

***The Science of Reading
meets
The Science of Instruction***

The Power of Instruction



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Archer, A., & Hughes, C. (2011). *Explicit Instruction: Effective and Efficient Teaching*. NY: Guilford Publications.

www.explicitinstruction.org

Title for Keynote: *The Science of Reading* meets *The Science of Instruction*

We are gathering at the Ohio Literacy Academy with a universal mission: to ensure that all students read accurately and fluently with comprehension at the highest level possible. The *Science of Reading*, the interdisciplinary body of reading research compiled over the last five decades, has informed educators on what and how to teach: phonemic awareness, decoding, encoding, sight recognition, fluency, vocabulary, background knowledge, and comprehension. However, this knowledge may not be enough unless implementation is powered by the *Science of Instruction*.

In this keynote, Dr. Archer will discuss the critical variables in instruction that optimize learning: clear lesson purposes, structured lessons including demonstration, guided practice and checking for understanding, active participation, monitoring of responses, effective feedback, and judicious practice. When these elements are consistently and effectively used, **learning** results.

The Science of Reading

Meets

The Science of Instruction

“The ‘science of reading’ refers to a vast body of multidisciplinary research providing a rationale for what must be taught to ensure almost all students can learn to read.”

“I wonder, however, if this movement will be enough to advance more effective literacy instruction; it may not be, unless teaching practices themselves receive more attention.” Dr. Louisa Moat, EDVIEW360 Blog

Universal Outcome

Learning

Learning

Learning

Learning

Learning

Learning

Universal Outcome, cont.

Teaching → Learning

Teaching → Learning

Teaching → Learning

Teaching → Learning

Teaching → Learning

Teaching → Learning

“No system or district in the world has made significant gains for students without a **relentless** focus on the learning and teaching process.”

What is Explicit Instruction?

You know it when you see it!

- Intentional
- Systematic
- Structured
- Sequenced
- Direct
- Unambiguous
- Engaging
- Positive
- Productive
- Perky

What is Explicit Instruction?

“Explicit instruction is direct and unambiguous. It can be thought of as “errorless learning” because students are supported with direct models and scaffolds to correctly perform the skills that lead to reading comprehension.”

“When schools apply the principles of explicit instruction in the regular classroom, they reduce the percentage of students who need intervention and increase the percentage of students who read at grade level.”

Implementing Ohio’s Plan to Raise Literacy Achievement, Grades K-5

When should Explicit Instruction be used?

Explicit Instruction should be used when:

- When students have little or no background knowledge
- When students are novices not experts
- When content is new
- When content requires specific order
- When students have experienced difficulty learning information
- **“Reading instruction works best when it is taught directly and explicitly.”**

50 years of research supports Explicit Instruction

IES Practice Guides

Foundational Skills to Support Reading for Understanding in Kindergarten Through 3rd Grade (2016)

Teach students to decode words, analyze word parts, and write and recognize words.

Teach students academic language skills, including the use of inferential and narrative language, and vocabulary knowledge.

Teach Elementary School Students to Be Effective Writers (2012)

Teach students to use the writing process for a variety of purposes.

Teach students to become fluent with handwriting, spelling, sentence construction, typing, and word processing.

IES Practice Guides

*Improving Reading **Comprehension** in Kindergarten Through 3rd Grade* (2010)

Teach students how to use reading comprehension strategies.

Teach students to identify and use the text's organizational structure to comprehend, learn, and remember content.

*Assisting Students Struggling with Reading: Response to **Intervention** (RtI) and Multi-Tier Intervention in the **Primary Grades*** (2009)

Provide intensive, **systematic instruction** on foundational reading skills in small groups to students who score below the benchmark score on universal screening.

IES Practice Guides, cont.

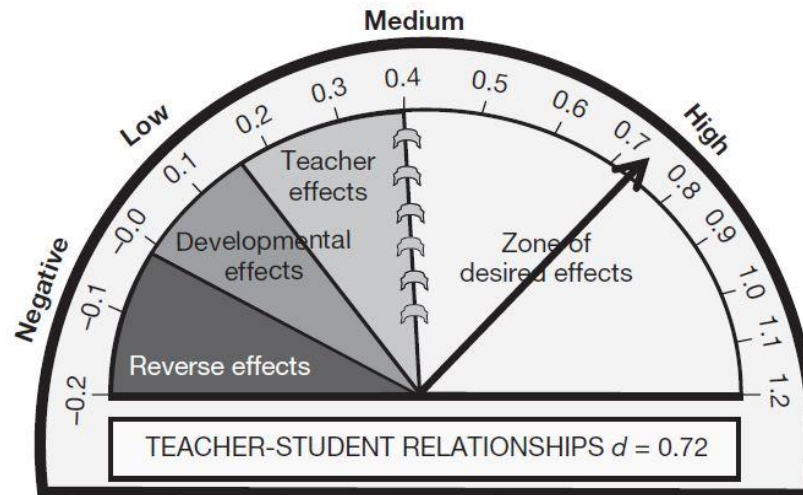
Providing Reading Interventions for Students in Grades 4 – 9 (2022)

- Build students' decoding skills so they can read complex multisyllabic words.
- Provide purposeful fluency-building activities to help students read effortlessly.
- Routinely use a set of comprehension-building practices to help students make sense of the text.

Preparing Young Children for School (2022)

- Intentionally plan activities to build children's vocabulary and language.
- Build children's knowledge of letters and sounds.
- Use shared book reading to develop children's language, knowledge of print features, and knowledge of the world.

John Hattie 2023



Direct Instruction
Explicit Instruction

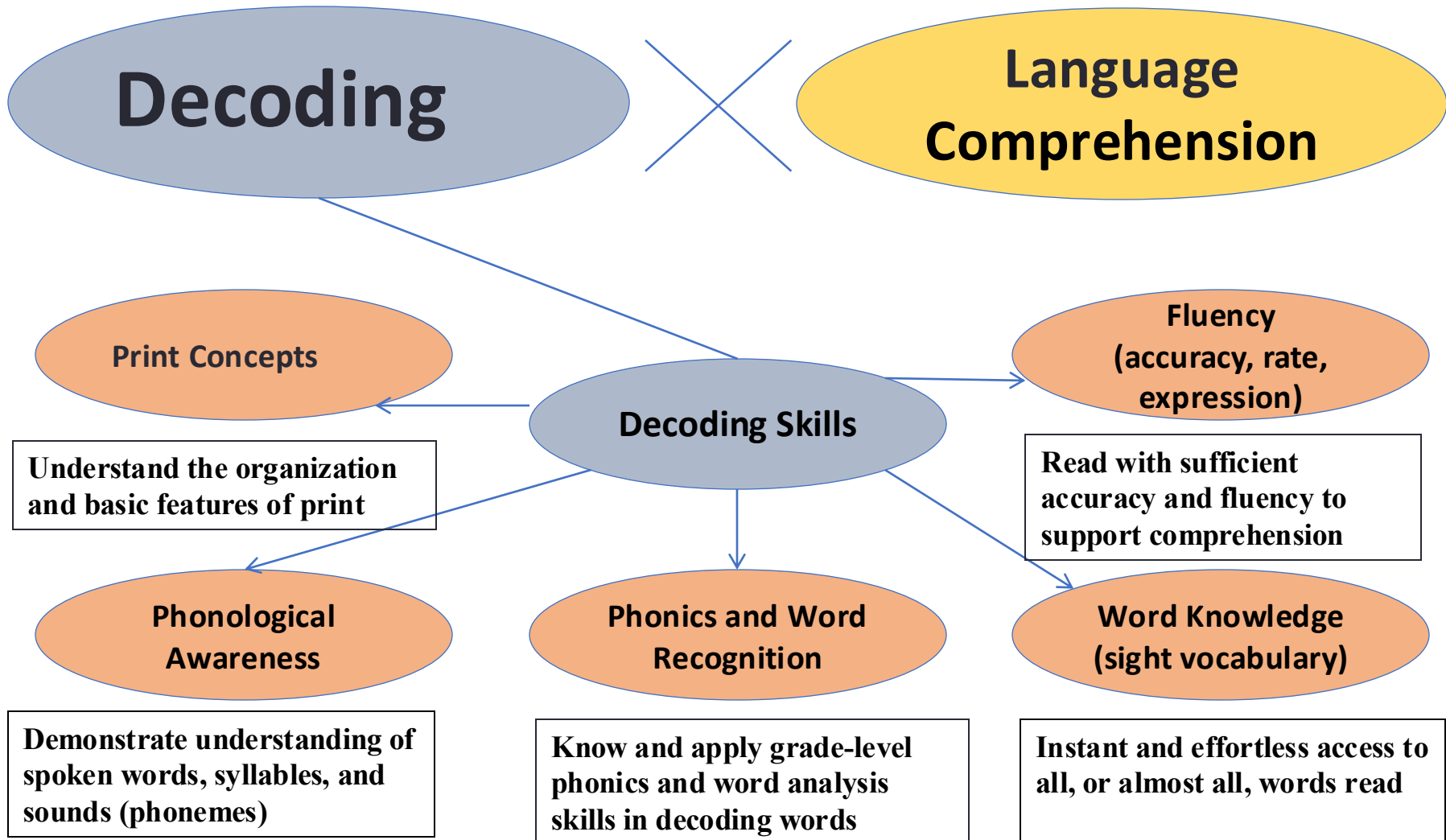
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Elements of Explicit Instruction 1

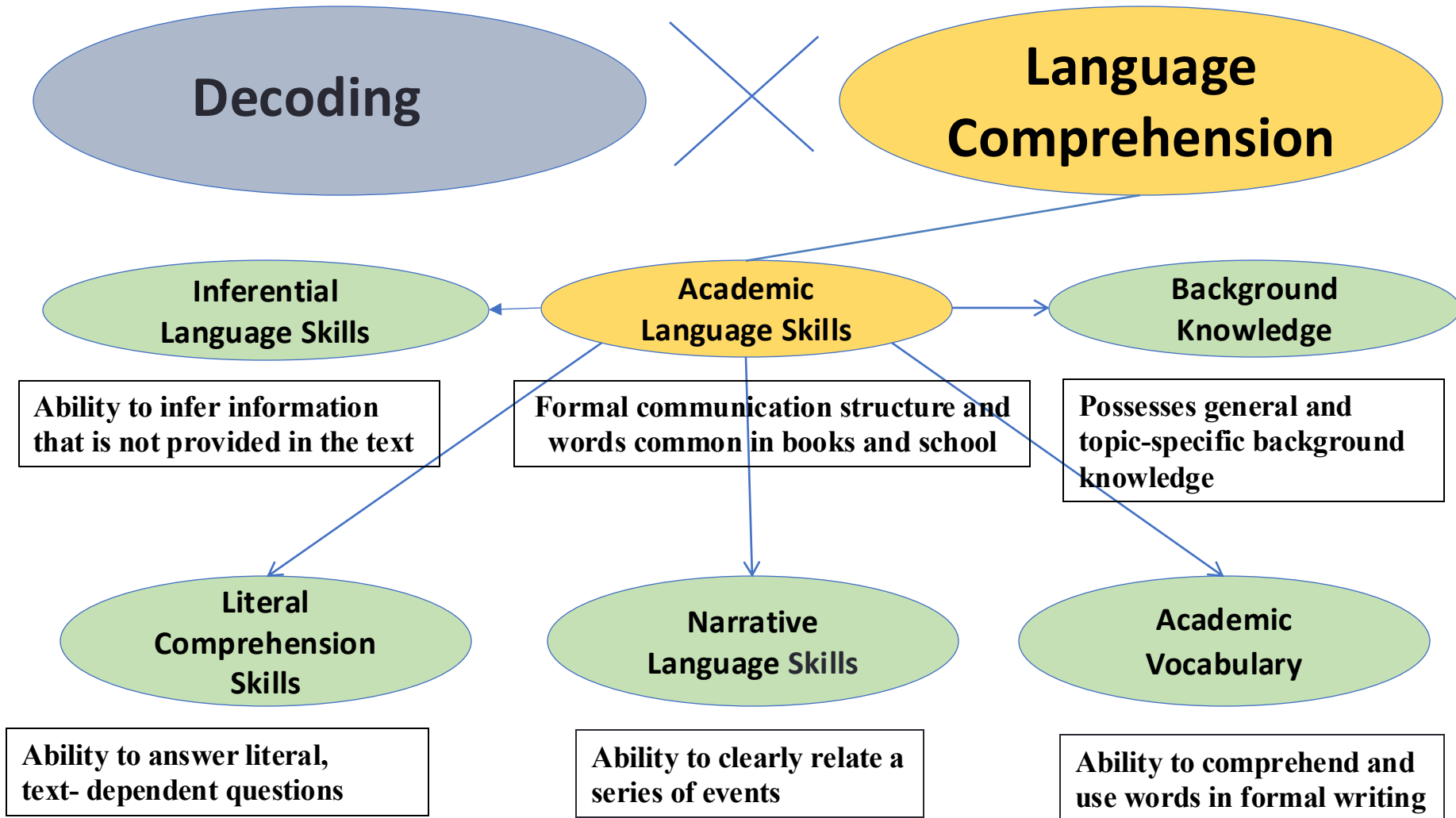
1. Focus on critical content to promote **LEARNING.**

“Ohio is using the **Simple View of Reading** (Gough and Tunmer, 1986) to drive all literacy content, conversation, development of organization of resources necessary to support the state’s comprehensive plan.”

Simple View of Reading



Simple View of Reading (See IES Practice Guide)



1. Focus on critical content to promote Learning.

Focus on **correct** content to promote LEARNING.



Google Curiosity: Google – Decoding Strategies Kindergarten. Look at first 50 images. Count the number that direct the student to guess based on the picture or first sound? Answer 49

1. Focus on critical content to promote **Learning**. (Evidence-based)

• **REWARDS - Overt Strategy**

- 1. Circle the prefixes.
- 2. Circle the suffixes.
- 3. Underline the vowels.
- 4. Say the parts of the word.
- 5. Say the whole word.
- 6. Make it a real word.



Diagram illustrating the word 'prevention' with phonetic segmentation. The word is written in a stylized font where each letter is enclosed in a rounded rectangle. The segments are connected by horizontal lines, and the entire word is underlined.



Diagram illustrating the word 'unproductive' with phonetic segmentation. The word is written in a stylized font where each letter is enclosed in a rounded rectangle. The segments are connected by horizontal lines, and the entire word is underlined.



Diagram illustrating the word 'masterfully' with phonetic segmentation. The word is written in a stylized font where each letter is enclosed in a rounded rectangle. The segments are connected by horizontal lines, and the entire word is underlined.

1. Focus on critical content to promote **Learning**. (Evidence-based)

Getting the Gist

1. Name the who or what the paragraph is about in a brief phrase.
2. Identify two or three important details about the topic.
3. “Shrink” the paragraph by stating or writing the main idea. (Say it in 10 to 15 words)

(From Vaughn, et. al. Collaborative Strategic Reading)

1. Focus on critical content to promote
LEARNING.

Archerism:

Teach the stuff and cut the fluff.

Elements of Explicit Instruction 2

2. Break down complex strategies into obtainable pieces to ensure **LEARNING**.

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Phonological Awareness Skills (Kilpatrick, 2019)

- **Early**

- rhyming
- alliteration
- segment words into syllables
- identify initial sound in word

- **Basic**

- blending sounds into words
- segmenting words into sounds

- **Advanced**

- manipulating phonemes
- deleting, adding, substituting

2. Break down complex strategies into obtainable pieces to ensure **LEARNING**. Cont.

Example Sequence of Phoneme - Grapheme Associations

(IES Practice Guide – *Foundational Skills to Support Reading for Understanding in Kindergarten Through 3rd Grade*, 2016)

- **Single consonant and vowel letters**

a m t s i f d r o g l h u c b n k v e w j p y x q z (Carnine, Silbert, and Kame'enui, 1997)

- **Consonant blends**

bl cl fl gl pl sl

cr dr gr pr tr br fr

sm sp st sw sc

- **Consonant digraphs**

th sh ch ph ng tch dge

- **Long vowels with silent e**

a-e i-e o-e u-e e-e

- **Two-letter vowel teams** (combination of letters standing for single vowel sound)

ai ay ea ee ey oa ie igh

2. Break down complex strategies into obtainable pieces to ensure **LEARNING, cont.**

Syllable Pattern	Single Syllable Words	Multi-Syllable Words
Closed Syllables VC CVC CCVC CVCC A syllable with a short vowel, spelled with a single vowel letter ending in one or more consonants.	am, sat, brat, math	rab bit, in sect, nap kin, top ic, pun ish, kit ten
Open Syllables CV CCV A syllable that ends with a long vowel sound, spelled with a single vowel letter.	me, he, she, hi no, go, ho	pro test, tor na do, si lent, hu man, ro bot, re lax
Silent e CVCe CCVCe A syllable with a long vowel, spelled with one vowel + one consonant + silent e.	mine, cave, ripe, tape, shape, whale, shine	in vite, ex cite, pan cake, man hole, in side, nick name

Decoding Single Syllable Words (Moats, L and Tolman, C. 2009, *Language Essentials for Teachers of Reading and Spelling (LETRS)*, Sopris/Voyager)

Syllable Pattern	Single Syllable Words	Multi-Syllable Words
<p>Vowel Team</p> <p>CVVC CCVVC CVVCC</p> <p>Syllables with long or short vowel spellings that use two to four letters to spell the vowel. Diphthongs ou/ow and oi/oy are included in this category.</p>	<p>rain, mail, deal,</p> <p>clean, speed,</p> <p>scream, least</p>	<p>train er, spoil age,</p> <p>mail man, rain bow,</p> <p>ex haust, pro ceed</p>
<p>Vowel-r</p> <p>A syllable with er, ir, or, ar, or ur.</p> <p>Vowel pronunciation often changes before /r/.</p>	<p>barn, fern, bird,</p> <p>torn, yard</p>	<p>per form, yard stick,</p> <p>sports man, sur plus,</p> <p>morn ing, dis turb</p>
<p>Consonant –le</p> <p>An unaccented final syllable that contains a consonant before /l/, followed by a silent e.</p>		<p>mid dle, pud dle,</p> <p>ma ple,</p> <p>can dle, fid dle, ea gle</p>

2. Break down complex strategies into obtainable pieces to ensure **LEARNING**

Archerism:

Be aware of cognitive overload.

Success breeds Success

Success breeds Motivation

Elements of Explicit Instruction 3

3. Provide quality explicit instruction lessons that yield **learning**.

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- **Opening**

- Attention** *Gain attention.*
- Review** *Review critical preskills and knowledge. (Retrieval)*
- Preview** *Communicate purpose of the lesson or activity.*

- **Body**

- **Closing**

- Review** *Use retrieval practice to review lesson content.*
- Preview** *Preview content of next lesson.*
- Independent Work**

3. Provide quality explicit instruction lessons that yield **LEARNING**. Cont.

- Utilizing **explicit instruction** procedures.
 - **Demonstration** **I do it.**
 - **Guided Practice** **We do it.**
 - **Checking understanding** **You do it.**

3. Provide quality explicit instruction lessons that yield **LEARNING**, cont.

Clarity - Effect Size 1.09

- **Clarity** – What students will learn (Learning Intentions, Success Criteria)
- **Clarity** - Organization (space, time, curriculum, lessons)
- **Clarity** - Explanations (expectations, critical content, activities, assignments, assessments)
- **Clarity** – Demonstrations (how to do something)
- **Clarity** - Guided Practice

Fendick & Titsworth

3. Provide quality explicit instruction lessons that yield **LEARNING**, cont.

Archerisms:

How well I teach = How well they learn

How well they learn = How well I taught

Attention:

What you think about is what you learn.

Goal:

You cannot come out without an outcome.

3. Provide quality explicit instruction lessons that yield **LEARNING**

Archerisms:

I do it. We do it. You do it.

I do. We do. You do.

Routines Routines Routines Routines Routines

Instructional Cycle

- Input Question Response Monitor Feedback Adjust
- Input Question Response Monitor Feedback Adjust
- Input Question Response Monitor Feedback Adjust
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Elements of Explicit Instruction 4

4. Actively involve all students in responding throughout the lesson, making **LEARNING** visible.

Opportunities to Respond – WHY?

Clear and Consistent Research Results:

Increases time on task

Increases academic achievement (Learning**)**

Decreases disruptive behaviors

Increases intensity of interventions

Research Review of 15 studies

Mac Suga-Gage & Simonsen, 2015

Elicit frequent responses

Verbal Response Procedures

- Unison Choral
- Partners
- Teams/Huddle Groups
- Individual (NO volunteers)
- Discussion

Written Response Procedures

- Short Written Responses
- Whiteboards
- Guided Notes

Action Response Procedures

- Acting out
- Touching/Pointing
- Gestures
- Facial Expressions

Hold Ups

- White Boards
- Hand Signals
- Response Cards/Response Sheets

Inclusive Passage Reading

- Silent Reading (Whisper Read)
- Choral Reading
- Cloze Reading
- Echo Reading
- Partner (Me or We)
- Literacy Circles

Use of Technology

4. Actively involve all students in responding throughout the lesson, making **LEARNING** visible.

Archerisms:

Learning is not a spectator sport.

Everyone does Everything.

Every day, in every class, every student participates by saying, writing, and/or doing.

Elements of Explicit Instruction 5

5. Carefully monitor students' responses, adjusting the lesson as necessary to ensure **LEARNING**.

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Archerisms:

Look carefully
Listen carefully

Circulate and monitor
Walk around
Look around
Talk around

Elements of Explicit Instruction 6

6. Provide affirmative feedback (praise), informative feedback, and corrections to support **LEARNING**.

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	Hattie Effect Size
Feedback	.70

6. Provide affirmative feedback (praise), informative feedback, and corrections to support **LEARNING**.

Archerisms:

Feedback feeds forward.

7. Maintain a brisk pace that enhances student attention, concentration, and **Learning**

- Prepare for the lesson.
- Use instructional routines.
- When you get a response, move on.
- Avoid verbosity.
- Avoid digressions.

7. Maintain a brisk pace that enhances student attention, concentration, and **Learning**.

Archerism:

Perky not Pokey.

Elements of Explicit Instruction 7

8. Provide deliberate **practice**, retrieval **practice**, and spaced **practice** to ensure retention and **LEARNING**.

8. Provide deliberate practice, retrieval practice, and spaced practice to ensure retention and **LEARNING**.

Deliberate practice is goal-oriented practice consciously devoted to improvement of a skill.

Retrieval practice is a learning strategy in which students must retrieve information from memory.

Spaced practice (also known as distributed practice) is a learning strategy, where practice is broken up into several short sessions - over a longer period of time.

8. Provide deliberate practice, retrieval practice, and spaced practice to ensure retention and **LEARNING**.

Archerisms:

~~*Practice makes perfect.*~~

Perfected practice over time makes perfect and permanent.

Elements of Explicit Instruction 8

8. Utilize management procedures that support students and teachers, thus facilitating **LEARNING**.

9. Utilize management procedures that support students and teachers, thus facilitating **LEARNING**.

Archerisms:

Teach predictable routines.	<i>Predictability predicts ability.</i>
Provide pre-corrections.	<i>If you expect it, pre-correct it.</i>
Provide acknowledgement.	<i>Catch them being good.</i>
Maintain a perky pace.	<i>Avoid the void for they will fill it.</i>

Elements of Explicit Instruction

10. Intentionally establish positive teacher-student relationships that support **LEARNING** in the classroom.

10. Intentionally establish positive teacher-student relationships that support **LEARNING** in the classroom.

Connect. Connect. Connect.

Be kind.

Be kind.

Be kind.

Be kind.

Elements of Explicit Instruction, cont.

Every day, in every class, in every lesson, we will:

1. Focus on **critical content** to promote **LEARNING**.
2. **Break down complex strategies** into obtainable pieces to ensure **LEARNING**.
3. Provide **quality explicit instruction** lessons that yield **LEARNING**.
4. Actively **involve all students** in responding throughout the lesson, making **LEARNING** visible.
5. Carefully **monitor students' responses**, adjusting the lesson as necessary to ensure **LEARNING**.

Explicit Instruction

6. Provide affirmative **feedback** (praise), informative feedback, and corrections to support **LEARNING**.
7. Maintain a **brisk pace** that enhances student attention, concentration, and **Learning**.
8. Provide **deliberate practice, spaced practice and retrieval practice** to ensure mastery, retention, and **LEARNING**.
9. Utilize **management procedures** that support students and teachers, thus facilitating **LEARNING**.
10. Intentionally establish positive **teacher-student relationships** that support **LEARNING** in the classroom.

Anita Archer's "Archerisms"

Explicit Instruction

Teach the *stuff* and cut the fluff.

How well I teach = How well they learn

I do it. We do it. You do it.

Learning is not a spectator sport.

Everyone does Everything

Look carefully. Listen carefully.

Walk around. Look around. Talk around.

FEEDBACK FEEDS FORWARD

Perfected practice over time makes
perfect and permanent.

Predictability predicts ability

If you expect it, pre-correct it.

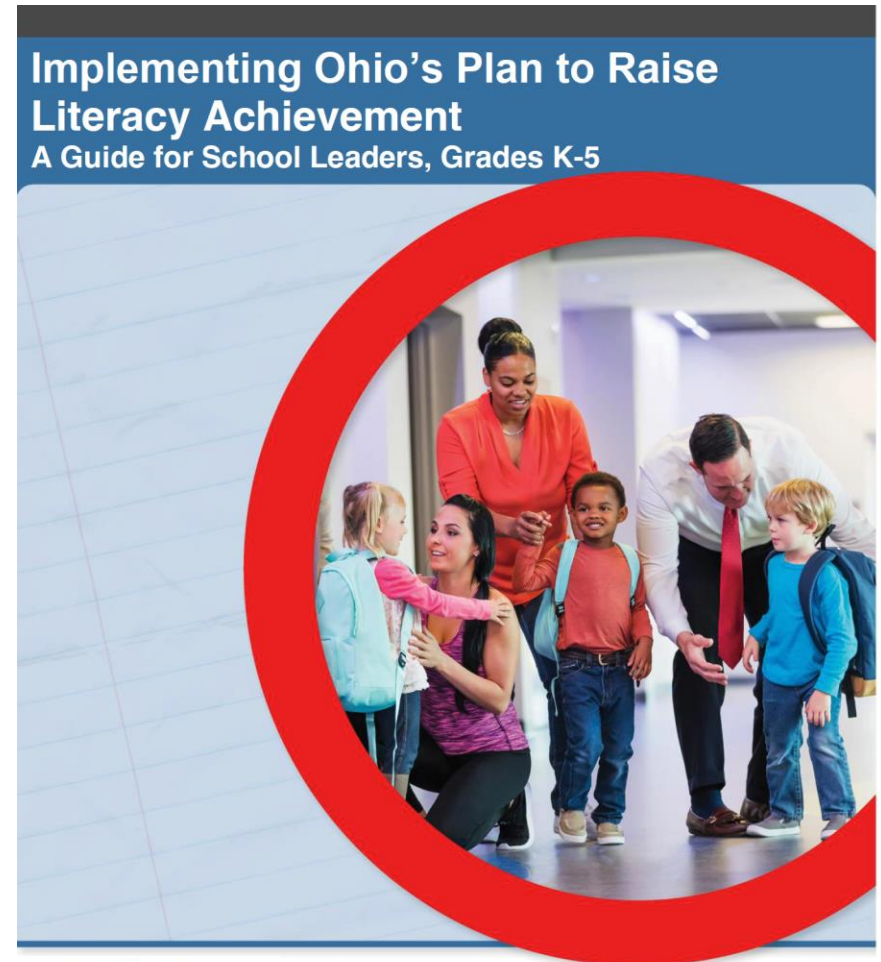
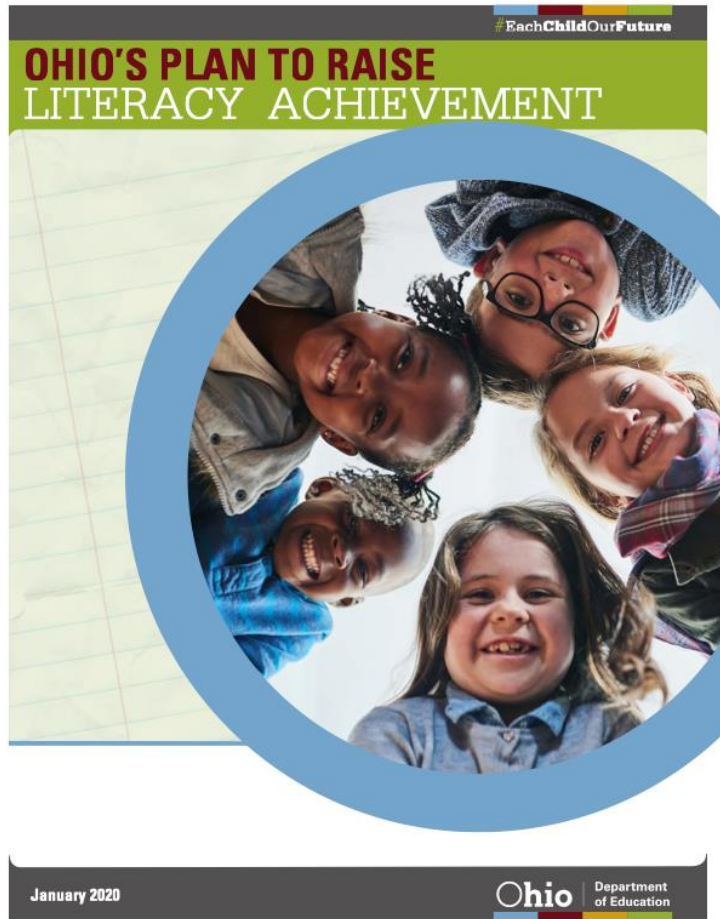
Avoid the void, for they will fill it.

Teach with passion.
Manage with compassion.

Recommended Reading

Topic: Explicit Instruction

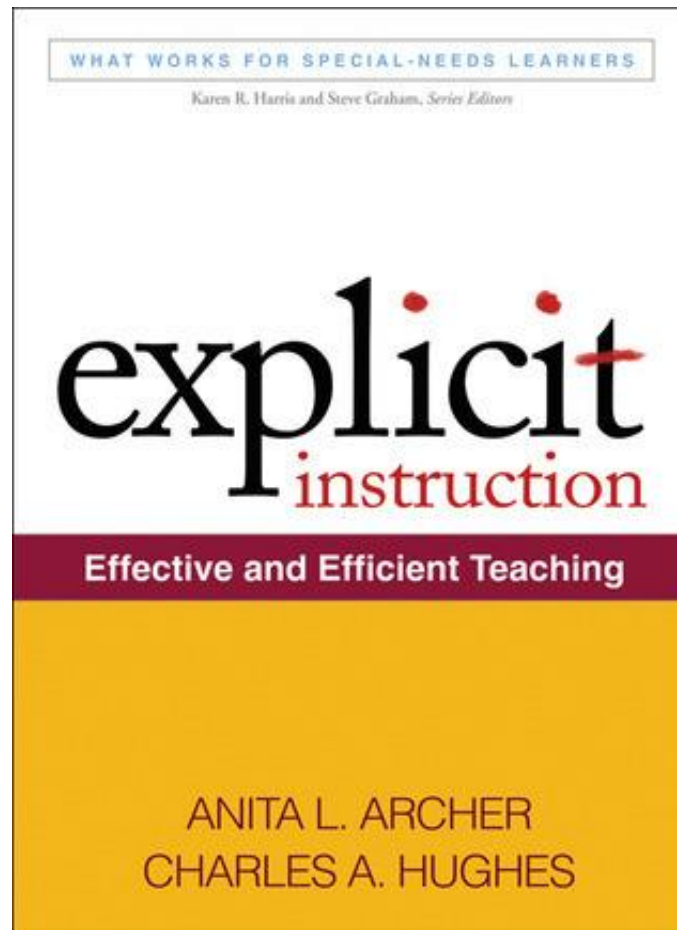
Recommended Reading



FEBRUARY 2023

Explicit Instruction: Effective and Efficient Teaching

Anita L. Archer and Charles A. Hughes



How Teaching Happens

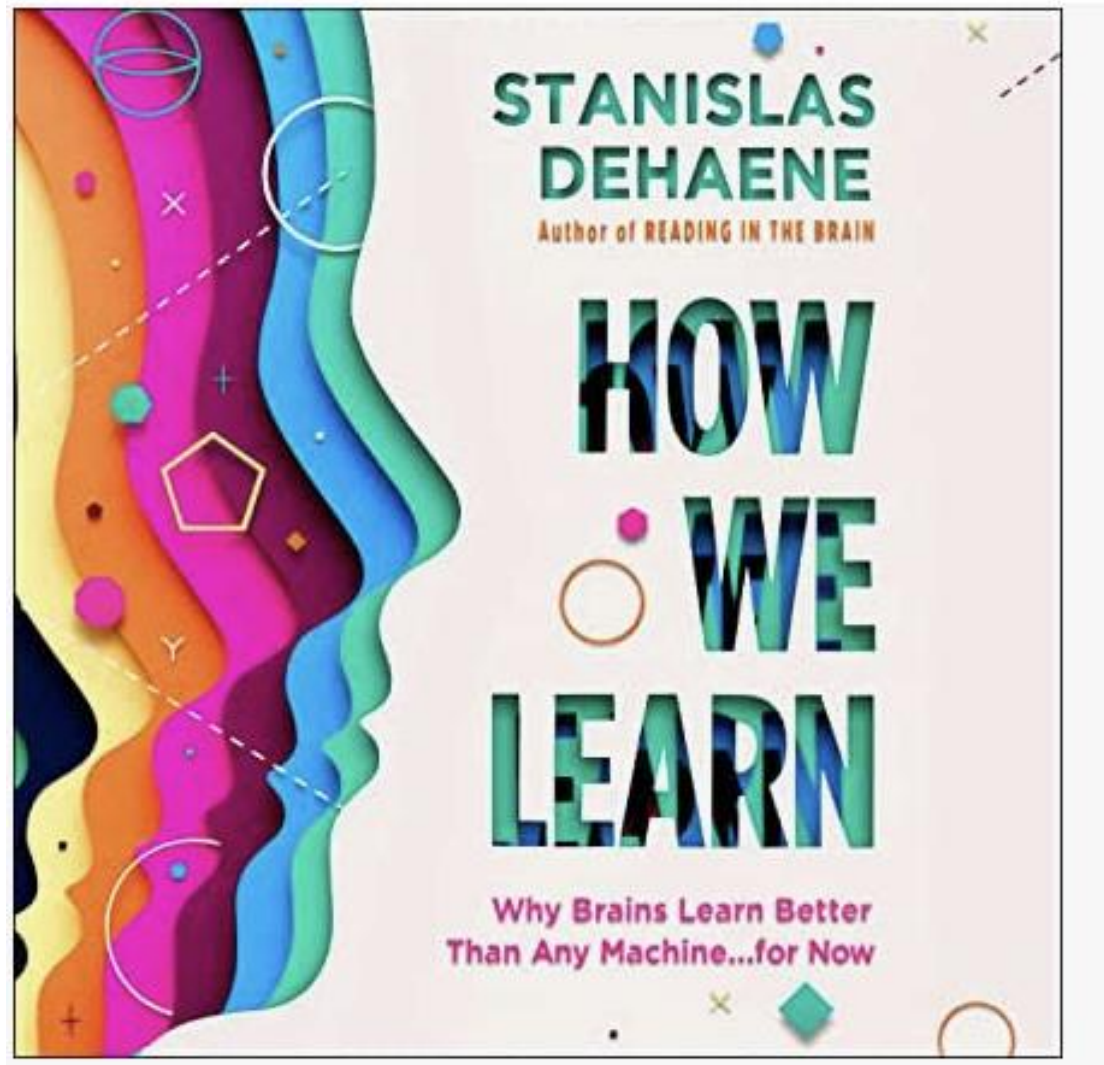
Seminal Works in Teaching and Teacher Effectiveness and What They Mean in Practice

Paul A. Kirschner, Carl Hendrick, &



How We Learn

Stanislas Dehaene



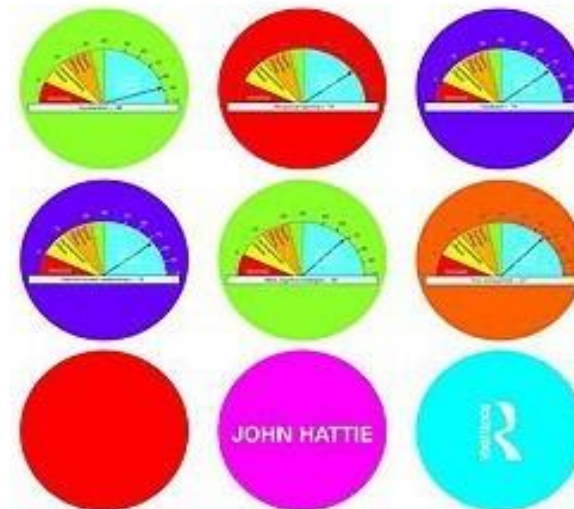
Visible Learning (New Edition - 2023)

A Synthesis of Over 800 Meta-Analyses Relating to Achievement

John Hattie

VISIBLE LEARNING
A SYNTHESIS OF OVER 800 META-ANALYSES
RELATING TO ACHIEVEMENT

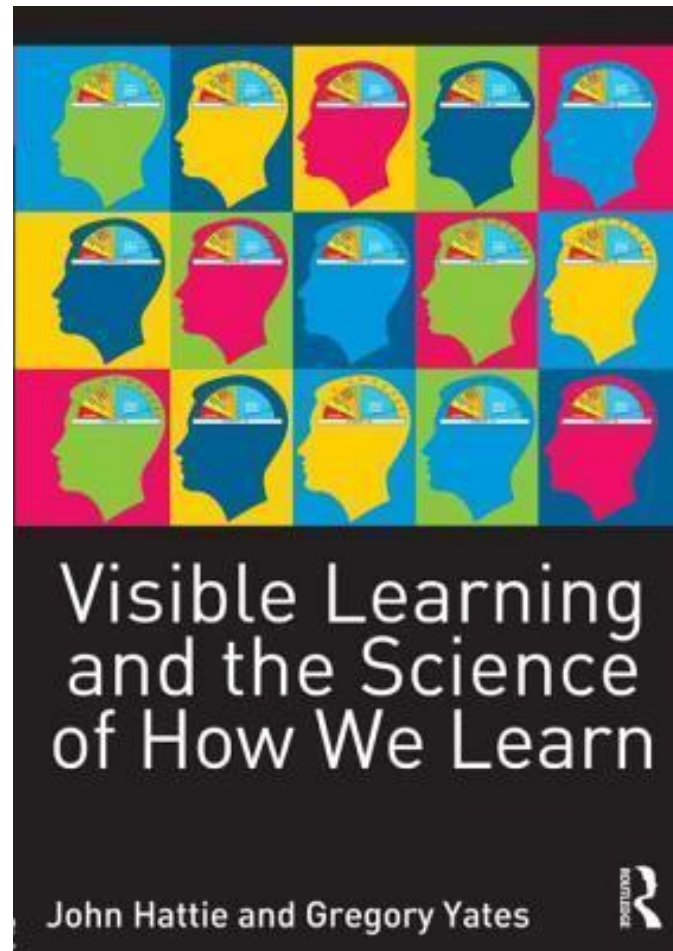
"Reveals teaching's Holy Grail"
The Times Educational Supplement



Visible Learning and the Science of How We Learn

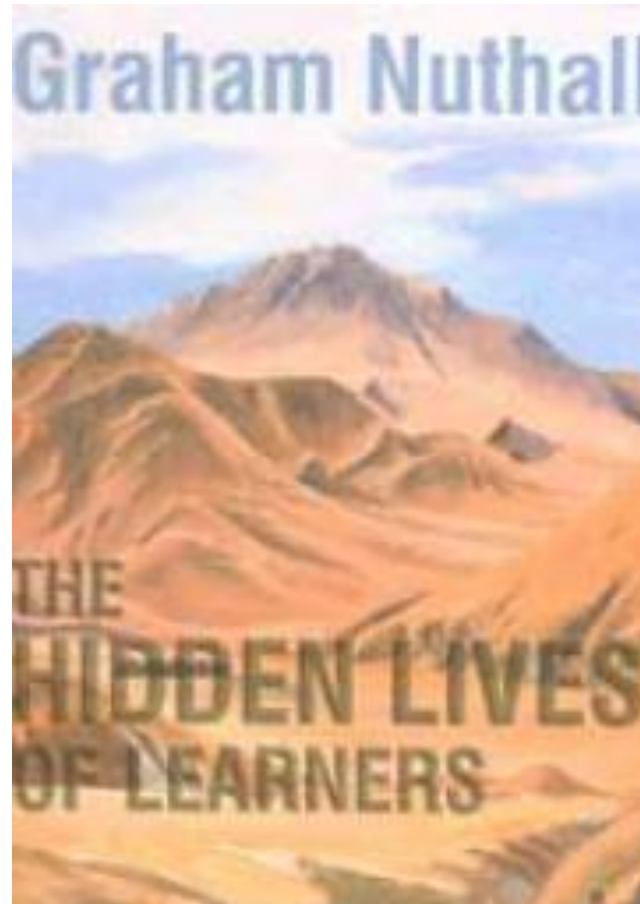
John Hattie

Gregory Yates



The Hidden Lives of Learners

Graham Nuthall



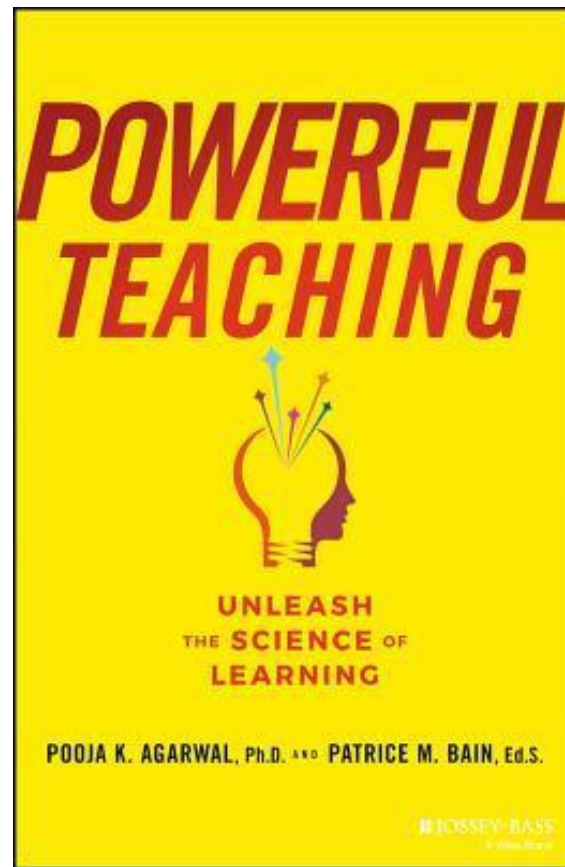
Powerful Teaching

www.retrievalpractice.org

Unleash the Science of Learning

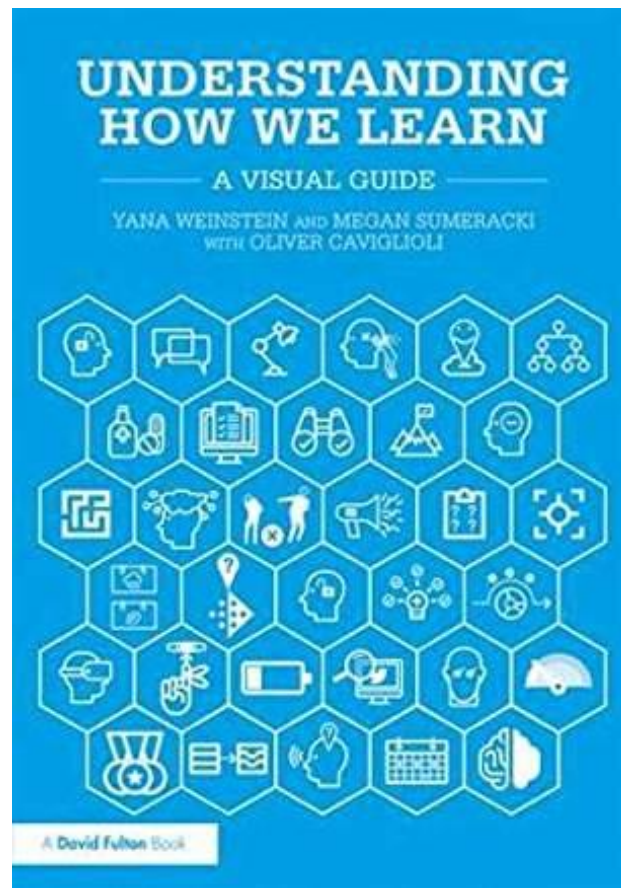
Pooja K. Agarwal

Patrice M. Bain



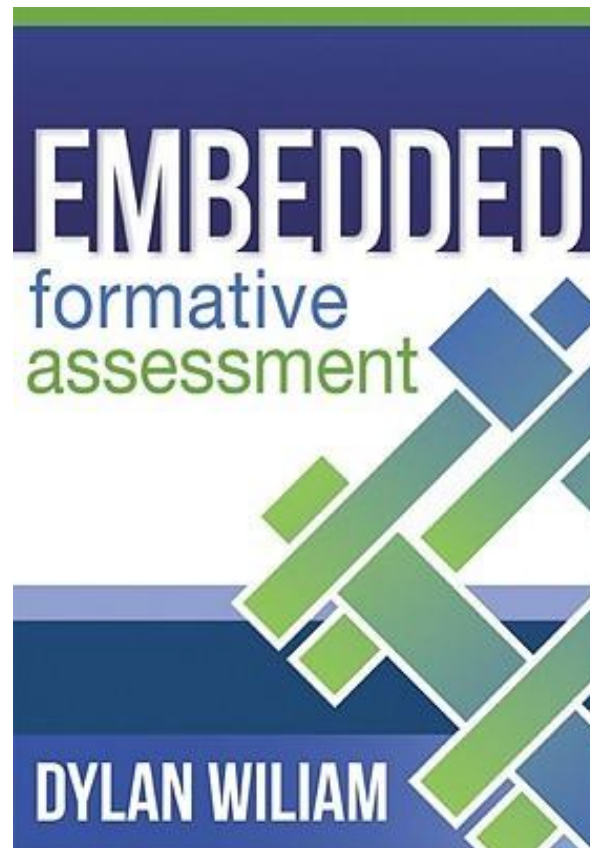
learningscientists.org

Yana Weinstein and Megan Sumeracki



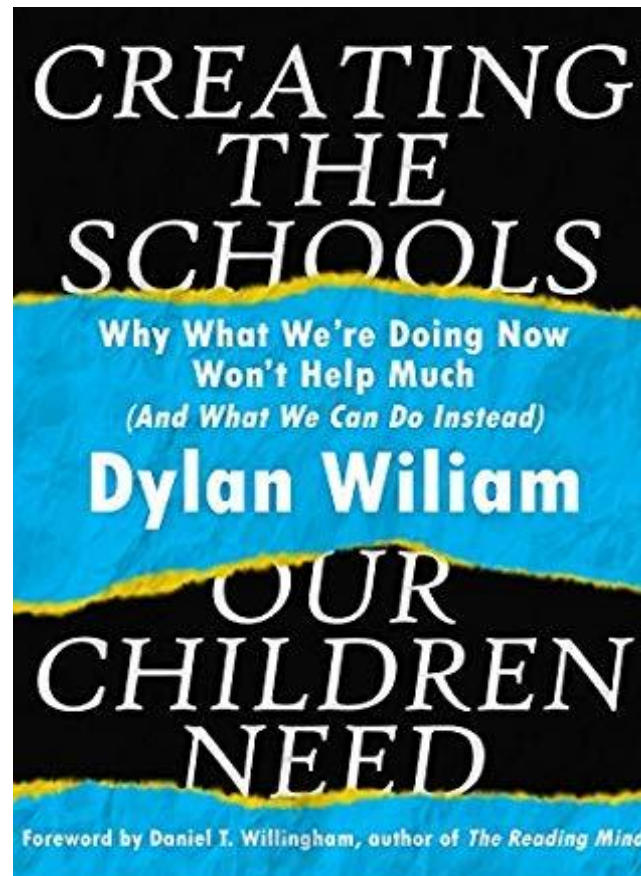
Embedded Formative Assessment

Dylan Wiliam



Creating the Schools Our Children Need

Dylan Wiliam



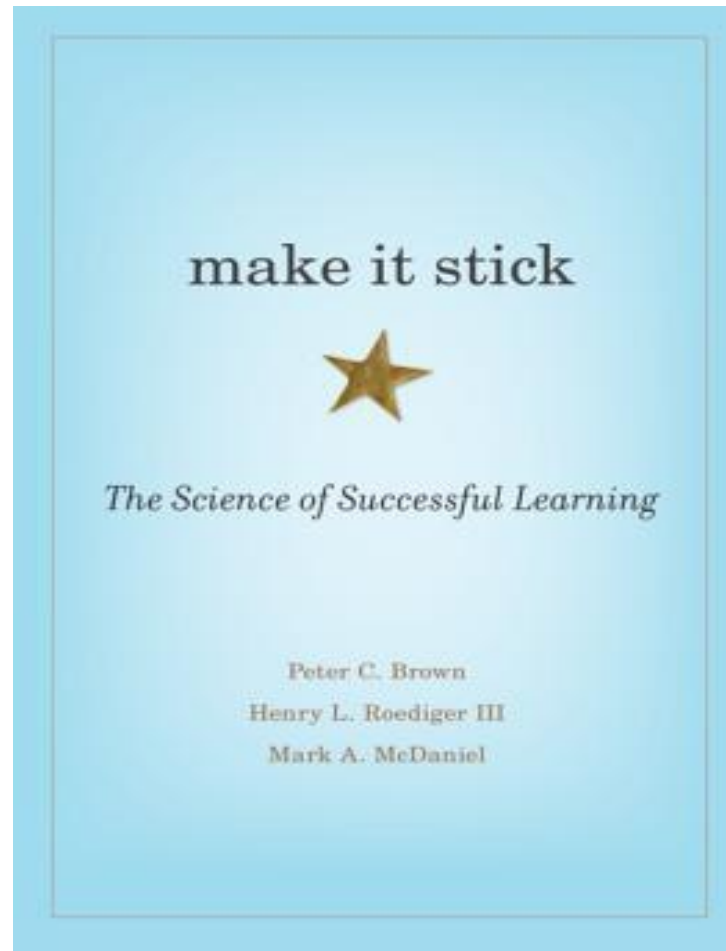
Make it Stick

The Science of Successful Learning

Peter C. Brown

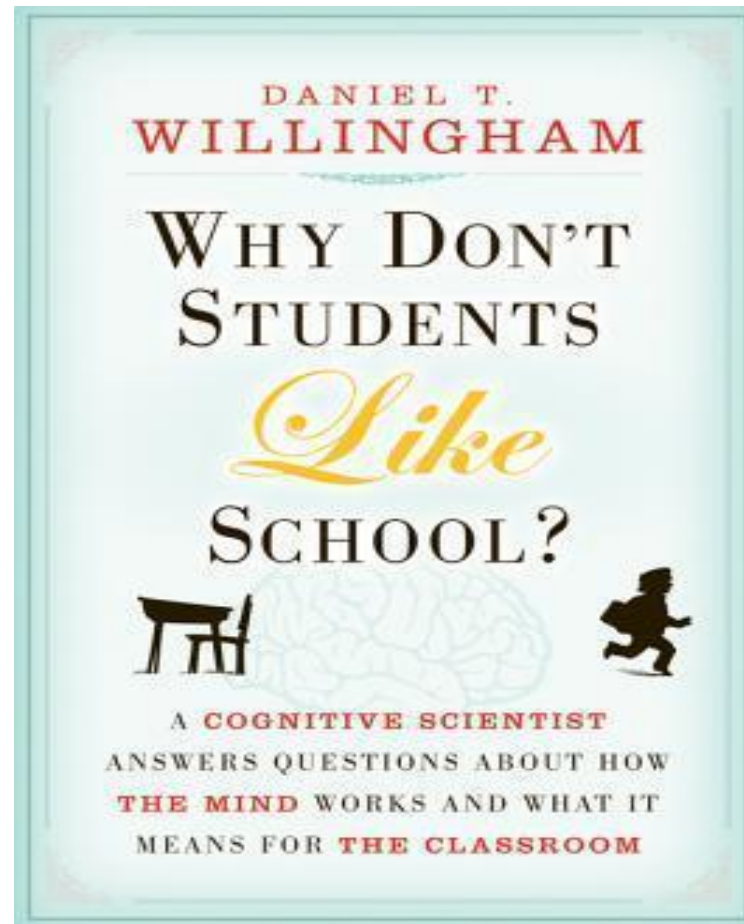
Henry L. Roediger III

Mark A. McDaniel



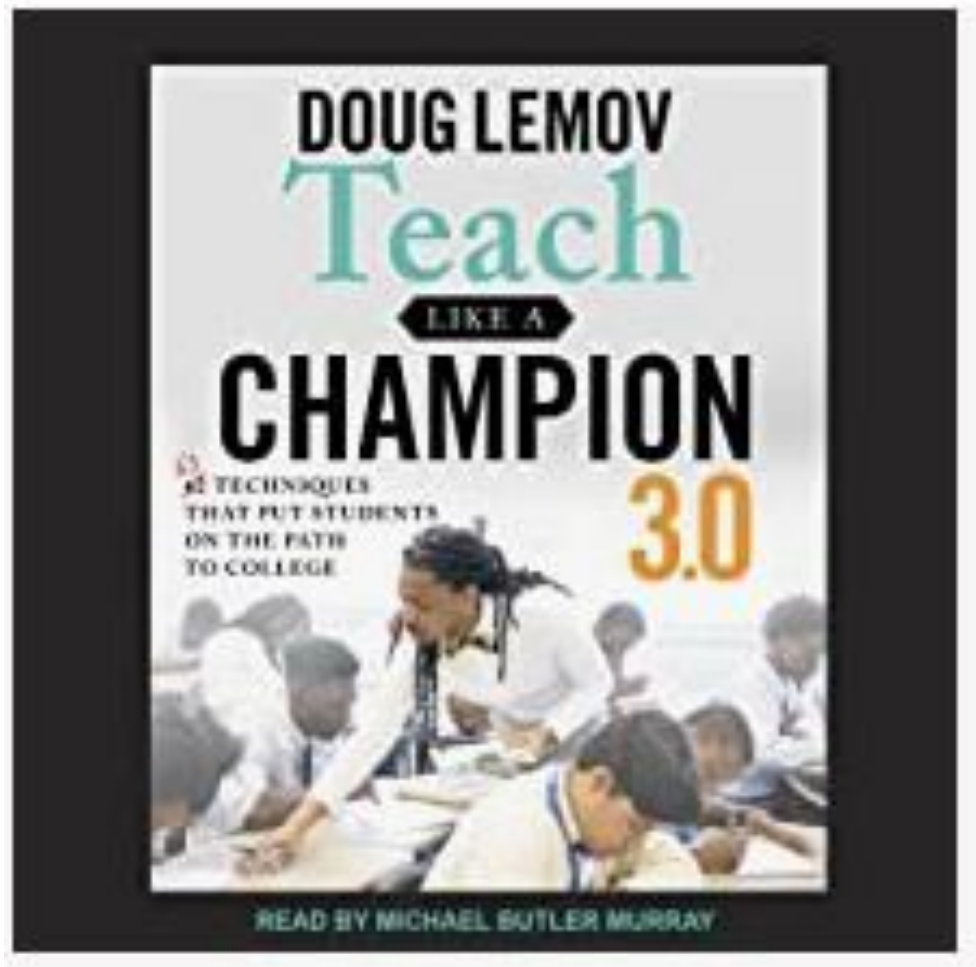
Why Don't Students Like School?

Daniel T. Willingham



Teach Like a Champion 30: 63 Techniques that Put Students on the Path to College

Doug Lemov, Michael Butler Murray, et al.



Tackling Attendance Challenges



Additional Summaries of Best Practices and Research

Practice Guides

<https://ies.ed.gov/ncee/wwc/PracticeGuides>

Practice Guides. A *practice guide* is a publication that presents recommendations for educators to address challenges in their classrooms and schools. They are based on reviews of research, the experiences of practitioners, and the expert opinions of a panel of nationally recognized experts.

Recommended Reading

Topic: Reading Instruction

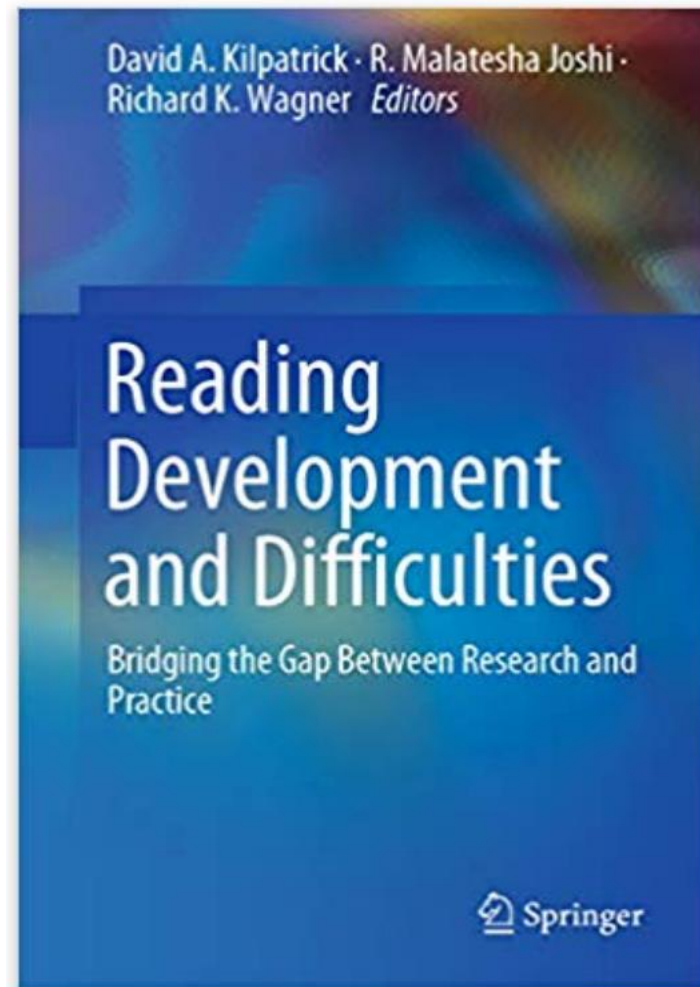
LETRS Volume 1 and 2

Louisa C. Moats
Carol A. Tolman



Reading Development and Difficulties: Bridging the Gap Between Research and Practice

Editors: David A. Kirkpatrick, R. Malatesha Joshi and Richard K. Wagner



The Reading Mind

A Cognitive Approach to Understanding How the Mind Reads

Daniel T. Willingham



THE READING MIND: A Cognitive Approach to

Understanding How the Mind
Reads. Daniel T. Willingham,

Author of *Why Don't Students
Like School?* The Reading

Mind: A Cognitive Approach to
Understanding How the Mind

Reads. **Daniel T. Willingham,**
Author of *Why Don't Students*

Like School? The Reading

JOSSEY-BASS
A Wiley Brand

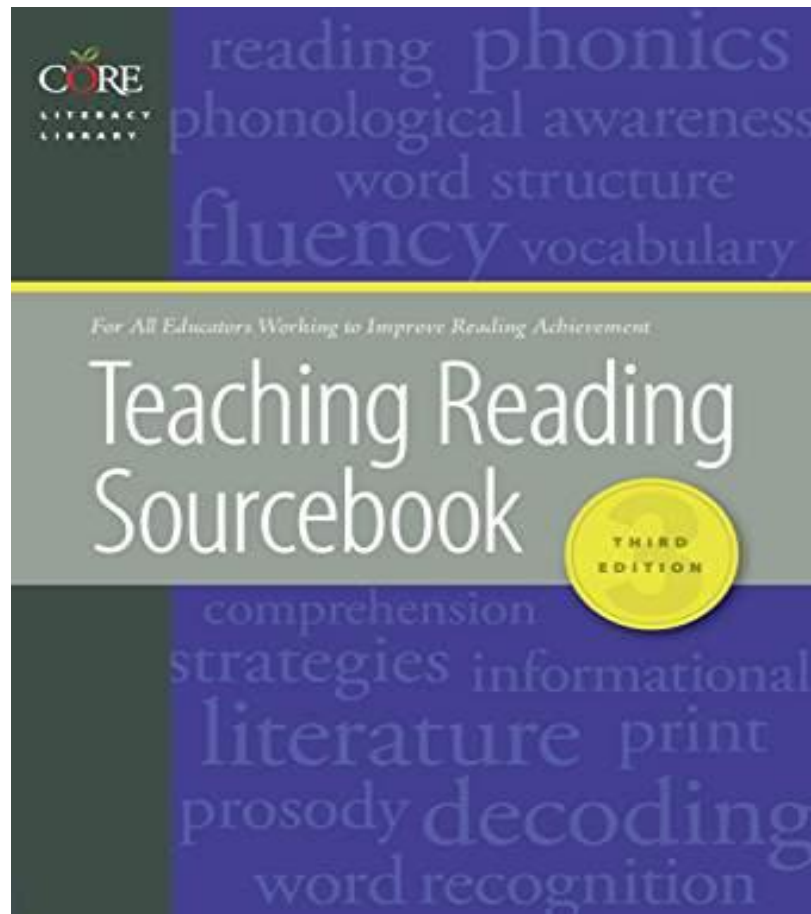
Language at the Speed of Sight

Mark Seidenberg

DON'T THINK WE'VE MET
HOW TWO THINGS ABOUT
IE **MARK SEIDENBERG** IS
IAT YOU ARE READING TI
ID **LANGUAGE AT THE** WO
IESE **SPEED OF SIGHT** YO
ADING THESE WORDS I
OW THAT YOU ARE AN E
OU **HOW WE READ, THE S**
WHY SO MANY CAN'T, I
W **AND WHAT CAN BE** YO
ERY **DONE ABOUT IT** DAY
HETHER YOU WANT TO O

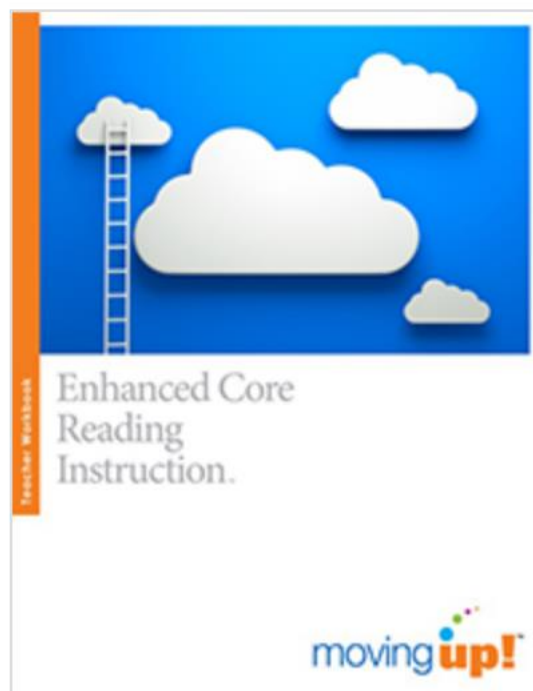
Teaching Reading Sourcebook

CORE



Enhanced Core Reading Instruction

Moving Up! Literacy
University of Oregon



Reading in the Brain: The New Science of How We Read

Stanislas Dehaene

