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

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."

Fullan & Quinn, 2016

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

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

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

Providing Reading <mark>Interventions</mark> for Students in <mark>Grades 4 – 9</mark> (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 <mark>Young Children for School</mark> (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
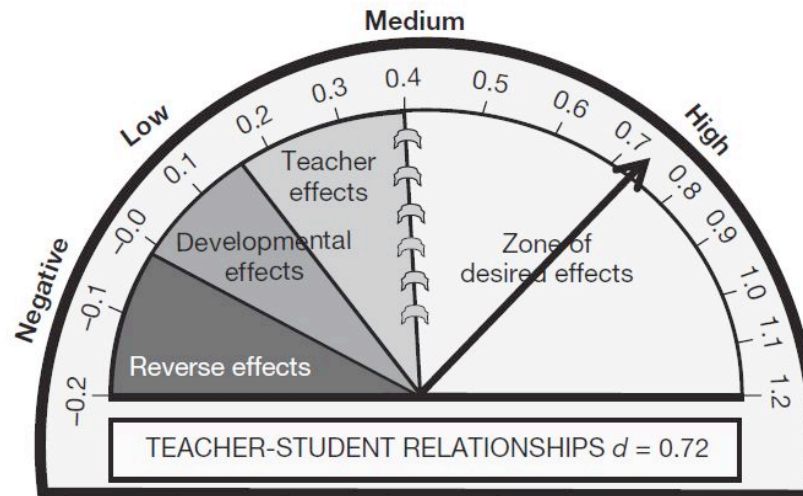
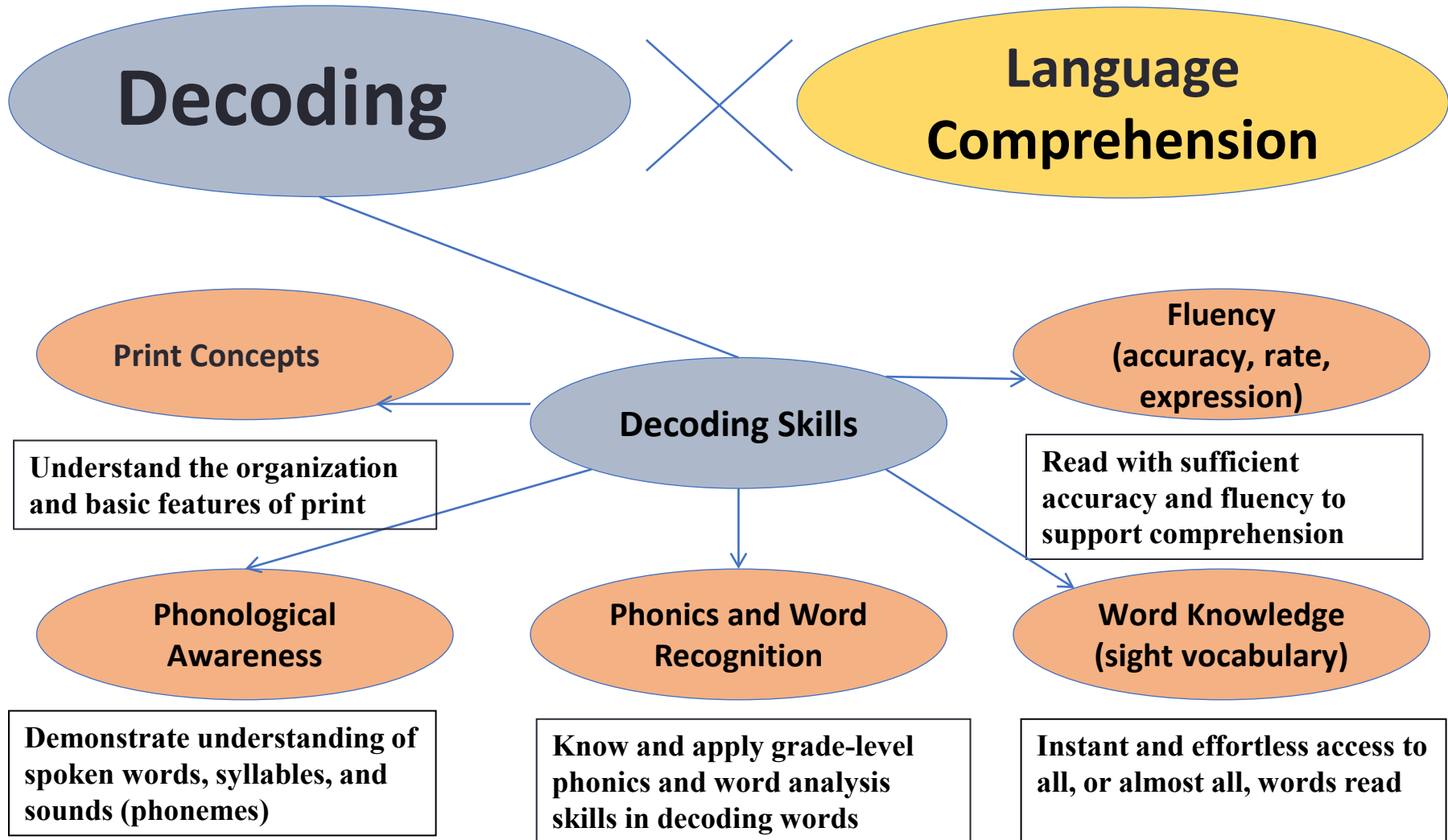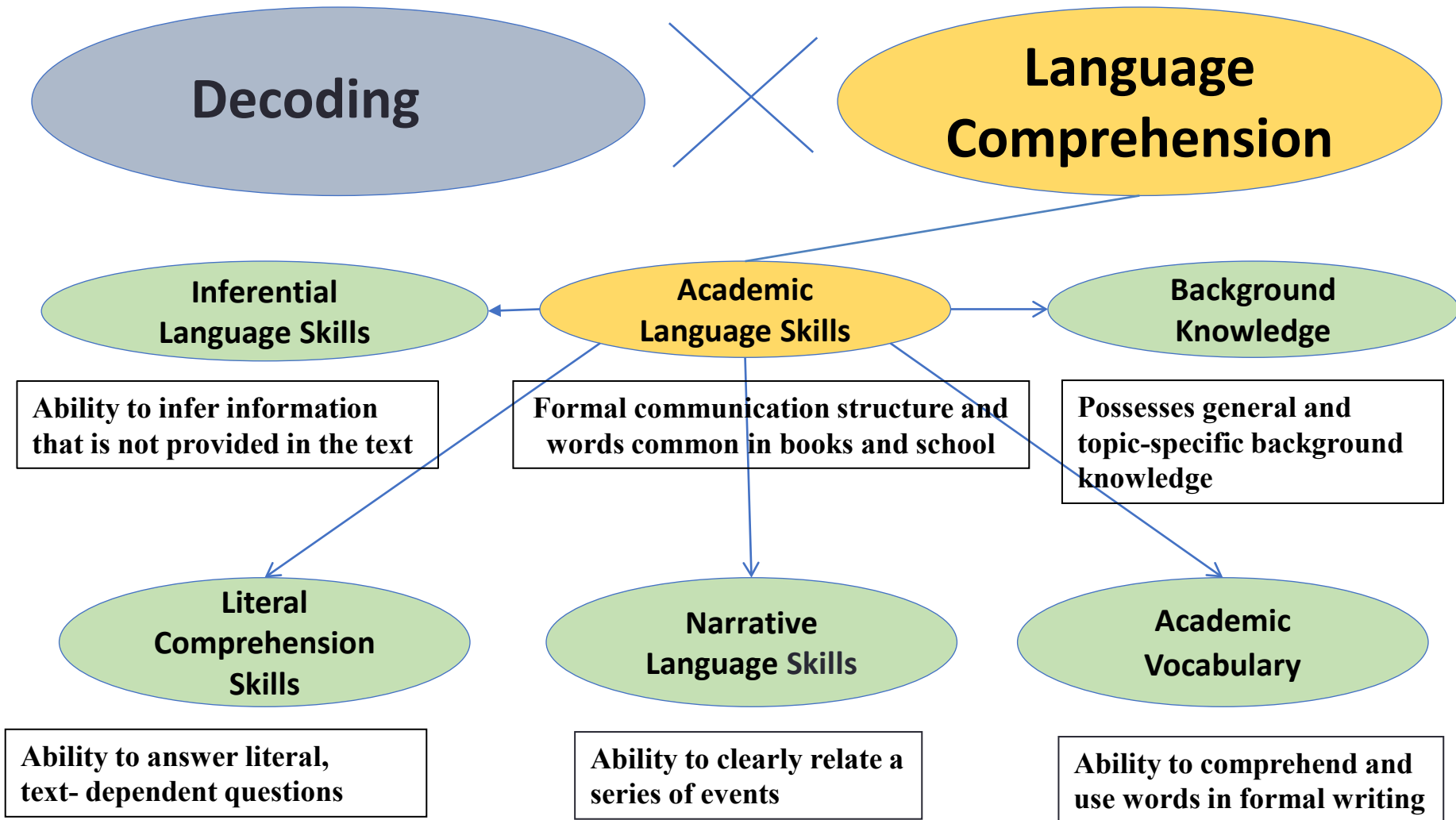|	
Direct Instruction	**Effect Size 0.56**
Explicit Instruction	**Effect Size 0.63**

Elements of Explicit Instruction

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."
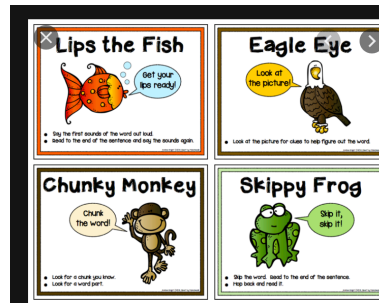
Simple View of Reading

Decoding × **Language Comprehension**

Print Concepts

Understand the organization and basic features of print

Decoding Skills

Fluency (accuracy, rate, expression)

Read with sufficient accuracy and fluency to support comprehension

Phonological Awareness

Demonstrate understanding of spoken words, syllables, and sounds (phonemes)

Phonics and Word Recognition

Know and apply grade-level phonics and word analysis skills in decoding words

Word Knowledge (sight vocabulary)

Instant and effortless access to all, or almost all, words read

Reading Development and Difficulties – Bridging the Gap Between Research and Practice. Chapter 4. Miles and Ehri

Simple View of Reading (See IES Practice Guide)

Decoding × **Language Comprehension**

Academic Language Skills

Formal communication structure and words common in books and school

Inferential Language Skills

Ability to infer information that is not provided in the text

Background Knowledge

Possesses general and topic-specific background knowledge

Literal Comprehension Skills

Ability to answer literal, text-dependent questions

Narrative Language Skills

Ability to clearly relate a series of events

Academic Vocabulary

Ability to comprehend and use words in formal writing

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.

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. 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.**

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.**

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
Vowel Team CVVC CCVVC CVVCC 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.	rain, mail, deal, clean, speed, scream, least	train er, spoil age, mail man, rain bow, ex haust, pro ceed
Vowel-r A syllable with er, ir, or, ar, or ur. Vowel pronunciation often changes before /r/.	barn, fern, bird, torn, yard	per form, yard stick, sports man, sur plus, morn ing, dis turb
Consonant –le An unaccented final syllable that contains a consonant before /l/, followed by a silent e.		mid dle, pud dle, ma ple, can dle, fid dle, ea gle

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. 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.**

•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.**

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.**

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**
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Elements of Explicit Instruction

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

36

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. 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.   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

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.   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. *Predictability predicts ability.*
Provide pre-corrections. *If you expect it, pre-correct it.*
Provide acknowledgement. *Catch them being good.*
Maintain a perky pace. *Avoid the void for they will fill it.*

Elements of Explicit Instruction

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

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Connect. Connect. Connect.

Be kind.
Be kind.
Be kind.
Be kind.

Elements of Explicit Instruction

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.

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.

I it.

Recommended Reading

Topic: Explicit Instruction

Recommended Reading
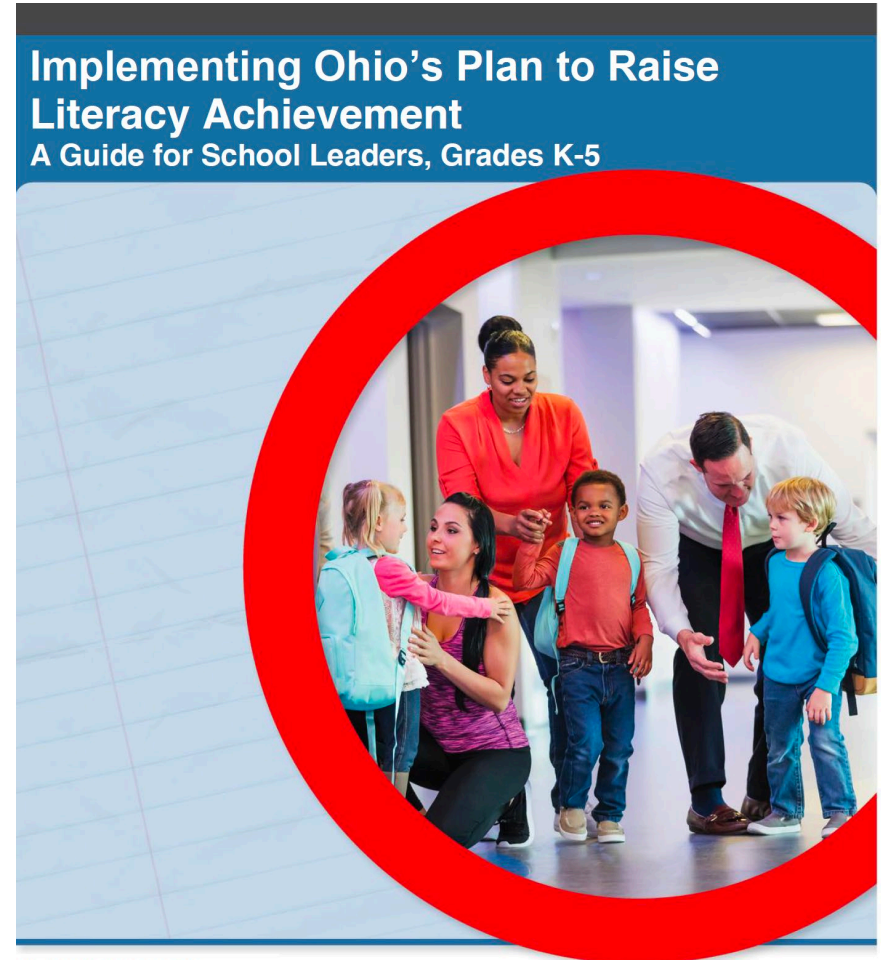
Explicit Instruction: Effective and Efficient Teaching

Anita L. Archer and Charles A. Hughes
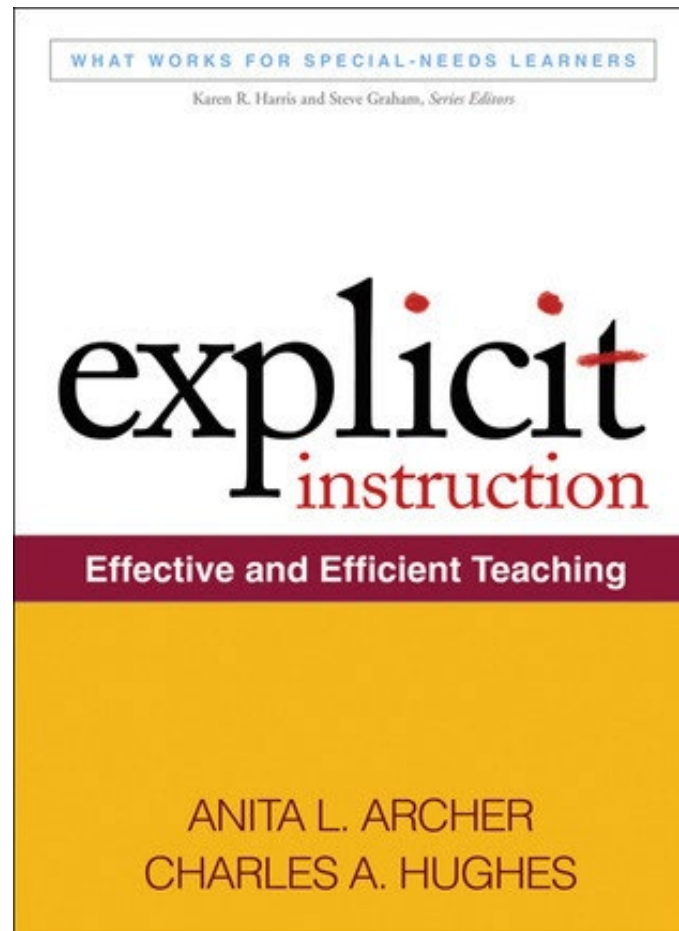
How Teaching Happens
Seminal Works in Teaching and Teacher Effectiveness and What They Mean in Practice
Paul A. Kirschner, Carl Hendrick, &

How We Learn

Stanislas Dehaene
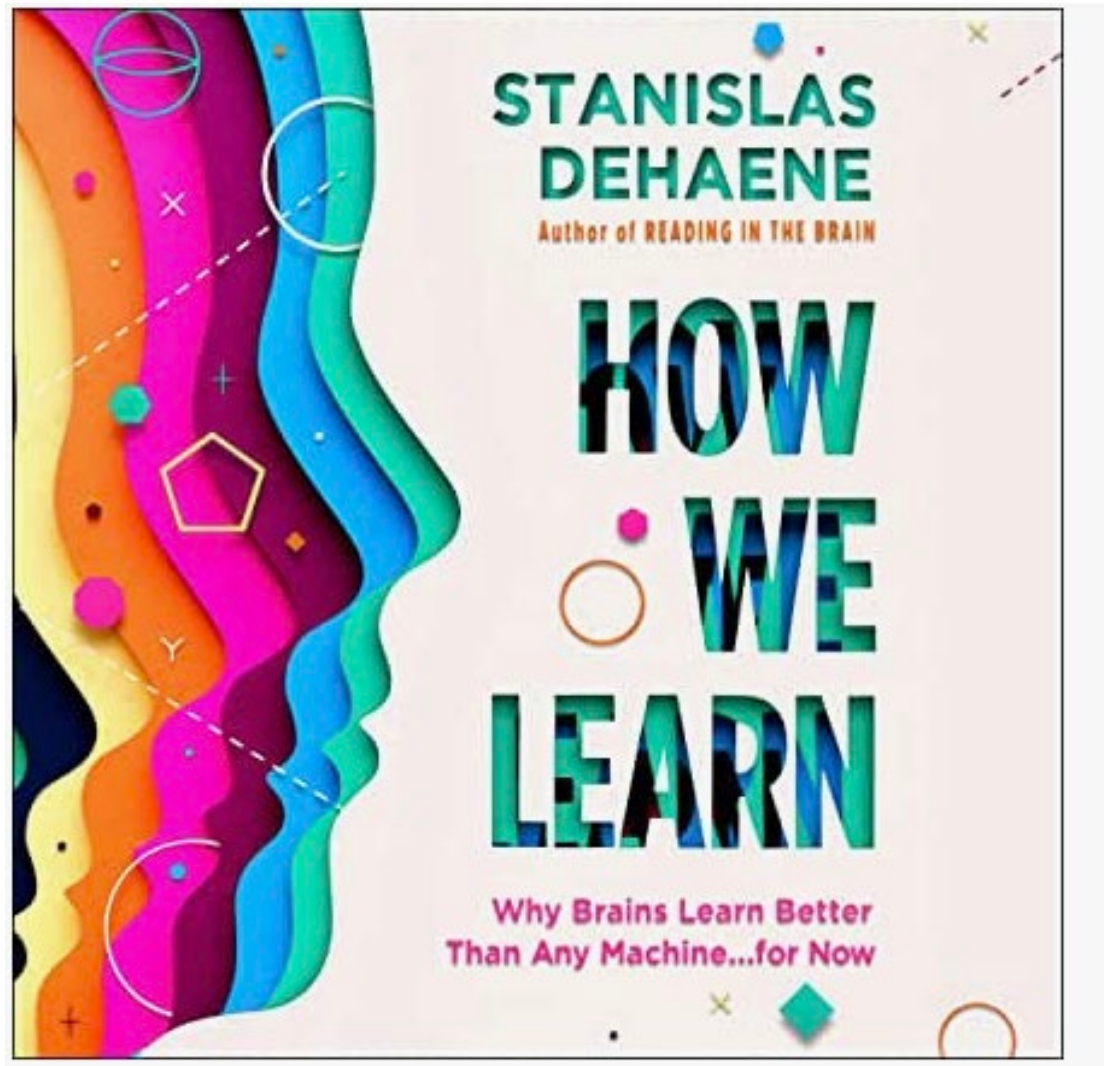
Visible Learning   (New Edition - 2023)

A Synthesis of Over 800 Meta-Analyses Relating to Achievement
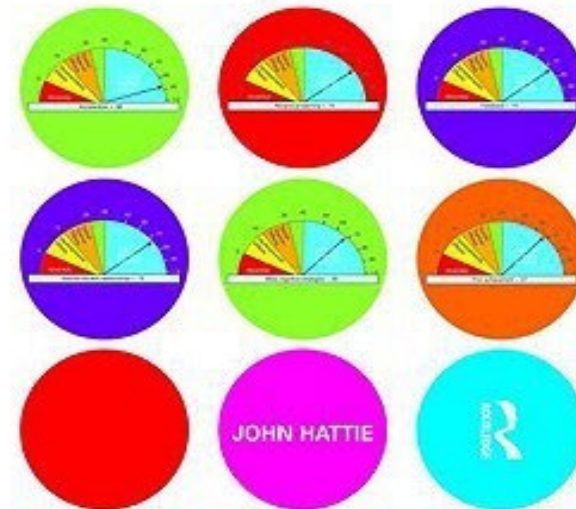
John Hattie

Visible Learning and the Science of How We Learn

John Hattie
Gregory Yates
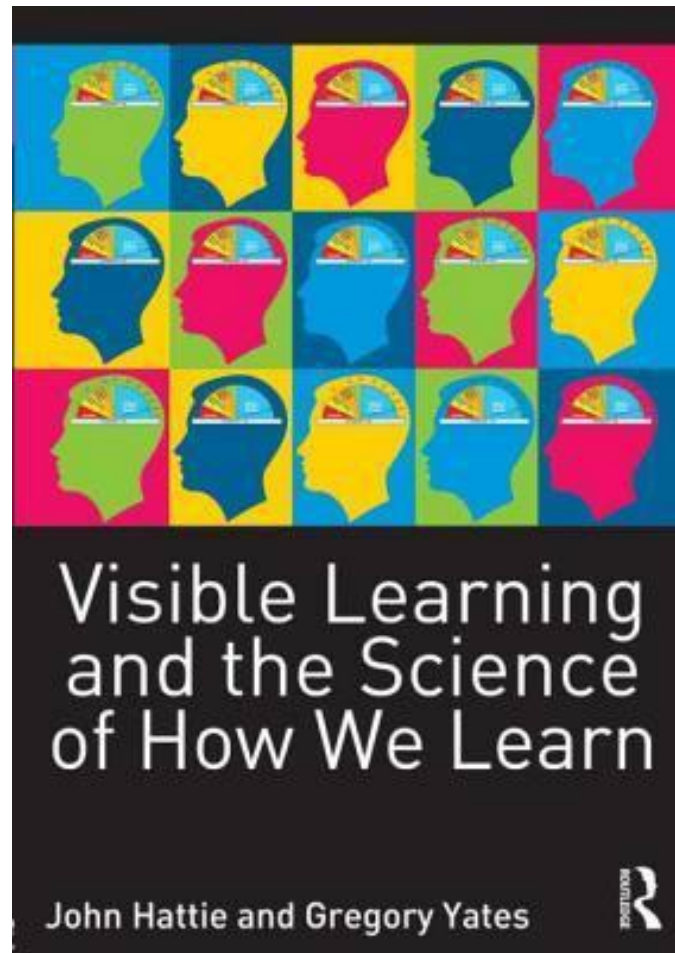
The Hidden Lives of Learners

Graham Nuthall
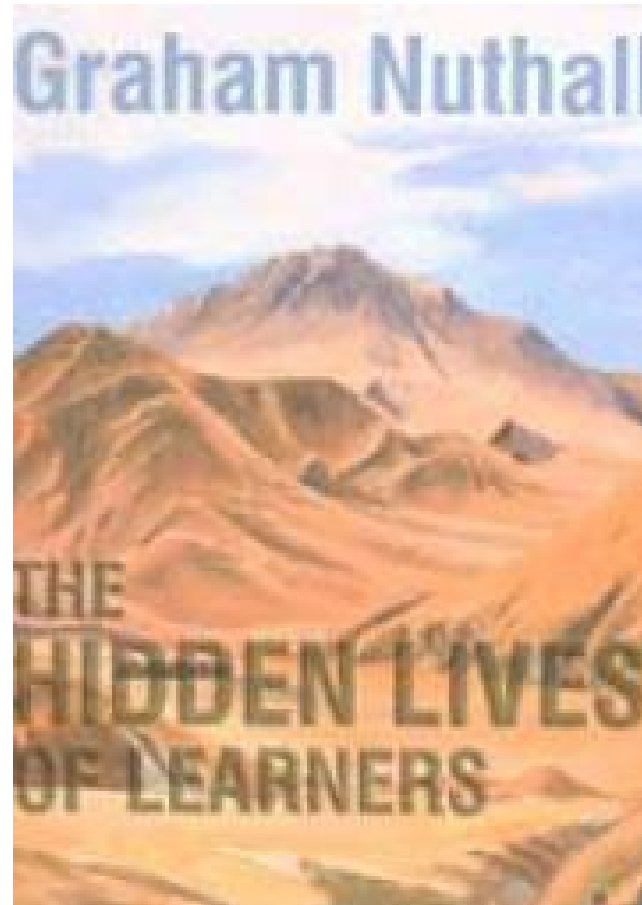
Powerful Teaching   www.retrievalpractice.org

Unleash the Science of Learning

Pooja K. Agarwal

Patrice M. Bain
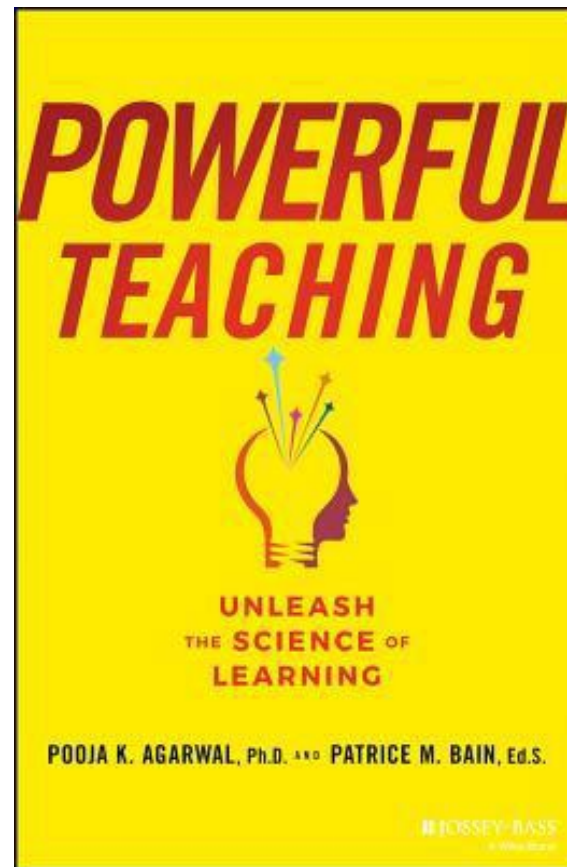
Understanding How We Learn: A Visual Guide   learningscientists.org

Yana Weinstein and Megan Sumeracki
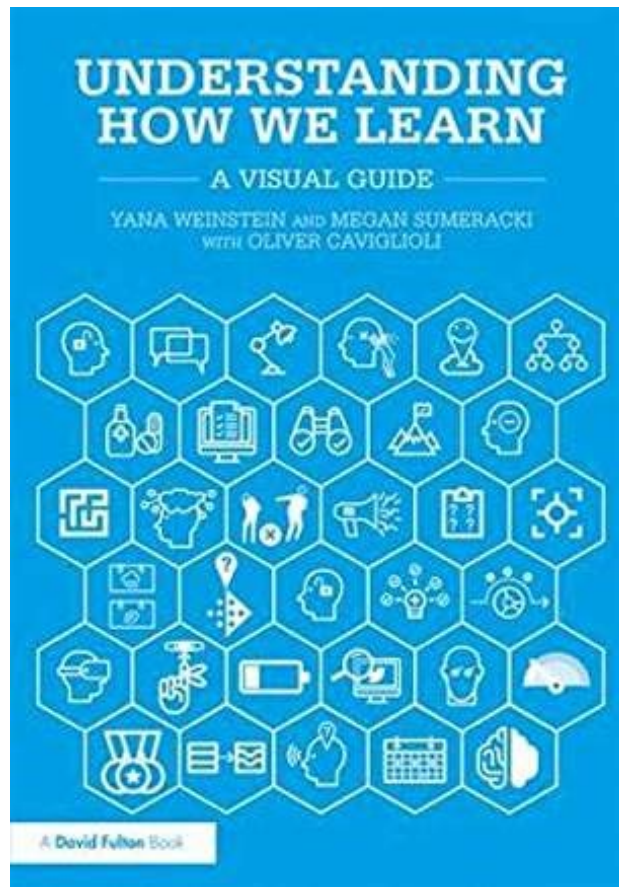
Embedded Formative Assessment

Dylan Wiliam

Creating the Schools Our Children Need

Dylan Wiliam
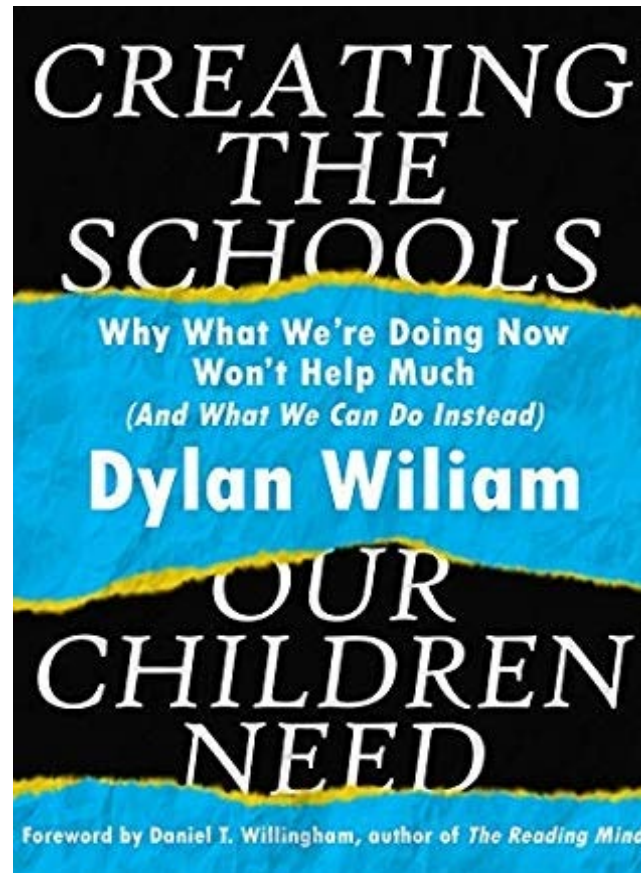
Make it Stick
The Science of Successful Learning

Peter C. Brown
Henry L. Roediger III
 Mark A. McDaniel
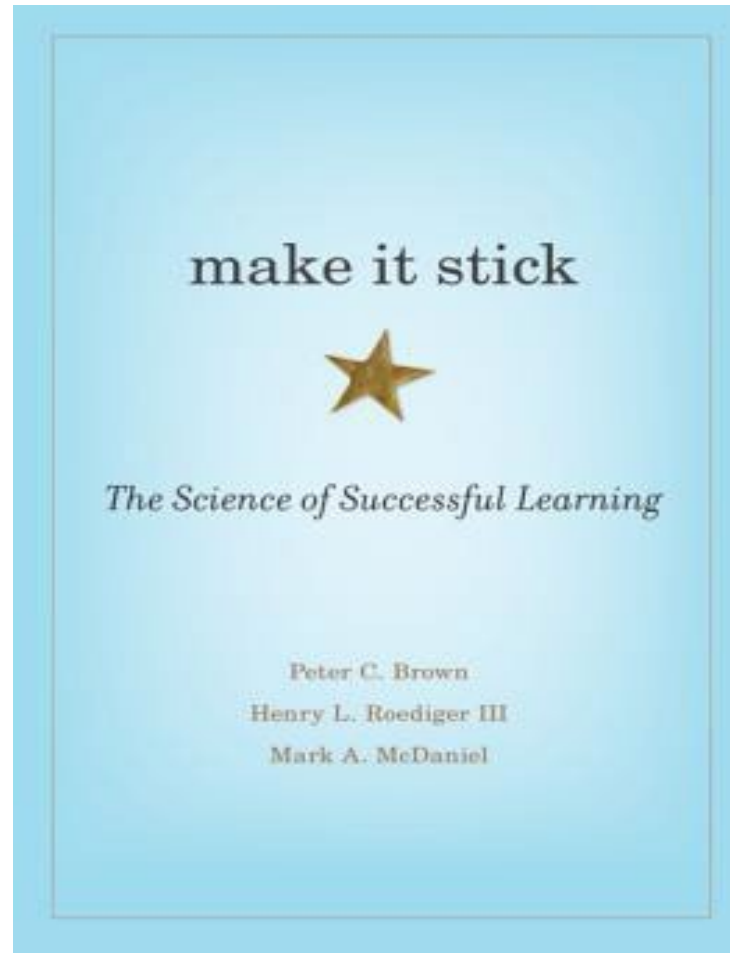
Why Don't Students Like School?
Daniel T. Willingham
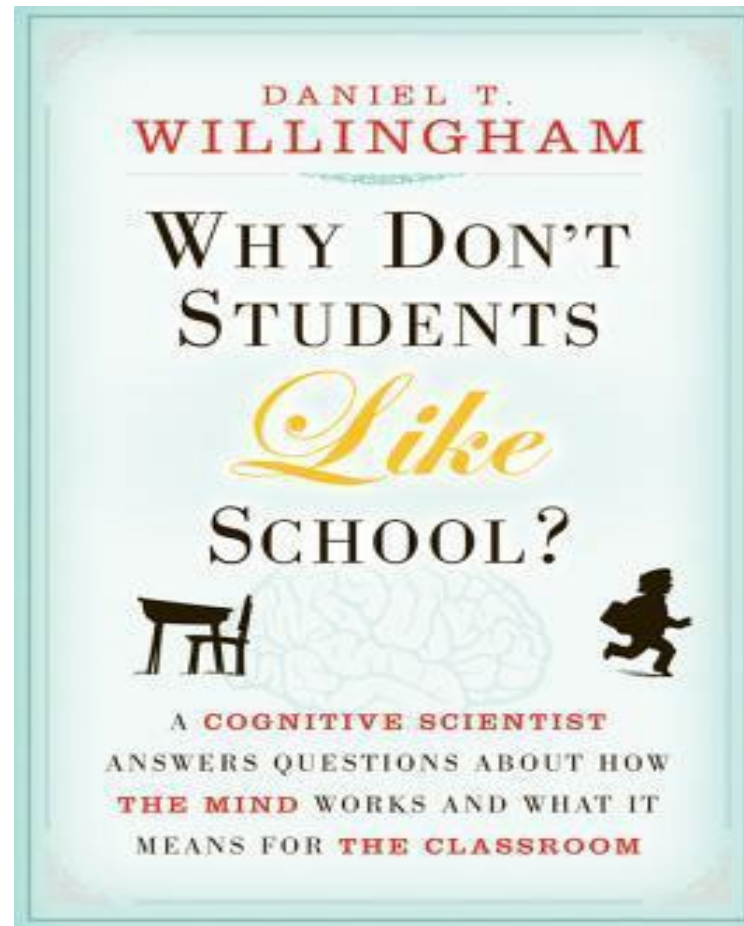
Teach Like a Champion 30: 63 Techniques that Put Students on the Path to College

Doug Lemov, Michael Butler Murray, et al.
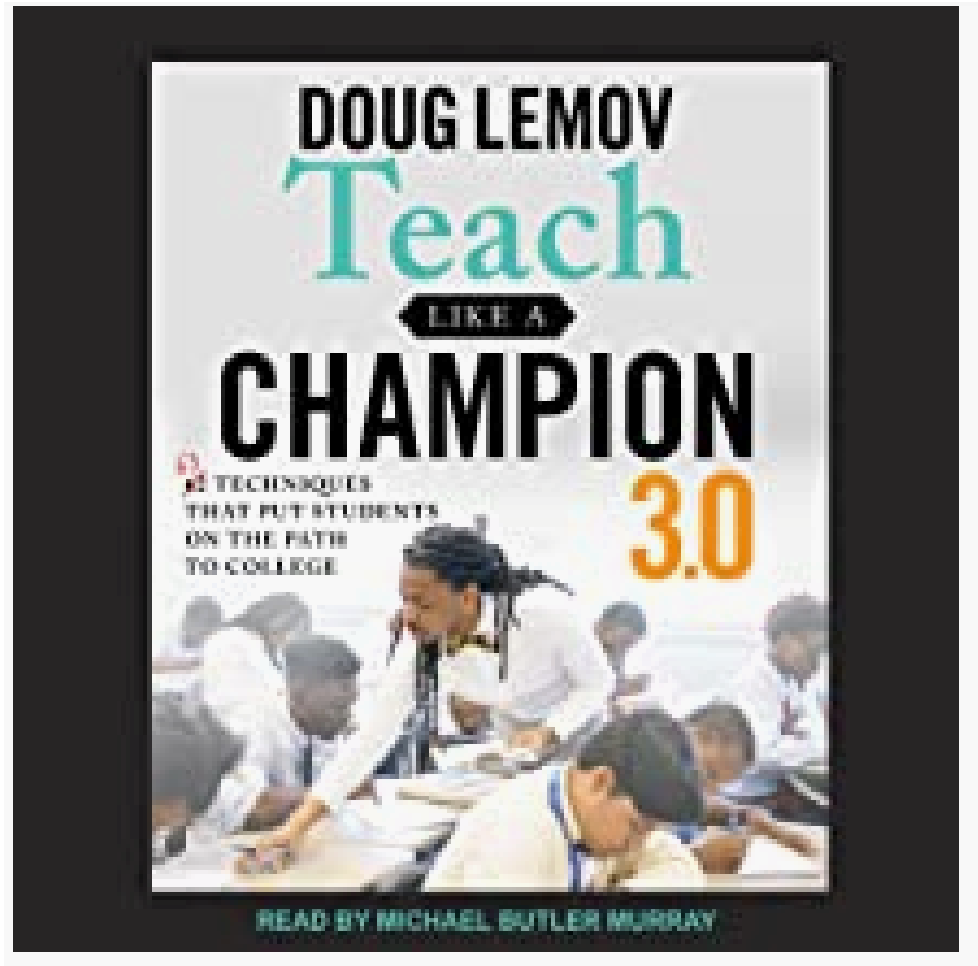
Tackling Attendance Challenges

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

David A. Kilpatrick · R. Malatesha Joshi ·
Richard K. Wagner *Editors*

Reading Development and Difficulties

Bridging the Gap Between Research and Practice

Springer
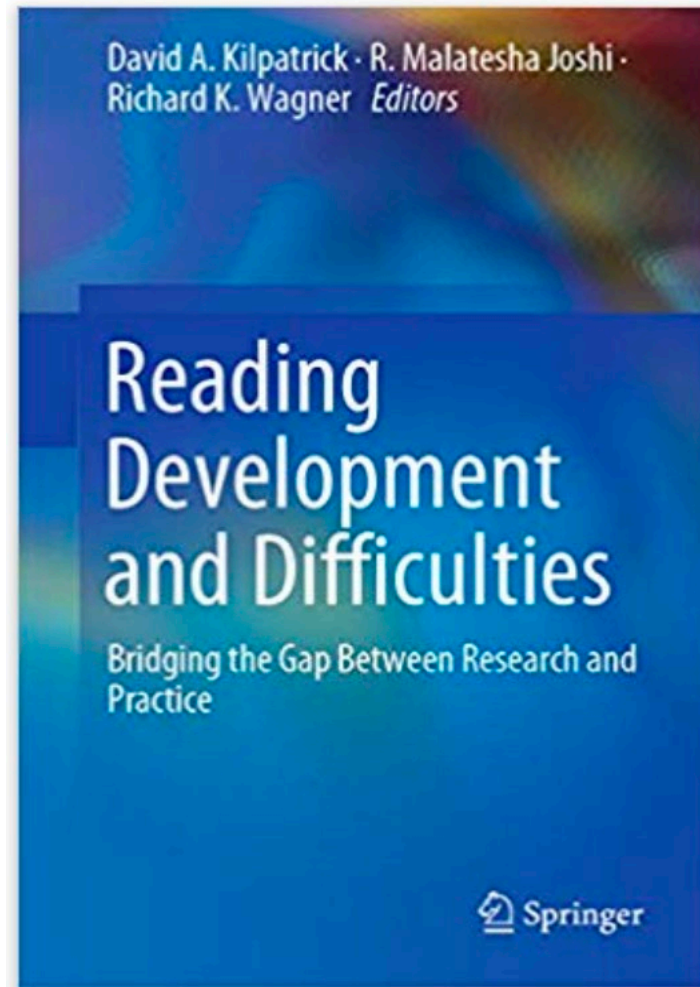
The Reading Mind
A Cognitive Approach to Understanding How the Mind Reads
Daniel T. Willingham

Language at the Speed of Sight
Mark Seidenberg

Teaching Reading Sourcebook
CORE
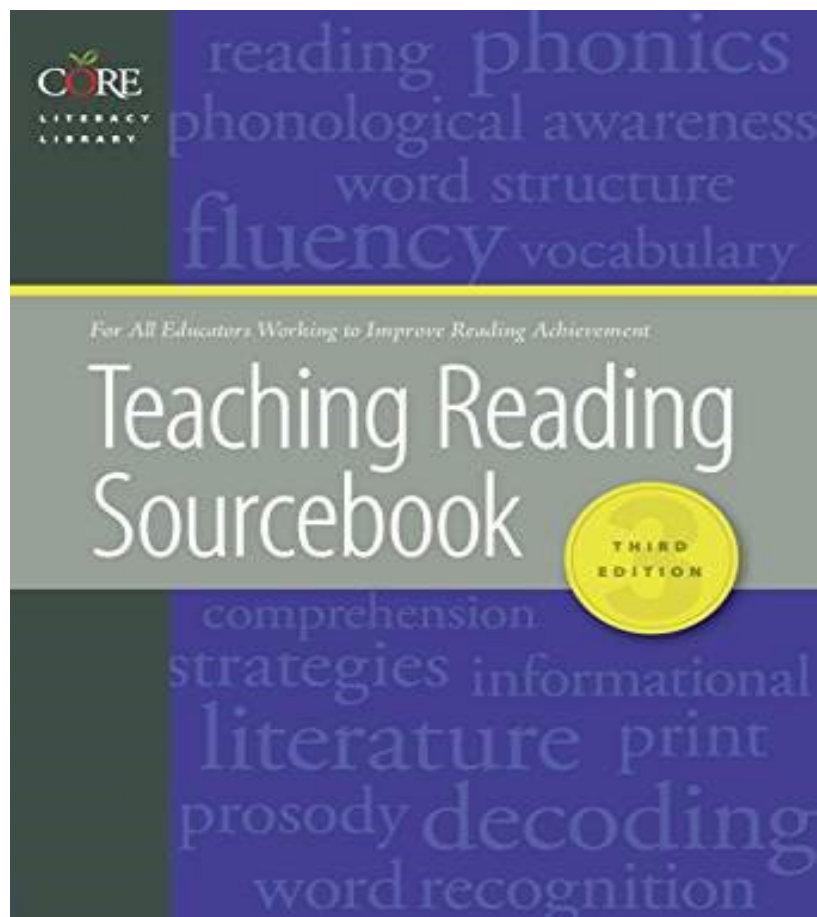
Enhanced Core Reading Instruction

Moving Up! Literacy
University of Oregon
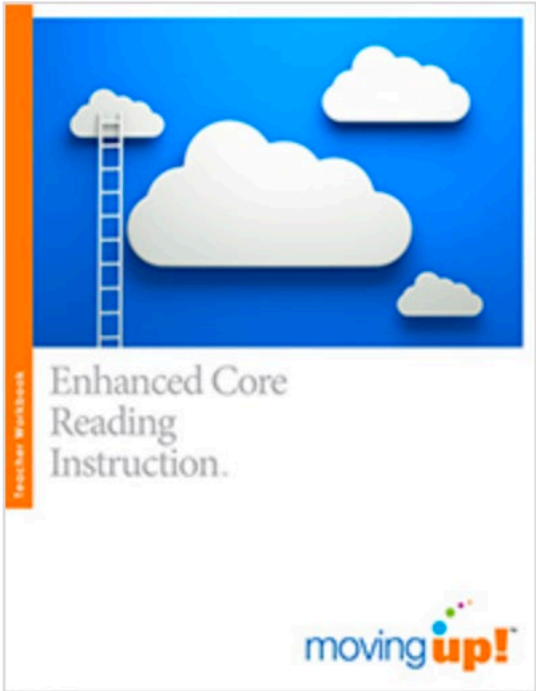
Reading in the Brain: The New Science of How We Read
Stanislas Dehaiene