

**DRAFT 11.14.06**

**Conceptual Framework for Professional Education  
Philosophy and Knowledge Base**

Abstract

Education in Virginia Tech's School of Education is organized around four assumptions. Briefly stated, these assumptions relate to (a) inquiry, (b) culturally-relevant pedagogy, (c) strong professional communities, and (d) activism and civic engagement. An additional emphasis of our programs is literacy in science, technology, engineering, and mathematics (STEM).

First, we believe that in addition to mastering disciplinary knowledge and developing a repertoire of effective pedagogical strategies and skills, teaching means learning how to learn about students, their cultures and the environments they come from. Inquiry, in the sense of systematically monitoring our own practice as educators, is fundamental to our conception of teaching, counseling, and leadership. Rather than an isolated endeavor, however, inquiry is conceived as something undertaken in networks "where inquiry is regarded as part of larger efforts to transform teaching, learning, and schooling" (Cochran-Smith & Lytle, 1999, p. 278). Such networks extend across subject areas and the borders of the school. Teaching, school counseling, and other forms of school leadership require practitioners who can foster collaboration with peers, work with parents and community members, and understand cross-grade and cross-school connections (Miettinen, 1999, p. 340).

Second, we believe that students learn in a variety of ways, through activities that challenge their assumptions, engage their identities, involve them with others who understand the world differently, and allow them choices and time to explore and question existing arrangements. Students come to educational settings with already-developed frames of reference which teachers must connect to the kinds of knowledge taught in schools (Dyson, 1999). Teaching must engage "kids and their curiosity about the world, get them asking questions and subjecting their own and other people's ideas to tough testing . . . [It must] call upon the best habits of mind and imagination . . . that make perseverance seem obvious and natural, [and] widen their horizons in terms of subject matter, people, and places" (Meier, quoted in Capellaro, 2005-6). This implies a kind of "culturally-responsive" teaching (Murrell, 2002; Ladson-Billings, 1997) that prospective educators acquire through strategically designed internships and student teaching in schools and classrooms where diverse student populations are being successfully educated.

Third, we believe that this kind of teaching can only occur in schools where power and accountability are shared by all educators in the school (Ingersoll, 2003). Learning to teach is necessarily about learning to assume responsibility and exercise control over organizational functions, both instructional and social. This requires an ability to work collegially (Little, 2002) not only in departmental and grade-level teams but across subjects and grades to form strong,

progressive, instructional communities (McLaughlin & Talbert, 2001). We believe that parents should be active participants in these communities. If educational reform cannot be successfully implemented top-down (Datnow, 2000), neither can it be accomplished without the engagement of multiple communities with competing interests (Rogers & Oakes, 2005). We believe that teachers and other school leaders must learn how to work with parents, not only enrolling them in pre-defined action agendas, but joining with them in scrutinizing and making decisions about the organization and conduct of schooling (Fine, 1993).

Fourth, a commitment to civic activism is at the core of our conception of educational leadership. We believe that schooling cannot be separated from the broader social, cultural, political, and economic processes that shape inequalities in health, housing, income, and education. Educators' work transcends the classroom and it is essential that they have the critical skills to analyze the context of their work and actively participate in civic life. We believe educators at all levels are public intellectuals with responsibilities for civic engagement far beyond the school. Technologies play key roles in these processes as means for facilitating professional reflection, developing new forms of curriculum materials and teaching tools, and media for redefining public outreach through new forms of communications technologies. We discuss aspects of the knowledge base for these assumptions below.

Finally, our emphasis on increasing literacy in science, technology, engineering, and mathematics (STEM) provides a focus for many programs in our School of Education. In school settings, there is often an artificial separation among the STEM areas that does not provide the best environment for teaching and learning to occur. In contrast, outside of schools, the content of science, technology, engineering, and mathematics are closely interrelated. Our programs seek to build bridges among these fields in order to enhance the learning of students at all levels of education and to prepare them for the global economy.

## Conceptual Framework for Professional Education Philosophy and Knowledge Base

Education in Virginia Tech's School of Education is organized around four assumptions. Briefly stated, these assumptions relate to (a) inquiry, (b) culturally-relevant pedagogy, (c) strong professional communities, and (d) activism and civic engagement. An additional emphasis of our programs is literacy in science, technology, engineering, and mathematics (STEM).

### *Inquiry*

Schools and classrooms are not standardized work settings (Mehan, 1999). Things like administrative regimes, funding levels and resource availability, the composition and mobility of school staff, and the economic and cultural capital of parents and students, present teachers and administrators with a work domain composed of "broadly similar but never precisely identical situations" that are "mutable, indeterminant (some facts unknown), and particular" (Scott, 1998, pp. 315-316). Problems are ill-defined, change in time, and require situated knowledge that can only be acquired through participation in and analysis of particular settings.

Inquiry by all educators is thus foundational to professional preparation in the School of Education. Curriculum planning, lesson organization, classroom management, strategies for analyzing and assessing student work in context- and content-specific ways and for tracking the effects of instructional efforts and strategically changing them in response to problems or new opportunities (Darling-Hammond & Bransford, 2005) are skills learned in part in pre-service settings, but are also developed as prospective educators investigate and systematically reflect on specific contexts of practice. "Teachers' development should not be understood as simply acquiring skills and knowledge, but as constantly studying, experimenting, and reflecting on the management of complex practices and professional careers" (National Academy of Education, 1999, p. 8).

Similarly, while mastery of disciplinary knowledge in content areas is a necessary condition of quality pedagogy (Zeichner, 2003, p. 505), such knowledge is far from static, and educators need the skills and dispositions to stay engaged with developments in their disciplinary fields if their own knowledge is not to become "dead" (Waller, 1932/1965).

The professional education unit's commitment to inquiry is distributed throughout the preparation curriculum. Methods of observation and analysis are taught in content methods courses, foundations courses, and courses on inquiry methods. Future generations of academic researchers are taught in doctoral programs through such mechanisms as well as through sustained mentorship experiences with faculty members. In addition to explicit instruction in techniques of inquiry, we seek to cultivate inquiry as a set of dispositions – generative habits of mind that teachers, counselors, and other school leaders draw upon when dealing with uncertain or emergent situations or when working through unexpected opposition and adversity (Bourdieu, 1977). These include the attitude of trying to see issues in historical depth and geographic extension, treating differences among students as resources to develop rather than problems to

fix, and seeing problems (behavioral or cognitive) as products of relational processes rather than manifestation of stable internal traits. Key among the dispositions of inquiry are openness to self-examination, collaboration with other inquirers, and the collective interrogation of practice. As Cochran-Smith and Lytle (1999) argued, the context-specific quality of “knowledge of [teaching] practice” presupposes connected inquiry:

A central idea of this work is that knowledge of practice across the professional life span is generated by making classrooms and schools sites for research, working collaboratively in inquiry communities to understand the co-construction of curriculum, developing local knowledge, and taking critical perspectives on the theory and research of others. (Cochran-Smith & Lytle, 1999, p. 275)

### *Culturally-relevant Pedagogy*

To “know how children learn and develop” (Darling-Hammond & Bransford, 2005), teachers need to understand learning as a socio-cultural activity and be able to connect curricula and pedagogy to the activity systems and cultural identities in which pupils participate in and out of school. Students bring to school knowledge, learning practices, and frames of reference from home, peers, after-school programs, the media, and elsewhere, and inevitably make connections between school tasks and this everyday knowledge (Dyson, 1999). Instead of simple “content delivery,” teaching is a matter of constructing schools and classrooms as systems of learning organized around multiple technologies and of shaping roles for students in this process. Learning isn’t just inside the head, but neither is it just the assumption of identities and participation in “communities of practice” or activity systems (Lave & Wenger, 1991; Rogoff, 1994, 1995). Ultimately it involves the questioning and transformation of such communities (Engestrom, 1995, pp. 168-169; Tuomi-Grohn & Engestrom, 2003, pp. 30-31). Central to this orientation is an understanding that race, gender, social class, (dis)ability and other “differences that make a difference” (Bateson, 1972, p. 453) intersect in complex ways across settings (Tyson, Darity, & Castellino, 2005; Noguera, 2003; Bettie, 2002; Collins, 1998; Hall, 1995; Pollock, 2003). This unit rejects racist (e.g., Herrnstein & Murray, 1994), classist (e.g., Payne, 2001), and the other essentializing ideologies currently resurgent in educational policy (Marks, 2005; Gorski, 2005). Teachers, counselors, and administrators need not only subject matter skill and pedagogical craft, but the knowledge and analytical tools to look at schooling through critical understandings of race, culture, language, and power. As McLaughlin and Talbert (2001) noted, such pedagogy does not mean lowering expectations, simplifying content, or focusing on topics presumed to be already-familiar to students: “Teachers who try to construct ‘relevant’ lessons by focusing on students’ age, gender, ethnicity, race, academic status, inferred interests, or futures often alienate the students they aim to teach” (p. 36). Rather, “nontraditional students appear to be . . . more successful as learners in classrooms where teachers connect them to subjects in new ways” (p. 36; see, e.g., Moses & Cobb, 2001). As Murrell (2002) suggested, drawing on Ladson-Billings (1997), such pedagogy incorporates: “more than language and communicative style, more than interactional competence, to include a critical and reflective regard of the social, historical, and cultural positionings of teachers and students in the conjoint actions that constitute teaching and learning” (p. 15).

Teachers' expectations can (even unconsciously) affect the treatment of their pupils (Ferguson, 2003; George & Aronson, 2003), but expectations are not static. They can be shaped by preparation programs that give prospective teachers opportunities to observe, analyze, and interact with successful teachers of diverse student populations. Moreover, such pedagogies are not functions solely of the perceptions and beliefs of the individual teacher, but must be understood as aspects of systems of activity that include teachers, students, and schools (Murrell, 2002). As Weade (1992) argued:

It is not *just* teaching that brings about learning. Rather, opportunities for learning are embedded within a complex and dynamically evolving social context that is co-constructed by students and teacher as they affiliate over time in pursuit of instructional and curricular goals. (Weade, 1992, p. 95)

A teacher should be “able to incorporate aspects of his or her students’ abilities, experiences, cultures, participation styles, frames of reference, and community resources into the class in ways that enhance student learning” (Zeichner, 2003, p. 508). To accomplish this, teachers need to understand how their own ways of speaking and norms of participation differ systematically from those of their students. Prospective teachers learn to bring this self-awareness to bear as they organize mandated subject matter into curricula that give students culturally appropriate ways of connecting to the material while preparing them for external evaluations. Some methods, such as backwards planning and unit construction, are well-defined and taught in methods courses. Prospective teachers learn how to organize culturally connected approaches to teaching with the need to prepare students for high achievement on state-mandated tests without teaching to the test or abdicating responsibility for teaching all students. Finally, in addition to becoming skilled at analyzing, interpreting, and critiquing standardized testing practices (Kornhaber, 2004) teacher candidates learn “how to develop and use assessments that measure learning standards and how to use the results to plan teaching that addresses student learning needs” (Darling-Hammond & Bransford, 2005, pp. 56-57). This includes knowledge of classroom-based assessments (Shepard, 2000); including dynamic assessment (Bransford & Schwartz, 1999; Newman, Griffin, & Cole, 1989).

### *Strong Professional Communities*

The kind of inquiry-driven, culturally-responsive teaching described above cannot be carried out by an isolated teacher. As Meier (in Capellaro, 2005-6, p. 2) stated, “a school’s culture is what teaches – not just individual classrooms.” As Little (2002) summarized:

Professional community is an important contributor to instructional improvement and school reform. Researchers posit that conditions for improving teaching and learning are strengthened when teachers collectively question ineffective teaching routines, examine new conceptions of teaching and learning, find generative means to acknowledge and respond to difference and conflict, and engage actively in supporting professional growth. (Little, 2002, p. 917)

This collegiality is essential to the kind of collective inquiry endorsed earlier. As McLaughlin and Talbert (2001) demonstrated, “weak” teacher communities “do not prompt teachers to question their assumptions about good practice and response to their nontraditional students’ poor performance, or to consider new ways of schoolteaching” (p. 63). To train teachers as if they should close their doors and work in isolation, that is, to limit professional preparation to the skills of shaping lessons and interacting with students, is in essence teaching them to work in weak communities and likely sets them up for failure (Hargreaves, 1994). Instead, our programs try to show them how to begin building strong communities. In “strong communities” teachers “share a sense of common mission and negotiate principles, policies, and resources for their practice” (McLaughlin & Talbert, 2001, p. 63). This “strength” does not automatically support culturally relevant teaching; it can easily promote elitist and discriminatory approaches. Thus it is essential for teachers and administrators to work collaboratively towards instructional issues.

Professional community requires that teachers understand how school organizations and administrative regimes operate (Ball, 1987) and how different kinds of structures and staffing systems influence learning (Darling-Hammond, 1997). Teacher control is a key issue. As Ingersoll (2003) argued, “if reform is to be effective, actual decision-making power must be shared” (p. 246). Teacher control – over both instructional and social issues in the school – decreases turnover, student disruption, and behavioral problems and improves relations between teachers and principals.

Finally, our programs systematically prepare professional educators to understand differences in family organization, family contexts, and cultural conceptions of the roles of parents in education and provide prospective educators with the skills of incorporating parents into educational processes in meaningful ways (Hidalgo, Bright, Siu, Swap, & Epstein, 1995). Current policy agendas that define schools as sellers of educational services and parents as customers not only misrepresent the situation, they preclude its amelioration. Our teachers and administrators learn how to form alliances with different community factions in support of educational reform. As Fine (1993) suggested:

We need to see the teacher-parent adversarial relation as largely *constructed by and serving* the very bureaucracies (local, state, and federal) that are underfunding and overcontrolling public education. Indeed, we must resist relentlessly the splitting of parents' and educators' interests in their struggles to transform public education. It is only through organizing parents and educators, as a democratic coalition, that both *privatization and controlling bureaucracy* can be confronted. (p. 699, original emphasis)

### *Activism and Civic Engagement*

As the last comment makes clear, it is no longer viable to imagine new teachers, counselors, and school administrators as anything other than civic activists. At the beginning of the 21<sup>st</sup> century, inequality and segregation are increasing in the U.S. The gap between rich and poor is at its widest in almost a century (Goode & Maskovsky, 2001). Racial segregation in

schools has been increasing since the late 1980s and now resembles the level prior to the 1954 *Brown vs. Board of Education* decision (Orfield & Lee, 2004). An increasing percentage of the student population is Latino/a, African American, Asian American, and mixed ethnicity, creating a “demographic imperative” (Zeichner, 2003) disadvantaging schools ill-equipped to deal with such diversity. Educational outcomes, school discipline sanctions, special education labels, drop-outs, and low-test scores vary dramatically by race, ethnicity, language and social class (Losen & Orfield, 2002; Skiba, Michael, Nardo, & Peterson, 2000). Yet even as the English language learner student population in the U.S. increases, bilingual education is being suppressed. Class and race bias in school organizational features like tracking systems and other forms of differentiation remain common (Oakes, 2005). High-stakes testing systems penalize diverse schools (Novak & Fuller, 2003), limit the pedagogical options of teachers in low-performing schools, and encourage teaching to the test (Firestone, Schorr, & Monfils, 2004). Instability in labor markets as a result of globalization, urban economies, and shortages in low- and moderate-income housing make the U.S. the most mobile population in the industrialized world and create disruptively high levels of student turnover in urban schools. Teacher turnover is endemic as well (Ingersoll, 2003, p. 197), and the schools in the poorest areas with the most diverse populations get the most inexperienced (or least desired) teachers (Lankford, Loeb, & Wyckoff, 2002). As Rogers and Oakes (2005) suggested, “Rather than abating over time, resistance to reforms aimed at realizing the promise of *Brown* has persisted and perhaps has grown stronger” (2005, p. 2184).

To cite these patterns is not to offer an excuse or to lower expectations. It is a recognition that schools and the communities they serve are shaped by cultural, economic, and ideological forces, that the wide-spread and systematic influence of inequality on educational outcomes signals a need for teachers and administrators who can individually and collectively analyze these forces to work beyond the school as advocates for schools, students, and their communities.

### *Science, Technology, Engineering, and Mathematics (STEM) Literacy*

As noted previously, we believe that inquiry and learning are undertaken in networks extending across subject areas and that teachers should learn to collaborate and understand cross-school connections. Beyond school walls, the content of science, technology, and mathematics are inextricably connected. At a time when technological development permeates virtually all aspects of our lives, a scientist would no more work without benefit of mathematical and technological operations and ideas than a technologist or engineer would seek to solve complex problems without benefit of scientific inquiry or mathematics. The separation among the STEM subjects that occurs in schools is artificial and counterproductive from both teaching and learning perspectives. Constructivist learning theories from Piaget’s conception that “...all knowledge is tied to action, and knowing an object or event is to use it by assimilating it to an action scheme” (Piaget, 1967, pp. 14-15) to contemporary notions of “how people learn” (Bransford, Brown, & Cocking, 2000) argue in favor of interdisciplinary approaches to STEM education that are invariably active and social in nature.

An array of recent educational reform efforts speak directly to the need for students to better understand the connections and among STEM and related subjects. This is the *central* idea

underlying science education reform: “*Science for All Americans* is based on the belief that the scientifically literate person is one who is aware that science, mathematics, and technology are interdependent human enterprise” (American Association for the Advancement of Science, 1989, p. 4). Likewise, the third of 20 *Standards for Technological Literacy* (International Technology Education Association, 2000, pp. 44-45) calls for students to “understand the connections between technology and other fields of study,” highlighting science and mathematics in particular, as well as engineering, humanities, and the social sciences. The math standards (National Council of Teachers of Mathematics, 1989) call for situating mathematics in the context of “real world problems”—many of which are technological in nature. The social studies standards (National Council for the Social Studies, 1997) stipulate:

“Tracing the impact of science and technology in such areas of human endeavor as agriculture, manufacturing, the production and distribution of goods and services, the use of energy, communication, transportation, information processing, medicine and health care, and warfare enables learners to understand both the way science and technology have influenced and have been influenced by individuals, societies, and cultures.” (n. p.)

Citizens, politicians, and educators of the 21<sup>st</sup> century must increasingly be able to understand STEM problems and solutions, as well as their intended and unintended consequences. We see technological literacy as including computing and instructional technologies, but going far beyond these in scope. For example, we see language as technology, mathematics as science, and scientific and technological byproducts interacting with culture, environment, and the political milieu. Moreover, we see threads such as aesthetics, inquiry, design, problem solving, and active learning tying all of this together in the school curriculum. We take a very broad view of literacy that recognizes the many connections between STEM and other school subjects as well as the interdependent nature of STEM content. Further, with the interdependence of global economies and the prevalence of global ecological sustainability issues, STEM education is essential for preparing students for the 21<sup>st</sup> century.

## References

- American Association for the Advancement of Science (1989). *Science for all Americans*. Washington, DC: Author.
- Ball, S. (1987). *The micro-politics of the school*. London: Methuen.
- Bateson, G. (1972). *Steps to an ecology of mind*. New York: Ballentine.
- Bettie, J. (2002). *Girls without class*. Berkeley: University of California Press.
- Bourdieu, P. (1977). *Outline of a theory of practice*. Cambridge: Cambridge University Press.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (1999). *How people learn: Brain, mind, experience, and school*. Washington, DC: National Academy Press.
- Bransford, J., & Schwartz, D. (1999). Rethinking transfer: A simple proposal with multiple implications. *Review of Research in Education, 24*, 61-100.
- Capellaro, D. (2005-6). Teacher quality: Conversations on quality with Deborah Meier. *Rethinking Schools 20*(2). Retrieved July 19, 2006, from [http://www.rethinkingschools.org/archive/20\\_02/debo202.shtml](http://www.rethinkingschools.org/archive/20_02/debo202.shtml)
- Cochran-Smith, M. & Lytle, S. (1999). Relationships of knowledge and practice: Teacher learning in communities. *Review of Research in Education, 24*, 249-305.
- Collins, P. H. (1998). Some groups matter: Intersectionality, situated standpoints, and Black feminist thought. In Collins, P.H. (Ed.) *Fighting words*, (pp. 201-228). Minneapolis: University of Minnesota Press.
- Darling-Hammond, L. (1997). Staffing schools for teaching and learning. In *The right to learn: A blueprint for creating schools that work* (pp. 177-209). San Francisco: Jossey-Bass.
- Darling-Hammond, L., & Bransford, J. (Eds.) (2005). *Preparing teachers for a changing world*. San Francisco: Jossey-Bass.
- Datnow, A. (2000). Power and politics in the adoption of school reform models. *Educational Evaluation and Policy Analysis, 22*, 357-374.
- Dyson, A. (1999). Transforming transfer: Unruly children, contrary texts, and the persistence of the pedagogical order. *Review of Research in Education, 24*, 141-171.
- Engestrom, Y. (1995). *Non scolae sed vitae discimus*: Toward overcoming the encapsulation of school learning. In H. Daniels (Ed.) *An introduction to Vygotsky* (pp. 151-170). New York: Routledge.

- Ferguson, (2003). Teachers' perceptions and expectations and the black-white test score gap. *Urban Education*, 38(4).
- Fine, M. (1993). (Ap)parent involvement: Reflections on parents, power, and urban public schools. *Teachers College Record*, 94(4): 682-710. (PDF)
- Firestone, W., Schorr, R., & Monfils, L. (Eds.) (2004). *The ambiguity of teaching to the test*. Mahwah, NJ: Lawrence Erlbaum Associates.
- George, P., & Aronson, R. (2003). *How do educators' cultural belief systems affect underserved students' pursuit of postsecondary education?* Retrieved July 19, 2006, from [http://www.prel.org/products/pn\\_/cultural-belief.htm](http://www.prel.org/products/pn_/cultural-belief.htm)
- Goode, J., & Maskovsky, J. (Eds.). (2001). *The new poverty studies*. New York: New York University Press.
- Gorski, P. (2005). Savage unrealities: Uncovering classism in Ruby Payne's Framework. Retrieved March 1, 2006, from [http://www.edchange.org/publications/Savage\\_Unrealities.pdf](http://www.edchange.org/publications/Savage_Unrealities.pdf)
- Hall, S. (1995). The question of cultural identity. In S. Hall, D. Held, D. Hubert, & K. Thompson (Eds.), *Modernity* (pp. 595-634). Cambridge, MA: Blackwell.
- Hargreaves, A. (1994). *Changing teachers, changing times*. New York: Teachers College Press.
- Hartman, C. (2003). *High classroom turnover: How children get left behind*. Retrieved July 19, 2006, from [http://www.prrac.org/CCCR\\_Chapter16.pdf](http://www.prrac.org/CCCR_Chapter16.pdf)
- Herrnstein, R., & Murray, C. (1994). *The bell curve*. New York: Free Press.
- Hidalgo, N., Bright, J., Siu, S., Swap, S., & Epstein, J. (1995). Research on families, schools, and community: A multicultural perspective. In J. Banks (Ed.), *Handbook of research on multicultural education* (pp. 498-524). New York: Macmillan.
- Ingersoll, R. (2003). *Who controls teachers' work? Power and accountability in America's schools*. Cambridge, MA: Harvard University Press.
- International Technology Education Association. (2000). *Standards for technological literacy—Content for the study of technology*. Reston, VA: Author.
- Kornhaber, M. (2004). Appropriate and inappropriate forms of testing, assessment, and accountability. *Educational Policy*, 18(1), 45-70.
- Ladson-Billings, G. (1997). *The dream-keepers*. San Francisco: Jossey-Bass.
- Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. *Educational Evaluation and Policy Analysis*, 24, pp. 37-62.

- Lave, J., & Wenger, E. (1991). *Situated learning*. Cambridge: Cambridge University Press.
- Little, J. (2002). Locating learning in teachers' communities of practice: Opening up problems of analysis in records of everyday work. *Teaching and Teacher Education, 18*, 917–946.
- Losen, D., & Orfield, G. (2002). Introduction: Racial inequality in special education. In D. Losen & G. Orfield (Eds.), *Racial inequality in special education* (pp. xv-xxxvii). Cambridge, MA: The Civil Rights Project at Harvard University, Harvard Education Press
- McLaughlin, M., & Talbert, J. (2001). Professional communities and the work of high school teaching. Chicago: University of Chicago Press.
- Marks, J. (2005). Anthropology and *The Bell curve*. In C. Besteman & H. Gusterson (Eds.), *Why America's top pundits are wrong: Anthropologists talk back* (pp. 206-227). Berkeley: University of California Press.
- Mehan, H. (1999). The study of social interaction in educational settings: Accomplishments and unresolved issues. *Human Development, 41*, pp. 245-269.
- Miettinen, R. (1999). Transcending traditional school learning: Teachers' work and networks of learning. In Y. Engestrom, R. Miettinen, & R. L. Punamaki (Eds.), *Perspectives on activity theory* (pp. 325-344). Cambridge: Cambridge University Press.
- Moses, R., & Cobb, C. (2001). *Radical equations: Civil Rights from Mississippi to the Algebra Project*. Boston: Beacon.
- Murrell, P. (2002). *African-centered pedagogy*. Albany: State University of New York Press.
- National Academy of Education. (1999). *Recommendations regarding research priorities: An advisory report to the National Educational Research Policy and Priorities Board*. Washington, DC: National Academy of Education.
- National Council for the Social Studies (1997). *Standards for teachers. Science, technology, and society*. Retrieved July 10, 2006, from <http://www.socialstudies.org/standards/teachers/vol1/thematic/>
- National Council of Teachers of Mathematics. (1989). *Curriculum and evaluation standards for school mathematics*. Reston, VA: Author.
- Newman, D., Griffin, P., & Cole, M. (1989). *The construction zone: Working for cognitive change in schools*. Cambridge: Cambridge University Press.
- Noguera, P. A. (2003). The trouble with black boys: The role and influence of environmental and cultural factors on the academic performance of African American males. *Urban Education, 38*(4), 41-459.

- Novak, J. R., & Fuller, B. (2003, December). Penalizing diverse schools: Similar test scores, but different students, bring federal sanctions. *Policy Analysis for California Education (PACE) Policy Brief 03-4*. Retrieved July 19, 2006, from [http://pace.berkeley.edu/policy\\_brief\\_03-4\\_Pen.Div.pdf](http://pace.berkeley.edu/policy_brief_03-4_Pen.Div.pdf)
- Oakes, J. (2005). *Keeping track* (2<sup>nd</sup> ed.). New Haven: Yale University Press.
- Orfield, G., & Lee, C. (2004). *Brown at 50: King's dream or Plessy's nightmare?* Cambridge, MA: Harvard University, The Civil Rights Project. Retrieved July 19, 2006, from <http://www.civilrightsproject.harvard.edu/research/reseg04/brown50.pdf>
- Payne, R. K. (2001). *A framework for understanding poverty*. Highlands, TX: RFT Publishing.
- Piaget, J. (1967). *Biology and knowledge*. Paris: Gallimard, pp. 14-15.
- Pollock, M. (2004). Race-bending. *Anthropology and Education Quarterly*, 35(1), 30-52.
- Rogers, J., & Oakes, J. (2005). John Dewey speaks to *Brown*: Research, democratic social movement strategies, and the struggle for education on equal terms. *Teachers College Record*, 107, 2178-2203.
- Rogoff, B. (1994). Developing understanding of the idea of communities of learners. *Mind, Culture, and Activity*, 1, 209-229.
- Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J. Wertsch, P. Del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139-164). Cambridge: Cambridge University Press.
- Scott, J. (1998). *Seeing like a state*. New Haven, CT: Yale University Press.
- Shepard, L. (2000). The role of assessment in a learning culture. *Educational Researcher*. Retrieved July 19, 2006, from <http://www.aera.net/pubs/er/arts/29-07/shep01.htm>
- Skiba, R. J., Michael, R. S., Nardo, A. C., & Peterson, R. (2000). *The color of discipline: Sources of racial and gender disproportionality in school punishment*. Retrieved July 19, 2006, from <http://www.indiana.edu/~safeschl/cod.pdf>
- Tuomi-Grohn, T., & Engestrom, Y. (2003). Conceptualizing transfer: From standard notions to developmental perspectives. In T. Tuomi-Grohn & Y. Engestrom (Eds.), *Between school and work: New perspectives on transfer and boundary-crossing* (pp. 19-38). Amsterdam: Pergamon.
- Tyson, K., Darity, W., & Castellino, D. (2005). It's not "a black thing": Understanding the burden of acting white and other dilemmas of high achievement. *American Sociological Review*, 70, 582-605.

Waller, W. (1965). *The sociology of teaching*. New York: John Wiley & Sons. (Original work published 1932)

Weade, G. (1992). Locating learning in the times and spaces of teaching. In H. Marshall (Ed.), *Redefining student learning: Roots of educational change* (pp. 87-118). Norwood, NJ: Ablex.

Zeichner, K. (2003). The adequacies and inadequacies of three current strategies to recruit, prepare, and retain the best teachers for all students. *Teachers College Record*, 105, 490-519.