

Overcoming the Knowledge Gap: The Case for Content-rich Instruction

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Seen as the newest cure-all for schools failing to make adequate yearly progress, public school for 3- and 4- year olds, affectionately known as Pre-k, has begun to take center stage. Recognizing that the achievement gap starts early, new policies and practices including the White House initiative, “Good Start Grow Smart” (2002) have put in place attempts to prevent reading difficulties for children who are at greater risk of falling behind, and staying behind.

Recently I watched as the day unfolds in a nearby classroom recommended as an exemplar Pre-k by the local school administrator in an urban school district struggling to make AYP. The room is literally filled with print--words, pocket charts, alphabet letters, numbers, signs, environmental print, all seem to adorn every available space. Sitting with “quiet hands and quiet feet,” in their designated space in the circle, the children are about to begin their lesson.

Taking a pointer in hand, the teacher begins, “Good morning boys and girls.” Pointing to each word, in unison, the children recite the daily schedule, pretending to read seven simple sentences, like “we will have circle time; we will read a story,” until they finish with “we will go home.” Next comes the days of the week, and children are asked to repeat them in chorus. This is followed by recalling the days of the week, reciting the months of the year, and remembering their ABC’s.

But all of this is prelude to the big event: The letter of the week. “And what’s our letter of the week?” “Yes, its N and n,” she writes. What words do we know? “Night, nut, and noodles” “And why are we learning about noodles this week?” The children in unison say, “We are learning about the letter ‘n’.”

Over the next 55 minutes, these children will learn to point, circle, and underline the letter “n.” They will recite it, draw it, and look around the room for it. They will hear it, see it, even feel it, having it traced on their backs by their peers. And after sitting “station style” for what seems to be an interminable amount of time in the circle, they will be allowed the free choice of tracing, cutting, or rolling play dough of it--all to learn about the joys of the letter “n.”

Aside from its questionable age-appropriateness for these children, and the numbing mindlessness of these exercises, what is perhaps most disconcerting about this visit and those of many others, is that this pattern of literacy learning has become all too typical throughout this country. Call it chiming, repeating, reciting or recalling, it all had a similar effect: Not once did I see any effort to engage children’s minds through stimulating content.

Of course, one might argue that children must learn the basics of decoding before tackling content, or more complex, higher-order thinking. Children supposedly move from “learning to read,” in the early years to “reading to learn” as they grow older. As the theory goes, the skills, procedures, general purpose maneuvers that children learn in these settings will be put to good use later on when they take on more complex texts in an array of subject areas.

But here’s the tragic irony of such an approach. It turns out that such a narrow, limited view of reading may actually harm not help these learners. Such teaching of basic skills, separate from any meaningful context, may actually undermine rather than promote the very goals of improving literacy. Because comprehension of text—the very purpose of reading-- depends not only on a small set of procedural skills, but on a great

infusion of knowledge: Knowledge of words and their meanings, the concepts that connect them, and the ability to think critically about what one reads. Serving as a foundation for literacy learning, it is knowledge, not the learning of the letter “n,” that accelerates children’s achievement.

The Problem

America’s economically disadvantaged children do not fare well in our society. Even before formal schooling begins, the ravages of poverty have had their influence (Lee & Burkam, 2002): On average, cognitive scores of children at age 4 have been shown to be as much as 60% below their more affluent peers. Unfortunately, once behind, children more often stay behind: Evidence from the National Assessment of Education Progress (2004) reports that children in low-income families continue to lag significantly behind their more affluent peers academically, socially, and physically throughout their schooling.

According to economists (Mayer, 1997), however, it’s the concomitants of poverty, and not poverty itself that take such a toll on children’s learning and development. Poverty affects the availability of materials resources. With limited earnings, families can not afford to purchase books, lessons, and stimulating learning materials that engage children in learning about reading and about their worlds. For example, in our analysis of four neighborhoods in Philadelphia, we found striking disparities even in the access to print resources for children who lived in low-or middle-income communities (Neuman & Celano, 2001). Compared to 13 book titles available

per child in the middle-income neighborhoods, we found only 1 book title was available for every 300 children in the poor communities.

Poverty also affects a family's emotional resources, their well-being and interactions with children. As Betty Hart and Todd Risley poignantly describe, poor children engage in fewer experiences with new, different and more sophisticated vocabulary outside of their day-to-day encounters (Hart & Risley, 2003). In his now-classic model of the Matthew effect, Keith Stanovich (1980) describes that these differences in these early opportunities become magnified over time, so that less-skilled children find their experiences in school unrewarding, avoid reading, with the consequences that their skills fall precipitously behind.

These striking differences, then, in material resources coupled with limited interaction in the home environment begin to define what children are taught, and what is modeled and reinforced in these very early years, just when cognitive connections are forming. And these differences are the key to understanding the beginnings of the social stratification of knowledge, which, if not quickly overturned, grows every larger with each successive year.

Schemas: The Building Blocks of Knowledge

Children organize and structure their experiences into schemas, described as the "building blocks of cognition" (Rumelhart, 1980). Schemas provide children with the conceptual apparatus for making sense of the world around them by classifying these incoming bits of information into similar groupings.

But what is particularly important in the process of knowledge acquisition is that schemas provide a kind of organizational prosthetic that serves to diminish the information-processing load. Consider, for example, a young child visiting a library for the first time. It is probably a complex and confusing new world. Not only are there new routines to consider, but categories of choices of books, activities, and different locations, and roles of individuals. As the child comes to know the routines, and the schemas of visiting the library, she begins to form a mental representation of certain activities, devoting less mental energy to the structure of the activity than to the content itself. Certain activities, originally confusing, then, become understandable, familiar, and easier to access.

By diminishing the information-processing load, children are able to acquire new information more rapidly. Understanding the basic concept of a “library” for example, enables children to quickly make new associations, creating additional schemas that become increasingly differentiated with more knowledge. Children begin to recognize differences in genres, and text types, and purposes for reading, resulting in greater speed for gathering and remembering information. Knowledge becomes easier to access producing more knowledge networks. And conversely, limited knowledge increases the difficulty level of accessing new knowledge.

Widening Knowledge Gaps

A vicious cycle begins. Information-haves read more, engage more in higher-level conversations, and use information for fulfilling specific purposes and needs. Information have-nots rely on others, often avoiding reading and other knowledge

pursuits. Over time, differences in the speed of information acquisition and developing schemas accelerate, creating a growing knowledge gap between those who have accumulated a good deal of knowledge and those who do not (Viswanath & Finnegan, 1996). Although the have-nots gain knowledge, the haves gain it faster. And by gaining it faster, they are able to gain more.

We saw the knowledge gap at work in our 6-year study of neighborhood public libraries in low- and middle-income communities (Neuman & Celano, 2006). Although these libraries tried to “level the playing field,” by providing equal and plentiful resources for children who come from high poverty circumstances, the playing field was hardly level. From the very beginnings, preschool children in middle-income neighborhoods were given knowledge about the library. They were carefully mentored by a parent on using the resources purposefully, and modeled on challenging material; low-income children rarely came with an adult, engaged in only short-bursts of behaviors. New computer technologies in libraries, even after the novelty wore off, only extended the previous patterns, with poor children reading less, attending less, and learning less, and middle-income children, learning more, reading more, and more often. After spending over 20 million dollars in equalizing resources for a total of six years, middle-income children were learning approximately three times the amount as poor children.

Since 1997, over 90 studies on topics as varied as crime prevention, health, and safety have shown the persistence of knowledge gap (Viswanath & Finnegan, 1996). This literature shows that the gap further exacerbates during economic downturns and hard times. Given the rapid rise of socioeconomic divisions in the past decade and

increasing poverty among many of our families, the knowledge gap, if not quickly overcome, threatens to grow ever wider.

The Solution

What can we do to reduce the knowledge gap? Provide knowledge-building experiences that help children understand their worlds. Create schemas of information networks for children early on that build rich vocabulary. Encourage children to question, discover, evaluate, and use higher-order thinking skills.

Contrast the earlier scenario with a preschool program in another urban school district, also suffering from AYP distress. I enter as “sharing circle” is beginning. The children are busily talking about their recent visit to Cobblestone Farm. The room looks warm and inviting, with interesting corn husks, natural fibers, and objects for children to explore.

After a few minutes, children put on their coats and hats. They are studying the ecology of the wetlands. The day before they scattered milkweed in the meadows; today they’re about to investigate the trees in the area. Glancing through a picture album, I later learned that this is part of a month-long study. They’ve spent some time with an ecologist from a local university, tested the water for certain algae, as well as conducted several experiments along the way. Throughout the morning, I see children engaged in lots of literacy activity, independently writing about their discoveries, (“If you need help with words, I can help” says the teacher), reading stories in a small group with the teacher, and making maps of the meadow.

But perhaps most striking than *what* they do, is *how* they do it. I see children taking initiative, asking questions, grouping natural things from the outside into little boxes, trying to figure how they're alike or different. I hear the teacher using phrases like "Let's investigate where the rainbow is," and "What does that make you think of?" "What do you all think about that?" and "Why?" in efforts to link what children know with what they need to learn. I watch as concepts are revisited through the day, helping children apply their skills in various other subjects, transferring and extending their understandings to new ideas. And I see children engaged, challenged, and proud of their growing accomplishments.

Classrooms like these help children build on their ideas. Using an array of strategies, their teacher models, tells, shows, explains, and demonstrates information—so that children with limited prior knowledge receive the same kinds of opportunities that other middle-class children have had. This knowledge then acts as a catalyst for children to acquire more knowledge on their own. In these content rich settings, early literacy skills ultimately serve children's developing thirst for knowledge and greater understanding.

Where Do We Go From Here?

Children learn what we teach. Exposed to a language- and content-rich setting, children begin to acquire the broad array of knowledge, skills, and dispositions that serve as a foundation for literacy learning. Exposed to a literacy curriculum that is reduced to a set of narrow, largely procedural skills, they learn the skills of pleasing others through mimicking, reciting, and repeating. Simply put, they learn how to react, not how to think.

The most unfortunate consequence is that not only does this wastes precious time, it overlooks what high poverty children need the most--key material resources and interpersonal experiences that engage their minds. Experiences that help them learn how things work, how to form patterns and relationships, how solve real problems, and engage in higher-order thinking skills. It is these key experiences that they lack--vital background knowledge for developing concepts and schema—that has put these children at great jeopardy, and not their ability to learn.

Such features of effective content- and language rich instruction include (Neuman, 2006):

- Time, materials, and resources that actively help children build language and conceptual knowledge;
- A supportive learning environment in which children have access to a wide variety of print resources;
- Experiences that help them connect new learning to what they already know and can do.
- Opportunities for sustained and in-depth learning;
- High levels of teacher interaction to assist and guide children’s learning

We do a terrible disservice to low-income children when we narrow our curriculum to its most procedural elements. Because there really is no joy in learning about the letter “n,” despite any protests to the contrary. Rather, what is joyous for young children is to work on the edge of their current competencies—to have teachers who provide learning experiences that are challenging but achievable. Teachers who carefully

scaffold children's learning with the level and amount of assistance gradually decreasing as the children are able to perform tasks independently. Programs that encourage children to express their ideas through language and allow them to raise questions that develop more complex understandings and concepts. Because effective teachers recognize that learning experiences and practices that help children to become skillful at knowing many things are the key motivators for literacy development and the joys associated with hard-won achievement.

References

- Good start, Grow Smart. (2002). A White House Initiative.
<http://www.whitehouse.gov/infocus/earlychildhood/toc.html>
- Hart, B., & Risley, T. (2003). The early catastrophe. American Educator, 27, 4,6-9.
- Lee, V. & Burkam, D. (2002). Inequality at the starting gate. Washington DC: Economic Policy Institute.
- Mayer, S. (1997). What money can't buy: Family income and children's life chances. Cambridge, MA: Harvard University Press.
- NAEP (National Assessment of Educational Progress). (2004). Percentage of students, by Reading achievement level, grade 4: 1992-2003.
<http://nces.ed.gov/nationsreportcard/reading/results2003/natachieve-g4>
- Neuman, S.B. (2006). The Knowledge Gap: Implications for Early Education. In D. Dickinson & S.B. Neuman, Handbook of Early Literacy Research, (pp. 29-40). NY: Guilford.
- Neuman, S. B., & Celano, D. (2001). Access to print in middle- and low-income communities: An ecological study of four neighborhoods. Reading Research Quarterly, 36, 8-26.
- Neuman, S.B. & Celano, D. (2006). The knowledge gap: Implications of leveling the playing field on low- and middle-income children. Reading Research Quarterly, 41, 35-70.

Rumelhart, D. E. (1980). Schemata: The building blocks of cognition. In R.J. Spiro, B. C. Bruce & W. F. Brewer (Eds.), Theoretical issues in reading comprehension (pp. 34-58). Hillsdale, NJ: Erlbaum.

Stanovich, K. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 16, 32-71.

Viswanath, K., & Finnegan, J. (1996). The knowledge gap hypothesis: Twenty-five years later. In B. R. Burleson (Ed.), *Communication Yearbook* (Vol. 19, pp. 187-227). Newbury Park, CA: Sage.