

**New possibilities for a new era:  
Research-based education for equality and excellence**

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Despite many renewed possibilities for U.S. schools, fixing them remains a multifaceted problem. Clearly focusing on improving education for all American children requires a comprehensive understanding of global issues that will impact their future, along with cutting-edge interdisciplinary research from neuroscience, psychology, pediatrics, and education. Gains made in brain-based research and global education studies can directly influence delivery approaches within classrooms and teacher education programs. Educators are beginning to bridge the divide between education research and practice, an initiative that offers hope for real change.

Research on global education is beginning to reveal why many U.S. students are lagging behind their counterparts in other countries. Most of those countries' curricula, teaching approaches, and teacher-preparation programs are *based upon research and equally available to all children*. Their resources, both in school and out of school, are *strongly supported by government funding*.

The Forum for Education and Democracy (2008) has called the U.S. education system one of the most inequitably funded of any industrialized nation. Social inequities have contributed to a rapidly growing phenomenon called the "school-to-prison pipeline" (pp. 21-22). Additionally, many educational gains made by African American and Hispanic students during the 1970s seem to be eroding (Forum 2008, iv). Equitable educational opportunities will include *essential needs*, including safety, healthful buildings, and nutritious meals, along with superior educators, equipment, and materials (Gunzelmann 2008). Finally, meeting children's early needs is a prerequisite of optimal learning, and that goal takes in health care, quality child care, and parenting programs.

### **What "Well Educated" Means Today**

The term "well educated" involves considerably more than it did even twenty years ago. Although children still must attain competence in the basics of reading, writing, and mathematics, our increasingly complex world requires advanced abilities in many other areas. While conducting qualitative research on global education, our research team at Southern New Hampshire University has identified themes that might improve U.S. schools. Such global research, coupled with sophisticated interdisciplinary studies that incorporate brain-based

research, suggests that the breadth and depth of our subjects need examination as much as how they are taught.

Let's look briefly at the curriculum and how it is taught. U.S. history, for example, is typically required for only one year in high school, and few courses address Native American heritage in any depth. Other cultures require history every year to enhance students' understanding of their society and the world. Geography is another area of weakness for American students: in most U.S. curricula it too goes unreinforced from year to year. Research on learning and the brain clearly indicates that reinforcement is essential for long-term memory and depth of learning.

Likewise, few U.S. students are fluent in a second language--an essential skill in the growing global society. Our interviews have revealed that virtually all students outside the United States study a second language early in their schooling--the stage well established as optimal for language acquisition (Gunzelmann et al. 2008-2009).

Despite upgraded math and science curricula, American students are not yet competitive with learners from many countries. According to the most-recent international PISA (Programme in International Student Assessment) assessments, U.S. students ranked thirty-fifth of the forty top countries in math and thirty-first in science. Those outcomes reflect a decline from the 2003 results (Darling-Hammond 2008).

The reasons underlying this state of educational affairs are complex: they involve our society's attitudes, values, beliefs, and behaviors, along with matters of world economy, technological advances, and myriad other issues<sup>2</sup>. Blaming teachers and schools alone is unwarranted. Most teachers are trying to do good work, but they find themselves underprepared, essentially trying to bandage a hemorrhaging artery.

## **Teachers**

Research repeatedly indicates that good teachers are education's most important component. According to Darling-Hammond (2008), the most significant influence on learning

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<sup>2</sup> Societal issues including the deterioration of the family, issues of addiction, family violence, and now a serious economic crisis with soaring unemployment rates all impact our goal of educational excellence. Paradoxically, another problem related to our culture involves our prosperity and many youths' attitude of entitlement. Conducting interviews with students and teachers around the world, we found that this entitled attitude is not true of most students outside the United States.

is the teacher, who can influence a student's learning either positively or negatively for years (p. 34).

The United States, for all its many outstanding teachers, cannot yet provide enough of them to educate all youth at the level of excellence a global society will mandate. American society must demonstrate respect for teachers through salary increases, benefits, tuition reimbursement, and researched-based teacher-preparation programs.

Becoming a good teacher can be a grueling and costly process in the United States. Many motivated young education students fall into debt trying to complete the requirements of teaching certification. Many teachers are forced to work two jobs just to pay their bills. Often the best teachers migrate from inner city and rural schools to higher-paying suburban localities, a trend that further increases the inequity in our schools. Many leave the field of education altogether to take better-paying jobs in different fields. Our interviews with students and teachers from other countries indicate that outside the United States, teachers are generally among the most valued leaders in their own societies. The literature reveals that in Finland, for example, teachers are selected for a tuition-free graduate-level teacher education program, complete with a living stipend (Forum 2008, 27). Other countries have undertaken similar interventions. Shouldn't U.S. schools be doing the same?

That brings us to recommended changes within teacher education programs. Interfacing with several fields, such as psychology (including child development), biology, and neuroscience, should be the foundation of teacher preparation. Teacher education programs must draw on content experts from specific disciplines. For example, research on learning and the brain, although increasing, is often mentioned only briefly in some teacher education classes or practiced by teachers with inadequate knowledge or training. Thoughtfully incorporating advanced research from experts in child psychology, biology, neuroscience, and pediatrics can provide teachers with the resources needed to help students become world-class learners.

Teacher education programs should also encourage classroom research in both qualitative and quantitative research methodologies. Future teachers must also develop expertise in assessment and testing: how to interpret test results and to fine-tune their teaching to reach each student. Testing must be applied to the targeted population and purposes, both to demonstrate student learning and to determine what still needs reinforcement. Students should also think of testing as a benefit: a time to review and see how they are doing. Used well, assessment can help

identify how students learn most efficiently and how teachers should teach. However, teachers have not been taught to understand psychometrics fully.

## **Schools**

*Schools must also develop research-based policies.* Costly, misguided educational programs can foster academic failure through inappropriate interventions, mislabeling, and various misguided investments (Gunzelmann 2004, 2008). For example, the research of Stamm (2007) and others indicates that children should be taught at appropriate times and provided information correctly at its first presentation. Although the brain is considerably more plastic than previously realized, its resistance at certain stages in individual development can exacerbate learning difficulties.

Ratey (2008) found a definite connection between exercise and brain performance: it improves the individual's ability to learn, counters high stress levels, helps to reduce and even prevent maladaptive anxiety, and reduces depression, while it increases levels of focus and attention. Clearly, our schools should be increasing, not decreasing, regular physical exercise up to several times a day.

Significant research has also established how to reduce aggression and behavior problems in children. For example, Greenberg's (2006) interventions, using research from the fields of developmental psychopathology, prevention, and neuroscience, demonstrate convincing results. Such research should directly impact how we teach.

Applied research from brain-based studies is yielding better understanding of approaches to help children who exhibit various symptoms schools must address. Case in point: musical training has been shown to improve verbal memory and reading ability in children and adults (Gaab et al. 2005). Additionally, music and art help to access areas of the brain dealing with emotion. Immordino-Yang and Damasio (2007) refer to "emotional thought," which is closely related to learning, attention and memory, decision-making, and social functioning--and such factors, in turn strongly affected by emotion, should directly impact how we teach.

Not only learning necessary skills and subjects but also allowing time for reflection are essential. School policies that schedule early-morning classes and then hold one class right after another are not conducive to optimal learning. Service-learning programs can also help education come alive while students demonstrate responsibility and give back to society. More

responsibility must be placed on students' shoulders as well. Overcontrolled school environments can prevent students from understanding that a good education is ultimately their responsibility to obtain.

### *Unfounded Ideas*

For example, longer school days or years do not necessarily enhance learning, particularly when neglecting necessities such as exercise and fresh air as well as increasing stress may actually increase dropout rates. Schools need not develop a sweatshop mentality.

### **Government**

Research from the neuropsychological expert Stamm (2007) clearly illustrates that learning begins much earlier than formal education. The implication is not to abandon the trend toward earlier formal schooling; rather, *parents must be provided with parenting-skills programs and well-run day care and preschool programs.*

Government funding is an essential component of such programs. Ideally, well-funded, solidly researched-based early-intervention programs would begin to equalize educational opportunities for all children. Other foundational needs include early and sustainable programs that develop safe, healthful home and learning environments; healthful food; access to excellent health care; and stimulating, balanced after-school care for the children of working parents.

Increased support for technology can also help make education more equitable. Thanks to advances in technology, even inner city and remote rural classrooms can directly access content experts and premier teachers. Furthermore, accessing such expertise will raise the bar of excellence for all teachers.

Government policies on assessment and testing must be helpful. The No Child Left Behind Act may have at first appeared helpful, but ultimately it caused schools to concern themselves more with scores than with student needs (Forum 2008, 25). By overemphasizing an unreliable measure of performance, such mandates reduce student interest and teacher passion (Gunzelmann 2004, 2005, 2008).

*Safe and healthful schools* are also critical to learning. All children deserve to learn in toxin-free buildings that meet safety codes. Wholesome, nutritious foods served for lunches and snacks must become the rule to support healthy development and optimal learning.

How much might resolving these educational issues cost? According to the Forum for Education and Democracy (2008), the United States could completely reverse its current educational drift by spending the equivalent of one month's involvement in Iraq. Additionally, improving education for all students would decrease the costs of dropouts' lost wages and taxes, innumerable remediation programs, and the millions needed for the prison population, due in part to inadequate and unequal education (Forum 2008).

**Government can and must play an important role in the education of the children.**

Doing what is best for children means trusting and relying on professionals in the related fields of education, psychology, neuroscience, and medicine; doing what is best, not what is cheapest; doing what works, not more of the same old approaches that have intensified educational decline. There is no time like the present. A new administration in Washington brings with it new thinking and the possibility of educational excellence for all children.

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