TOWARDS AN EVOLVING VIEW OF EDUCATIONAL EQUITY

Despite major efforts to improve education—civil rights cases, federal policy (e.g., No Child Left Behind), and overhauls of school funding legislation—poor and low-status children continue to achieve at disproportionately lower levels throughout the performance spectrum. By the end of fourth grade, poor students of all races are two years behind their wealthier, Caucasian and Asian peers in reading and math. By eighth grade, they have slipped three years behind, and by 12th grade, the gap is a full four years. Poor Latino and African-American students are also underrepresented at the highest levels of achievement: advanced performance at fourth and eighth grades, high school, college, and graduate school completion.

These stubborn patterns of inequality are puzzling in a nation that built an extensive public education system as early as the 19th century and which today is among the most extended public education systems, stretching from kindergarten through post-secondary colleges and universities. These persistent patterns are also puzzling in light of the considerable regulation, litigation and legislation that have sought to control some of the worst inequalities (e.g., outright segregation, huge numbers of poor children performing far below basic, or significant percentages dropping out of school prior to high school). In fact, wave
after wave of reform have demonstrated how difficult it is to re-distribute opportunity substantially, sharing excellence, not just basic skills.

To change these patterns, many researchers and policy makers have begun to argue that schools alone cannot make up for the multiple ways in which poor children are underserved. For example, many of the authors in this volume are urging that we replace our singular focus on schooling with a much broader focus on supporting learning—from infancy through young adulthood—wherever it occurs. In this vision, schools remain important, but they become one part of a much larger, interconnected and coherent set of learning opportunities for children, youth, and families. In this vision of comprehensive education the resources of schools are supplemented by in-school tutoring and mentoring programs, extended school days, supplementary after school programs, free-time literacy learning sponsored by libraries and museums, internship-based learning in public and private organizations, and more. (Gordon, Bridglall & Meroe, 2005; Harvard Family Research Project, 2007; Mott Foundation, 2007; Rothman, 2007). At its broadest, such a system would include major amendments to public housing, health and safety that would support children’s development and strong families. The outcomes envisioned for such systems would include the equitable attainment of emotional, physical, social, as well as academic skills. In this broader definition, students, families, and community-members are all valued and active as teachers. The goal is the development of children and youth who can thrive as individuals and who, in turn, can become contributing members of their families and communities.

But simply creating an expanded, or even a more coherent, system of opportunities, available from 8 am to 8 pm, throughout the year, is unlikely to "fix" the issues of educational equity. Based on the last century of efforts to make public schools more equitable, we can’t assume that more and longer will necessarily be "more equal" or "more effective." Thus the call for comprehensive education presents both an opportunity—and an urgency—to re-examine how we define and realize equity.

This paper is a beginning. One of its major purposes is to urge that we examine the specific version of an educational meritocracy that we have created, and in particular at three problematic features of that meritocracy: 1) the assumption of agency; 2) our trust in provision; and 3) the belief in the power of academic capital to fuel equality. A second purpose is to look at two cases, one in mathematics and one in the arts
in order to understand how we need to revise the ways in which we define and pursue educational equity.

**RE-THINKING EQUITY**

From the outset, formal education has held an unusually powerful place in US conceptions of social mobility and fairness. This commitment was reflected in the articles of the earliest state constitutions which defined public education as an integral part of the common wealth—a public good to be made widely available to all those considered free men. For example, the Constitution of the Commonwealth of Massachusetts, Part II, ch. V § 2, reads:

Wisdom and knowledge, as well as virtue, diffused generally among the body of the people, being necessary for the preservation of their rights and liberties; and as these depend on spreading the opportunities and advantages of education in the various parts of the country, and among the different orders of the people, it shall be the duty of the Legislators, and Magistrates, in all future periods of the Commonwealth, to cherish the interests of literature and the sciences, and all seminaries of them; especially the . . . public schools and grammar schools in the towns (quoted in Rebell & Wolff, 2008).

The promise of this system was that it was imagined as a meritocracy. It would be an education system where opportunities, responsibilities and recognitions would be distributed based on demonstrated talent and ability (merit), rather than by wealth, family connections, class privilege, membership in any specific ethnic or religious group or power. It would reward those who demonstrated talent and competence, demonstrated through actions and works. As Jefferson explained, he envisioned this system of education as creating a "natural aristocracy" unlike the "tinsel aristocracy" of the Old World.

Based on this vision, throughout the 19th century the US pursued the rapid establishment of local, publicly financed, schools open to all white children through elementary school. Generous as this vision was—and remains—it carries a distinctive set of assumptions: the presumption of agency, the sufficiency of provision, and a strong faith in power of academic learning. As we consider expanding our view of education from schooling to learning in multiple contexts, we have a chance to revisit—and expand—these deeplyrooted assumptions, using
our evolving understanding of human development and learning to develop an expanded conception of equity.

**The Presumption of Agency**

The Founding Fathers, in first designing public education, drew on their own Enlightenment notions of individuals as independent agents, motivated and entirely free to improve, particularly through study and industry. They viewed public education as an expression of that will to self-determination. Even Ben Franklin's short quips in Poor Richard's Almanac portray a man (sic) who is at liberty to learn and change.

- If a man empties his purse into his head, no one can take it from him. An investment in knowledge always pays the highest return.
- Think of three things:
  Whence you came,
  Where you are going,
  And to whom you must account.
  (http://www.verityinvcounsel.com/fav_quotes.htm)

For Franklin, Jefferson and other early designers of US schools, "the student" was the child of families who could vote, serve on a jury, own land or secure a trade license. In turn, they would have the same rights. No slaves, indentured servants, girls or Native Americans need apply. Thus, US schools began by assuming, rather than teaching, the fundamentals of agency defined as the power to understand, speak up about, act on, and effect positive change in one's personal and social contexts (Annenberg Institute for School Reform, 2000). US schools assume a student who asks questions, chooses courses and electives, or goes to the guidance counselor to challenge a placement in general math rather than algebra. Those same schools assume families who will speak to a teacher about an incident on the playground, let the principal know that their children need and deserve a late bus in order to participate in after school math club, or file a lawsuit to address the quality of education for English Language Learners.

But work in developing nations and community organizing challenges this view of agency. Particularly in settings where wealth, status, and power are highly stratified, youth and adults who have been marginalized require chances to learn about their rights, to practice them and to work with others to secure those goals and to develop their agency (Sen, 2006). Given those opportunities, individuals and groups of students often develop new knowledge about education issues, greater
involvement in schools and other civic issues, as well as different levels of aspiration for themselves and their communities (Epstein & Dauber, 1991; Mediratta, Shah & McAllister, 2008; Watts, Williams & Jager, 2003). The same is true of families (Comer, 1988; Epstein 1987; Fruchter, 2006; Ginwright & James, 2002; Henderson & Mapp, 2002; Reynolds & Clements, 2005). The point is that in a nation where resources, including access to a sense of personal and group power, are increasingly unevenly distributed, whatever system of public learning we provide has to include substantial opportunities to learn to be an effective agent (Annenberg Institute for School Reform).

**Trust in the Power of Provision**

Horace Mann and other proponents of the common school movement in mid-nineteenth century America fought to establish free, publicly funded elementary schools open to all white, free children. The curriculum was to be common enough that all attendees left with the literacy and mathematics skills that permitted them to participate in civic and business life.

At the same time, these second generation of school designers trusted that a combination of individual motivation and persistence (agency) in a system that could guarantee uniform operations for schools across communities would result in equity. They trusted in the power of provision. At the heart of this vision was the belief that if operated in a vigorously systematic way, public education would be "the great equalizer of the social conditions of men—the balance wheel of the social machinery," an engine that would translate individual endowment and effort, rather than inherited status, into the basis for lifelong opportunities and achievement (Cremin, 1957). In this view, ignorance and poverty would disappear as a broadened popular intelligence unlocked new streams of natural and material wealth. While profoundly democratic, this vision is also profoundly technical. Its legacy is the belief that the efficient delivery of equal resources through schools is adequate. The resulting presumption is that if a district delivers the same literacy program, via teachers trained in the same way, for the same number of hours, using comparable materials, then all students are in a position to learn to read equally well.

But a half a century of work in universal design, or assistive technology, raises questions about this view of equity. At the center of that work is a conception of human capacity as a continuum of users all of whom share a set of common needs and aspirations, but who require different
forms of assistance (supports) to express or actualize their capacities. Thus, a woman who no longer has the use of her legs is "disabled" in a world of curbs, stairs and crutches. However, in a world of escalators, motorized wheelchairs and curb cuts, she is "able-bodied."

But providing the necessary supports to "level the playing field" has been a substantial struggle in US education—witness the ongoing efforts to provide special education or English Language Learner services. In the early history of the standards movement in the 1990s, policy makers at the state and federal level passed content and performance standards (i.e., descriptions of what students should know and how well they should know it.) But a similar effort to create opportunity to learn standards (e.g., descriptions of the conditions that would facilitate new, higher levels of achievement) was never accepted.

But if the expectation is that all fourth graders learn to read critically, is provision really enough? Where and how do families and students get Spanish translations that guarantee that English Language Learners are taught at the same level of demand as native speakers? Who sponsors after-school programs with mentors and reading buddies who provide all students with an environment for doing homework successfully? How do we distribute honors classes, summer book clubs, or scholarships to creative writing workshops that are the ingredients of more than basic literacy?

The Sufficiency of Academic Capital

In the US, the legacy of assumed agency and a trust in provision has been further complicated by the view that schools can and should carry the burden for creating equitable opportunities and outcomes in childhood (Wells, 2006), apart from additional supports from communities. However, many argue that much more than schooling and the resulting academic capital needs to be shared equally. Researchers and advocates point out that children without basic health capital (nutrition, exercise, and knowledge of what and how to promote their own well-being and longevity) are often too sick, too tired, or absent to participate in learning. Without the political capital (the knowledge of how to work the system of access or power to accomplish their goals to make and follow through on demands) disenfranchised families and students may not have the knowledge or skills to demand the quality of education that is promised on paper (United Nations, 1990, 1996). Finally, school success often depends, less on what schools teach, and more on the social and cultural capital that individuals, families or
communities share with their children or call on to insure that the school does well by their sons and daughters (Coleman, 1966; Putnam, 2000; Lareau, 2000; Lareau, 2003; Bourdieu, 1986).

In fact, substantial research points to the role of a critical set of non-cognitive capacities in learning. Young people's ability to self-regulate, to make an effort, to plan and to see themselves as having a future all play a generative role in how cognitive abilities are acquired, amplified and applied (Cunha, Heckman, Lochner & Materov, 2006; Dweck, 1999; Rothstein, 2004). This is what Gordon et al. (2005) refer to as personal capital: the dispositions, attitudes, aspirations, efficacy and sense of power that fuel development. These forms of socio-emotional capital can be learned just like reading or counting and when established at one stage augment the capabilities attained at later stages, yielding an accruing 'self-productivity. For example, half a century of research on the effects of high-quality pre-schools shows that early interventions can create the motivations and habits that substantially increase life success including scores on achievement tests, employment history, and reduced social pathologies. There is similar evidence for other later interventions such as tutoring, mentoring and after- and out-of-school programs through adolescence (Carneiro & Heckman, 2003; Cunha et al. 2006). How students acquire this capital has everything to do with whether they see themselves— and are seen as— learners.

This broader conception of the many different types of human capital necessary for learning has consequences for how we might conceive and pursue educational equity in building comprehensive education systems. At the most basic level, it suggests that strict attention to academic content alone is insufficient (Gordon, 2001; Pittman, Yaholem & Tolman, 2003; Sen, 1989; Sen, 2006). We have to take up larger questions of identifying the many forms of human capital children and youth need to thrive, the multiple settings in which those capitals can be built, and the many individuals who can act as teachers, mentors and models.

**Between Provision and Thriving: Realizing Equity in Context:**

Taken together, these points underscore that our customary definitions of equity as either equitable inputs or equal academic achievement are insufficient. We have to understand what lies between provision (what is offered) and equitable thriving (becoming a thoughtful and contributing member of the communities in which you live). However, any bolder conception of equity will remain just that— a
hopeful idea—unless we bother to understand what it will take to achieve it in actual circumstances. Towards this end, the Annenberg Institute for School Reform developed a set of tools for examining equity and excellence in students' learning across school and out-of-school, formal and informal, contexts. One major suite of tools is the Teaching and Learning Review,¹ a process in which professional educators and community representatives train together to become skilled observers and interviewers and then conduct a multi-pronged examination of students' learning across homes, schools and a set of extended learning opportunities (e.g., structured after school programs, lessons, informal learning, and personal projects). The Review includes tools such as observation, interviews with teachers, students and families, as well as journaling techniques through which students learn to track and comment on their activities and thoughts related to particular contents (e.g., mathematics, reading, the arts)² across a 24-hour period in order to create in-depth portraits of their own capacities, needs and learning opportunities (Csikszentmihalyi & Larson, 1987; Larson & Kleiber, 1993). Building the body of research on the role of reflection and self-assessment in learning, the Review also involves students the reflective work of telling the stories of their own development through a particular piece or project (Bamberg, 1996; Polyani, 1991).

Based on work conducted with these tools, the following sections of the paper examine two case studies each of which highlights what it actually takes to translate provision into thriving. Each case examines how critical the full resources of communities are in this work. The first case examines mathematics learning at the middle school level, highlighting what is in the gap between standard provision and what it takes for low to moderate income children to thrive as mathematics learners. Specifically, the case examines the contributions families can make to building their children's sense of agency in the context of increasingly demanding curricula. The case raises the much larger question of how we create equitable human capital to support student learning—a task that includes, but goes far beyond, insuring a qualified teacher in each classroom. The second case examines arts learning in urban high schools and raises the issue of equitable pathways that cross

¹ The Teaching and Learning Review was developed with funding from the Gates and MacArthur Foundations. The tools that focus on out of school time were funded by the Gates Foundation.

² The Student Learning Lives Tool was developed with funding from the Ford Foundation.
time and institutions. It specifically underscores the importance of thinking about the cumulative effect of being able to pursue a talent.

THE CASE OF MATHEMATICS: BUILDING AGENCY

"Children build a foundation for logical and mathematical thinking from their actions and reflections. Logical and mathematical thinking further evolves as children engage in social interactions, games, commercial transactions, and discussions with others. As students they encounter conventional representations and reasoning practices that will affect the course and even the nature of their mathematical thought. A theoretical account of mathematical reasoning requires uniting the findings of developmental psychology, everyday mathematics, and mathematical learning in schools. It will also require a careful analysis of the structure and semiotics of mathematics itself." (Schliemann & Carraher, 2002, p. 262)

Schliemann and Carraher remind us that children and young people create their mathematical understanding not only in math class, but when experimenting in science with race cars on ramps, in the quick, implicit calculations of catching a fly ball, and out of the sheer amazement of watching their grandmother do her neighbor's taxes without ever reaching for a calculator. This lived quality of children's mathematics—and the accompanying images of the child as an active learner have played a central role in the mathematics education reform efforts of the past 25 years. But we are only beginning to consider the social and emotional issues in mathematics learning that arise as culturally, linguistically, and socio-economically diverse students encounter new, high-demand curricula that differ dramatically from the procedural mathematics that many families know and many students expect (Cahnmann & Remillard, 2002; Goldman, 2005).

Mathematics as Requiring More than Academic Resources

This discussion draws on ethnographic data about middle school mathematics learning in a small post-industrial urban community in the Northeast United States where the schools adopted a challenging mathematics curriculum (Connected Mathematics) in order to provide all of its students with the demanding mathematics learning they need to be ready for high school and college. Few teachers, and even fewer families, were prepared for the highly conceptual, as compared to
practical and procedural, emphasis of the program. In response, the district has done as much as is in its power to insure that the program is well implemented, offering professional development to all middle school teachers, insuring that new teachers get training, holding math nights for families designed to explain the programs distinctive emphasis. In the resulting patterns of resistance and acceptance, it emerged that families, independent of their own educational attainment, could play a substantial role in building their children's agency as mathematics learners by using snatches of talk in their kitchens or cars, by asking questions during homework sessions, or by inviting their children to join them in figuring out the economics of daily life. For a number of students these family-based values and uses comprise a set of supports that helped to translate what is provided into what is understood and learned.

The following problem from the new mathematics curriculum provides a sense of the nature and the challenges of these newer standards-based materials that call on students to play a very active role in developing their understanding of a topic like area:

"The Sole D'Italia Pizzeria sells small, medium, and large pizzas. A small is 9 inches in diameter, a medium is 12 inches in diameter, and a large is 15 inches in diameter. Prices for cheese pizzas are $6.00 for small, $9.00 for medium, and $12.00 for large.

A. Draw a 9-inch, a 12-inch, and a 15-inch "pizza" on centimeter grid paper. Let 1 centimeter of the grid paper represent 1 inch on the pizza. Estimate the radius, circumference, and area of each pizza. (You may want to use string to help you find the circumference.)

B. Which measurement - radius, diameter, circumference, or area - seems most closely related to price? Explain your answer."

(Lappan, Fey, Fitzgerald, Friel & Phillips, 2002; Problem 7.1, p. 70, Covering and Surrounding)

Considered from a mathematical point of view, the problem demands:

- Command of a set of representational systems (written text, numerals, graphic displays) and a fluency in translating across them with fidelity;
- Command of the concepts of radius, diameter, circumference
Understanding of the concepts underlying the critical relation at the heart of the problem "most closely related to price";
Strategies for generating, organizing and drawing conclusions across the different strands of data;
The ability to write up findings succinctly.

But interviews with middle school students about doing problems like this one suggest that their mathematical experience doesn't resemble the frictionless, straightforward mathematical environment implied in the foregoing list. From a student's point of view, doing a problem like 7.1 is packed full of social and emotional choices (as well as obstacles and resources) that are rarely the stuff of mathematics instruction—but which could be. Their accounts suggest that "doing" such problems often requires considerable social and emotional capital:

- Finding the time, space, materials and concentration to do the assignment;
- Locating the will to stick with a problem that may be difficult or that follows on others that have given you difficulty;
- Knowing what to do when you get stuck;
- Assessing to whom to turn (given their varied familiarity with mathematics, and especially CMP mathematics);
- Thinking through the short- and long-term consequences of the different options for dealing with difficulty (leaving the problem blank, showing partial work up to the point of getting stuck or frustrated, going to school early to ask the teacher for help, or copying the answer from friend sometime before math class).

Building Mathematical Agency: Contributions from Families

Interviews with students in this community suggest that their families (along with their friends) are important contexts in which they develop the values and approaches that they bring with them to tackling mathematics learning. For example, students reported numerous examples of using mathematics at home or in family settings (e.g., cutting carefully using a table saw, calculating a tip for a meal, etc.). If we look at their examples solely in terms of mathematical content or topic, there appears to be a large gap between range and concepts of school and home-based mathematics. Specifically, the (non-homework) mathematics that students describe as part of family or home situations
appears at first glance to focus more on arithmetic and "make do" types of measurement and less on rational numbers, geometry and algebra than does the middle school mathematics curriculum.

But students underscore how much their families do to support their mathematics learning, to help them navigate the demands of a rigorous curriculum, to show them about the potential power of mathematics in the world (Jackson & Remillard, 2005) and to convince them that they "come from" people who use mathematics effectively. Our analysis of these data builds on and extends existing understanding of family engagement (Abreu, Cline & Shamsi, 2002; Barton, Drake, St. Louis & George, 2004; Civil, Bratton, & Quintos, in press; Goldman, 2005; Peressini, 1998; Reynolds, & Clements, 2005; Sheldon & Epstein, 2005) and its potential contributions to mathematical learning in several ways.

To begin, many students describe times when they and the adults who care for them work together, sharing the responsibility for learning. In these descriptions, one of the things that stands out is the extent to which mathematics is woven into the fabric of the relationship between some students and family member(s) (parents, grandparents, aunts, uncles, older and younger siblings). The following quotes offer examples of how this work communicates that problem-solving need not be a solitary activity. Knowing when to ask for and how to use help are valuable skills:

"I think about it (homework) in my room and my dad gets home at 5:30 and he usually helps me when he gets home. And I usually do most of it in my room lying on my bed working on it, and if I don't get a question or two, I put it aside for later and when my dad gets home, I go down to the kitchen table and discuss it with him. And he tells me like different ways of approaching it."

But, significantly, homework is not the sole context in which this occurs. Students also describe their home-based encounters with mathematics in social and emotional terms. Families go through the mathematics curriculum with students—feeling upset and concerned when they struggle and immensely proud when they work hard and succeed. At least for some children, parents provide an important narrative of the student's mathematical history that becomes part of how students view themselves mathematically, part of their productive disposition as learners in that domain. For example:
In 6th grade I wasn't very good at math and Mr. C was my teacher [at school]. He used to always call me up [at the board] cause I didn't get math so much. ... He always helped me and he gave me problems that I didn't know and then I figured it out. And right now my mom says I'm like one of the smartest kids she's ever seen in her life because math is not my favorite subject and it is the one I really put more energy into than all my other ones, even gym, because I like math a lot more.

Further, the students explain how their families help them to navigate a high-demand mathematics curriculum even when the content might not be familiar to family members: giving them rides to school early in the morning to talk to their teacher, helping them to understand that it is better to put down evidence of having tried rather than leaving homework examples blank, urging them to call a friend to get help with homework so that it can be turned in complete, or helping them to practice with flash cards or math games on week-ends.

In addition, students record how their families show them the power of mathematics and gradually admit them to the world of adult decision-making, where hopes, plans, realities and sudden turns of events often contend. One student talks about helping her mother to figure out how much she could spend at Christmas time:

At Christmas time actually, my mom was doing her bills, and she said that she was going to have this much for Christmas shoes. She didn't have her calculator, so she said "[Child's name], come here", cause she wanted to see if I could get it. So she asked me and then I got it. How much she would have to split it between them.

Another aspect of students' mathematical lives within the family context is that children, as older siblings who have traveled through CMP, informally tutor their younger brothers, sisters, and cousins in ways that adult relatives can't. Thus, within the family context, as within the school context, there are peer-to-peer teaching opportunities. For some students, especially those who may be struggling with mathematics at their own grade level, helping younger family members with more elementary mathematics might provide especially rich opportunities for building both (younger and older) children's mathematical proficiencies. One seventh grader explains how playing with her much younger brother became a moment when she reflected on her own mathematics:
"He's only four [...] but he's really smart so like when he was two years old he lined up all his blocks in a perfect line from the darkest color to the lightest color, like a rainbow almost. So he is very smart... the book that we are on is Filling and Wrapping so it is like if you have a rectangle it can be a four by two by four and when he builds his squares or whatever he builds he can tell you, "Oh, that's a 2 - 4 - 2." He already knows it. He like knows the stuff that I am learning right now."

Finally, there is the subtle pulse of messages that families can send about themselves being the kind of people who can command mathematics. A seventh grader describes the role that her grandmother plays in convincing her she comes from a long line of capable folk:

Addition, subtraction, multiplication, division... My grandmother does taxes, so it really does help her, the addition, she does it all in her head, she doesn't use a calculator... She does other people's taxes and she is a secretary and she does these huge grants for the college she works at UMass Dartmouth. So like addition and subtraction helps you a lot... Ever since I can remember, from before I was five, she always bought me flash cards, whether they were addition or multiplication or division, so she's like helping me with the basics, and then she is helping me with integers, and she has helped me a lot with the shapes like she knows how to explain it a lot more simpler than my math teacher explains it. So she like breaks it down for me. She just teaches it more easier.

These data demonstrate how more than access to the explicit mathematics curriculum (e.g., the procedures, concepts, and applications in doing Problem 7.1) is involved in mathematical success. Drawing on what their families offer, the students represented here are developing the strategies for overcoming the obstacles to and persisting in doing problems like 7.1.

**Between Provision and Thriving: The Need to Re-think Human Capital**

These students' accounts of their mathematical learning reveal how key partners in their lives, regardless of their own level of education, can teach important socio-emotional strategies that help children to see themselves as agents in charge of their own learning in high demand classes. In effect, mothers, fathers, grandparents and older siblings taught "units" on will, effort and persistence. They also taught children how to represent themselves as mathematics learners in the context of
school by showing their work, going to school early for help and asking questions. In addition, the examples outlined above go far beyond the simple tasks to which many parent outreach programs limit themselves: getting children to school on time, controlling absences, or limiting television watching. By setting such low ceilings, we fail to engage families' aspirations fully. As many have pointed out (Goldman, 2005; Jackson & Remillard, 2005) we frequently underestimate what family members can do, using their historic levels of educational attainment as false proxies for their levels of understanding and aspiration.

But the issue is much larger than stronger partnerships between families and schools—vital as that is (Epstein, 1997; Henderson & Mapp, 2002; Mapp, 2003; Mediratta, Fruchter & Lewis, 2002). For all students to develop the levels of agency required to meet high (as compared to basic level) expectations we require a radically different model of human capital that goes far beyond a national call for qualified teachers. The foregoing observations demonstrate how substantially we underestimate the range of learning partners that students need and could have. Grandparents and siblings figure forcefully in middle school students' accounts of their math learning outside of school. Cell phone conversations about hard problems occur regularly between friends. And students themselves in class, before school, and on the bus serve as resources to each other (Cohen, Mediratta & Shah, 2007).

In comprehensive education systems it would be vital to build this greater range of capital, recognizing the specific genius and potential contributions of different contributors. While students may need teachers and tutors for mathematics concepts, parents, if recognized and drawn in, can help students to build their identities as learners at home. Parents are potentially classroom aides and teachers who will stay to build the resources in their communities. As activists, families also have a vital role in insuring equity and access for all students (Mediratta et al., 2002). But students—currently rarely seen as part of the human capital spectrum—could also play a significant role. High school students could

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3 For example, Illinois' "Grow your Own" program has demonstrated how schools can be effective employers helping parent to move from volunteers, to family liaisons, to paraprofessionals and translators, and ultimately to teaching positions. These individuals are the ones to inform families, to accompany them to events, to assure them about the opportunities offered by neighborhood programs. The state funds provide forgivable loans that help the candidates finish college and earn their teaching certificates. In exchange, the candidates agree to teach for at least five years in neighborhood schools (http://www.growyourownteachers.org/).
learn questioning techniques and strategies, serving as after school tutors embedded in community centers—or even in households. Younger students, if taught to think, discuss and question each other as part of instruction, could also support one another’s learning in substantial ways.

THE CASE OF ARTS LEARNING: RETHINKING PROVISION

The foregoing account of mathematics learning looked at issues of equity in the mandated mathematics curriculum, pointing to the need to radically re-think the human capital in the context of comprehensive education systems. The following section uses the example of arts learning to explore some of the ways in which we will have to move beyond established notions of provision if comprehensive education systems are to create substantially equal outcomes. Specifically, this section looks at the role of two kinds of pathways—lateral and longitudinal—in making it possible for students from a range of backgrounds to do excellent work.

As a starting point, consider the entrance requirements for a music conservatory:

- application fee of $100 (U.S. dollars - no cash, traveler's checks or fee waivers are acceptable);
- writing sample (300 - 500 words of expository text showing evidence of original thought);
- artistic résumé (including academic study, private study (subjects, with whom, dates, where), performance experience, awards and distinctions, festivals and summer programs);
- repertoire list (a representative list of works recently studied in your applied area that is no longer than 2 pages);
- letters of recommendation (2 or 3, as required by your program);
- preliminary audition recording, if required;
- official transcripts;
- standardized test scores (SAT/ ACT scores are recommended for all undergraduate applicants but are not required). (New England Conservatory, 2008)

One of the striking things about this list is how it presumes both lateral and longitudinal pathways. An applicant is asked for evidence of having
achieved across settings that exceed school (for instance, lessons and festivals) and over time (as evident in an artistic resume, repertoire list, as well as the more predictable Transcript). They are living in states and districts that frequently do not live up to the most basic standards for arts education (i.e., one or two courses for graduation). While this example is clearly specific to music, its almost narrative requirements highlight a second factor that lies between provision and thriving: students' access to pathways. If we are serious about using comprehensive education, then its policies and programs will have to distribute these pathways equitably. In fact, such pathways may be critical in creating forms of equity that surpass the basic skills level. While the following case uses materials from the arts, the same argument may well hold for science, world languages, or journalism.

The following data on pathways come from a linked set of studies of students who are trying to pursue the arts in comprehensive urban high schools and their surrounding communities. The students came from moderate— to low-income families and are largely dependent on what their schools provide and what they and their families could locate in terms of free programs or scholarship opportunities. In working with these students, we used many of the same data collection strategies that were described above in the mathematics case, with the addition of one-on-one interviews that allowed us to map the longitudinal course of students' involvement in the arts (Wolf, 2005).

**Provision: School Pathways**

Many students described their work in arts courses as the most valued aspect of their in-school time. For many young people these classes shared a number of the features that researchers have ascribed to strong youth development programs (Eccles & Grootman, 2002; Larson, Jarrett, Hansen, Pearce, Sullivan & Walker, 2004; Larson & Walker, 2006, McLaughlin, 2000, McLaughlin, Irby & Langman, 1994; Roth & Brooks-Gunn, 2000). Thus, many students described their arts classes as contexts that offer opportunities to build physical, intellectual, psychological, emotional, and social skills that facilitated their sense of themselves as capable individuals. They described their arts classrooms as settings where they are encouraged to concentrate on their growth and improvement rather than where they rank in terms of absolute performance. They spoke about the strong relationships with their arts teachers, with whom they work across multiple years, often using them as counselors and adult friends. They described these classes, for the
most part, as settings where they experienced a very strong emphasis on excellence, combined with fairness.

Students also recognize their schools as gateways to opportunity: for many of them there would be no clarinet or studio unless their public school provided it. Analyses of students' accounts of their in-school arts learning clearly suggest how those courses help them learn the techniques, responsibilities and repertoire of a field like music which might never have been open to them otherwise. They recognize the power and the importance of these apprenticeships:

The spring concert is coming up. We are going to do it for the other keyboard classes. We each have to choose a short piece to play and get it ready. I am doing a version of "Ode to Joy". Our teacher gave us a rubric about what to work on. She told me to concentrate on getting the two hands together. She lets us practice for a part of each class. She also opens the classroom at lunch so we can get more time. That's good because I don't have a keyboard at home and I have a lot of work to be ready.

At the same time, many of the high school students also cite a number of institutional facts through which the very structure of high school mitigates against their ever being able to do high quality work. They describe the difficulties of trying to rehearse a piece in a 50-minute period or before the last bus leaves. They speak about credit distribution in which only one or two arts courses are required for graduation. They also point out that additional courses count as electives and do not affect their grade point averages, which, in turn affects their class standing and eligibility for scholarships. More poignantly, students speak to the confusion that can arise between good and original work in the context of school arts classes. "Good" schoolwork fulfills all the parts of the assignment, it meets the criteria, it is completed by the due date and often has to fulfill a social rather than an artistic function in the school calendar such as the holiday concert or bulletin board. But, as they point out, original work can be messy, uncharted, and end in failure despite considerable effort. Some students experience a real clash of criteria, for instance city-wide, regional and state band competitions often focus on unison playing, precision, and deportment, arbitrating against experiment, responsiveness in the moment, or standout solo playing.
Every spring we compete in statewide juries against other orchestras. They set the rules. Part of what they score is ensemble playing. But that means marching band tight ensembles. So you lose points if a section or a player stands out, even if that was a choice and part of interpreting the music.

Students, whether they are musicians, artists, dancers or writers, also joke (in that way that is very serious) about "the big frog" problem of art done solely in school contexts. As a student explained:

... you can be the best in your class or school, but that's one very small pond. You don't ever know the real standards, not until you are actually standing in an audition somewhere where you can hear them say, "This one's in that one's out," or until you get rejected from some summer program you were hoping for. So you don't ever grow the skin that you need to take the cuts. You have to go to other places, get outside of school for that.

Analyses of the interviews with students who have found ways to thrive as young artists and performers suggest that they are different from their peers insofar as they value the activities of expressing, imagining, and inventing enough to use their personal resources (concentration, imagination, physical energy, materials, relationships, persuasive powers, and even their personal savings) to win the time and focus to develop major skills or works. What distinguishes them, in particular, is their achievement (with the help of many others) of two types of paths: lateral paths that carry them across multiple contexts and longitudinal paths that permit them to develop increasingly strong skills and vision.

**Lateral pathways**

Figure 1 provides a detailed document of a twenty-four hour period in the life of a high school senior who is involved in vocal music both in and outside of school. Seven and a half of those hours are directly involved with music. Even more hours (like those at a job that is yielding savings for college) are structured by her interest in music.

**Figure 1: Evidence of Lateral Pathways from a High School Senior**

<table>
<thead>
<tr>
<th>Time</th>
<th>Value</th>
<th>Supportive Relations*</th>
<th>Setting</th>
<th>Activity</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Class</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 pm-2:00 am</td>
<td>3</td>
<td>P</td>
<td>Friend's house</td>
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<tr>
<td>3:00-6:00 am</td>
<td>2</td>
<td>T</td>
<td>Sleep/school</td>
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<tr>
<td>8:00 am</td>
<td>3</td>
<td>P</td>
<td>Contemp. Issues</td>
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<tr>
<td>9:00 am</td>
<td>3</td>
<td>T</td>
<td>Vocal Ensemble</td>
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<tr>
<td>10:00 am</td>
<td>1</td>
<td>English</td>
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<tr>
<td>11:00 am</td>
<td>3</td>
<td>T</td>
<td>Library</td>
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<tr>
<td>12:00 pm</td>
<td>3</td>
<td>P</td>
<td>Lunch room</td>
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<tr>
<td>1:00 pm</td>
<td>1</td>
<td>CA</td>
<td>Math</td>
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<tr>
<td>2:00 pm</td>
<td>1</td>
<td>CA</td>
<td>Downtown</td>
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<tr>
<td>3:00 pm</td>
<td>1</td>
<td>CA</td>
<td>Job</td>
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<tr>
<td>4:00 pm</td>
<td>1</td>
<td>CA</td>
<td>Job</td>
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<tr>
<td>5:00 pm</td>
<td>1</td>
<td>Job</td>
<td>Same</td>
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<tr>
<td>6:00 pm</td>
<td>1</td>
<td>Job</td>
<td>Same</td>
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<tr>
<td>7:00 pm</td>
<td>2</td>
<td></td>
<td>Drove home/home</td>
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<tr>
<td>8:00 pm</td>
<td>1</td>
<td>Home</td>
<td></td>
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<tr>
<td>9:00 pm</td>
<td>1</td>
<td>Home</td>
<td></td>
</tr>
<tr>
<td>10:00 pm</td>
<td>2</td>
<td>Home</td>
<td>I need to rest up for the concert. Not much sleep the night before.</td>
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</tbody>
</table>
This journal (which is typical for students in periods of high involvement in performing and generating original work) demonstrates that while school is absolutely an anchor for her work, to thrive she has to expand on what is literally provided. She builds a wider campus for her learning that includes the Chinese restaurant and the equipment and peers trained at the Voc Tech center (Heath, 1994; Heath, 1998; Heath & Roach, 1999; Heath & Smyth, 2000; Jarrett, Sullivan & Watkins, 2005; Larson, 2000; Larson, Hansen & Walker, 2005; Mahoney, Eccles, & Larson, 2005). In a sense, she invents a faculty that includes a range of adults and a community of like-minded peers with skills that complement and challenge her own, creating a social network in which to learn (Latour, 2005; Moran and John-Steiner, 2003.)

Longitudinal Paths

In addition, students describe a second type of pathway: longitudinal sequences of opportunities that support them in developing high levels of skill and passion. Figure 2 portrays what this can look like in the life of an individual—in this case a young man whose early family and community resources take off when he reaches high school age.

From an early age, the young man (PB) grew up in a household rich in cultural capital. His mother was a singer who performed both at church and house concerts. He and his sisters became members of their church choir in elementary school. While he had access to a piano—and even lessons for a short period of time—he had to stop them. However, when he entered a new high school, a music teacher recognized his musical ear—even though he didn't have the "chops" of someone who had had the kind of early or consistent musical training that would make him a candidate for orchestra or band. Instead, impressed by what he could do "by ear," the teacher started up a guitar class for him and several other young men in a similar situation. Inspired, the student began spending hours on the computer, teaching himself the history of music and composing. Even though he was using clunky free software, his effort impressed his music teacher who agreed to continue the guitar class and to listen and respond to PB's compositions. This support sent PB hunting down a job in a recording studio during the summer.

PB lacks the middle class means to fill in where public school leaves off. He has to piece together a longitudinal path out of grit and luck, like many of the students in the research. They invent pathways across changes in their families' circumstances, lapsed lessons, moves and the attendant changes of schools. If comprehensive education systems are
to make a difference, they will have to have the capacity replace that grit

Figure 2: Evidence of Longitudinal Path: High School Musician

<table>
<thead>
<tr>
<th>Resources And Events</th>
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<td>2 Church Choir and Performance</td>
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<td>Resources for Learning in the Home</td>
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<td>Family Social + Cultural History: Parent + Sibling Generations</td>
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<tr>
<td>Time</td>
<td>Early Childhood</td>
<td>Elementary School</td>
<td>Middle School</td>
<td>High School</td>
<td>Post Secondary</td>
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</table>

- Family-based
- School-based
- Peer/Self-based

**Resources/Events**
1) Piano Lessons
2) Church Choir
3) Special Guitar Class
4) Computer-based composing
5) Dance in friend’s piece
6) (Summer job at recording studio)

and luck with continuities and supports.

Many children start off with home-based histories of listening to the radio, singing, drawing, and making up games. By age five, all normally developing children, sing, dance, draw, and tell stories. But when children enter school sustained access to settings for doing increasingly sophisticated original work vary in ways that frequently correlate with social class, race and ethnicity. In many poor communities, arts education, project-based mathematics and science, and affordable after-school programs with creative options are in short supply. Moreover, the sustained pathways for developing the requisite skills and habits are frequently broken or fragile. While a district may offer music classes for every child in elementary school up through grade 3, due to costs, or changes in priorities, that same district may only support
continued music in magnet arts schools at the middle and high school level.

Many of the young artists and performers we interviewed believe this could be different—if only their communities would treat them as the next generation of innovators, deserving of sustained developmental paths. They want out of mindless after school jobs. They want positions in arts and literacy projects in the burgeoning field of after-school, they want to write and record the "youth track" on museum audio guides; they want jobs with the city department of parks and recreation mentoring even younger writers and artists; they want to teach courses in libraries. They envision every youth-serving agency in their community contributing to a website that lists jobs that require and nurture knowledge, skills, and experience in creative fields from landscaping to record production. They want the pathways that would put an end to what the poet, Adrienne Rich (2002) has termed "the apartheid of the imagination."

Asked about small, affordable programs that would make a major difference to their ability to do creative work, the students were quite clear that schools and communities could build the needed pathways with only moderate investments:

If I were mayor? I would make exploring the city mandatory. Every 9th grader would take a course on the city and its resources. Most of the kids from the faraway neighborhoods or suburbs never go into the city except to shop. Make us get up and out.

I say every summer put on poetry jams and traveling youth art shows in every part of the city and rotate them from neighborhood to neighborhood. Set up a stage, get families to come, get people cheering for their home poets!

I want the branch libraries to have studies for writers. You could go there and sign up. You trade your bus pass for a key. There is a computer hooked up to a shared printer. People put out their recommended books with why they like them. At lunch and at the end of the day, there would be an open reading session. It could be me who is fifteen or my grandmother who is writing her memories up. And different days there are different writing tutors there. Say Monday for poetry, Tuesday for stories....

This discussion of pathways as an integral part of the equity of comprehensive education systems has used the arts as an example—but
regardless of the field or discipline, many students require these lateral and longitudinal pathways to achieve at high levels. As the novelist, Marianne Wiggins suggests:

People lean, either in their dreams or in their action, toward that place where they suspect their inner lights are coming from. Whether they call it God or conscience or the manual of Army protocol, people sublime toward where their inner fire burns, and given enough fuel for thought and a level playing field to dream on, anyone can leave a fingerprint on the blank of history. (Wiggins, 2003, pp. 12 -13)

CONCLUSION: EVOLVING CONCEPTIONS OF EQUITY IN COMPREHENSIVE EDUCATION SYSTEMS

In the United States today, children’s economic and social status continues to predict their school success and hence, in many respects, their future. Under these conditions, it is vital that we locate settings in which students, with the support of their families and communities, have the chance to uncouple status from achievement. The foregoing cases of mathematics and music make clear how essential it is to transform “what’s offered” into “what makes a difference.” Four major points emerge.

First, like many other contributions to this volume, this paper argues that given their history and the current pressures on them, schools alone are unlikely to create the kind of equity of opportunity or of outcomes that Americans are fond of believing that education, in the form of public schools, can achieve. What schools can achieve is limited by their larger societal context (residential and economic segregation, widening income gaps for families, etc.), as well as their institutional history of operating as sifting and sorting mechanisms. It is also limited by growing accountability for academic performance alone.

Second, to the extent that schools work to level the playing field, they may be best designed for the increasingly equal distribution of established academic capital (e.g., how to find the area of a circle, the sequence of dynasties in China, or how to write a thesis statement). This is not insignificant work particularly if done well and fairly. But schools, at least as we know them, are ill-suited to producing other forms of equity that matter such as the agency needed to negotiate changing demands in mathematics or the pathways that permit human beings to achieve at more than basic levels.
Third, the time for a commitment to a broader view of learning for all children is now. The out-of-school inequalities in children's lives may well increase in the years to come. First, there is the growing income inequality that erodes poorer families' time and energy for demanding the best from their public schools as well as for searching out the multiple forms of informal learning—after-school, clubs, scholarships and lessons with sliding fee scales that help to develop their children's human capital (The Economist, 2004; Wells, 2006). As costs like health care, nutritious food, and energy spiral upwards, many cities and towns are cutting back on positions such as librarians and "non-essential" teachers such as those who teach untested subjects like physical education, history, world languages and the arts. This is leading to the growing privatization of learning opportunities in which economically strapped communities and schools are charging families to ride school buses, play athletics, or participate in after-school activities like band and choir. In such a world, the increasing numbers of poor and immigrant families in the U.S. who already navigating the unequal quality of the public education, will be faced with identifying and piecing together the supplementary forms of education that often allow children to acquire the forms of human capital that allow formal instruction to take hold, or that fuel learning when formal schooling fails.

Finally, if as researchers and policy-makers we call for comprehensive education, we have corresponding ethical and intellectual responsibilities to understand how it can operate equitably.

REFERENCES


DENNIE PALMER WOLF is a Senior Scholar at the Annenberg Institute for School Reform. Her research focuses on students' opportunity to learn, particularly in the arts and humanities, examining how that learning is shaped by the multiple contexts of homes, schools and communities. In that work, she conducts inquiries and develops programs by collaborating with family and community members, as well as young people, as co-researchers. Her most recent work examines where and whether children and youth have access to doing non-routine, original work.