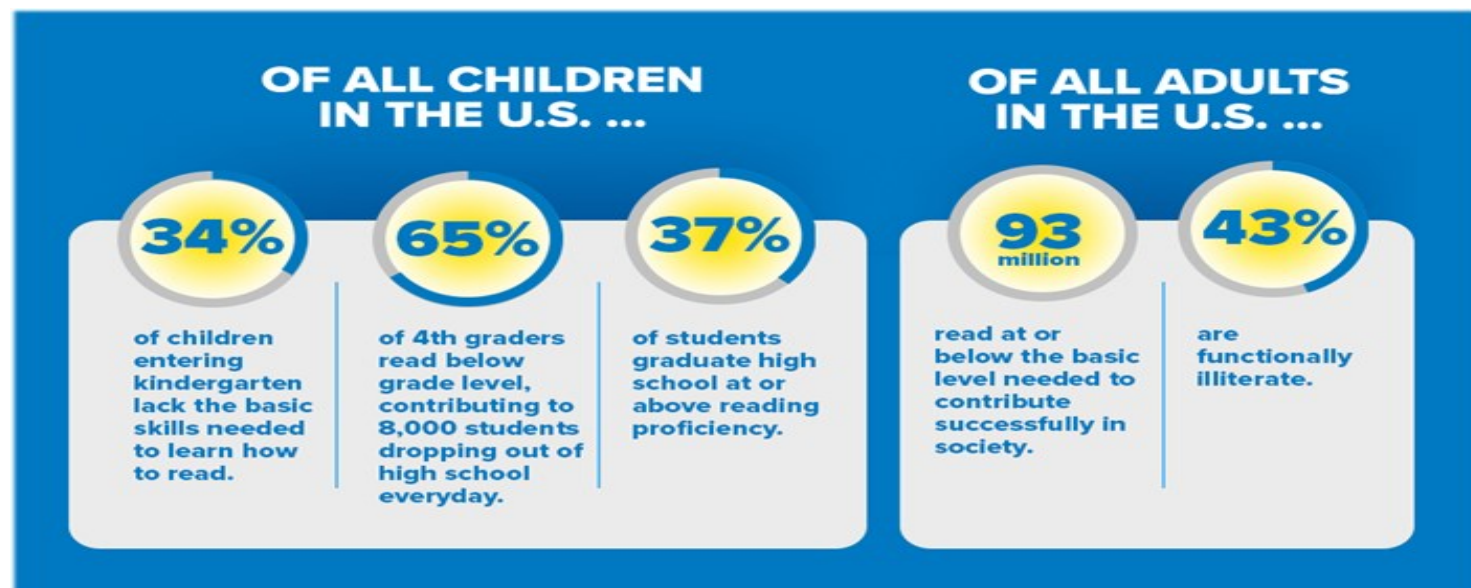




CHILDREN OF THE CODE

According to the U.S. Department of Education **more than 60% of K-12 school children are reading below the level of proficiency necessary for the *brain-work of reading* to be transparent to the *mind-work of learning* at the grade level they are in.**



Proficiency Scores 2017 NAEP

According to the latest National Assessment of Adult Literacy report (NAAL), **over 90 million (4 out of 10) U.S. adults are living lives socially and economically disadvantaged due to poor reading skills. Adults with low levels of literacy are significantly more likely to live in poverty, engage in crime and other forms of social pathology, and to live unhealthy, and even shorter lives.**

David Boulton: ... **our children's futures are all but fated...by how well they learn to read.**

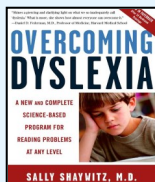
Dr. Grover (Russ) Whitehurst: **Yes, that's true.** ... in our society, as it is structured, **the inability to be fluent consigns children to failure in school and adults to the lowest strata of job and life opportunities.**



Dr. Grover Whitehurst, Director of the Institute of Education Sciences, and an **Assistant Secretary of Education** with the U.S. Department of Education (2002-2008).



Dr. Sally E. Shaywitz, professor of Pediatric Neurology at Yale University, author of "Overcoming Dyslexia".



David Boulton: ...[It's not just] dyslexics or people that are struggling on the more severe side of this, ... **reading improficiency and its psychological and cognitive processing challenges and consequences, reaches to the extent that, according to national statistics, sixty-plus percent of all twelfth graders are below proficient.**

Dr. Sally Shaywitz: **That's right. It's believable.** At first blush it seems, oh, how can that be? **But it is.**

David Boulton: If you look at all the things (US) kids born today are at risk for, the possibility of ... cognitive, neurological, psychological developmental issues, or even abuse, all the things we put stats on... **if you add them together ... the risk of having their lives harmed because they didn't make it to reading proficiency is bigger than all the other things combined.**



Nancy Hennessy, M.Ed., president of the International Dyslexia Association (IDA) 2003-2005

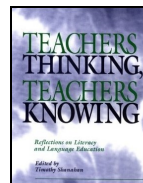


Nancy Hennessy: **It's huge.** That's a really interesting perspective when you begin to talk about all these different factors that play in, **it really is a startling and very different way of looking at this and realizing how much more significant the problem is.**

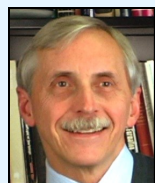
CHILDREN OF THE CODE

David Boulton: I've come to view reading as the interface between what's natural in human learning and what's artificial. It's a virtual reality.

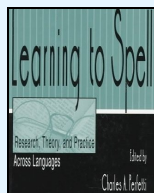
Dr. Timothy Shanahan: I think that's a lovely description of it. It really is a virtual reality, it is a matrix.



Dr. Timothy Shanahan, Chair of the National Early Literacy Panel, Past-President International Reading Association, Member of the National Reading Panel.



Dr. Charles Perfetti, Professor of Psychology & Linguistics and the Sr. Scientist and Project Director of the Learning Research and Development Center at the University of Pittsburgh

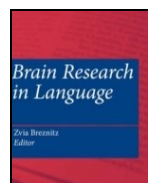


David Boulton: Reading is a code instructed and informed language simulation system that's feeding into downstream comprehension processes. And if that first part is working right then the second part is very similar to comprehending spoken language.

Dr. Charles Perfetti: Yes, I think that's a fundamentally correct way to understand it.

David Boulton: So, my point is that a significant percentage of the difficulty that most people face, at least in English, is connected to the time it's taking the brain to work out the letter-sound correspondence (code confusion) fast enough to feed the assembly to comprehension before it stutters and drops out.

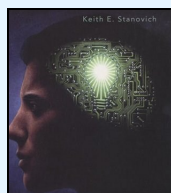
Dr. Zvia Breznitz: Absolutely right. Exactly. When you look into the brain of beginning readers or the brain of a dyslexic you see similar kinds of phenomena as the brain is searching for the solution.



Dr. Zvia Breznitz, Director of the Laboratory for Neurocognitive Research and a member of the Brain and Behavior Center at the University of Haifa in Israel.



Dr. Keith Stanovich is Canada's Research Chair of Applied Cognitive Science at the Department of Human Development and Applied Psychology, University of Toronto.

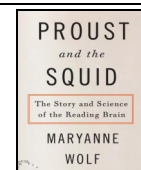


David Boulton: We're talking about children experiencing a form of confusion that is unnatural to their organism.

Dr. Keith Stanovich: I think that is an interesting and good way to frame things

David Boulton: if we break that down... you could ask: what happens if we develop a pre-conscious shame-aversion to the feeling of confusion involved in learning to read?

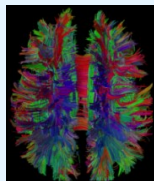
Dr. Maryanne Wolf: You know I haven't thought in these terms. But as you say them there is no question that's our enemy. Shame.



Dr. Maryanne Wolf, Director of the Center for Reading and Language Research at Tufts University, Author of "Proust and the Squid"



Dr. Michael Merzenich, Co inventor of the cochlear implant, Retired Co-Director of the Keck Center for Integrative Neuroscience at the University of California, member of the National Academy of

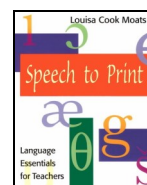


David Boulton: The sum of our view is this... We think that children are being overwhelmed with a form of confusion that is unnatural to them and **they are learning to associate the feeling of that confusion with shame**. We are all shame avoiders, escape artists; we don't like to feel shame. So, just as reading involves an assembly that's faster than conscious, there's a faster than conscious aversion to shame, which in turn decapitates learning because learning involves extending through confusion.

Dr. Michael Merzenich: I love that description, although I don't really understand its neurology. I love the description.

David Boulton: It all boils down to an antiquated technology that nobody has been overseeing. How can we re-conceptualize our relationship with it? Without having to fight against all the inertia, I think there's an entirely different relationship that is possible without changing the alphabet, without changing the spelling, that focuses on helping children move through these layers of ambiguity. It begins with us understanding these layers of ambiguity in relation to the kinds of experiences children are having – not our adult-formed, adult-centric, models.

Dr. Louisa Moats: That's a wonderful thesis and it's just so refreshing to hear you articulate that because I guess I'm in total agreement with it. I have not really heard people articulate it as clearly as you have.



Dr. Louisa Cook Moats, V.P., International Dyslexia Association, specialist in the implementation of school-wide interventions for improving literacy.

