The Science of Reading and the "Science of Reading"

AIM Institute 14th Annual Research to Practice Symposium

Mark Seidenberg

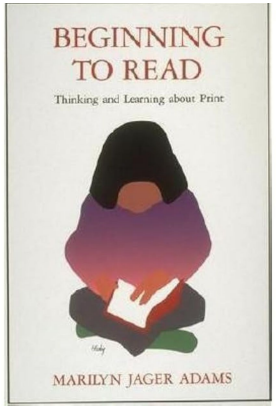
A lot has happened since my first visit

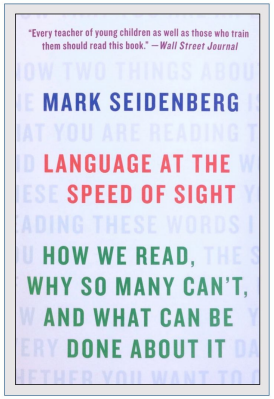
My book: disconnect between science of reading and how reading is taught

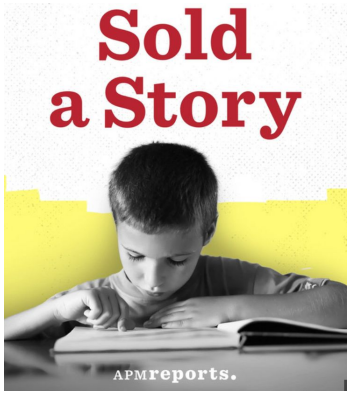
(As previously observed by Stanovich, Adams, Lyon, others)

Emily Hanford podcasts brought message to much wider audience

Coincided with ongoing efforts to initiate change (e.g., Decoding Dyslexia)







And peak dissatisfaction over NAEP, OECD scores

NAEP
NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

PISA

OECD

In my book, I made rather obvious suggestion that reading education might be more successful if it incorporated insights from research on reading, language, learning, development, brain, etc.

People liked this idea. Resulted in “Science of Reading” (SoR) legislation in more than 40 states

- curricula, professional development, classroom practices incorporating “science of reading”
- screening of children at risk for difficulties, provisions for intervention
- other mandates (e.g., teacher coaching)

The “science of reading” is a national movement to improve literacy outcomes. An important achievement!

But, it has to work

- We don’t know how well SoR is working as currently implemented.
- Big ongoing experiment.
- Mississippi results suggestive not definitive.

Rest of this talk: what’s next for this movement?
Any ways to improve odds of success?

2 Red flags: Suggest need to recalibrate current SoR approach

Many Green flags: Additional opportunities

I’m going to say something that may be perceived as controversial.

I hope that if we work through it together it will seem reasonable.

One size does not fit all

"Structured Literacy" is general approach to teaching dyslexics to read

Developed by IDA.

Explicit, systematic, incremental instruction in components of reading.

Best idea about how to address reading/language/learning impairments.

A way to help children succeed despite impaired learning.

Solution: break reading down into parts that can be explicitly taught.

Build reading skill from the ground up.

Then, with great teachers, great school resources, strong support in the home, and a lot of time on task, children can often gain good reading (and other) skills.

With so much hard work, the results can be extraordinary.

That is my understanding of what happens at AIM Academy (correct me if I'm wrong).

Structured Literacy has now been adopted for all readers in SoR.

- Same approach, different “dosages” of instruction
- “What works for dyslexics works for everyone”
- “Can’t have too much of a good thing”

I think this is a problem.

Everyone needs to learn the same things in order to read,
but everyone doesn't learn the same way.

Two types of learning:

Explicit: conscious, language-based, intentional

Implicit: unconscious, automatic, occurs while engaged in activities such as reading

Learning a skill usually involves both.

Often, a large amount of explicit instruction at the outset followed by a lot of implicit learning by doing.

Riding a bike. Learning to sharpen knives.

Extended explicit instruction may be effective in dyslexia because it avoids implicit/statistical learning, which isn't fully developed.

But, we don't want to use this workaround with children who don't have this learning impairment.

What does this mean in practice?

Everyone starts in the same place:

explicit instruction about code, relations between print, sound, meaning

For typically-developing children, goals of such instruction are

learn what there is to learn
gain a foundation that enables beginning to read words
which enables ("scaffolds") implicit learning from reading, other activities
with decreasing reliance on explicit instruction
"cracking" or "breaking" the code (Gough); achieving "escape velocity" (me)

For children with significant reading/learning impairments

Greater amount of explicit instruction about codes
Including instruction about things that ordinarily don't have to be taught because they are learned implicitly.

An analogy: facial expression impairments in autism

Many ASD individuals exhibit impaired ability to recognize emotional content of facial expressions.

Intervention/remediation focuses on explicit instruction about how to do this

Not required for typically-developing individuals, who acquire the skill without explicit instruction--implicitly.

Not a difference in ”dosage”. A difference in what needs to be taught.

Rev J Autism Dev Disord (2016) 3:254–265
DOI 10.1007/s40489-016-0081-1

REVIEW PAPER

The Effectiveness of Interventions in Teaching Emotion Recognition to Children with Autism Spectrum Disorder

Jennifer L. Kouo[1] · Andrew L. Egel[1,2]

Example: stress alternation for bisyllabic nouns and verbs

trochaic	iambic
REcord	reCORD
PERmit	perMIT
CONduct	conDUCT

Doesn't normally have to be taught. Picked up through language use.
Patterns over many words, sentences.

The alternation could also be explicitly taught.
Downsides of teaching the pattern as a rule:

time-consuming
requires memorizing the rule
and there are many exceptions, such as

Blanket	both N, V are trochaic
Release	both N, V are iambic

Using Structured Literacy with typically-developing readers overteaching

Explicit instruction about things that can be learned by implicit mechanism

Is overteaching a real problem in the SoR? It seems to be.

Instruction starting earlier, ending later

Taking up increasing amounts of school day

Squeezing out other kinds of learning.

For dyslexics, overteaching is not the problem.

More often: Insufficient opportunities for extensive explicit instruction, practice.

Why schools such as AIM are so badly needed.

Again we see that needs of dyslexics and nondyslexics differ.

One size does not fit all.

Conclusions?

Explicit, systematic, comprehensive instruction remains the approach of choice in teaching children who struggle to learn.

How exactly to do this most effectively is the challenge.

For other children, the approach is somewhat different:

Early explicit instruction to enable learning via implicit/statistical mechanism.

Coupled to a lot of opportunities to learn from reading and other activities.

With appropriate feedback, monitoring.

Red flag 2: The use of science in the “science of reading” approach

A lot is known about reading, language, and learning.

Useful for devising effective practices.

But hard to get in the door.

Educators are enthusiastic about incorporating scientific findings

But background knowledge is weak.

Limits how much can be assimilated.

The SoR, as realized in state laws, has relied on a small number of sources, mainly

- the Simple View of Reading (Gough et al.)
- the Reading Rope (Hollis)
- the Report of the National Reading Panel

And, to a lesser extent, a few others

These are good places to start and terrible places to stop.

Scope is limited. They left a lot out. Also, out of date.

By themselves, consistent with many approaches.

Net result is:

SoR is only loosely connected to research. We need to do better.

Example: The Simple View of Reading

Figure 4. From “The simple view of reading in less than one minute.”

Reading depends on print knowledge and language: true.

Useful: orients people to

importance of instruction about print

need to link to existing knowledge of language

How to do this? SVR does not address.

The SVR is nonetheless used to establish scientific credentials of programs, products in the “science of reading” approach.

> “The SVR is supported by hundreds of studies.”
>
> Therefore programs based on the SVR are scientifically-based.

That’s not OK. Scientific evidence isn’t transferable or inheritable.

Instructional programs incorporate many other choices about reading, learning, practices. These choices could be empirically validated. But programs aren’t valid merely because they were inspired by the SVR.

One more example, dear to my heart because it involves my work.

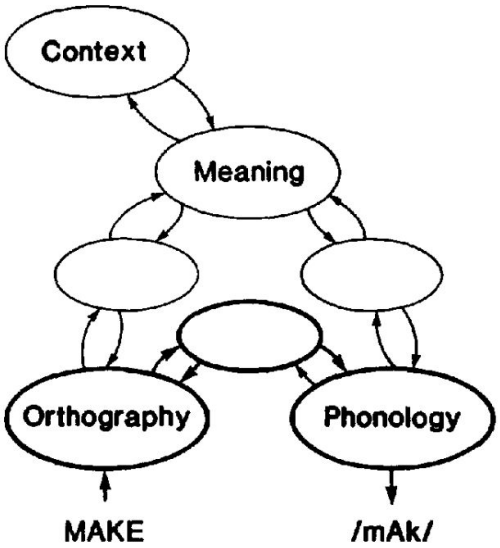
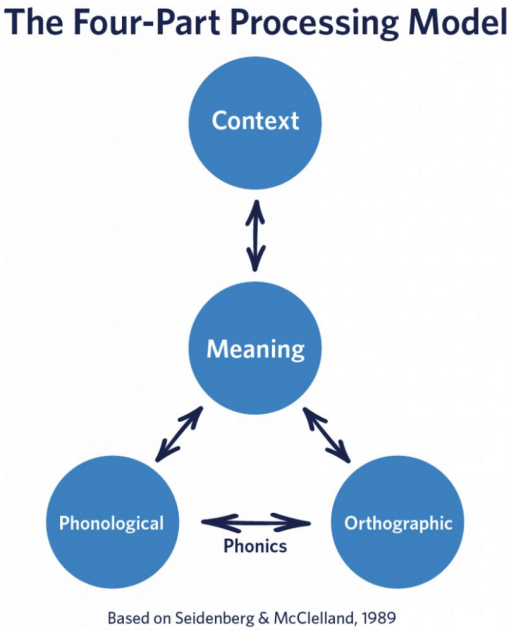


Figure 1. General framework for lexical processing. (The implemented model is in boldface type.)



This was an early account of implicit, statistical learning. No rules, no explicit instruction.

Like SVR, has to be true. Description of basic parts. Consistent with every approach. Left out the crucial learning part.

My research is being used to support practices that my research does not support.

How to get more science into the “science of reading” approach?

Incorporate it in how prospective teachers and other educators are taught.
Four courses:

Linguistics 101
Developmental psychology
Intro cognitive science
Science of reading and education

PD courses for in-service teachers are important, but not sufficient.

Opportunities?

1. Language background. Pre-K.
2. Assessment, expectations that take it into account
3. Resources: put another person in the classroom!
4. Making better use of knowledge of spoken language

   Prosody. Intonation. Blending.

6. Reading words in linguistic contexts. Necessary part of comprehension.

   words

   collocations: stock phrases.

   sentences

   texts

7. Eyes on the prize: goal is teaching children how to read. Not about reading. Knowing how v. knowing that.

Thank you very much.

Look for a new edition of my book, later this year.