, 2001). Identity is never complete and always subject to modification in relation to prevailing ideologies, discourses, and knowledges. Critical complex teacher education encourages desocialization via ideological disembedding. Critical complex professional education coursework and practicum experiences focus on the ways in which the values of power-driven, information-saturated hyperreality of the twenty-first century shape the consciousness of both students and teachers (Apple, 1999; Britzman, 1991; Carson, 1997; Gordon, 2001; Macedo, 1994; Malewski, 2001; Soto, 2000). The rigorous study of cultural and historical context alerts prospective teachers to the ways dominant myths, behavior, and language shape their view of the teacher’s role without conscious filtering.

Experiential Knowledge about Education

Obviously, there are experiential knowledges of education. Educators need knowledges about practice; teacher educators need to take these knowledges seriously and place them neither above nor below other forms of knowledges about education. Knowledges about practice are inherently problematic, however, because the nature of what constitutes practice is profoundly complex. There are many different forms of educational practice:

- ◆ classroom teaching;
- ◆ teacher leadership involving areas of curriculum and instruction;
- ◆ educational administration;
- ◆ educational policy making;
- ◆ teacher education;
- ◆ knowledge production in education;
- ◆ political activism.

The point here is that there are many types of educational practice — these are just a few. Yet too often in teaching and teacher education the only type of practice signified by the term involves classroom teaching. We have to be very careful about this type of reductionism as we work to develop and put into practice a critical complex teacher education.

Thus, the model of teacher education advocated here recognizes that not only are there numerous forms of practice but that all of them are complex. Donald Schon

(1995) has used the term, “indeterminate zones of practice” to signify the uncertainty, complexity, uniqueness, and contested nature of any practice. The positivistic epistemology of the contemporary university often is incapable of coping with the complexity of practice, as it applies scientific theories to practical situations. Instead, Schon promotes a practice grounded on reflection-in-action. Here practitioners engage in conscious thinking and analysis while “in practice.” They have no choice, they have to do this Schon argues, because each situation a practitioner encounters is unique. This demands a rigor that falls outside the boundaries of positivistic technical rationality and its reductionistic rule following. As one technician teacher educator put it: “Look to the overhead projector, class; here are the five steps to writing on the chalkboard:

- ◆ always keep chalk longer than two inches readily available in the chalk tray;
- ◆ before writing adjust shades to minimize glare on board;
- ◆ hold the chalk at a 45 degree angle relative to the board;
- ◆ write letters at least five inches tall;
- ◆ dust hands before leaving the board so not to wipe them inadvertently on clothing.”

I actually endured this lesson in an undergraduate teacher education class in 1971. I am still trying to recover.

Thus, our meta-epistemological understanding reasserts itself here in the context of experiential knowledge. From such a perspective the knowledge derived from practice about education is shaped by an epistemology significantly different from the one shaping propositional empirical knowledge. Such a position undermines the technically rational notion that teacher education researchers should continue to produce positivist empirical knowledge about educational practice until they can tell teachers how to do it correctly (Hatton & Smith, 1995; Munby & Russell, 1996). Experiential knowledge in the critical complex paradigm is rooted in action and informed by a subtle interaction with the empirical, normative, critical, ontological, and reflective-synthetic knowledges. There is no way to specify these interactions and routinize practice accordingly. Professional practice is always marked by surprises. Such interruption forces the practitioner to restructure her understanding of the situation. Critical complex practitioners learn to improvise and develop new ways of dealing with the new circumstances, new modes of action.

A new teaching situation, for example, may be created by a particular student’s behavior or by a reprimand by the principal. How do I address the needs that are moving the student to be so violent? How do I work with the principal productively when she holds views of educational purpose so different from my own? Schon (1995) contends that such reflection-in-action brings the medium of words to the action orientation of practice. And this is the context in which experiential knowledge begins to come into its own as one of many knowledges related to education. Valuing this knowledge — not as the only important form of knowledge — brings practitioners to the negotiating table as respected participants in the professional conversation.

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With practitioners at the table no longer will education be subjected to mandated “expert-produced systems” with rules and scripts for teachers to follow (Capra, 1996; Goodson, 1999; Schon, 1983, 1987, 1995).

In this context it is important to note that a critical complex teacher education values experiential knowledge about teaching. Because of its value and because of teacher education students’ concern with obtaining such knowledge, it may be wise to begin teacher education in school settings. In this context teacher education students could be directed to take note of and analyze the experiential knowledges they encounter. A critical complex teacher education is dedicated to making sure that experiential knowledge is not deemed second class information about education. Given its importance and student concern with obtaining it, beginning teacher education with school experience with experiential knowledge may be desirable. Such a positioning would challenge the debasement of experiential knowledge, while helping students deconstruct the positivist view that we can only do after being told what to do. This epistemological assumption must be challenged before a critical complex teacher education can get students to analyze the diverse forms of knowledge involved in becoming a professional educator. In this context critical complex teacher educators listen carefully to the experiential knowledge of teachers and other types of educational practitioners. We must be sensitive to not only the value of such knowledge but the ways it is obtained, altered, and sophisticated in lived contexts. Understanding these features of experiential knowledge, we are better prepared to teach it and integrate it with the other forms of educational knowledge (Kincheloe, 2001; Munby & Hutchinson, 1998; Munby & Russell, 1996; Quinn, 2001).

Reflective-Synthetic Knowledge about Education

Acknowledging our debt to Schon’s notion of the reflective practitioner, a critical complex teacher education includes a reflective-synthetic form of educational knowledge. Since our purpose is not to indoctrinate practitioners to operate in a particular manner but to think about practice in more sophisticated ways, a central dimension of teacher education involves reflecting on and examining all of these knowledges in relation to one another. A reflective-synthetic knowledge of education involves developing a way of thinking about the professional role in light of a body of knowledges, principles, purposes, and experiences. In this process educators work to devise ways of using these various knowledges to perform our jobs in more informed, practical, ethical, democratic, politically just, self-aware, and purposeful ways. At the same time they work to expose the assumptions about knowledge embedded in various conceptions of practice and in the officially approved educational information they encounter.

In the reflective-synthetic context the practitioners’ purpose is not to commit various knowledges to memory or to learn the right answers. Instead, teachers and other practitioners work studiously to avoid generic forms of educational knowledge applicable in all situations. Neither does their reflection on and synthesis of all

the knowledges we have described reduce the uncertainty of the profession. The recognition of such uncertainty and complexity elicits humility, an understanding that all teachers and teacher educators agonize over the confusing nature of everyday practice. To do otherwise would involve a reductionistic retreat to the dishonesty of positivism's veil of certainty. In the reflective-synthetic domain practitioners learn they cannot separate their knowledges from the context in which they are generated. Thus, they study their own usage of such knowledges and the schemas they develop in this process.

In the reflective-synthetic domain, teacher educators engage teacher education students and teachers in an examination of not only the contexts in which teaching has taken place but the various forces and cultural knowledges shaping everyone involved with the teaching act. How do cultural knowledges of educational purpose connected with racialized and class-inscribed definitions of what it means to be an "educated person" shaped the pedagogical act? How do folk knowledges about the nature of children and the ways they must be treated insert themselves into pedagogy? How do craft knowledges of the proper role of the teacher shape practice? How does the larger depoliticization of American culture shape teachers', parents', and the public's view of the political role of schools in a democratic society? How does the public's view of the "ideal teacher" influence who chooses education as a career path? How do all of these dynamics intersect to shape education in the U.S. writ large, as well as the individual lives of teachers and students?

All teacher educators, educational leaders, and friends of democratic education must make sure that all teachers have the time and opportunity to cultivate such reflective-synthetic knowledges. Such knowledges help them come to terms with their early concerns with survival skills and move to a more sophisticated understanding of the diverse factors that shape teaching and the broad contexts that must be accounted for as pedagogy proceeds. When positivism reduces teacher education to training in methods of transferring knowledge in light of the demands of standards, a teacher possessing reflective-synthetic skills knows that such teacher education has already embraced many political assumptions about knowing. Synthesizing a variety of the educational knowledges we have studied, such teachers begin to put together the complex ways these political assumptions shape the purposes of schools, the image of the "good teacher," the validated knowledge about "best practices" they are provided, and the ways they are evaluated. In this synthetic context they know that the way particular knowledges are transmitted reflects a variety of value positions and hidden assumptions.

In this context, critical complex teachers use their insights to connect their students to these understandings. Such teachers get to know their students and help their students know them by producing a form of authentic dialogue. With their students, they analyze and reflect on classroom conversations (How do we talk to one another?), the nature of classroom learning (What do we call knowledge?), curriculum decisions (What do we need to know?), and assessment (Is what we are

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doing working?). In this conversation with students they ask how the macro-level decisions about larger educational, political, and moral issues shape these everyday classroom dynamics. When thinking advances and the dialogues grow in sophistication, students come to reflect on the socio-political, moral, and epistemological dimensions of their school experiences. When this happens, a new level of learning has been reached.

The concept of teachers as researchers becomes extremely important in critical complex practice (Kincheloe, 2003). If teachers and eventually students are to be able to engage in these types of exercises, they must become researchers of educational contexts. Bringing the various educational knowledges together with research skills, all parties are empowered to reveal the deep structures that shape school activities. In this process they develop a reflexive awareness that allows them to discern the ways that teacher and student perception is shaped by the socio-educational context with its accompanying linguistic codes, cultural signs, and tacit views of the world. This reflexive awareness, this stepping back from the world as we are accustomed to seeing it, requires that the prospective teachers construct their perceptions of the world anew. For teachers this reconstruction of perception is not conducted in a random way but in a manner that undermines the forms of teacher thinking that the culture makes appear natural. Reflexively aware teacher researchers ask where their own ways of seeing come from, in the process clarifying their own meaning systems as they reconstruct the role of the practitioner. The ultimate justification for such reflective research activity is practitioner and student empowerment. In this context teachers gain the skills to overcome the positivist tendency to discredit their integrity as capable, reflexively aware, self-directed professionals (Carson & Sumara, 1997; Diamond & Mullin, 1999; Hatton & Smith, 1995 McLaren, 2000; Wesson & Weaver, 2001). An awareness of these knowledges can elicit productive analyses, conversations, and actions that lead to new forms of pedagogical and intellectual rigor.

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