

## Caution or Stasis: Using Research to Rethink Schools—Now

Alden Blodget

I have spent my life working in the tragicomedy club of school reform, almost 50 years now. I was a secondary school teacher and administrator for 38 years, and as is the case for many of my colleagues, my memories of my own learning and my experiences as a teacher revealed a need for fundamental, systemic change. Over the past 20 years, thanks to researchers in cognitive and neuroscience, our growing understanding of how people learn also suggests a need for rethinking outdated assumptions about learning and for redesigning our schools.

I'm not talking about the small but helpful changes that occur every few decades sprinkled through a few schools, the sorts of changes that can affect classroom practices without really changing the basic designs of schools-- experiential learning, discussions instead of lectures, portfolio assessments, projects, learning for understanding, constructivism, differentiated instruction, blended learning, coaching. I'm talking about structural, systemic change based on a psychological paradigm shift in our understanding of how people learn. It seems that no matter what tinkering takes place, educators manage to hold onto traditional assumptions about learning, yet my sense of the insights offered by many researchers is that it's way past time to let those assumptions go.

The traditional assumptions are reflected in the almost universal trappings that identify schools as schools: Once they are old enough, students typically carry five or six courses. Their days are chopped into a certain number of pieces of about 50 minutes, sometimes with a few longer blocks. Graduation requirements distributed

through traditional subjects are pretty much identical from school to school, as are the way students are grouped and assessed. The grading system creates an expectation that everyone can be master of everything. Visit any classroom in most schools, and you'll find that, on average, the teacher does most of the talking and virtually all of the planning and directing. The mortar holding this cinderblock fortress together is a traditional set of beliefs: that all brains are (or ought to be) basically the same; that, unless they are disabled, kids learn at the same pace; that they need to learn those things that adults think are interesting and important; that teaching, learning and telling are synonyms; that a disjointed day filled with quick bursts of many different, unrelated ideas can be navigated by and productive for anyone with "grit" and a strong work ethic.

My experiences as both student and teacher led me to a different set of beliefs: that the source of motivation and of the deep engagement that triggers perseverance and creative thinking is the emotional connection between what learners study and their lives; that young people need to experience school as a place with sufficient freedom and time for them to explore their evolving interests and seek answers to genuine questions arising from their own needs; that making meaning is more important than memorizing the meaning that others have made; and that, as Ted Sizer wrote, less is more.

Little wonder, then, that I was particularly excited to learn about the research of Mary Helen Immordino-Yang (neuroscientist at the University of Southern California) and Kurt Fischer (recently retired head of the Mind, Brain and Education program at Harvard). Their insights into how people learn seemed to support, explain, alter and expand several of the conclusions and intuitions that many teachers over many decades had developed based on their observations and experiences in the classroom. Many of these insights suggest a need to rethink not

just classroom teaching methods but the entire system. If the current system is built on faulty assumptions about learning, then we must replace these assumptions and redesign the structures, practices and policies that they support. A few of the insights from research resonated particularly strongly with me and offer points of departure for discussions about such fundamental changes, discussions that need to occur not just among current teachers but, maybe especially, among the next generation of teachers:

**Emotion and cognition are inextricably intertwined.** Antonio Damasio and Immordino-Yang suggest that "emotion is the rudder for thought" and that "we think in the service of emotional goals," which typically are connected to our physical and social survival and well-being (Immordino-Yang, Damasio, 2007). From my perspective, this connection between emotion and thinking leads to a deeper understanding of motivation. People think and learn about what matters to them, what is emotionally relevant and personally meaningful--now, not in some emotionally distant future with which teachers like to cajole students: "You'll need this later in your life."

This connection between emotion and motivation might help explain the results of a 2012 Gallup poll that revealed a steady decline in engagement as students move through their years in school: from 80% in elementary school to 60% in middle school to 40% in high school. Perhaps we need to consider a different model of education, one that is structurally designed so that students can learn about things that matter to them every year they are in school so that they become accustomed to experiencing school as emotionally relevant to the lives they live outside it.

**All brains are different.** While the architecture and general developmental trajectories are shared, the neural networks vary depending on all sorts of factors: genetics, chemistry, experiences, nutrition, relative strengths and weaknesses of different regions and of their connections. The result is significant variation in how people perceive and solve problems, which they tend to approach by recruiting their cognitive strengths (Immordino-Yang, 2007). The idea that we can standardize education and assessments for some fantasy of a "normal" brain seems doomed to failure. The only norm is variability. As a result, each school would be wise to consider not just differentiated instruction within its classrooms but differentiated paths through school itself--variation in graduation requirements, course loads, schedules, etc.

**Learning is a process of building and rebuilding neural networks** (Immordino-Yang, Fischer, 2009). If I want to learn to drive a car or understand neuroscience, I must build neural networks for driving or neuroscience. The *learner* must build the network; the teacher can't do it for me. Teaching and telling should not be confused with learning. Memories are important in skill development, but memorization is not a substitute for building the network. Yet telling ("teaching") and memory work often get most of the focus in schools: "Mary just can't remember anything I taught her yesterday." "People, people, you need to sit down and memorize those definitions."

This notion that the teacher's job is to present information (to tell) and that the students' job is to remember it may be the most intractable because this is the essence of the educational system that most teachers have not just endured but mastered when they were students themselves. Gaining a new perspective, getting outside the boxes in which we are raised, is never easy, so teachers tend to teach as they were taught. It worked for them; it should work for everyone. During my

years of interviewing prospective teachers, I always asked candidates why they wanted to be a teacher, and, invariably, they would answer with some form of "because I want to share my knowledge with students." Never any mention of wanting to help students develop their own sense of meaning, to create their own knowledge and understanding of the world. These earnest young candidates had no experience with examining traditional assumptions about learning through the lenses offered by new insights into the biology of learning--insights into this process of building and rebuilding neural networks.

**Performance depends on context, and regression is inevitable as the context changes.** The less supportive the context, the poorer the performance. The skill or conceptual understanding that seemed to be evident yesterday in a nurturing environment regresses as conditions become more challenging. And regression is a necessary part of the process of building increasingly stable neural networks--the process of learning. (Fischer, Immordino-Yang, 2002) As we learn anything, a skill or concept, our ability or understanding reaches a point when further development requires more complexity. At this point, typically, our performance regresses, and we have to go back and start rebuilding, though not necessarily from the beginning. And this rebuilding results in a more stable base from which we can move to greater complexity before the skill or understanding again falls apart. It's the cliché of two steps forward, one step back. Sometimes, circumstances can cause regression. I might finally feel that I understand dynamic skill theory, but the stress of having to explain it to my colleagues in a formal presentation turns me into a babbling fool. This building-regression-rebuilding is the natural rhythm of learning. Regression is essential to learning.

Yet schools assume learning is a linear process of steady improvement, and regression is treated as failure. Once a student "has" the skill or knowledge, it is

not supposed to fall apart. For example, the assumption is that writing proceeds from sentences to paragraph to five-paragraph essay to research paper. A nice, tidy idea, but the student who seemed able to write sentences very well yesterday might start writing wretched ones today as she tries to express more complex ideas or moves to writing paragraphs. The student who wrote a lovely personal essay last week might write gibberish when asked to write an analysis of a poem. The demands change, the circumstances change--the context changes--and the performance changes.

Fischer suggests that an apt metaphor for skill development is not the traditional ladder representing a single skill (like writing) but a web of interconnected skills that support each other, some of which might seem unrelated to the task at hand. (Fischer, Rose, 2001) So it is likely that different people will develop different webs of skills as they work, for example, on writing skills. A good chess player may have developed strong strategic skills that support her improving skill in writing essays by contributing to her ability to organize a persuasive argument as a complex logical trap, while another student with strong empathic social skills might create a persuasive psychological argument. This sort of variation often surprises teachers, who tend to teach approaches to topics that reflect their own unexamined webs of skills. The good chess player may well receive a higher grade than the empathetic student simply because the teacher, too, sees writing as more of an exercise in logic. Or, the other way around: a different teacher may prefer the empathic essay, according to his own predispositions and web of skills.

These are only a few of the places where ideas from research interface with my and many of my colleagues' discoveries about learning based on experiences in classrooms. This marriage of science and experience offers powerful lenses

through which educators can examine old assumptions and imagine new learner-friendly schools. Having used many of these ideas in different ways--in my classroom, in redesigning a ninth grade curriculum, in an alternative school-within-a-school--I know that they can lead to meaningful structural changes that improve learning outcomes for students. Other teachers have had similar experiences. Yet fundamental systemic change seems just as elusive as ever. The system remains controlled by teachers and administrators who seem to pay little attention either to the teachers in their schools who advocate substantive change or to the researchers whose insights into learning and brain function support the specific changes advocated by their teachers.

Unfortunately, beyond the human antipathy to change, other factors also play a significant role in maintaining the traditional system. First, too many schools of education seem either slow or reluctant to embrace the growing field of mind, brain and education (MBE). When I interviewed teacher candidates, I was constantly startled by their inability to discuss new research into learning and brain function. The problem persists. Even recent graduates of education schools that have MBE programs can get their master's degree without having taken even one course in these programs. This past fall, I visited a prestigious independent school and met a bright first-year teacher who had graduated from the Harvard Ed School without taking a single course in one of the world's first MBE programs, founded and directed by Kurt Fischer. Unless those who educate the next generation of teachers study, embody and model new insights into how people learn, the system cannot change. Prospective teachers need to work with professors who can imagine and discuss the implications of this research.

A second impediment to change results from a failure to draw a distinction between research into how people learn and research into techniques that simply

help students become more successful in the traditional system. Unlike more complex, challenging ideas about brain function (like the role of emotion in learning), these techniques typically get popularized in the media. People readily understand the techniques because they don't require a psychological paradigm shift in how they understand the process of learning. For example, the *New York Times* published a report on research that suggests that "Frequent Tests Can Enhance College Learning" (2013). The American Psychological Association's *gradPSYCH Magazine* presented similar research in an article called "Study Smart" and included other research-supported "tips on how to improve study results," like spacing study sessions and interweaving subjects (2011). Teachers eagerly embrace this sort of research for two reasons: The techniques work to improve test results for many of their students, and this sort of research doesn't challenge their comfortable assumptions about learning. Like most busy people, teachers enjoy easy answers and strategies that can be quickly incorporated into what they already understand. They can claim that they are using "brain-based" techniques based on research as an excuse not to struggle with the more threatening research that challenges their typically unexamined notions about learning that are embodied in current school designs.

Although these sorts of "tips" can be useful, prospective teachers need to study and understand the more challenging implications of research into learning and brain function. Creating a new system based on valid assumptions about the process of learning is the more significant, urgent need than improving test scores in order to preserve a faulty system. Once the system and the assumptions about learning support each other, teachers can help students select from an array of techniques that might improve performance.

Finally, even some researchers and professors of education who urge



understandable, sensible caution in bringing neuroscience into our schools can also impede change. Warnings like those in Marc Schwartz's recent article in the *IMBES* journal (Schwartz, 2015) can provide unintended support to educators who prefer to keep things as they are. These articles lay out the complexities and dangers of rushing to apply neuroscience to the classroom: the inability of neuroscience to "directly inform curricular decisions"; the history of neuromyths, like trying to teach to the different hemispheres; and the need for good scientific research to determine the effectiveness of interventions. The articles remind us of the unsubstantiated theory of "learning styles" that remains a misguided fad in schools or discuss the lack of research to measure the effects of the many curricular and instructional changes that resulted from the theory of multiple intelligences. One of my teaching colleagues put the problem best when he said, "Today's innovation is tomorrow's baloney." And these warnings that urge caution reinforce this attitude that new insights are passing fads that educators should ignore.

Schwartz's article offers many excellent suggestions for moving forward and "achieving a foundation of common understanding and purpose": developing a common language for all the cross-disciplinary stakeholders in mind, brain and education initiatives (including legislators); training more "neuroeducators"; setting up more research schools; and ensuring that research and classroom practice inform each other.

However, given the scope of the work that these sorts of articles present, we could remain mired in this same failed system for another century. We cannot continue to postpone the opportunity to change our failed system. We have millions of young people right now who shouldn't have to wait until later. Even those few insights into learning that I outlined above ought to be sufficient motivation for teachers and administrators to imagine ways to alter many of the

traditional practices that are clearly at odds with those insights, not to mention at odds with their own experiences as learners and teachers.

There is a difference between snake-oil salesmen looking to earn a buck peddling "brain-based" curricula and educators using insights from researchers and their own understanding of how people learn as motivators and guides to improve their schools. Despite the mistakes that some may have made in using, for example, the theory of multiple intelligences to improve learning experiences in their classrooms, despite our updated understanding that brain function is not modular, the basic insights about intelligence (what it is and the variety of ways it can be expressed) helped to improve the experiences of learners in schools that used these insights as a context for exploring what worked and didn't work in the classroom. We have now learned more. We can use new insights to continue to move forward. That's pretty much how other professions work.

Change is hard work; it's threatening and can be deeply unsettling. And, unfortunately, those who oppose change often seize on any excuse to keep it at bay. What could be a more attractive excuse for stasis than arguments from researchers in the MBE world making a case for further delay? Let's wait until later when we have more data.

We don't have to continue to wait. We could combine the gathering of data and all the other steps that the cautious suggest with actual changes to improve the lives of young learners right now--if educators work to study and understand the current research that resonates with their own experiences; and if schools hire their teachers to work most of the summer with their colleagues, when the students are not around, to imagine and develop structures, practices and policies that make more sense than the current ones; and if schools of education immerse the next

generation of teachers in MBE. The kids in our classrooms need change now, not later--cautious, systemic, thoughtful, informed change now.

### References

- Carey, B. (2013). Frequent Tests Can Enhance College Learning, Study Finds. *New York Times*. November 20.
- Fischer, K. W., & Immordino-Yang, MH. (2002). Cognitive Development and Education: From Dynamic General Structure to Specific Learning and Teaching. Essay for the Spencer Foundation.
- Fischer, K. W., & Rose, L. T. (2001). Webs of Skills: How Students Learn. *Educational Leadership*, November, 6 - 12.
- Immordino-Yang, MH. (2007). A Tale of Two Cases: Lessons for Education from the Study of Two Boys Living with Half Their Brain. *Mind, Brain and Education*. 1, 66 - 83.
- Immordino-Yang, MH. (2007). We Feel, Therefore We Learn: The Relevance of Affective and Social Neuroscience to Education. *Mind, Brain and Education*. 1, 3 - 10.
- Immordino-Yang, MH., & Fischer, K. W. (2009). Neuroscience bases of learning. *International Encyclopedia of Education*, 3rd edition, section on Learning and Cognition. Oxford, England: Elsevier.
- Schwartz, M. (2015) *Mind, Brain and Education: A Decade of Evolution*. *Mind, Brain and Education*. 9, 64 - 71.
- Winerman, L. (2011). Study Smart. *gradPSYCH Magazine*, November, 25.