

What we know about how reading works that's relevant to teacher education

Mark Seidenberg

Vilas Research Professor

Department of Psychology

University of Wisconsin-Madison

Mississippi Reading

November 10, 2021



Reading Matters
Connecting Science and Education

www.seidenbergreading.net

Goals

I'm a scientist who has studied reading, language, learning, dyslexia for many years.

I can try to clarify basic issues and answer questions.

Plan:

Start with overview of basic issues about learning to read: what research says.

Then focus on issues about phonology/phonemic awareness.

Discussion, not just presentation.

These are things that you need to know, and teachers need to know.

Disclaimer: list is incomplete, given time constraints.

Becoming a reader requires three kinds of knowledge:

- Knowledge of spoken language, how it is used to communicate.
- Knowledge of the world, the things we use language to communicate about;
- Knowledge of print, how it represents spoken language

Advanced, specialized reading involves other expertise, but we're focused on getting children into reading.

What readers need to know is the same for all children.

The same types of knowledge coming together in the same ways.

(leaving aside some dyslexics who require workarounds)

What differs: paths to acquiring relevant knowledge

Because relevant experiences vary, even before school entry.

About spoken language

Reading depends on spoken language

Child already speaks a language (at 5 year old level)

Beginning readers don't re-learn the language; it continues to grow.

They learn how print relates to the language they know.

Simple View of Reading: print + language = reading

Yes but: the two are related, affect each other.

Not independent.

Example: size of spoken vocabulary affects discovery of component parts, which affects learning spelling works.

Conversely: learning about print affects knowledge of spoken language, especially development of phonemic abstraction.

More about spoken language

Children's spoken language experience varies

Amount, variety, content

Relation between language used in home and school

Different languages: "bilingual"

Different varieties of a language: "dialect"

(These terms cover a range of conditions, situations.)

Reading difficulties can derive from these language differences, not learning about print.

Variability in spoken language experience affects progress in reading

Bilingual children: more to learn than monolingual because they are still learning English.

Bidialectal children: different variety/dialect in home than school. More to learn: two dialects, correspondences between them, conditions for using them.

Learning to read is

Simpler for monolingual child who speaks “mainstream” dialect used in school, books.

Harder for bilingual or bidialectal child who is still learning about school dialect.

Our curricula and assessments do not take this into account adequately.

Paths differ yet children are assessed against same milestones.

This is unfair, prejudicial. (see discussion in Washington & Seidenberg, 2021)

More about beginning to read

Reading depends on the acquisition of foundational skills

rapidly and accurately recognizing and comprehending words and sequences of words that form meaningful texts.

And also: being able to spell words and generate simple text.

Low literacy achievement is almost always related to difficulties acquiring these skills.

We know that reading is more than word recognition.

But: literacy is built on this base.

Comprehending, learning from varied texts of increasing complexity predicated on having developed foundational skills.

Instructional goal: insure that children acquire foundation skills so that they can move ahead.

What about the “learning” part of learning to read?

The knowledge relevant to reading is learned

spoken language

knowledge of the world

print knowledge

Progress depends on having sufficient learning opportunities.

experiences that add to knowledge

in home, community, school

These vary because of circumstances in school, home, community.

Instructional materials, practices do not adequately take these differences into account.

With few exceptions, curricula are oriented to idealized child who speaks the “mainstream” dialect, has middle-class background, access to supplemental resources.

Two major problems:

First problem: Instruction doesn't work equally well for all children.

Example: phonics instruction

Child pronounces word differently than lesson assumes.

Example: math word problems. Incorporate cultural knowledge that isn't necessarily shared.

The concept of “culturally-relevant instruction” needs to extend to how foundational reading skills are taught.

Second problem:

Curricula often assume availability of resources in home

There isn't enough time to teach/learn everything in school.

“outsourcing” of instruction

parent, tutor, “learning center”, computer, apps

These resources aren't equally available.

Poverty is a disadvantage, higher SES is an advantage, unfortunately YES.

But instructional practices can **magnify** these effects.

We need economically-relevant instruction, in addition to culturally-relevant.

More about the “learning” part of learning to read.

Two major forms of learning

Explicit: children learn from traditional explicit instruction.

Involves language, attention to task, conscious awareness, motivation.

Useful; also necessary for some types of knowledge

Example: names for letters. Arbitrary. Just have to teach ‘em.

Implicit: children also learn without explicit awareness, attention

we update our knowledge of language, print, world all the time

as we engage in various tasks: using language, reading, making our way around the world.

Reading involves both types of learning.

Controversies focus on balance between them.

Whole language/balanced literacy

Emphasis on implicit learning of foundational skills (phonics etc.)
Minimized explicit instruction.

[evidence that this wasn't sufficient; evidence that explicit instruction is beneficial]

Today: a swing toward greater emphasis on explicit instruction in some curricula
learning the 44 phonemes
learning pronunciations of letters, including multiple ones for vowels
learning phonics rules
learning spelling rules

Less attention to implicit learning.

Goal is to get the balance right. Still working on that.

Explicit instruction is required at the onset of reading

letters, letter names, pronunciations of spelling patterns, vocabulary

But, the entire system cannot be taught this way.

Too much to learn, too little time.

Rules are hard to learn. They have to be memorized. Slow and inefficient.

Opportunity costs: what else could child have been learning with that time?

Ideal: explicit instruction at the outset so child learns how system works, gains sufficient knowledge to allow them to learn more and more with less and less explicit instruction.

How do children learn implicitly?

generalization: applying what you know to new cases.

statistical regularities: many kinds, prepare the way for learning new words

Self-generated feedback: read word, say it to yourself, does it sound right?

“Self-teaching mechanism”.

This brings us back to the need for sufficient learning opportunities.

Last observation about learning

People think of reading as involving components.

Example: the 5 components from the NRP

These components are all related to each other. They are correlated.

Phonemic awareness	phonemes	
Phonics	syllables	
Fluency	morphemes	spelling
Vocabulary	words	
Comprehension	phrases	

When instruction focuses on components, it makes learning to read harder.

Because it treats the components as separate, independent.

Misses opportunity to capitalize on overlap, correlations.

Final observation:

The goal of reading instruction is reading.

Not knowing 44 phonemes.

Not mastery of phonemic awareness tasks.

Not reading nonce words aloud.

READING. Recognizing and understanding words and sequences of words that form meaningful texts.

Instruction in components is only justified by effects on reading.

If child is meeting goals for reading, can move on from instruction in components.

Three Bears Problem for Instruction:

Teaching too much

Teaching too little

Teaching just the right amount.

Thank you!

Language & Cognitive Neuroscience Lab

Production • Comprehension • Reading • Dyslexia • Behavior • Brain • Development

[HOME](#)

[ABOUT THE LAB](#) ▾

[PEOPLE](#) ▾

[PUBLICATIONS](#)

[LINKS](#)

[CONTACT](#)

[INTERNAL](#)

LCNL.WISC.EDU

Reading Matters

Connecting Science and Education

www.seidenbergreading.net



seidenberg@wisc.edu

Extra:

Math word problems often assume background knowledge that may not be shared by all. These were taken from study materials for middle-school children:

To make the Leaning Tower of Pisa from spaghetti, Mrs. Robinson bought 2.5 kilograms of spaghetti. Her students were able to make 10 Leaning Towers in total. How many kilograms of spaghetti does it take to make 1 Leaning Tower?

A health club charges a one-time initiation fee and a monthly fee. John paid 100 dollars for 2 months of membership. However, Peter paid 200 for 6 months of membership. How much will Sylvia pay for 1 year of membership?

Phonological differences: AAE permits final-consonant dropping in some contexts. GOLD may be pronounced “gole”. Impact on reading-related tasks.

Rhyming: gold rhymes with bowl.

Phoneme deletion: harder to delete final phoneme in “gold” because it usually isn’t pronounced.

Phoneme counting: 3 phonemes or 4?