

From Pipelines to Partnerships: A Synthesis of Research On How Diverse Families, Schools, and Communities Support Children's Pathways Through School

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This article maps recent progress on 5 key questions about "the academic pipeline problem" of different rates of persistence through school among ethnically diverse students across the nation. The article shows the complementary development of the Overlapping Spheres of Influence Theory and Sociocultural Theory and aligns concepts and measures across theories. Evidence from the Center for Research on Education, Diversity, and Excellence and other studies points to 5 major findings. First, tracing demographics across ethnicity, income, and geography can contribute to opening the academic pipeline. Second, families are key to students' developing and sustaining educational and career aspirations and school achievement, not only among college-educated families, but also among low-income, minority, and immigrant families. Third, it is important to recognize how early children's pathways in math and language divide as they move through school if successful pathways are to be sustained. Fourth, across age, ethnic, and income groups, the most successful students build links across their families, schools, peers, and communities, who in turn support students' pathways. Fifth, sustained educational partnerships draw on long-term data to connect measurable goals from childhood to college and careers. Finally, an agenda is outlined for advancing science, policy, and practice.

The range of students' developmental pathways can be seen as they navigate through the academic pipeline from preschool, elementary, middle school, high

school, and postsecondary education toward adult work and family roles. Many communities hold ideals of equity in access to schooling and advancement through merit, but as students move through school, the numbers of ethnic minority, immigrant, and low-income youth in the academic pipeline shrink.

Figure 1 shows dramatically different national trends in persistence, based on cross-sectional data, within Asian American, European American, African American, Native American, and Latino groups. The graph sets the percentage of students in each group who start kindergarten at 100% to compare how many students persist to high school graduation, complete some college, and attain a bachelor's degree by age 24 (U.S. Census Bureau, 1998).

This *academic pipeline problem*, which makes college enrollments unrepresentative of the demographics of their broader communities, will intensify in the coming years as low-income, immigrant, and ethnic/racial minority youth make up a growing segment of school enrollments.

An educational system can be described with a variety of metaphors. Those interested in educational institutions and economic policies often choose the metaphor of the academic pipeline and trace its leaks in the attrition of low-income and ethnic minority students (Gándara, Larson, Mehan, & Rumberger, 1998). Designers of educational programs often describe key relationships or programs as

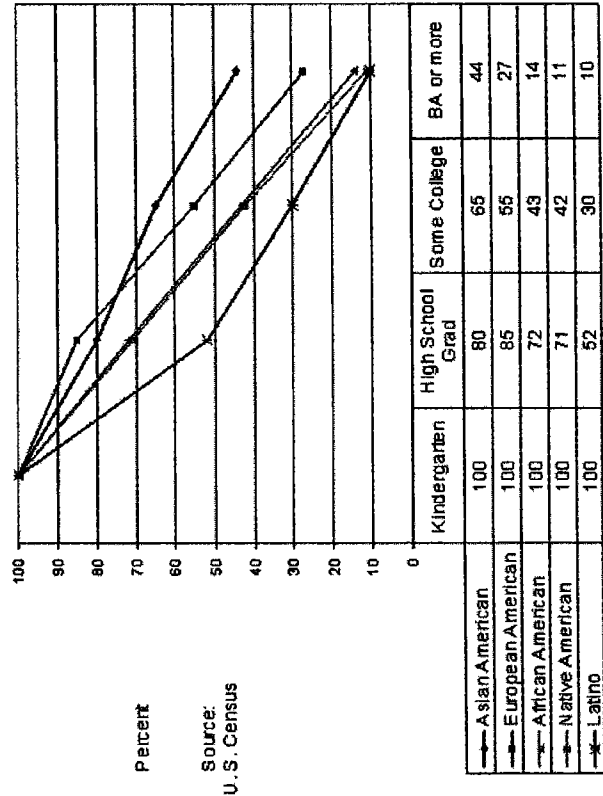


FIGURE 1 The academic pipeline problem: Persistence through school within five ethnic-racial groups. BA = Bachelor of Arts degree.

bridges (or *puentes* in Spanish) through the educational system (Gándara & Moreno, 2002). Those interested in the lives of individual students over time often use metaphors of *pathways*, *trajectories*, or *routes* through school to adult work and family life (Jones, Yonezawa, Ballesteros, & Mehan, 2002).

For some, the pipeline metaphor is especially problematic: "The pipeline invokes the image of students poured into one end of a seamless conduit and flowing out the other end, thereby implying that college preparation and admissions processes are smooth and highly predictable" (Jones et al., 2002, p. 3). Still, interdisciplinary work often juxtaposes metaphors to capture economic, institutional, relational, and individual levels of analysis over time. Whatever metaphor one chooses, equal access to education is a core value of democratic societies. Education is not the only definition of success, but education is clearly linked to opportunities and choices for each generation.

Scientific progress on the pipeline problem has emerged from economics, sociology, anthropology, psychology, and educational policy, and increasingly from collaborations across disciplines. In such work, aligning theories sparks productive debate, comparative analysis, and further investigation. Just as physicists consider light as both a separate particle and a continuous wave, this review shows the complementary nature of theories and research methods, quantitative and qualitative, that address the pipeline problem (Cooper & Denner, 1998).

TWO VIEWS OF THE ACADEMIC PIPELINE PROBLEM

This synthesis starts by looking at two influential theories for addressing the academic pipeline problem: the Theory of Overlapping Spheres of Influence developed by Epstein and her colleagues at the National Network of Partnership Schools and the approach to Sociocultural Theory developed by Tharp and his colleagues at the Center for Research on Education, Diversity, and Excellence (CREDE). Epstein's theory serves as the cornerstone of national conversations on family-school relationships and as the basis of the standards for parent involvement in the National Parent Teacher Association (National PTA, 1997). In sites across the nation, Sociocultural Theory at CREDE has focused on mapping community practices reflecting ethnic, linguistic, and geographic diversity to school success. As each theory has evolved, it has enriched science, practice, and policy.

Epstein's (1990, 2001) Theory of Overlapping Spheres of Influence traces how the spheres of home, school, and communities interact in their interests, responsibilities, and investments in children's learning. Epstein proposed a typology of six types of involvement that fall in the intersection of the spheres (Epstein, Sanders, Simon, Salinas, Jansorn, & Van Voorhis, 2002). These types include (1) *Parenting*: Assisting families with parenting, child-rearing skills, and home conditions for learning; (2) *Communicating* with families about school programs and student

progress; (3) *Volunteering* at school; (4) *Learning at home* with homework and other activities; (5) *Decision making* in school governance and advocacy; and (6) *Collaborating* with community businesses and agencies to strengthen school programs, family practices, and student learning (Hidalgo, Siu, & Epstein, 2003).

On average, as children move from elementary school into middle and high school, the spheres of home, school, and community may move further apart, reflecting decreasing mutual involvement. When Epstein and Dauber (1991) surveyed teachers of primarily African American and European American students in urban schools in Maryland, teachers in elementary schools, compared to those in middle schools, were more likely to report using the six family involvement types and saw parents of their students as more involved with their children.

Although all types are seen as important, Learning at Home (Type 4) appears to play a more direct role in students' achievement. In a study of European American and African American students in a suburban Maryland middle school, those given weekly science activities with guidelines for doing them with families reported more family involvement in science and made better science grades than students with the same homework but no guidelines (Van Voortuis, 2003). Learning at Home also appears to change in middle and high school. In a study of the National Educational Longitudinal Study (NELS:88), a nationally representative cohort of students, Catsambis (2001) found that during middle and high school, across social class and ethnic groups, parents holding high expectations and providing consistent encouragement (what would be considered Learning at Home), as well as enhancing learning opportunities beyond the home, predicted students' enrolling and their grades in college-prep high school classes. Similarly, a meta-analysis of research (Fan & Chen, 2001) found parents' aspirations and expectations for children's education to be the strongest predictors of their achievement.

Sociocultural Theory complements Epstein's theory by focusing on community-specific practices to enrich science, practice, and policy on diversity and education. It builds on Vygotsky's (1978) proposition that families in all cultural communities develop goals, values, and skills that allow them to adapt to their environments and establish meaningful lives (e.g., Harkness, Super, & Keeser, 1992; Rogoff, 2003; Tharp & Gallimore, 1988; Weisner, 2002). Children learn by participating with more expert members of their cultural communities in *activity settings* such as household chores, classroom lessons, homework, sports, or religious activities (Gallimore, Goldenberg, & Weisner, 1993; Reese, Balzano, Gallimore, & Goldenberg, 1995). In each activity setting, researchers map the *personnel* (who participates), *goals and values* held in that setting (why the activity happens), the *scripts* (regular patterns of communicating), and the *participant structure* (social organization for the activity, such as whether children do homework alone or in groups).

Sociocultural researchers describe how cultural discontinuities or "mismatches" can arise when conflicts or gaps between families' and schools' goals

and values, activities, and styles of communicating impede students' development (Cazden, 1988). Studies documenting home-school discontinuities have been conducted with low-income European American children in Kentucky and California (Azmitia, Cooper, Garcia, & Dunbar, 1996; Heath, 1983; McIntyre, Kyle, Hovda, & Stone, 1999); African American youth from upper income families in Ohio and lower income families in California and Washington, DC (Ogbu, 2003); Native American youth in New Mexico and Native Hawaiian children and families (Weisner, Gallimore, & Jordan, 1988; Yamauchi & Tharp, 1995); Asian American youth in California and Rhode Island (Chang, 1995, 2004; Collignon, Men, & Tan, 2001); and Latino youth in Texas and California (Matute-Bianchi, 1991; Romo & Falbo, 1995).

For example, Peña (2000) conducted an ethnographic study of an urban elementary school in Texas by observing school events and interviewing teachers and Latino parents. Language was the major constraint on parent participation, as when the school held Parent-Teacher Organization meetings in English without providing translation (Chavkin, 1996; Delgado-Gaitan, 1990). Challenges were also evident in teachers rarely participating in these meetings. Some families with modest education felt they could not help children with homework but did not tell teachers, who assumed parents could read and write.

To address these issues, sociocultural researchers propose that viewing culturally diverse families as having expertise rather than lacking it allows teachers to build cultural continuities between home and school that foster children's learning. Such values and practices define each person with the potential for being both expert and novice, rather than schools playing a compensatory role for families' deficits. Based on this theme of teachers connecting home, school, and community, Tharp, Estrada, Dalton, and Yamauchi (2000) proposed Five Standards for Effective Pedagogy: (a) teachers and students producing together, (b) developing language and literacy across the curriculum, (c) making meaning by connecting school to students' lives, (d) teaching complex thinking, and (e) teaching through conversation. For this review, the third standard is especially relevant because it focuses on how teachers connect teaching and curriculum to students' experiences and skills of home and community (Tharp et al., 2000). To examine these propositions empirically, Tharp and his team developed the Activity Setting Observation System and the Standards Performance Continuum for rating classroom implementation of the Standards and the effects of teaching with the Standards on student learning (Doherty, Hilberg, Epaloose, & Tharp, in press; Hilberg, Tharp, & DeGeest, 2000; Waxman, Tharp, & Hilberg, in press).

Tharp's work with Sociocultural Theory has served as the overarching framework for CREDE, a federally funded research and development program that focuses on improving the education of students challenged by language or cultural barriers, race, geographic location, or poverty. Among the 31 studies in CREDE are 9 in which researchers studied the interaction of families, schools, and commu-

ity organizations. Located in 6 states, these 9 studies led to long-term partnerships. Listed by state, the primary cultural communities and principal researchers at each site include:

- Arizona: Mexican immigrant, Native American, African American, and European American families (González, Andrade, Civil, & Moll, 2001).
- Hawaii: Native Hawaiian, Asian American, and European American families (Yamauchi, Ceppi, & Lau-Smith, 1999).
- California (four sites): Chinese, Filipino, Vietnamese, Asian Indian, and Latino families (Chang, 1995); European American and Mexican immigrant families (Azmitia & Cooper, 2001); Mexican immigrant families (Durán, Durán, Perry-Romero, & Sanchez, 2001); urban Latino, African American, Southeast Asian, and European American and rural Latino families (Gándara, Gutiérrez, & O'Hara, 2001).
- Kentucky: Rural Appalachian families (McIntyre et al., 1999).
- New Mexico: Zuni families (Tharp et al., 1999).
- Rhode Island: Hmong, Laotian, Vietnamese, and Cambodian families (Collignon et al., 2001).

These 9 projects address overlapping age spans in students' development through the preschool through graduate school pipeline, many with longitudinal designs. For example, Yamauchi studied a K-12 public school program in Hawaii that was influenced by a preschool program, with some study participants involved in both. McIntyre and her team in Kentucky followed children through the elementary grades. Collignon in Rhode Island and Azmitia and Cooper in California followed on children moving from elementary to high school. Gándara and her team followed a California sample from ninth grade into young adulthood.

In considering the scientific merits of work for this review, we drew on three sources. First, the National Research Council (NRC) Standards Committee on Scientific Principles for Education Research proposed that meritorious work provides clarity in statements of research questions that can be investigated empirically; a conceptual or theoretical basis for choice of study participants, data collection, and analysis; a design and method appropriate to questions; and coherent reasoning between conceptual framework or theory and findings (Shavelson & Towne, 2002). Second, we drew on the National Institutes of Health (NIH; 1999) guidelines for using qualitative methods in health research and NIH grant applications. These guidelines parallel those of the NRC, but also point to issues faced by qualitative researchers in sampling, measurement, reliability, and validity. Finally, this review draws on mixed methods that link variable-based and quantitative methods with case-based and other qualitative methods (Mertens, 2005).

FIVE KEY QUESTIONS ABOUT THE ACADEMIC PIPELINE PROBLEM

This review considers five important questions about how diverse families, schools, and communities can support children's pathways through school:

1. How can we open the academic pipeline across ethnicity, income, and geography?
2. How can we sustain aspirations and expectations of students, families, and teachers?
3. How can we sustain children's math and language learning pathways through school?
4. How can we link families, schools, and communities to support children's pathways?
5. Finally, how can we sustain educational partnerships for long-term outcomes?

To address these questions, this review now examines core concepts associated with each of these questions and synthesizes progress with highlights from the 9 CREDE sites.

Opening the Academic Pipeline: Demographics Across Ethnicity, Income, and Geography

Who stays in school from childhood to college? Who moves in and out of special education, gifted and talented, or advanced placement classes? How typical of their broader communities are families in a study sample or program? How do sites compare with each other and with state, national, and international data? These questions motivate researchers, schools, and programs to map demographics across local, district, state, and national samples.

In accordance with the U.S. Civil Rights Act of 1964, which forbids discrimination in access to education based on "race, color, or national origin," the Office of Education uses five ethnic-racial categories to monitor the pipeline. Researchers, practitioners, and policymakers use a wider range of demographic indicators, such as national origin, self-reported ethnicity, home languages, parents' education, and rural/urban location. These practices can be illustrated with work from CREDE, each study focusing on a distinctive cultural community.

CREDE in New Mexico: Counting elders' voices at the Zuni Pueblo. In New Mexico, the local CREDE partnership considered community demographics in collaborating with community members on behalf of Zuni students.

The local pipeline problem mirrored national data on Native American communities, with school dropout and expulsion rates “alarmingly high” and “no parent involvement at all” (Tharp et al., 1999, pp. 9–10). Barriers stemmed from bureaucratic and policy constraints, educators disrespecting Native Americans, teachers’ resisting outside influences, conflicting goals between Native American communities and the schools, the community lacking confidence in their leaders, and students’ resistance and low achievement. To address these issues, the state Board of Education created the Zuni Public School District and asked it to develop a curriculum that was appropriate to its cultural needs and state standards. Tharp et al. proposed that partners emulate Zuni leaders, who work with all stakeholders in the community and make decisions through patient consensus seeking, similar to the traditional Zuni process of *Yanse’lyona’*.

The research partnership took this approach in surveying the Zuni community about what Zuni children should learn in school (Rivera et al., 2001). The partnership collaborated with the district, school board, and tribal council to survey adults in three generational groups: ages 21–40, 41–60, and 61–105, with elders surveyed in the Zuni language. Results indicated consensus across age and gender. For example, 84% agreed or strongly agreed that “Zuni schools must teach the history, beliefs, and the values of the community,” and 93% agreed that “We want our children to go beyond a high school education, but educational success also includes maintaining our cultural values and traditions for the development of future leaders.” Thus, including elders’ voices linked the community, families, and school as resources for youth in ways that reached beyond Census data.

CREDE in Hawaii: Counting Native Hawaiian language speakers to renew an entire cultural community. Papahana Kaiapuni, the Hawaiian language immersion program, developed from a grassroots movement of parents and community members seeking to revive the Hawaiian language. In their local CREDE partnership, Yamauchi et al. (1999) found that all adults in the islands were once literate in the language, but Hawaiian had become threatened with language extinction following the overthrow of the Hawaiian monarchy and the subsequent ban on the language from schools. By 1984, it was estimated that only 30 native speakers under the age of 18 remained. Compared to other state residents, Native Hawaiians as a group do not perform as well on traditional achievement measures; they are also overrepresented in special education and underrepresented in higher education (Yamauchi & Wilhelm, 2001).

As the first cohort of children in the Kaiapuni language immersion program moved through school, the program became a K–1, then a K–6, and then a full K–12 program. All instruction was conducted in Hawaiian. Many parents and families began to learn Hawaiian with their children. As parents took children to events where Hawaiian was spoken, home and school activities became more compatible. Interviews by Yamauchi et al. (1999) revealed multiple yet converging views of the

program by families, teachers, students, and evaluators. Families saw teachers and the program as extended family, a strong value of many Hawaiians. Involvement among families in school was accompanied by their greater awareness of Hawaiian culture and history. Teachers saw their goal as transforming the school to be “more Hawaiian” through curriculum development and teaching “in a Hawaiian way.” Some incorporated Hawaiian proverbs in their lessons by interviewing elders or *Kūpuna*. Older siblings “are encouraged to look after their younger brothers and sisters and to teach them and supervise their work” (Yamauchi & Wilhelm, 2001, p. 90). Teachers incorporated this value by organizing heterogeneous and multiage groups for activities.

Students saw the program as building positive attitudes toward the Hawaiian language and preserving Hawaiian language and culture. Older youth, however, worried about the lack of academic and extracurricular activities in the program compared to what they saw of schools conducted in English.

From an evaluator’s perspective, progress toward the partnership’s goal was marked by rising numbers of native Hawaiian speakers, with 2,000 children learning Hawaiian compared to the 30 Hawaiian speakers under the age of 18 before the program began. By the end of kindergarten, Kaiapuni students who entered the program as English speakers were speaking Hawaiian, with younger children speaking Hawaiian more frequently than older students in settings outside of school (Yamauchi & Wilhelm, 2001). Kaiapuni students’ English was comparable to peers enrolled in the English program of the public schools.

CREDE in Rhode Island: Mapping who got out and who gets in with local demographic data and values in a Southeast Asian community. In the CREDE partnership with community organizations and schools of Providence, Rhode Island, Collignon et al. (2001) worked to connect four Southeast Asian communities—Cambodian, Laotian, Hmong, and Vietnamese—each with distinctive languages, cultural practices, and legacies of war, to support students’ school pathways. Arriving in Providence as refugees, the Cambodian, Hmong, and Laotian families had fled first to Thailand, where they were placed in refugee camps. As their children arrived at school, districts grouped them with the general “Asian/Pacific Islander” racial–ethnic category. So the partnership collected demographic data from each Southeast Asian community to help schools understand students’ distinctive needs and counter “model minority” Asian stereotypes.

The partnership traced three ways that these cultural communities, with little understanding of the U.S. educational system, engaged with schools to address their issues. First, reflecting the work of Friere (1970) on community empowerment, families and communities found voices with schools when their representatives on the Southeast Asian Advisory Council met with the school superintendent and other leaders. Second, to protect students during the summer from street violence, promote their school achievement, and preserve their cultural heritage, the

