In the race to get kids to the finish line, let's not bypass their developmental needs.

Thomas Armstrong

A superhighway is being built across today's education landscape. It has been under construction for some time. Initially, this project focused on connecting kindergarten to the elementary grades. Gradually, it has broadened its vision until now it extends from preschool to graduate school. All the byways, narrow routes, and winding paths that have traditionally filled the journey from early childhood to early adulthood are now being "aligned" so that the curriculum (a Latin word meaning "a lap around a racetrack") can move along at breakneck speed.

So far, this project has received the approbation of most educators and policymakers. Such a colossal undertaking, however, extracts a great cost.

Human beings travel through different stages of life, each with its own requirements for optimal growth.

Early Childhood
In early childhood, the developmental bottom line is play. When I say play, I'm not talking about playing checkers or soccer; I'm referring to open-ended play in a rich, multimodal environment, with supportive facilitators and a minimum of adult interference. Between the ages of 2 and 6, children's brains go through an incredible process of development. Metabolism is twice that of an adult, and brain connections are formed or discarded in response to the kinds of stimulation the child does or doesn't receive.

At this time of life, it makes the most sense to encourage open-ended engagement with the world in an environment like that of Habibi's Hutch, a preschool in Austin, Texas, that calls itself a "natural childlife preserve." Children spend most of their day playing on swing sets, in sand piles, in playhouses, and with art materials and toys. They perform their own plays and participate in a cooking class (Osborne, 2007). The preschool's Web site (http://habhibishutch.com/philosophy.html) explains, "Our kids leave the Hutch with so much more than their ABCs and 123s. They all leave with a sense of themselves and a wonder and drive to know more about themselves and their surroundings."

This approach to early childhood education is a good example of a developmentally appropriate program. Unfortunately, the curriculum superhighway is delivering academic goods and materials as well as formal teaching lessons from the higher grades down to the preschool level—a trend that could ultimately destroy this precious ecology.

Middle Childhood
In middle childhood, the developmental bottom line is learning how the world works. Naturally, children of all ages are constantly learning about the world. But...
Superhighway
from age 7 to 10, this need becomes especially important. Kids are becoming a more significant part of the broader society, and they want to understand the rules of this more complex world. Their brains have matured to the point where they can begin to learn the formal rules of reading, writing, and math; but they also need to satisfy their insatiable curiosity by learning how governments work, how butterflies grow, how their community developed, and countless other things.

The "children's museum" model of ecosystem could eventually decay and disappear.

**Early Adolescence**

The developmental needs of early adolescence consist primarily of social, emotional, and metacognitive growth. Surges of testosterone at puberty swell the amygdala, especially in boys, generating strong emotions (Giedd et al., 1996). For girls, estrogen levels appear to affect serotonin levels, leading to high rates of depression (Born, Shea, & Steiner, 2002). The curriculum needs to regard this newly acquired metacognitive capacity as merely an opportunity to teach algebra and reading comprehension. The components of the superhighway's infrastructure—tougher requirements, more homework, and harder tests—leave teachers little chance to engage students' emotions, social needs, and metacognitive thinking in any substantial way. The resulting deterioration in this ecosystem may lead to environmental hazards such as gangs, violence, and mental disorders.

"In all the world there is no other child exactly like you. In the millions of years that have passed, there has never been another child exactly like you. You may become a Shakespeare, a Michelangelo, a Beethoven. You have the capacity for anything. Yes, you are a marvel.

—Pablo Casals

learning, recommended by Howard Gardner (1994) among others, is a good example of how we can preserve this developmental ecology. "In a children's museum," Gardner explains, "kids have an opportunity to work with very interesting kinds of things, at their own pace, in their own way, using the kinds of intelligence which they're strong in." In a unit developed by the Minnesota Children's Museum, for example, 1st grade students spend six weeks studying insects using the museum's Insect Discovery Kit and then take a trip to the museum's ant hill exhibit (Association of Children's Museums, 2003).

Because schools today are spending more and more class time preparing students for academic tests that are part of the superhighway scheme (a project aptly called "No Child Left Behind"), students have fewer opportunities to engage in a rich exploration of our incredible world. As a result, this reflects young adolescents' greater sensitivity to emotional and social issues. For example, at Benjamin Franklin Middle School in Ridgewood, New Jersey, students read about the Warsaw ghetto and then discuss how they can combat injustices that they see in their own lives (Curtis, 2001).

Just before puberty, children's brains experience a surge in the growth of gray matter in the frontal, parietal, and temporal lobes, which may be related to what Piaget called formal operational thinking—the ability to "think about thinking." This new capacity represents an incredible resource, enabling young teens to begin to reflect at a more abstract level—not only to gain perspective on their own emotional responses, but also to engage intellectually with such universal issues as justice and individual rights.

Unfortunately, the project managers of the curriculum superhighway appear to regard this newly acquired metacognitive capacity as merely an opportunity to teach algebra and reading comprehension. The components of the superhighway's infrastructure—tougher requirements, more homework, and harder tests—leave teachers little chance to engage students' emotions, social needs, and metacognitive thinking in any substantial way. The resulting deterioration in this ecosystem may lead to environmental hazards such as gangs, violence, and mental disorders.

**Late Adolescence**

In late adolescence, the developmental bottom line is preparing to live independently in the real world. At this age, neural pathways in the brain are becoming increasingly sheathed, or myelinated, so that nerve impulses travel more quickly—especially in the frontal lobes, which control planning and decision making (National Institute of Mental Health, 2001). At this age, young people in many states are legally empowered to set up their own individual retirement accounts, drive a car, marry, vote, and engage in other adult responsibilities. But in a typical high school classroom, these same adolescents have to raise their hand for permission to go to the bathroom.

At this stage of life, kids need less classroom time and more time out in the real world, in apprenticeships, internships, job shadowing, career-based work experiences, and other situ-
ations in which they can experience themselves as incipient adults. The traffic on the curriculum superhighway, however, is especially intense at this point. High school students are deluged with pressures to pass high-stakes tests, meet strict graduation requirements, and take advanced courses that will prepare them for four-year academic colleges. Many of them aren't even allowed to dip their toes into the currents of the real world, because to take this time would mean falling behind their peers in an increasingly competitive society. The curriculum superhighway's attack on this ecosystem may erode students' ability to think for themselves, reflect on their futures, and make responsible choices that mirror their own proclivities and interests.

Restoring a Human Development Curriculum

Schools need to approach curriculum in a way that is environmentally sensitive to the ecologies of different developmental stages of life. Let's start with literacy. In early childhood, literacy needs to take place in the context of play. According to developmental psychologist David Elkind (2001), children aren't even cognitively ready to learn formal reading and math skills until they reach Piaget's operational stage of cognitive development around age 6 or 7. In early childhood, literacy should be just another part of the child's rich multisensory environment. A playhouse area, for example, should include books and magazines along with dolls and furniture. If a child wants to play at being mommy reading a story to baby, that's up to her (experts call this process emergent literacy).

At the elementary school level, we can appropriately teach formal reading and writing skills, because the symbol systems of literacy are an important component of how the world works. Literacy will develop best, however, not with boring worksheets and sterile reading programs, but with reading and writing experiences that give students a chance to learn about all aspects of the world, from science to history to social relationships. In such programs, students may read historical narratives, guidebooks on science topics, and other reading materials (such as reference sources, Internet text, or high-quality fiction) that whet their curiosity to find out more about the world. Likewise, they may take field notes on nature hikes, write letters to people of influence, and create reports based on what they've discovered about their community's history.

In middle school, literacy needs to take place in the context of a young teen's social, emotional, and metacognitive growth. Journal writing, therefore, is developmentally more important than book report writing. Reading material should include emotional themes that speak to the adolescent's inner turmoil. Teachers should assign collaborative and cooperative reading and writing assignments to honor the social needs of early adolescence. They need to teach students how to use metacognitive strategies to monitor their own reading and writing habits.

Finally, in high school, literacy needs to serve the interests of the student becoming an independent person in the real world. Here, college preparation reading lists are appropriate for some students. But all students should learn more practical literacy skills, including how to write a résumé, how to skim for essential information on the Internet, and how to develop a lifelong interest in reading as a hobby.

Math and science instruction should also evolve as children move through each developmental ecosystem. In early
childhood, math and science are an integral part of daily play activities as kids build with blocks, examine insects, and dangle from the jungle gym. In elementary school, kids are developmentally ready to learn the formal systems of mathematics and the use of science to answer questions about the world, from why the sky is blue to how a car works.

In middle school, math and science become vehicles for exploring the biology of life, the ultimate nature of the cosmos, the consequences of a nuclear war, and other emotionally laden and thought-provoking topics. Students need to work on high-interest, group-oriented math and science projects (for example, preserving a bird habitat or monitoring junk food habits) and communicate their findings to others through the Internet, science fairs, and other means.

At the high school level, students need to study for preparatory exams in math and science to help them apply for college or technical schools. They also need to learn the practical math and technical skills necessary for living independently (for example, financial planning and using computer software) and develop the science and math literacy necessary to vote intelligently on such issues as taxation, global warming, and the costs of war.

A human development curriculum also extends beyond literacy, math, and science to other subjects, including the arts, physical education, social skills training, and imaginative, moral, and spiritual development. In far too many schools, these subjects have been crushed beneath the heavy weight of the concrete (benchmarks), asphalt (standardized tests), and steel (adequate yearly progress) that make up the bulk of the curriculum superhighway.

As educators, we need to rescue these important components of person-building from the rubble of the super-highway construction site and preserve the delicate ecologies that make up our students' stages of human growth and development. By dismantling the curriculum superhighway, we can ensure that our students will not stress out in traffic jams, keel over from road fatigue, or be maimed or killed in collisions along the way. By focusing on the whole child, we can prepare our students to meet the challenges of the real world in the years to come.  

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References


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