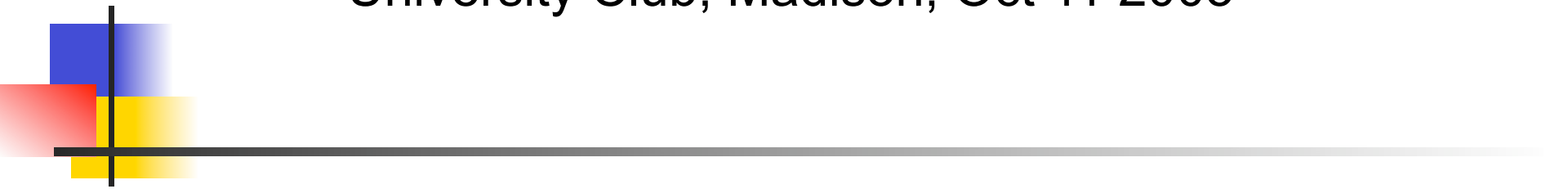
An Informal Talk About Reading Education

Delivered as an after-dinner talk at the University Club, Madison, Oct 11 2005



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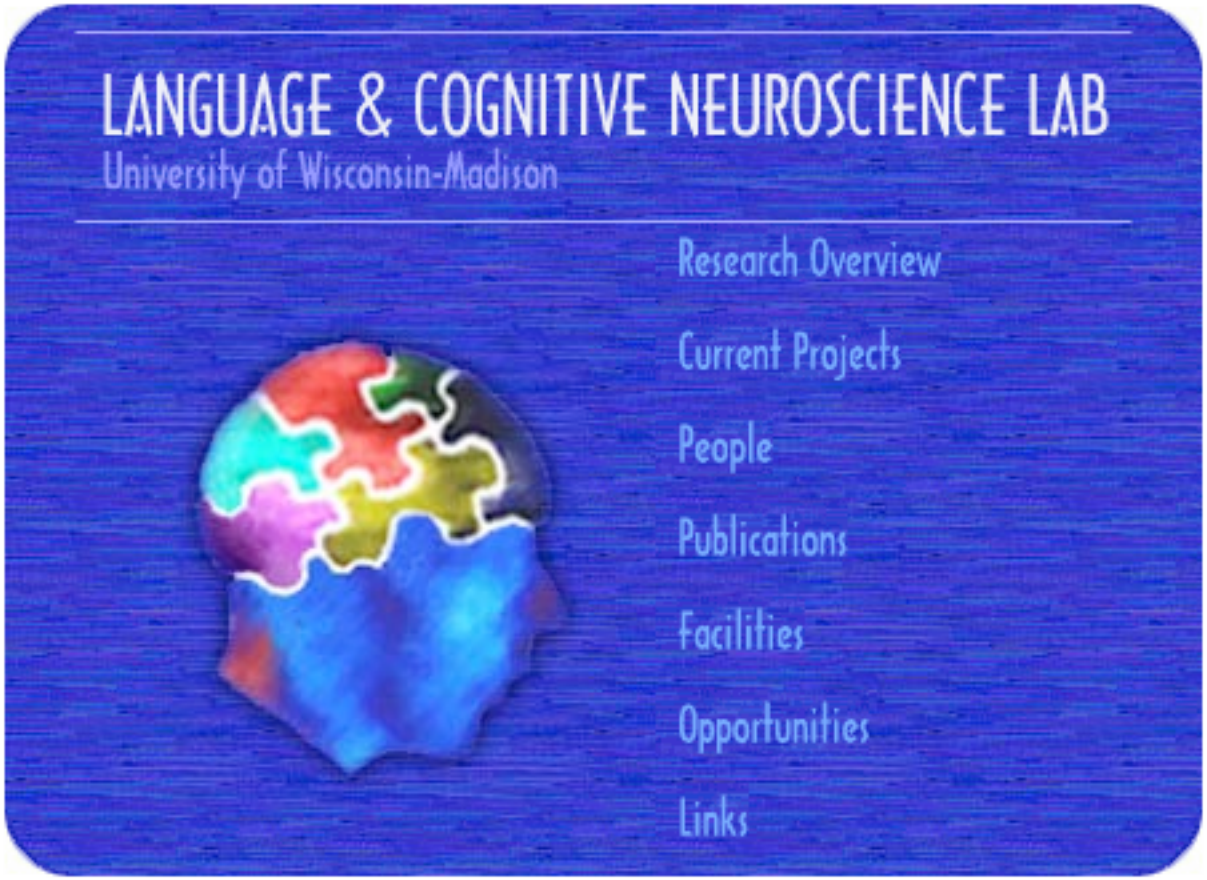
My Name is Mark Seidenberg



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I Study

- Reading
  - How children learn to read
  - How skilled reading works
  - The brain bases of reading
  - Disorders of reading
  - Cross-linguistic differences in reading

I Study

- Language
  - How children learn a first language
  - How skilled language processing works
  - The brain bases of language
  - Disorders of language
  - Cross-linguistic differences in how languages are acquired, used, represented in the brain

Today: How Should Reading Be Taught?

- We know quite a lot about normal and disordered reading
- The research has direct implications for controversies about how reading should be taught
- But linking the research to educational practice is very difficult
- Methods that have been used to teach reading for 20 + years are inconsistent with facts about how children learn, how reading works
- Maybe we need to change them?

Reading: A Remarkable Invention

- Reading is so important it's hard to imagine what civilization would be like without it
- Yet, writing systems are a relatively recent invention: earliest around 2500 BCE
- The early systems were primitive.

"Do you spell that with a bird or a tree?"

Alphabet
Around 1500 BCE

א ב ג ד ה ו ז ח ט י כ ל מ נ ס ע פ צ ק ר ש ת
A B Γ Δ E Z H Θ I K Λ M N Ξ O Π P Σ T
A B C D E F Z H I K L M N X O P Q R S T
متحف اسرائيل، اورشليم القدس the israel museum, jerusalem, 1981 מוזיאון ישראל, ירושלים, תשמ"א

Three Reasons to Study Reading

1. Reading is a Complex Skill

- Uniquely human
- Not all people acquire it
- Not all cultures have it
- It's one of the supreme achievements of human intelligence
- We need to understand it

2. Reading as a Research Tool

- People did not evolve the capacity to read.
- Rather, reading utilizes capacities that evolved for *other purposes*
- It therefore provides a tool for studying
  - Vision
  - Language
  - Learning
  - Plasticity
  - Memory
  - Thinking, etc.

OECD Programme for International Student Assessment (PISA) 2000 study

Finland	556	(2.8)
Australia	536	(3.7)
New Zealand	535	(2.8)
Canada	530	(1.7)
Korea	530	(2.5)
Japan	526	(5.5)
Ireland	524	(3.3)
United Kingdom	523	(2.5)
Sweden	516	(2.4)
France	515	(3.0)
Belgium	515	(3.9)
Norway	505	(2.9)
Austria	502	(2.3)
Iceland	500	(1.6)
United States	499	(7.4)
Switzerland	498	(4.4)
Denmark	498	(2.8)
Liechtenstein	492	(4.9)
Italy	488	(3.1)
Spain	483	(3.0)
Germany	483	(2.4)
Czech Republic	481	(2.7)
Hungary	478	(4.4)
Poland	475	(5.0)
Portugal	455	(4.9)
Russian Federation	451	(4.9)
Latvia	451	(5.7)
Greece	450	(5.4)
Luxembourg	433	(1.6)
Mexico	402	(3.9)
Brazil	365	(3.4)

3. Concern About Levels of Reading Achievement

- Disagreements about effectiveness of teaching methods
- Cultural factors that discourage literacy
- Government intervention: “No Child Left Behind Act”

Where Cognitive Neuroscience Comes In

- We ask: What does basic research have to say about
  - Skilled reading
  - How children learn to read
  - The causes of reading impairments
  - The effectiveness of instructional, remediation practices: what works and why
  - Brain bases of normal and impaired performance

Different Perspectives

- Educators
- Parents
- Politicians
- Cognitive neuroscientists
  - What does the science tell us?

The Reading Wars

- A long-running debate about how to teach reading
- Featuring
  - “whole language”
  - “phonics”

What is Whole Language?

- A philosophy-ideology
- Assumptions:
  - Reading involves active construction of meaning
  - Reader's background + text = reader-created meaning
  - Yields "constructivist" approach

Constructivism

- Child constructs meaning out of experience
- Learning = constructing meaning and systems of meaning
- Learning is contextual: not isolated facts
- Leads to definition of reading as:
  - “a process of generating hypotheses in a meaning-making transaction in a sociohistorical context. As a transactional process…reading is not a matter of “getting the meaning” from text, as if the meaning were in the text waiting to be decoded by the reader.”

Constructivism

- Old approach: teacher is instructor
  - Teacher has knowledge, children don't
  - Teacher facilitates transfer
- New approach: teacher is facilitator
  - Knowledge is valuable if it's discovered, not taught
  - Teacher facilitates self-discovery

Sources for constructivism

- John Dewey, Jean Piaget, Lev Vygotsky, Jerome Bruner
  - Emphasis on the child's active role in creating meaning
- Post-modernist doubts about objectivity
  - all knowledge is socially constructed

What Kind of Practices Does Whole Language Inspire?

- Emphasizes “literacy” rather than “skills”
  - In modern educational practice, “literacy” and “skills” are opposing poles!
- In practice:
  - Don’t emphasize direct instruction related to decoding words, learning connections between spoken and written language
  - Do emphasize familiarity with structure of texts, promote development of background knowledge, promote interest in reading

Like Learning a Spoken Language

- Whole language researchers emphasize similarity between learning to read and learning to speak
- Spoken language is not taught. No direct instruction.
- Rather, children are immersed in a rich linguistic context and pick up how to talk
- This is taken as the model for how to teach reading.

The Broccoli Theory

- How to get kids to eat broccoli:
  - Put it on their plates
  - Don’t force them to eat it
  - After a while, they get familiar with it and just start to eat it
- How to get kids to read:
  - Put it in front of them
  - Don’t force them to decode
  - After a while, they get familiar with it and just start to read

What's the Problem?

- Are these assumptions valid?
- Is there relevant research?
- How well does this work in practice?

Imagine You're a Drug Company

- You synthesize a new drug that you think should help relieve some condition
  - Your theory *says* it should work
- The drug will not be introduced until it's tested
  - There are controlled clinical trials
  - The trials indicate whether the drug works, has side effects, etc.
  - Then and only then would it be introduced

How It's Actually Done in Education

- Someone gets an idea
  - Often a Guru. Many Gurus in reading instruction.
  - Guru has brilliant insight about how children learn, how to teach reading
    - Their own personal theory
  - The idea may be personally promoted by the guru, with direct appeals to teachers
  - The idea is implemented on a vast scale, based on intuitions that it is good.

Whole Language was a massive, uncontrolled experiment, with millions of children as unwitting subjects.

No informed consent
No IRB approval

Eventually Relevant Research *Was* Conducted

- Mainly outside the educational establishment
  - Psychologists (in departments like ours)
  - Neuroscientists (using brain imaging)
- This research called into question basic assumptions of Whole Language approach

Basic Problem

- Learning to reading isn't like learning a first language
- Most children don't just "discover" how the system works
- They need instruction, particularly in the crucial transition phase
  - Kindergarten/grade 1
- Whole Language withheld this early instruction, on misguided theoretical grounds

Critical Research Findings

- Cognitive neuroscience research on reading indicates an important role for phonology
  - In learning to read
  - In remembering
  - In skilled reading
- It clearly indicates that mastering the systematic relationship between spelling and sound is crucial
- And so teaching methods should facilitate the acquisition of this knowledge

Critical Research Findings

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Why Is This Suggestion Controversial?

- Because methods that emphasize learning relationships between spelling and sound = "phonics"
- Methods used for teaching reading have discouraged explicit instruction in phonics
- Why?

Why Phonics Was Demonized

- It's boring: "Drill and kill"
- It's inefficient:
  - extra step: spelling-sound-meaning vs. spelling-meaning
  - Irregularities: have give said done was were his….
- There are better things to do
  - Immerse children in literacy activities that promote interest in reading; skill will follow
    - More interesting for teachers, too

But

- *It's boring*
  - Dr. Seuss is not boring.
  - Phonics software is not boring.
  - If it's important for children to learn, find creative ways to teach it.
- *It's inefficient*
  - Reading by "phonics" is demonstrably impossible. Ask any computer. (Frank Smith, 1973)
    - I have such a computer program.
    - The irregularities are not that bad: they're almost all short, high freq words; they aren't arbitrary.
- *There are more important things to do*
  - The literacy activities would be more effective if the kid already had basic decoding skills.

Summary:

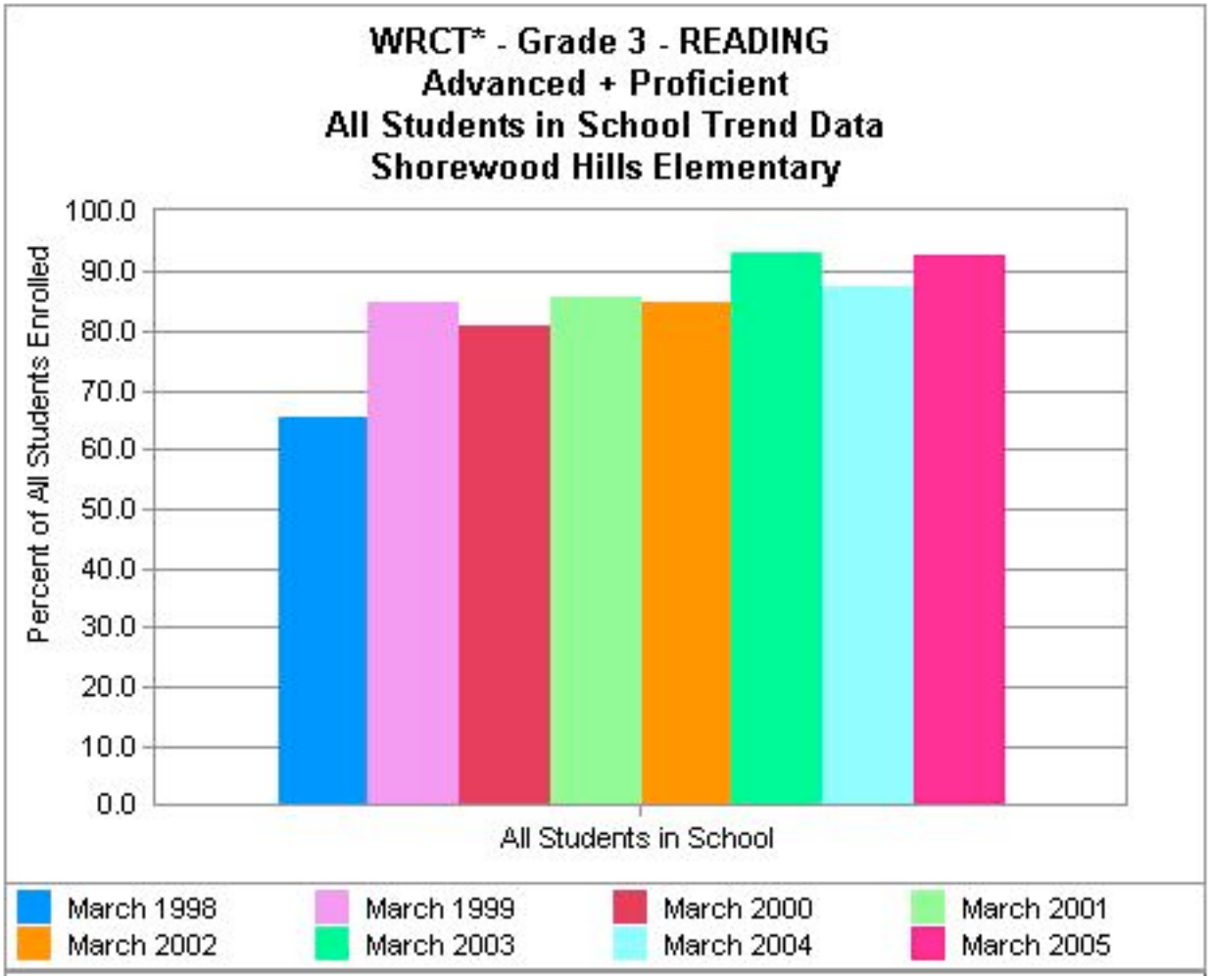
- A large body of “pure research” on reading suggests that mastering the relationship between spelling and sound is a critical step in learning to read
- It follows that pedagogical practices need to facilitate this: phonics
- But this conclusion is controversial.
  - Political football
  - Who is “progressive” or “conservative” in this crowd?

Educational Practices are in Flux

- Schools now advocate “balanced” approaches, mixture of different methods
  - Can these approaches be “mixed”?
  - What does “balanced” mean?
- Many teachers are unprepared to teach phonics
  - They were taught that it was the *wrong way* to become a skilled reader
  - Responsibility shifts out of school, into home
    - Parental tutoring, computer software, Kumon, etc.
    - Will your child learn this from a teacher or a phonics toy that speaks computerese?

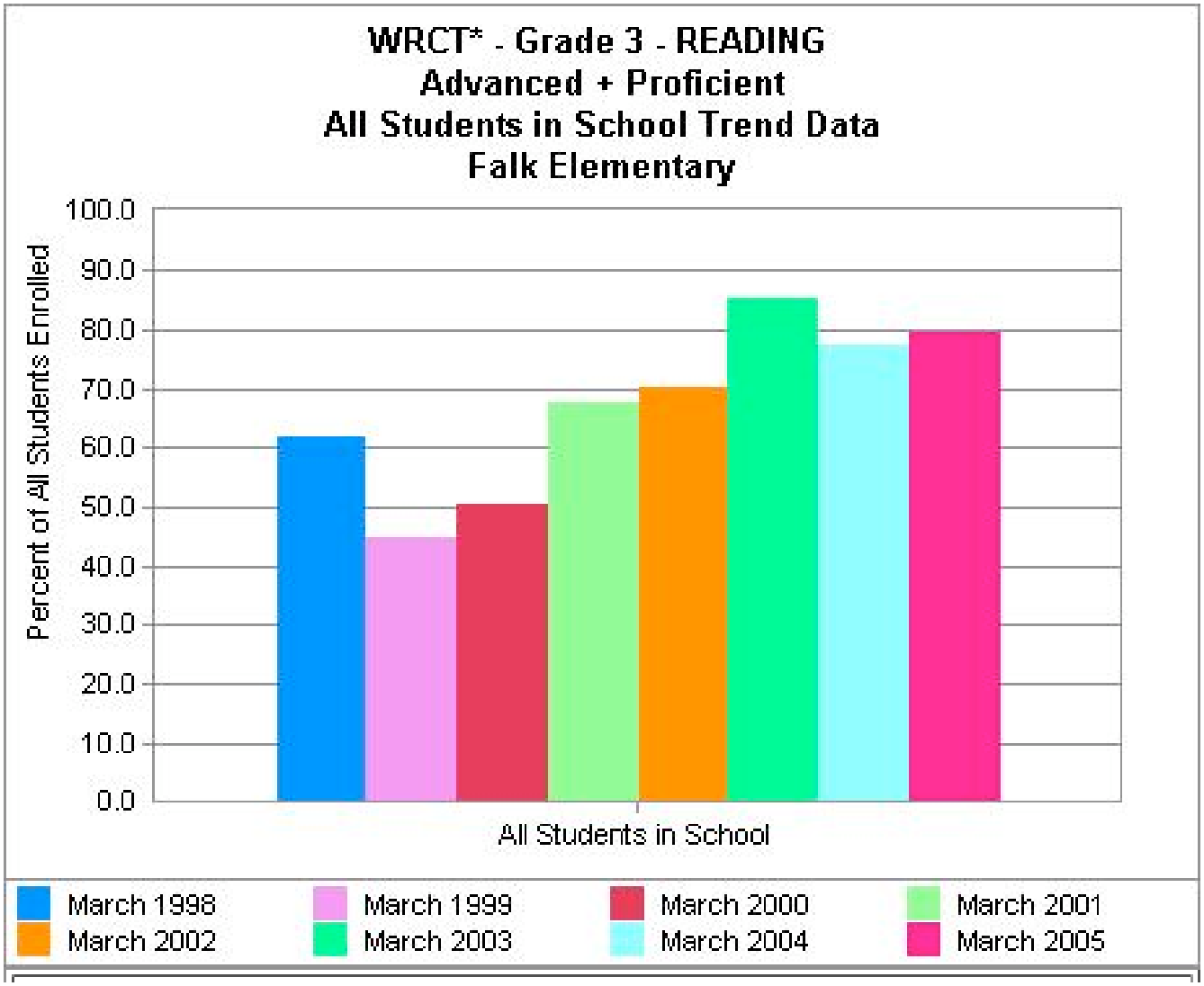
How Do Current Methods Play Out in Madison Schools?

- Here's a school where the methods work well


WRCT* - Grade 3 - READING
Advanced + Proficient
All Students in School Trend Data
Shorewood Hills Elementary
Percent of All Students Enrolled
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
All Students in School
March 1998
March 1999
March 2000
March 2001
March 2002
March 2003
March 2004
March 2005

Here’s a school where it works less well

Falk Elementary School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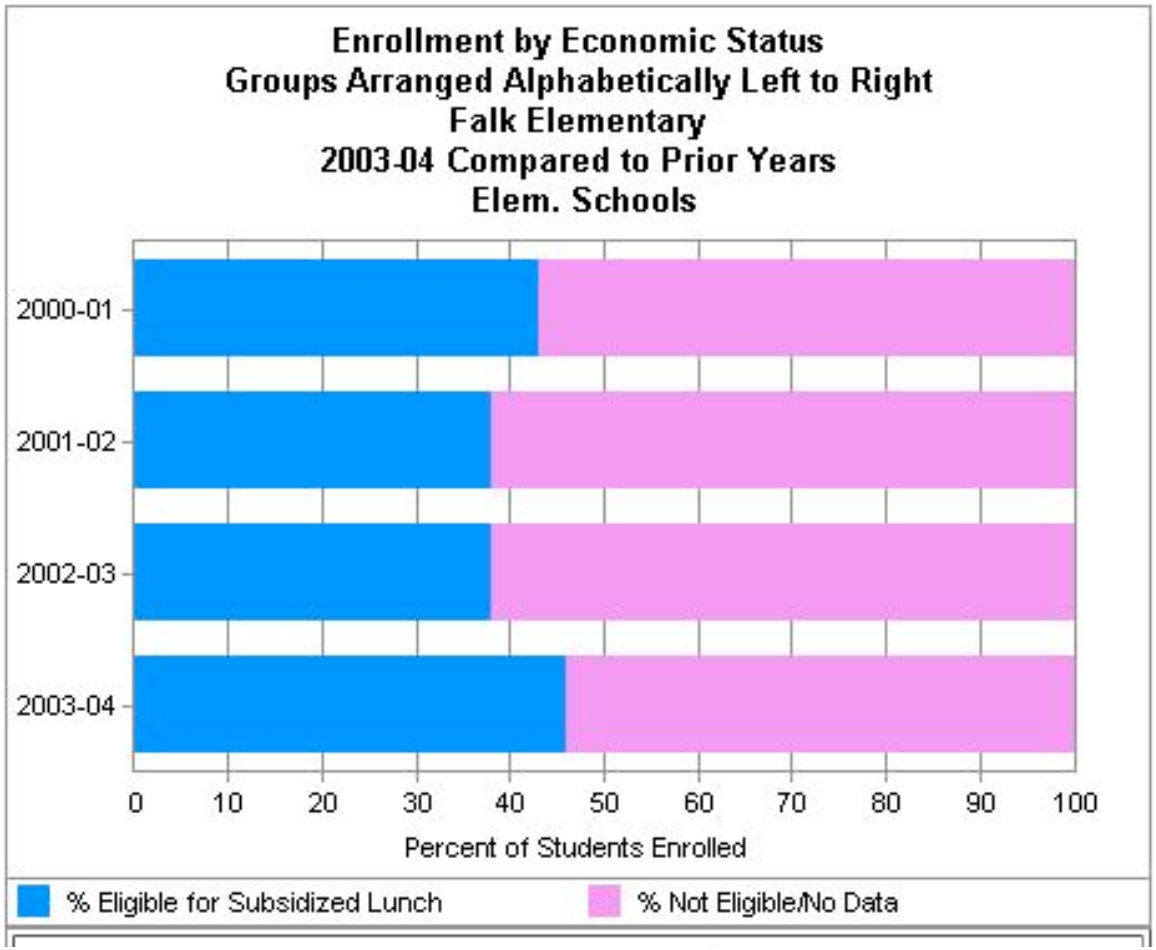
Shorewood School

- Student body
  - Shorewood residents
  - Eagle heights residents
- Education-oriented parents
- Many 2-parent homes
- Often 1 highly educated stay-at-home-parent, who is capable of tutoring
- Computers in the home
- Many can afford private tutors, if necessary

What about schools where…

- Student body
  - Lower SES
  - English not spoken in the home
- Parents with lower education levels
- Many single-parent homes
- Rarely 1 highly educated stay-at-home-parent
- Computers rarely in the home
- Extra tutoring not affordable

Falk School



Proxy for socio-economic status

Supplemental Programs?

- "Reading First," component of NCLB
  - Provides supplemental funds
- MMSD received a $2 million grant under this program
  - Funds were used at 5 local lower-achieving schools
- Funds were GIVEN BACK after one year.
  - Some teachers were using "direct instruction"
  - = phonics
- Supt. Rainwater
  - declared this method inconsistent with MMSD curriculum
  - Said he'd rather give the money back than cede control to the Feds
  - And what happened to those kids who benefited from the extra help those funds provided?

So:

- Current curriculum depends on heavy input outside the classroom
- It's assumed that parents can provide such input
- Some can, some can't
  - Returning supplemental funds doesn't help
- Curriculum will reinforce (increase?) inequities.

Why the controversy continues

- Paranoia about Federal government usurping local control over schools: Rainwater
- Teachers unprepared to incorporate phonics
- Potential to misinterpret findings re: phonics
  - Far-right wing embraces phonics as part of misguided, punitive “back to basics” movement
  - The research does not say that phonics is *all* that matters
- “Balanced literacy” is like the term “natural”: sounds good but can mean anything. Including “business as usual”

The Moral of the Story

- Teaching practices need to be based on sound theory and evidence about
  - The reading process
  - The effectiveness of different methods
- Seems uncontroversial, but it's not standard practice
- Basic research, conducted at UW and in labs around the world, provides such evidence
- Educational practices need to reflect this

Not So Simple

- Emphasis on “evidence-based” practices seems uncontroversial (part of NCLB)
- But, who determines which evidence “counts”?
  - Example: charter schools. Evidence that charter schools are underperforming. Will it have an impact?
    - What if the results had been positive?
  - Example: Superintendent Rainwater’s claim that MMSD reading program is “evidence-based”
    - What he means is: our test scores are good
    - Evidence based means: independent evidence that the programs are based on sound principles
    - Moreover, what do the tests test?

My Opinion

- If you are lucky, your child will learn to read no matter what they do in school
- Some will just catch on
- Most will not; they need instruction
- Few teachers will provide this
- Parents better be prepared (and able) to step in