

Informed Interaction: A Funds of Knowledge Approach to Students in Poverty

Davis Clement, Brian Fries, Mike Postma, and Bei Zhang

The Elementary and Secondary Education Act, last restructured in 2002 as the No Child Left Behind Act (NCLB) of 2001, was intended to close the achievement gap between students from families of low socioeconomic status (SES) and their peers (U.S. Department of Education, 2002). Though the NCLB policy outlined a variety of methods to reform American education, children of low SES continue to suffer reduced academic achievement levels when compared to the achievement of other students (American Psychological Association, 2014). SES is defined by an individual's or family's economic and social position in relation to other individuals or families (American Psychological Association, 2014). Substantial evidence links low SES (e.g., poverty) to lower educational outcomes. Children from families of low SES score 10% lower than the national average on national achievement tests, and they tend to drop out of high school at higher rates than their contemporaries from higher SES backgrounds (American Psychological Association, 2014).

American educational settings include a persistent bias against students of low SES and their academic performance (Gonzalez, Moll, & Amanti, 2005). The SES difference that exists between student populations and teachers drives the need to develop educational environments that foster mutual trust and understanding, bridging the discord between a student's cultural background and the outcomes and expectations of the curriculum and the school. Evidence suggests that discord between a student's home and school environments contributes to poor educational outcomes (Brown, 2007). As a result, educators are seeking methods to improve the connection between school and home. The student learning that occurs amid this discord has been called the *hidden curriculum* by some researchers and advocates (Giroux, 2001). Instead of being explicitly stated, this curriculum is implied

by the formal, stated curriculum of a school, yet has widely disparate outcomes for students, depending on their race, SES, ethnicity, or linguistic identity. Identifying what methods are needed to better connect home and school requires school leaders to somehow identify the nature of the discord between a student's home and school environments.

In this paper we advocate educator, teacher and administrator use of the Funds of Knowledge (FoK) theory to identify the hidden curriculum that a student of low SES perceives or consumes in school (Moll, Amanti, Neff, & Gonzalez, 1992). After the nature of this hidden curriculum is specified, educators will be equipped to better connect the home and school environments of students of low SES and ultimately to improve their academic performance. We first explain how identifying the hidden curriculum as a function of the interaction of the school's formal curriculum and the student's funds of knowledge is essential to understanding how to counter its effects. Next, we review the emergence of FoK in research literature, highlighting selected studies that have used the FoK theory in classrooms that provide concrete methods for improving student academic achievement. Finally, we offer implications for research and practice.

Disparate Outcomes

Standardized teaching and testing of a standardized curriculum should result in standardized performance across a normal distribution. In reality, however, the same curriculum affects some populations of students differently than it affects other populations of students (Jones, 2004; Lipman, 2004; Martinez-Roldan & Malave, 2011; Sapon-Shevin, 2004; Weiss, 2006), and high-stakes testing of that curriculum results in disparate outcomes across the socioeconomic spectrum (Brignall, 2006; Lipman,

2004; Vinson, Gibson, & Ross, 2004). As a result, students in poverty report more “mistrust,” “anger,” and “dissociation” (Langhout & Mitchell, 2008, p. 595) related to school than students from middle- or upper-class backgrounds. Students who do not identify with school, as one might expect of those who are mistrustful of, angered by, or disassociated from school, are less likely to be academically engaged. Academic engagement is defined by Langhout and Mitchell (2008) as “on task and enthusiastic, optimistic, and curious about learning” (p. 595). This definition of academic engagement, however, is not measurable in terms of measured proficiency in a subject area, but in terms of specific student behaviors and dispositions that lead to increased proficiency in a subject area. Therefore, increased academic improvement is a result of increased enthusiasm, optimism, and curiosity.

Even half a century after the release of the *Coleman Report*, family SES “still dominates the statistical explanation of student achievement” (Levin, 2007, p. 1384). Students from poorer families have only one-third the vocabulary of children from middle-class families by the time they start kindergarten. At fourth and eighth grades, students in poverty are 25 percentage points below middle-class students in reading and math. In 2001, students from poverty were six times more likely to drop out of high school before graduation than middle-class students (Levin, 2007). Connecting Levin’s (2007) outcomes to the definitions of academic engagement from Langhout and Mitchell (2008), we can infer that the levels of enthusiasm, optimism, and curiosity among these students were just as low. School leaders must consider the possibility that such different outcomes between groups of students indicates that their curriculum, ostensibly standardized for all students, is actually different for some students than it is for others.

School reform efforts like No Child Left Behind (NCLB) have failed to erase the disparity in outcomes between students of low SES and students from middle-class backgrounds. In an issue brief for the Center for Comprehensive School Reform and Improvement, Craig D. Jerald (2006) claims that the

narrowing of curricular focus brought on by the new culture of standardized testing ushered in by NCLB disproportionately affects schools that serve students from low-income neighborhoods, as well as students from low-income families who attend majority middle-class schools. These negative effects appear to seek out students from low-income backgrounds, whether they are dispersed throughout schools that serve students of widely varied SES or concentrated in one school or district that serves predominantly low-SES neighborhoods (Levin, 2007). As the legislation does not facially discriminate against these groups, an alternative explanation must exist for the pinpointed effects of high-stakes standardized testing on students from high poverty backgrounds.

The answer is that these outcomes are not merely a result of a particular kind of formal curriculum. All standardized curricula do not automatically imply control or conformity. If this were the case, achievement results and disciplinary outcomes would be predictably tied to the type of curriculum a school delivers. Since there is diversity in outcomes among schools of the same type, it is more likely that the results are the effects of the interaction of the formal curriculum with particular students.

Hidden Curriculum as Interaction

Giroux (1981) defines the hidden curriculum as “the myriad of beliefs and values transmitted tacitly through the social relations and routines that characterized day-to-day school experience” (p. 284). Factors such as materials, teacher qualifications, teacher behaviors, classroom routines, regulations, student tracking, and time spent in instruction—none of which are the prerogative of a standardized curriculum—have a noticeable impact on student performance in and perception of school (Hemmings, 2000; Jerald, 2006; Levin, 2007). We suggest that these elements, or the informal curriculum, combine with the standardized, or formal, curriculum to form a single *transmitted* curriculum, to use Giroux’s (1981)

wording. One might expect the impact of such school-wide decisions to similarly affect all students. But these policies affect different students in different ways (Langhout & Mitchell, 2008). So Giroux's transmitted curriculum, even encompassing the formal and informal utterances of school policies, cannot fully account for the hidden curriculum.

Levin (2007), however, sees the hidden curriculum as the "actual content of the student experience...characterized by activities and interactions that are profoundly different from the formal dimensions" (p. 1389). From Giroux's perspective, there is a clear transmitted curriculum that is the result of both formal and informal phenomena, but in focusing on the individual student experience, Levin proposes a hidden curriculum that is beyond Giroux's transmitted curriculum. Levin's hidden curriculum relies on interaction between student and school. Factors such as home language, print access, previous school experiences, peer perceptions of schooling, family patterns, and local micro-cultural values all mediate the effects of school curriculum, instruction, and testing (Giroux, 1981; Hemmings, 2000; Lipman, 2004; Martinez-Roldan & Malave, 2011; Rueda & Dembo, 2006). It is this interaction that constitutes the hidden curriculum. Therefore, the key to improving outcomes for students of low SES is identifying—and changing—the nature of the interaction between the student and the school. By employing an approach that values students' home experiences and worldview, educators can change the hidden curriculum from one that stimulates disassociation, resentment, and apathy, to one that engenders enthusiasm, optimism, and curiosity. This is the Funds of Knowledge approach.

Funds of Knowledge

During the 1990s, the FoK theory emerged in scholarship as an anthropologically grounded approach to replace the deficit perspective usually taken in examining the educational outcomes of children of low SES. Moll et al. (1992) studied the

teaming of anthropologists with teachers to conduct ethnographic research into the families of students with low SES through home visitation. The study found that by drawing on the knowledge resources of the home environment (e.g., interactions with family, friends and community) teachers were able to develop engaging and rigorous learning environments (Moll et al., 1992). The Moll et al. research is important because it provides a methodology for improving the academic achievement of these students.

Eisenhart (2001) asserted that the FoK approach rests on culture, defined as "patterns in a way of life characteristic of a bounded social group and passed down from one generation to the next" (p. 4). Cultural patterns reflect a group's successful adaptation to relatively stable environmental (i.e., economic, social, and political) conditions (Carlone & Johnson, 2012). A student's funds of knowledge are derived from these environmental adaptations. Though axiologically rooted in cultural studies, the FoK theory's focus on local community knowledge is a fundamentally different shift in thinking from the broader anthropological concept (Moll et al., 1992).

The FoK theory is defined as "those historically developed and accumulated strategies (skills, abilities, ideas, practices) or bodies of knowledge that are essential to a household's functioning and well-being" (Gonzalez et al., 2005, p.91-92). FoK encompass a community's history and culture, and they also may refer to the experiences, knowledge, and ways of learning particular to a given family within a community. According to Basu and Calabrese Barton (2007), the most significant aspect of FoK is cognizance of the home experience of students with low SES and use of that knowledge within the learning environment.

The FoK approach provides a way to meaningfully connect teachers and students from different cultural backgrounds. The American Education Research Association's Panel on Research and Teacher Education found that the majority of new teachers in urban and rural schools with population predominantly of low SES have

very different cultural backgrounds than their students (Cochran-Smith & Zeichner, 2005).

Use of the FoK theory results in a non-deficit and deferential approach to student teaching and learning. Rather than blaming students from low SES backgrounds for their poor academic performance, which is an ontologically negative stance, the FoK approach identifies, as the issue to be corrected, a mismatch between the home and classroom environments of those students (Moll et al., 1992). In this identification, students are seen as different, not as deviant. Bouillon and Gomez (2001) found that learning issues in students of low SES result from a disconnect between students, who cannot relate the curriculum to their lived experience, and the school teachers, who do not align their instructional methodology to the ontology, epistemology, and axiology of a child's home experience. In other words, students cannot merely suspend the core paradigm in which they live to meet the expectations of a potentially very different paradigm at school. Incorporating FoK theory into such learning environments bridges the potentially incompatible worldviews of student and school by advancing the idea that education can promote social relations between schools and homes (Bouillion & Gomez, 2001).

Educators know that students from low SES backgrounds who make strong connections between home and school environments are more enthusiastic about learning, retain knowledge better, and develop enhanced drive to acquire new information (Upadhyay, 2009). Children learn new ways of thinking and making sense of new experiences through their existing funds of knowledge. The FoK theory is rooted in the concept of applying community knowledge to the school environment for improved student learning (Basu & Calabrese Barton, 2007). Therefore, to better connect students from low SES backgrounds to the learning environment, teachers should incorporate student funds of knowledge into curriculum development and instruction.

Selected Studies

The racial/ethnic, cultural, and SES differences between students and teachers drive the need to foster educational environments that are characterized by shared student and teacher understanding (Rodriquez, 2013). To establish those educational environments, teachers must create processes that facilitate communication of the funds of knowledge of students from low SES backgrounds for classroom use (Moll et al., 1992). For example, Amaro-Jimenez and Semingson (2011) described the use of family journals to communicate classroom issues and success with the student's teacher. By making the effort to engage parents and learn more about the children's funds of knowledge, teachers were able to partner with those families to improve academic achievement of their students. The following studies highlight the use of innovative communicative processes to connect students' funds of knowledge to the classroom, thereby improving student academic performance (Calabrese Barton & Tan, 2009; Dworin, 2006; Taylor, Bernhard, Garg, & Cummins 2008; Upadhyay, 2009).

Two studies highlight the implications for the writing classroom that employs the FoK approach. Dworin (2006) presented evidence that linking the school curriculum to the funds of knowledge of students of low SES can improve students' writing capabilities. The study began by having the children read books that developed the theme of relevant family stories. During the next phase of the study, the students used their funds of knowledge to interview family members whose oral stories provided a basis for the writing project. The children engaged their family members several times during the writing process to verify the accuracy of the family oral stories in their writing project. Finally, the students' writing projects were distributed to the other class members and their family members. By having the students engage their families to write about topics from their homes and communities, the study's use of the FoK approach enabled students to understand that their

lives *outside* the classroom have importance and meaning *inside* the classroom. Taylor, et al, (2008) also conducted a study that presented evidence on the benefits associated with linking funds of knowledge of students with low SES to the school curriculum to improve student writing skills. In this study, students used their answers to questions about themselves, their friends, and their family to write stories about their home experiences. Student families were asked to contribute photos and assist with developing their family member's stories. The results of this study emphasized the important role that families play within a curriculum and classroom environment to develop literacy for students in poverty. Additionally, the study argues for the use of multimedia strategies as a means to connect classrooms and home experiences.

Also, the Updahyay (2009) study showcased the ability to teach science using culturally relevant pedagogy based on the funds of knowledge of students from low SES backgrounds. A fifth grade teacher in an urban setting identified environmental science projects as an opportunity to incorporate students' funds of knowledge into the classroom. The students shared their home gardening experiences in small groups to learn from each other and experiments were conducted that allowed students to see the benefits of learning science beyond the traditional school environment. The study's results suggest use of students' funds of knowledge facilitates the integration of lived experiences and the science curriculum (Updahyay, 2009). According to Updahyay (2009), "... teachers can teach science to underrepresented students more effectively if teachers spend the time to understand students' home environment" (p. 229). Calabrese Barton & Tan (2009) also studied a middle school science classroom with the majority of students coming from low SES backgrounds that effectively connected students' funds of knowledge and their learning. The teacher linked a food and nutrition class to students' lived experiences by having the students bring and discuss associations with foods eaten at their residence. This activity increased student classroom engagement and access to the

curriculum while giving the students a voice in curriculum development. The study's findings showed that use of students' funds of knowledge improved the students' learning experience and attainment of the learning outcomes in a science classroom (Calabrese Barton & Tan, 2009).

Suggestions/Implications for Practice

One of the most profound significances of the FoK theory/approach is that it transforms the teacher into a learner. Teachers can broaden their teaching repertoire by including students' funds of knowledge in their daily work. Every student then becomes a biography for the teacher to read, understand, and love. Only after a teacher becomes a devoted, passionate, and empathetic learner of the funds of knowledge of each student's family, can he or she make informed decisions about teaching. Utilizing FoK theory in the teaching practice is a way to help achieve equity across students from a variety of historically-disadvantaged groups.

Though the teacher is a critical piece in the classroom, curriculum is also crucially important to student learning. Information about students' and families' funds of knowledge should be gathered within communities through intensive ethnographic study. The information collected can be used to craft a more relevant and comprehensive curriculum. In turn, students whose cultures are underrepresented in the current curriculum will make more significant connections between prior life experiences and new knowledge. As these connections are constructed, increased student learning should take place. Curriculum writers should also consider their own personal funds of knowledge and the funds of knowledge of the teachers who will be transmitting the curriculum to students. Exploring potential areas of discord--or, the hidden curriculum--in advance allows teachers to intentionally plan for ways to remediate any discrepancy between the curriculum as it is written, transmitted, and received.

As just one example, teachers in a rigorous math course may traditionally assign an hour's

worth of homework so that students can have substantial practice opportunities. However, students from low SES backgrounds may have additional obligations after school, such as looking after younger siblings or even working a part-time job to make money for the family, which would take priority over homework. The assertion of the hidden curriculum in this case is that learning math requires more time than some students may be able to commit; this is an exclusionary practice. If teachers are aware of this challenge, however, they could plan to periodically operate a flipped classroom, where notes are taken at home and practice opportunities take place in the classroom. Teachers could also creatively provide other times for students to complete practice problems rather than after school.

The FoK approach is also a way to motivate and inspire students from families with low SES. The substantial amount of time needed to construct an ethnography of a group would likely result in a close bond being developed between researcher and subject. The commitment of the school to the needs of the families with low SES demonstrates care and investment to those involved. This ethnography would serve as a sort of a history of the family's successful adaptation to the challenges of middle-class society. Students and their families will feel valued simply because their requests are being heard and because school personnel are taking the time to meet with them.

Schools should also consider that discord exists in other areas outside of the academic curriculum. One example related to homework and more pressing obligations to the family was already mentioned. Other examples revolve around concepts of behavior, respect, and student codes of conduct. Many families with low SES, particularly those in urban areas, live in places where physical violence is a means of survival and self-defense. There are neighborhood or cultural codes about the need to not only defend oneself from physical harm, but to also defend one's reputation by fighting back instead of walking away. Such codes do not always translate well to schools, where zero tolerance

policies for fighting, regardless of who is the aggressor in the situation, result in large numbers of students with low SES getting suspended. Schools need to purposefully examine their codes of conduct and the codes of behavior of students outside of school. Any areas of discord must result in training for students and staff alike. Students must be taught academic knowledge; in the same sense, they need to be taught about behavioral expectations as well.

Many of these suggestions are ideas that involve large quantities of resources, namely time. At the division level, these suggestions may be feasible. However, classroom teachers cannot be expected to conduct ethnographic research and overhaul curriculum along with their daily responsibilities in the classroom. There are steps that teachers can take to draw on students' funds of knowledge to impact daily instruction. Family conferences with parents/guardians/other relatives and students provide valuable time to learn about a family's culture and expectations. Teachers could go one step further and conduct these conferences as home visits to gain a better understanding of the environment in which students live. From a curricular aspect, teachers are ultimately responsible for delivering the transmitted curriculum to students. Teachers can do their part to make sure that the hidden curriculum impacts every student in a similar manner and provides like opportunities for all students to succeed. Finally, teachers can intentionally train students as to how school expectations differ from home expectations and provide ways for students to model and practice this new set of expectations.

Conclusion

That differences in outcomes between students can be explained by wealth and poverty demographics is contrary to the idea of a fair and equal public education. But it is not as simple (or, ironically, as insurmountable) as changing the curriculum. Since the disparity is a result of the discordant interaction between students and their school, teachers who find a way to communicate

their expectations in a way that values the student's experience will see better outcomes. The Funds of Knowledge approach is one that considers all aspects of a student and his/her background. Identifying the nature of the hidden curriculum, or the potentially exclusionary values that teacher expectations assume, allows for schools to develop plans to make this discord as small as possible in order to minimize its impact on student achievement. Though ethnographic research is time-consuming, it shows students that their experiences are valued and that their school is committed to improving their educational experiences and academic achievement.

References

- American Psychological Association (2014). *Children, youth and families & socioeconomic status* (Factsheet). Retrieved from <http://www.apa.org>
- Amaro-Jimenez, C., & Semington, P. (2011). Tapping into the funds of knowledge of culturally and linguistically diverse students and families. *NABE News*, 33(5), 5-8.
- Armando Gandin, L., & Fischman, G. E. (2006). Participatory democratic education: Is the utopia possible? Porto Alegre's Citizen School Project. In J. L. Kincheloe, k. hayes, K. Rose, & P. M. Anderson, *The Praeger handbook of urban education* (pp. 135-141). Westport, CT: Greenwood Press.
- Basu, S., & Calabrese Barton, A. (2007). Developing a sustained interest in science among urban minority youth. *Journal of Research in Science Teaching*, 44(3), 466-489.
- Benbow, L.B. (2006). A sociological critique of Meaningful Differences: A functional approach to the parenting style of low-income African-American families. In J. L. Kincheloe, k. hayes, K. Rose, & P. M. Anderson, *The Praeger handbook of urban education* (pp. 47-59). Westport, CT: Greenwood Press.
- Bouillion, L., & Gomez, L. (2001). Connecting school and community with science learning: Real world problems and school-community partnerships as contextual scaffolds. *Journal of research in science teaching*, 38(8), 878-898.
- Brignall, T. (2006). No Child Left Behind and urban education: The purpose and funding of public education. In J. L. Kincheloe, k. hayes, K. Rose, & P. M. Anderson, *The Praeger handbook of urban education* (pp. 1-10). Westport, CT: Greenwood Press.
- Brown, M. (2007). Educating all students: Creating culturally responsive teachers, classrooms, and schools. *Intervention in School and Clinic*, 43(1), 57-62.
- Carlone, H., & Johnson, A. (2012). Unpacking culture in cultural studies of science education: cultural difference versus cultural production. *Ethnography and Education*, 7(2), 151-173.
- Center for Comprehensive School Reform and Improvement. (2006, August). *The hidden costs of curriculum narrowing* (Issue Brief). Washington, DC: Craig D. Jerald.
- Cochran-Smith, M., & Zeichner, K. (2005). *Teacher education: The report of the AERA panel on research and teacher education*. Mahwah, NJ: Lawrence Erlbaum.
- Dworin, J. (2006). The family stories project: Using funds of knowledge for writing. *The Reading Teacher*, 59(6), 510-520.
- Eisenhart, M. (2001). Changing conceptions of culture and ethnographic methodology: Recent thematic shifts and their implications for research on teaching. In V. Richardson

- (Ed.), *Handbook of research on teaching* (pp. 209-225). Washington, DC: American Educational Research Association.
- Giles, H.C. (2006). Why should educators care about community organizing to reform schools? In J. L. Kincheloe, k. hayes, K. Rose, & P. M. Anderson, *The Praeger handbook of urban education* (pp. 35-46). Westport, CT: Greenwood Press.
- Giroux, H.A. (1981). Schooling and the myth of objectivity: Stalking the politics of the hidden curriculum. *McGill Journal of Education* 16(3), 282-304.
- Giroux, H. A. (2001). *Theory and resistance in education: Towards a pedagogy for the opposition*. Westport, CT: Bergin & Garvey
- Gonzalez, N., Moll, L. C., & Amanti, C. (2005). *Funds of knowledge: Theorizing practices in households, communities and classrooms*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Hemmings, A. (2000). The “hidden” corridor curriculum. *The High School Journal*, 83(2), 1-10.
- Jones, K. (2004). Authentic accountability: An alternative to high-stakes testing. In S. Mathison & E. W. Ross (Eds.), *Defending public schools: The nature and limits of standards-based reform and assessment* (pp. 57-70). Westport, CT: Praeger.
- Kohn, A. (2004). The costs of overemphasizing achievement. In S. Mathison & E. W. Ross (Eds.), *Defending public schools: The nature and limits of standards-based reform and assessment* (pp. 27-34). Westport, CT: Praeger.
- Langhout, R. D. & Mitchell, C. A. (2008). Engaging contexts: Drawing the link between student and teacher experiences of the hidden curriculum. *Journal of Community & Applied Social Psychology*, 18, 593-614.
- Levin, H. M. (2007). On the relationship between poverty and curriculum. *North Carolina Law Review*, 85, 1381-1418.
- Lipman, P. (2004). *High-stakes education: Inequality, globalization, and urban school reform*. New York: RoutledgeFalmer.
- Martinez-Roldan, C. M., & Malave, G. (2011). Identity construction in the borderlands. In V. Kinloch (Ed.), *Urban literacies: Critical perspectives on language, learning, and community* (pp. 53-71). New York: Teachers College Press.
- Mathison, S. (2004). The Accumulation of disadvantage: The consequences of testing for poor and minority children. In S. Mathison & E. W. Ross (Eds.), *Defending public schools: The nature and limits of standards-based reform and assessment* (pp. 121-135). Westport, CT: Praeger.
- Moll, L. C., Amanti, C., Neff, D., & Gonzalez, N. (1992). Funds of knowledge for teaching: Using a qualitative approach to connect homes and classrooms. *Theory Into Practice*, 31(2), 132-141.
- Onore, C. (2006). Rewriting the curriculum for urban teacher preparation. In J. L. Kincheloe, k. hayes, K. Rose, & P. M. Anderson, *The Praeger handbook of urban education* (pp. 208-217). Westport, CT: Greenwood Press.
- Rodriguez, G. (2013). Power and agency in education: Exploring the pedagogical dimensions of funds of knowledge. *Review of Research in Education*, 37, 87-120.
- Rueda, R. & Dembo, M. H. (2006). Rethinking learning and motivation in urban schools. In

- J. L. Kincheloe, k. hayes, K. Rose, & P. M. Anderson, *The Praeger handbook of urban education* (pp. 217-227). Westport, CT: Greenwood Press.
- handbook of urban education (pp. 289-303). Westport, CT: Greenwood Press.
- Sapon-Shevin, M. (2004). Thinking inclusively about inclusive education. In K. R. Kesson & E. W. Ross (Eds.), *Defending public schools: Teaching for a democratic society* (pp. 161-172). Westport, CT: Praeger.
- Tan, E., & Barton, A. (2010). Transforming science learning and student participation in sixth grade science: A case study of a low-income, urban, racial, minority classroom. *Equity & Excellence in Education*, 43(1), 38-55.
- Taylor, L., Bernhard, J., Garg, S., & Cummins, J. (2008). Affirming, plural belonging: Building on students' family-based cultural and linguistic capital through multiliteracies pedagogy. *Journal of Early Childhood Literacy*, 8(3), 269-294.
- U.S. Department of Education. (2002). *Elementary and secondary education legislation*. Retrieved from <http://www2.ed.gov/policy/elsec/leg/esea02/107-110.pdf>
- Upadhyay, B. (2009). Teaching science for empowerment in an urban classroom: A case study of a Hmong Teacher. *Equity in Excellence in Education*, 24(2), 217-232. doi: 10.1080/10665680902779366
- Vinson, K. D., Gibson, R., & Ross, E. W. (2004). Pursuing authentic teaching in an age of standardization. In K. R. Kesson & E. W. Ross (Eds.), *Defending public schools: Teaching for a democratic society* (pp. 79-95). Westport, CT: Praeger.
- Weiss, J. (2006). Critical theory, voice, and urban education. In J. L. Kincheloe, k. hayes, K. Rose, & P. M. Anderson, *The Praeger*