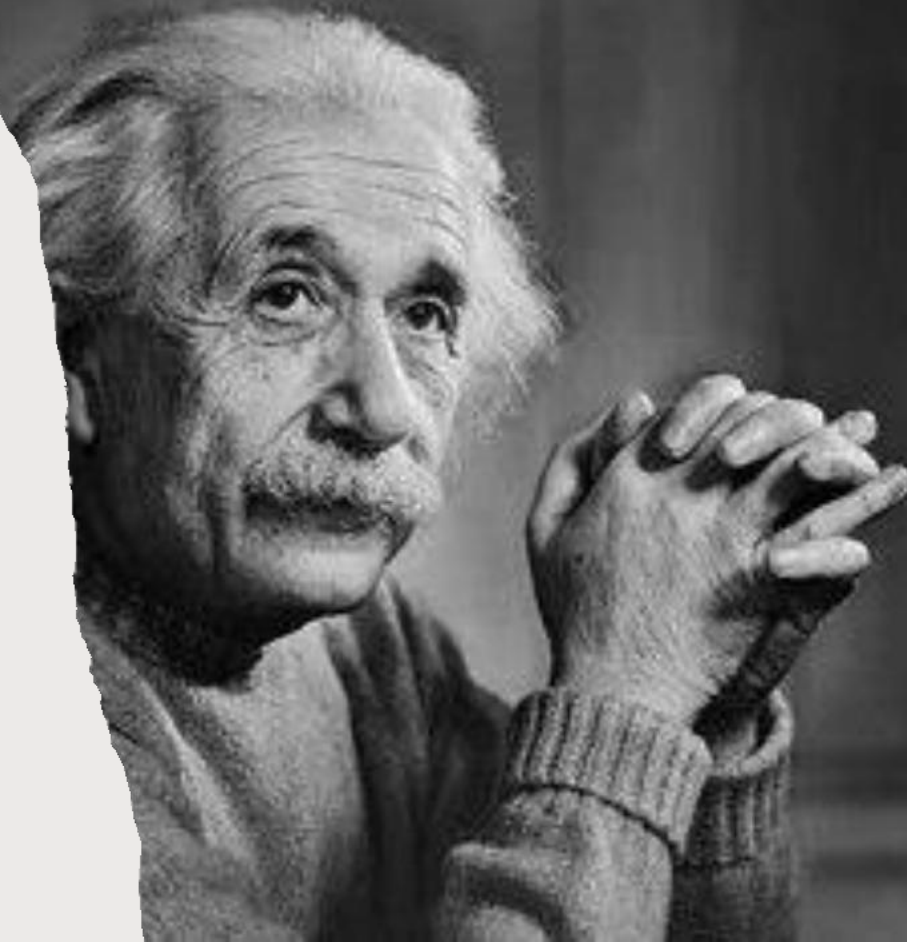# Student Learning and Simplexity

Leading for Learning 2025
Dr. Scott Morrison

If you can't explain it **simply**, you don't understand it well enough.

– Albert Einstein

Simplexity

How complex things can be made simple

Agenda
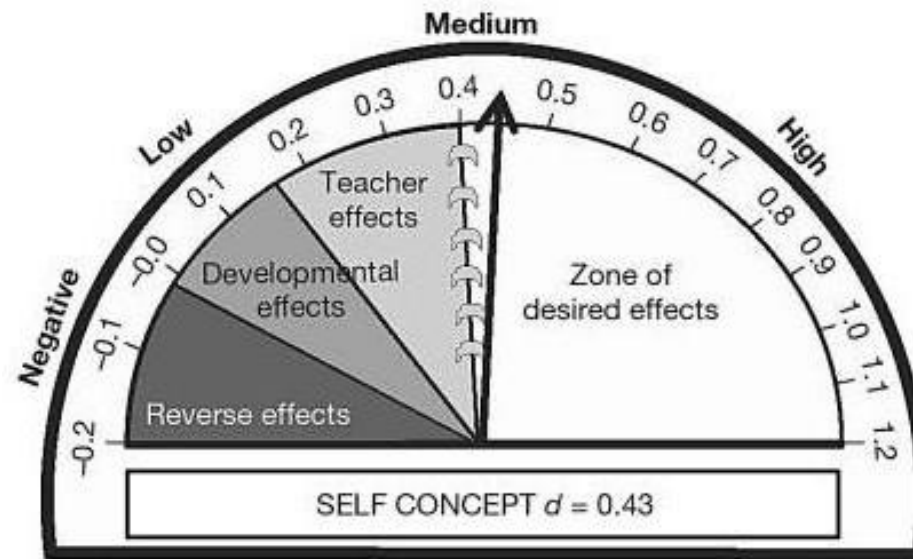
Leadership Styles and Student Achievement

Educational trends over the years

Curriculum Alignment, Scheduled Review, and Formative Assessment

The Rating Game

Focus and Simplexity

Instructional Leadership
vs.
Transformational Leadership

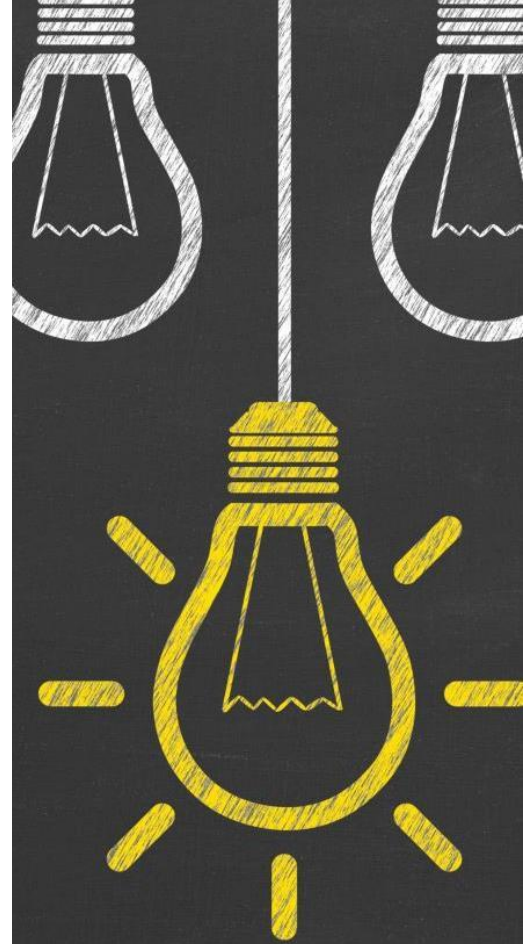Instructional leadership - .42

Transformational leadership - .11

All Leaders – 0.30

Robinson, Lloyd, & Rowe, 2008

What are the Highest
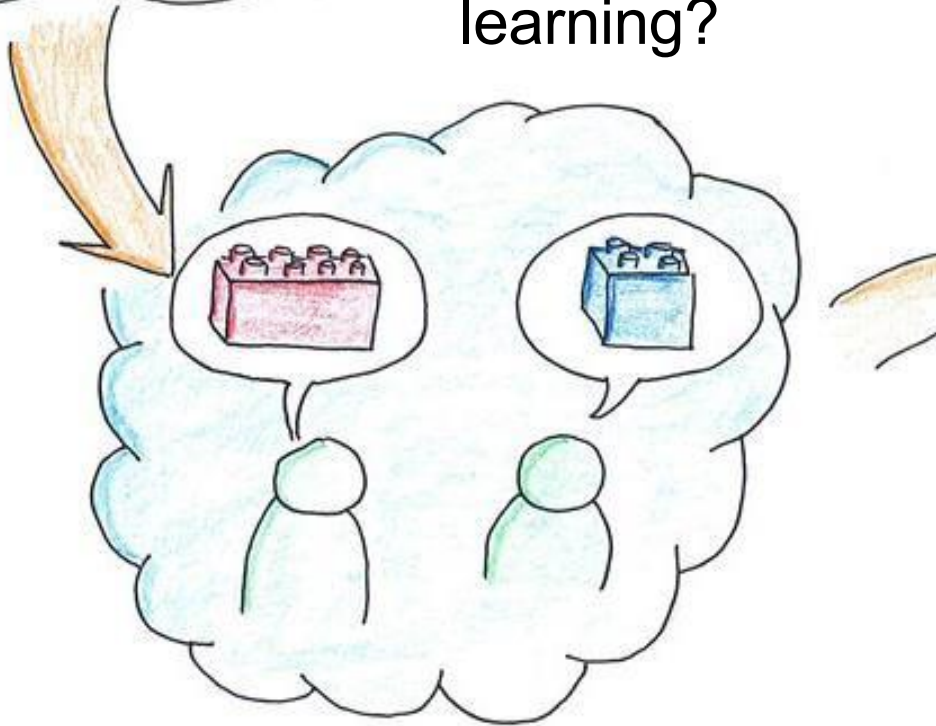Yielding Strategies to
Promote Student Learning ?

100 Years of Educational
Paradigms and
Strategies…aka Complexity

Think, Pair, Share

What influences/strategies promote the highest level of learning?

If every teacher at my school would do the following three things, students would learn at higher levels:

1.

2.

3.

Curriculum Alignment

Distributed Practice

Formative
Assessment

Simplexity

Curriculum Alignment

ENGLISH LANGUAGE ARTS

INTRODUCTION

Clear student learning outcomes and high learning standards in the program of studies are designed to prepare students for present and future language requirements. Changes in society and technology have affected, and will continue to affect, the ways in which people use language to think, to communicate and to learn. Students must be prepared to meet new literacy demands in Canada and the international community. The ability to use language effectively enhances student opportunities to experience personal satisfaction and to become responsible, contributing citizens and lifelong learners.

The Importance of Language

The Nature of Language

Language is the basis of all communication and the primary instrument of thought. Composed of interrelated and rule-governed symbol systems, language is a social and uniquely human means of exploring and communicating meaning. As well as being a defining feature of culture, language is an unmistakable mark of personal identity and is essential for forming interpersonal relationships, extending experiences, reflecting on thought and action, and contributing to society.

Language Acquisition and Development

Language learning is an active process that begins at birth and continues throughout life. Children learn language as they use it to communicate their thoughts, feelings and experiences; establish relationships with family members and friends; and strive to make sense and order of their world. They may come to school speaking more than one language or learn another language in school. It is important to respect and build upon a child's first language. Experience in one language will benefit the learning of other languages.

In their early years, children develop language informally. Long before they understand explicit language rules and conventions, children reproduce the language they hear, and use language to construct and to convey new meaning in unique ways. Later, language learning occurs in specific contexts for specific purposes, such as learning about a specific subject, participating in the community, and pursuing work and leisure activities.

Language development is continuous and recursive throughout a student's life. Students enhance their language abilities by using what they know in new and more complex contexts and with increasing sophistication. They reflect on and use prior knowledge to extend and enhance their language and understanding. By learning and incorporating new language structures into their repertoire and using them in a variety of contexts, students develop language fluency and proficiency. Positive learning experiences enable students to leave school with a desire to continue to extend their knowledge, skills and interests.

The Instruction, Curriculum, and Assessment Connection

Instruction

What we teach

Curriculum

What we are required to teach

Assessment

What we assess
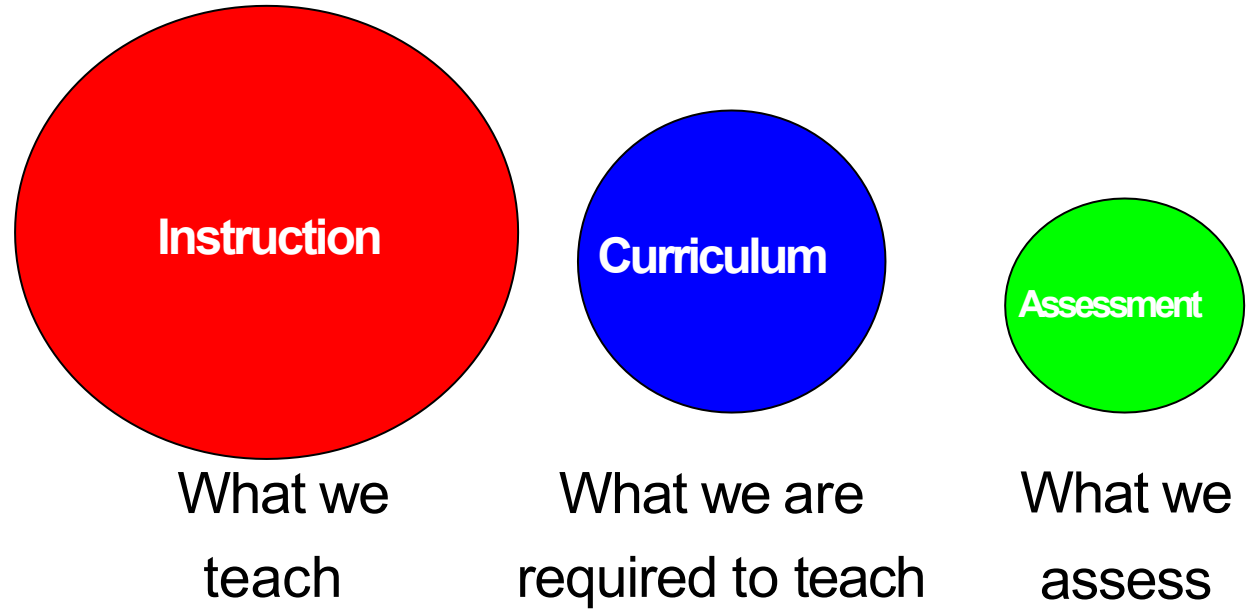
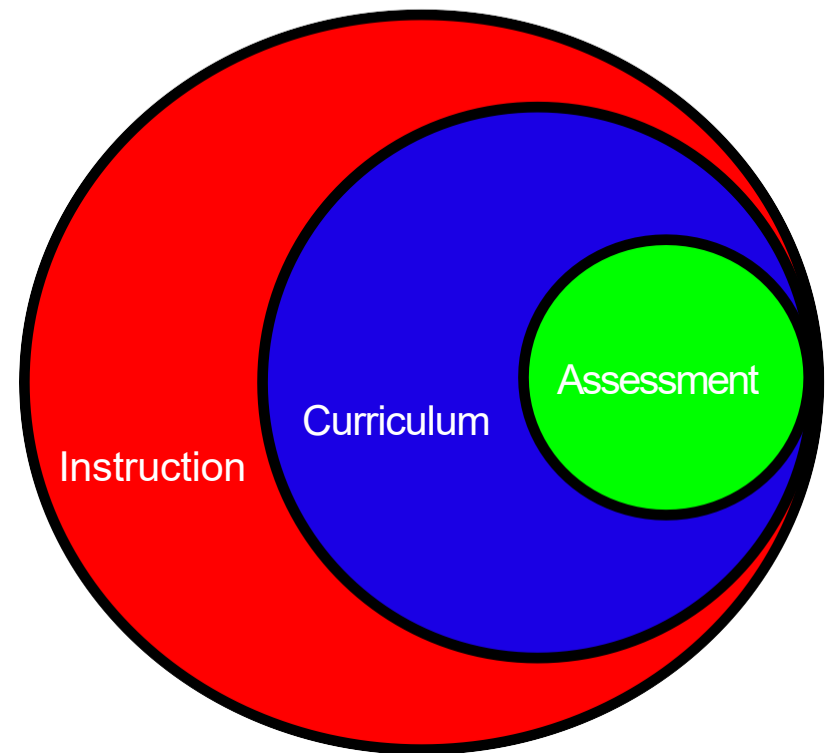# The University Experience

Sociology 1000
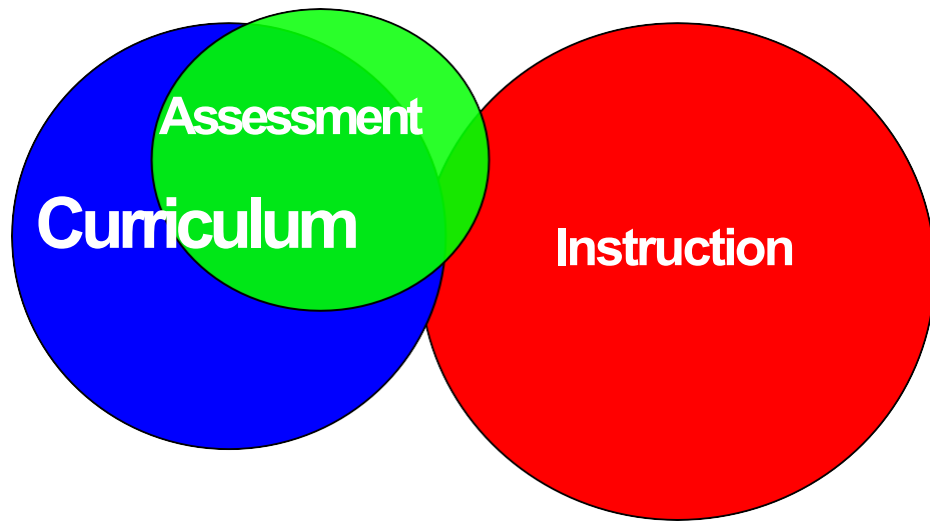
What did he assess?

Effective Curriculum Alignment

Teach all the curriculum.

Teach knowledge and skills above and beyond the curriculum (instruction).

Asses what you teach (instruction) and, especially, what is in the curriculum.

The St. John's Story

- Principal wants proof that "failure is not an option" strategies work. He expected results, now! Social PAT year.

- Three units….six textbooks. **Solution… a study guide and a skills guide.** Added PAT questions later.

- **Discovery #1:** Concepts and not Facts:
  Textbook: Inventions and inventors of the Industrial Revolution in Britain and America.
  Curriculum: Domestic System > Mechanization > Industrialization > Urbanization.

- **Discovery#2:** Poor Alignment: Quality of Life – Physical

- **Discovery #3:** How the other half lived without curriculum alignment while teaching Social 9 at Trinity…Tsars, Tsars, Tsars.

Social Studies 30

SS 30: The Contemporary World

Topic A: Political and Economic Systems

Theme 1: Political and Economic Systems in Theory

Curriculum Objectives

a) Ideologies contain beliefs and ideas about human nature and are used to explain and justify political and economic systems.

Ideology - A systematic set of beliefs that provides a fairly thorough picture of the world that a group of people accepts as true. The key beliefs around which a political or economic system is centered. In general, there is a strong ideological difference between those who value individualism and collectivism. For example, the capitalist ideology values individualism and includes private property, free choice, and individualism, whereas communism values economic equality and collectivism. *(Global Systems - page 9)*

Individualism - A value held by supporters of a political or economic system that allows the individual goals to be emphasized over the needs of society. Capitalists and those who believe in democracy would support this value. Adam Smith's economic ideas justify this value because they emphasize the idea that when people pursue their own goals it will benefit all of society, because they work to provide the best products and services as they seek to make individual profit. Democratic political systems are aligned with this value because people have the freedom to choose the representatives they like the best. *(Global Systems - page 11)*

1. The belief that an economy must be based on the price system in order to function successfully places the greatest emphasis upon which of the following values?

A Empathy

B. Cooperation

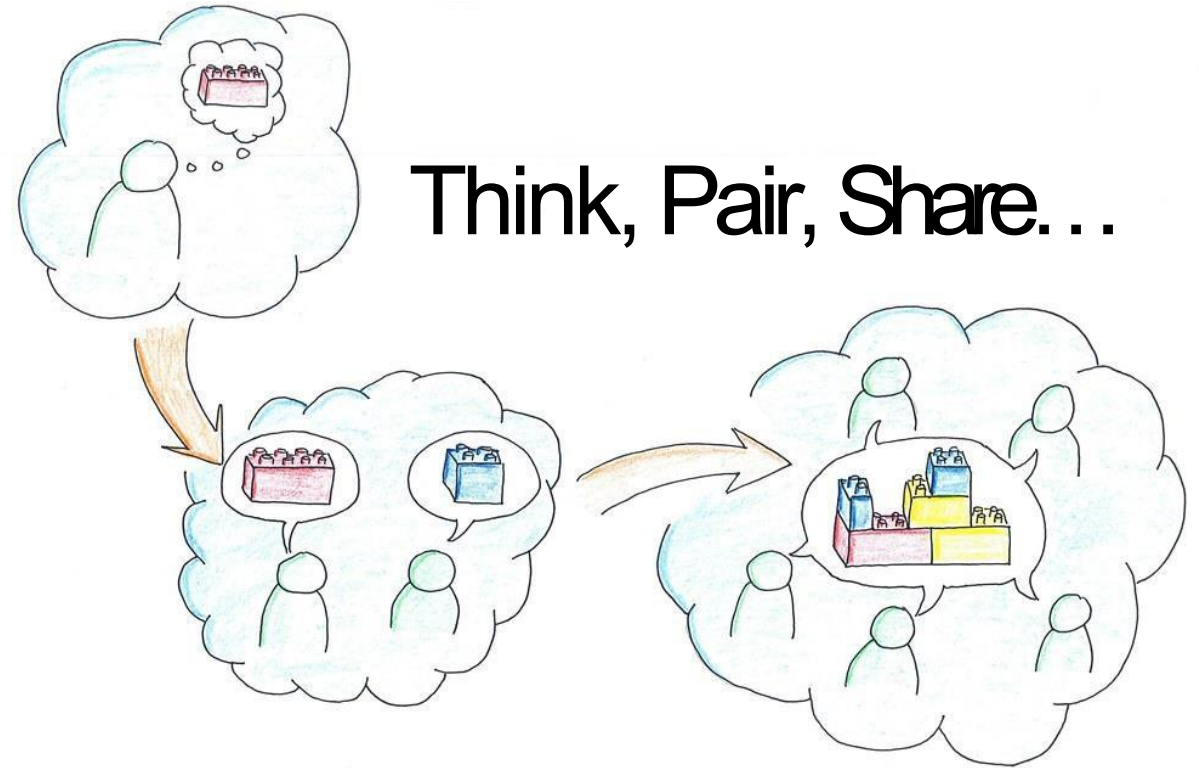C. Individualism

D. Social consciousness

Conceptual Knowledge Defined

Textbook References

Assessment of Objective

To what extent do your teachers treat the curriculum as the genesis of everything that is taught?

Think, Pair, Share...

Application to English Language Arts

Technological Process:

- Identify 10 key outcomes: e.g. Preview complex texts for intent, content, and structure to help set purpose for reading.
- Identify the best practices or activities that allow students to meet those outcomes. Illustrative examples give basic ideas. Develop more.
- Teach outcomes using identified best practices and activities over and over and over…spiral curriculum.

"Language Arts, more than any other discipline, has lost its way. It is in desperate need of clarity. To that end, we need to simplify and reconceive standards." (Schmoker, 2011)

Naturalistic Process:

- Develop high quality, motivational, and stimulating learning activities.
- Block out a host of these learning scenarios and then determine which outcomes are met intentionally or ostensibly.

Curriculum Support Documents

- Develop them collegially in teams
- Start with each curriculum outcome and then:
  - define it
  - rephrase it in student-friendly language
  - illustrate it using an example
  - Develop an achievement indicator
  - Identify a resource that can be used to teach it.

CTR's *Curriculum Support Documents*

Mathematics Curriculum Support Documents

Christ The Redeemer CATHOLIC SCHOOLS

Curriculum Support Documents – DRAFT Grade 1

Organizing Idea	Quantity is measured with numbers that enable counting, labeling, comparing, and operating		
Guiding Question	In what ways can parts and wholes be related?		
Learning Outcome	Students recognize one-half as a part-whole relationship		
	Knowledge	**Understanding**	**Skills and Procedures**
	One half can be one of two equal groups.	In a quantity partitioned into two equal groups, each group represents one-half of the quantity.	Identify one-half in familiar situations. Partition an even set of objects into two equal groups.

Student Language (Key vocabulary/concepts to use with students)/I can statements

One-half, part, whole → I can show one-half of a pizza, cookie or a shape.
Fair share → I can share objects into 2 equal groups.

Achievement Indicators

- Cut or fold a whole into 2 equal parts representing a half.
- Describe everyday situations where one-half is used.
- Sort an even set of objects into 2 equal groups.

Resources	Building Background, Gaps, or Enrichment (Optional)
Mathology Number - Activity 22	

Illustrative Example Infusing Competency Progressions

Chocolate Bar Sharing: An Open Mathematical Task (p 230 TMWM) Students demonstrate how to **fairly share** a chocolate bar(s) between 2 people. (Problem solving, Citizenship, Critical Thinking)

How could you fairly share a chocolate bar between 2 people?
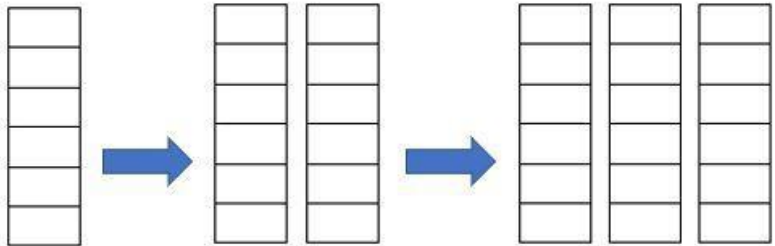**How many pieces will each person get?**
How do you know it is a fair share?
Explain which is the best way to share?
Start with 1 bar, then 2 bars, then 3 bars
  - With second step, do students share the larger piece? Break it up
Remove lines and repeat.

Curriculum

Mathematics Curriculum Support Documents

Student Language (Key vocabulary/concepts to use with students)/I can statements

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Resources

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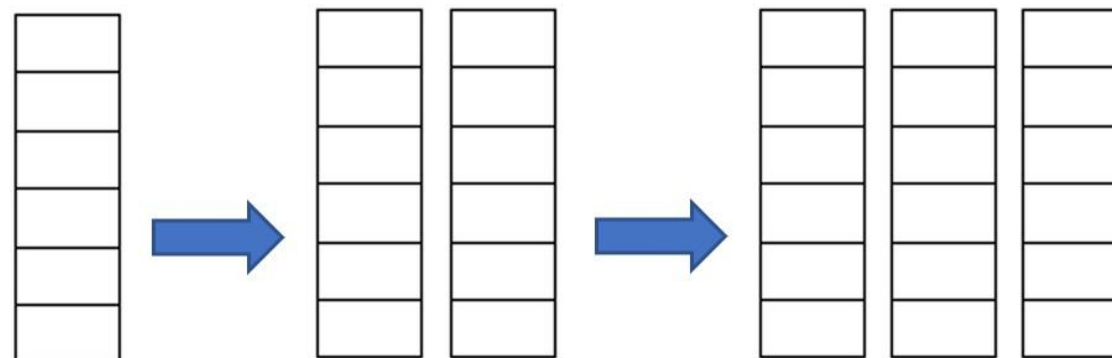
How many pieces will each person get?

How do you know it is a fair share?

Explain which is the best way to share?

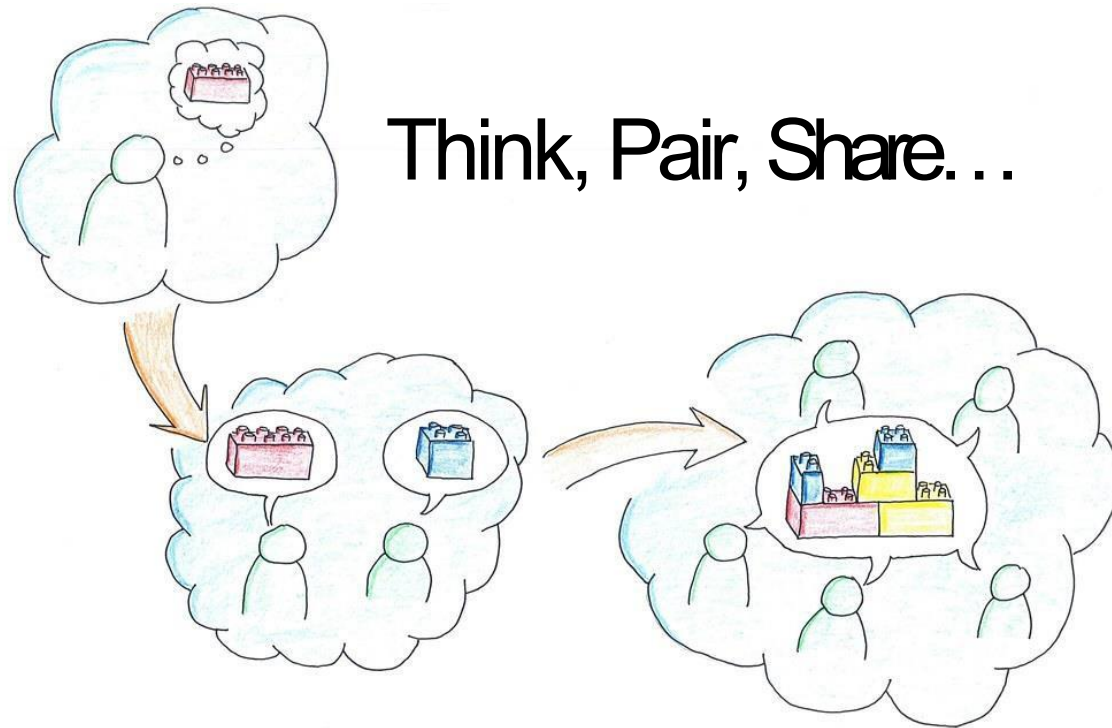Start with 1 bar, then 2 bars, then 3 bars

- With second step, do students share the larger piece? Break it up

Remove lines and repeat.

Guiding Question	In what ways can listening and speaking be applied to develop oral communication?	Learning Outcome	Students develop listening and speaking skills through sharing stories and information.

This outcome means that students will:	Deepen Student Thinking:

Knowledge	Understanding	Skills & Procedures	High Yield Instructional Strategies (Mini-lessons, Routines)	Concepts
Listening involves maintaining attention and focus. Listening includes asking and responding to questions. Discussions involve listening and contributing. Listening processes can look different for individuals or within communities.	Listening is an active process that supports understanding.	Ask questions to clarify information during discussions. Respond orally to questions during discussions. Contribute to discussions as a listener and speaker. Listen to and follow two-step instructions.	**Resources**	

English Language Arts Curriculum
Support Documents

Think, Pair, Share…

How did your division prepare teachers to implement the new curriculum? What improvements can be made for 7-9?

Distributed Practice AKA – Deliberate Practice

Distributed Practice –is the provision of multiple practice periods over a period of time.

Without practice to reinforce it, 80% of new information is forgotten within 24 hours.

With periodic reviews spread out over an extended period of time, such as four or five months, nearly all new information can be retained.

The effect is cumulative: the more information a person has stored in memory, the easier it is for him or her to learn new information. This is because more items of information are available from which to form memory connections.

Deliberate Practice

A learning technique that involves extensive engagement in relevant practice activities in order to improve particular aspects of performance.

Deliberate practice often refers to challenging, effortful repetition, often adjusted through feedback that is purposeful and systematic.

While regular practice can include much repetitions, deliberate practice requires focused attention and is conducted with the specific goal of improving performance without immediate reward.

St. John's Story…Continued

- Curriculum Alignment Completed: Concepts defined, and skills broken into small chunks through scaffolding. Iterative process.

Domestic System - The production of products by hand in the home. This is how they produced goods before industrialization. The domestic method of production required highly skilled craftsmen, and they produced high quality products. The domestic system began to die out when mechanization and the **Factory System** began producing products more quickly and cheaply while using unskilled labourers. Though the factory system offered speed and low prices, the individuality, quality and care that was put into domestically produced products was gone.

Writing an Essay Introduction:

Identify issue.

State competing sides and their values.

State your position.

- Teach exact curriculum concepts.

- Review. Review. Review….Concepts. **Scaffold and add to schemas about concepts at hand.** (This is remediation and enrichment combined).

- Practice. Practice. Practice…..Skills such as essay writing and analysis and evaluation of sources (charts, graphs, primary sources, cartoons, maps, etc.)

The Effects of Practice

Meta-synthesis	Focus	Average Effect Size	Robustness Index
Hattie, 2024	Deliberate Practice	.49	3
Hattie, 2024	Space vs Massed Practice	.62	5

Implementation for Declarative x 3

Day 1	Day 2	Day 3	Day 4	Day 5
O1	O2 **O1**	O3 O2 **O1**	O4 O3 O2 **O1**	O5 O4 O3 O2

Day 6	Day 7	Day 8	Day 9	Day 10
O6 O5 O4 O3 **O1**	O7 O6 O5 O4	O8 O7 O6 O5	O9 O8 O7 O6	O10 O9 O8 O7 **O1**

Implementation for Procedural x24

Iterative Skill Strategies

Use skill building pedagogies over and over again with different content inserted.

Example: Critical Thinking = Analysis of political cartoons, graphs, charts, etc. Creativity = Brainstorm multiple solutions to a problem.

Task Analysis

Break the task into its component parts and teach little by little.

Example: Skill of essay writing = thesis, opposing positions and values, statement of one's own position and underlying values.

Scheduled Review and Bloom's Taxonomy…

anything that is taught can be reviewed

Knowledge – Recall social studies concepts.

Comprehension – Explain science concepts.

Application – Guided practice of the completion of math problems.

Analysis – Analyze messages of social studies political cartoons.

Synthesis – Formulate a hypothesis.

Evaluation – Evaluate the quality of an idea or piece of work.

Distributed Practice

...best practices

- Wait time of 5 to 7 seconds

- Insist on high volunteerism

- Periodically call on non-volunteers

- Use turn-and-talk to prime the pump about new material

- Lower Level (knowledge/comprehension) first

- Higher level (analysis, synthesis, evaluation) second

- Skill review is like large group guided practice (I do, **we do,** you do)
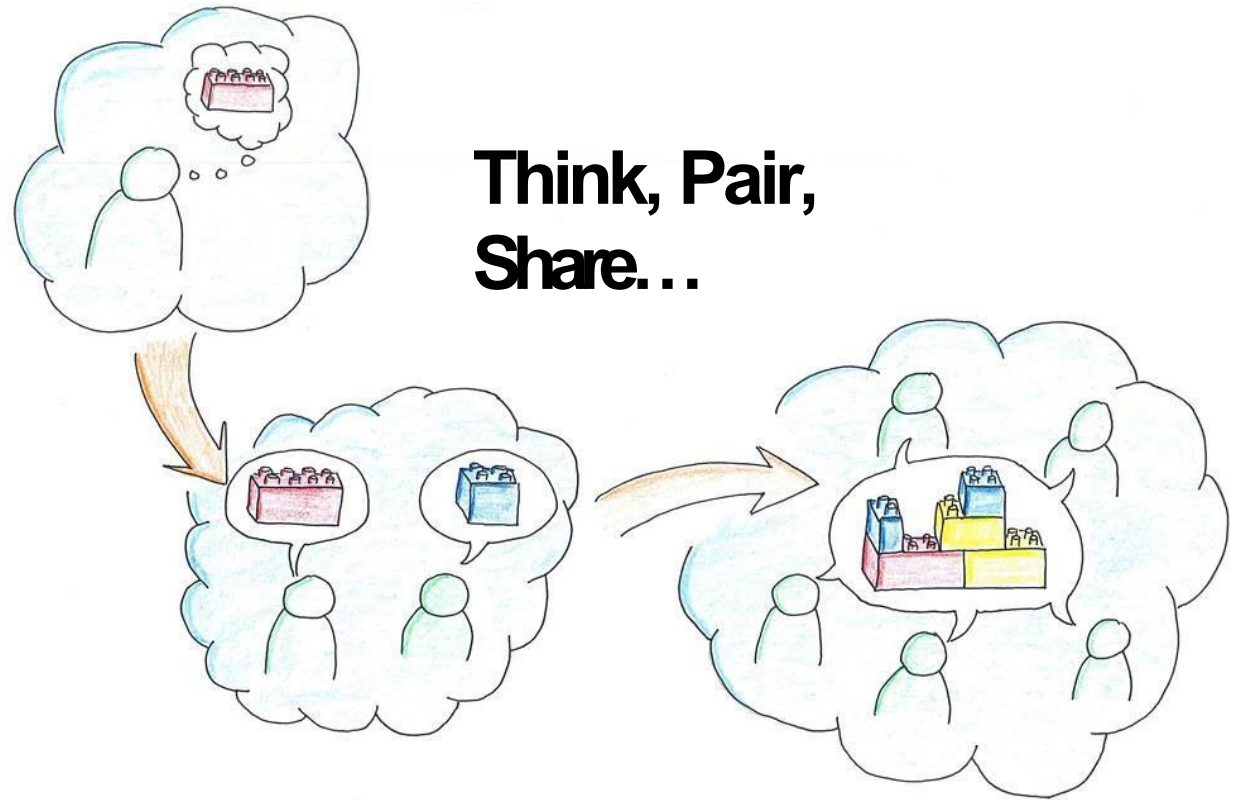
Massed Practice

When exposed to distributed practice or massed practice, the students receiving _____ _____ performed at the highest level.

What are the reasons for, or caveats about, the prediction you made?

Think, Pair, Share…
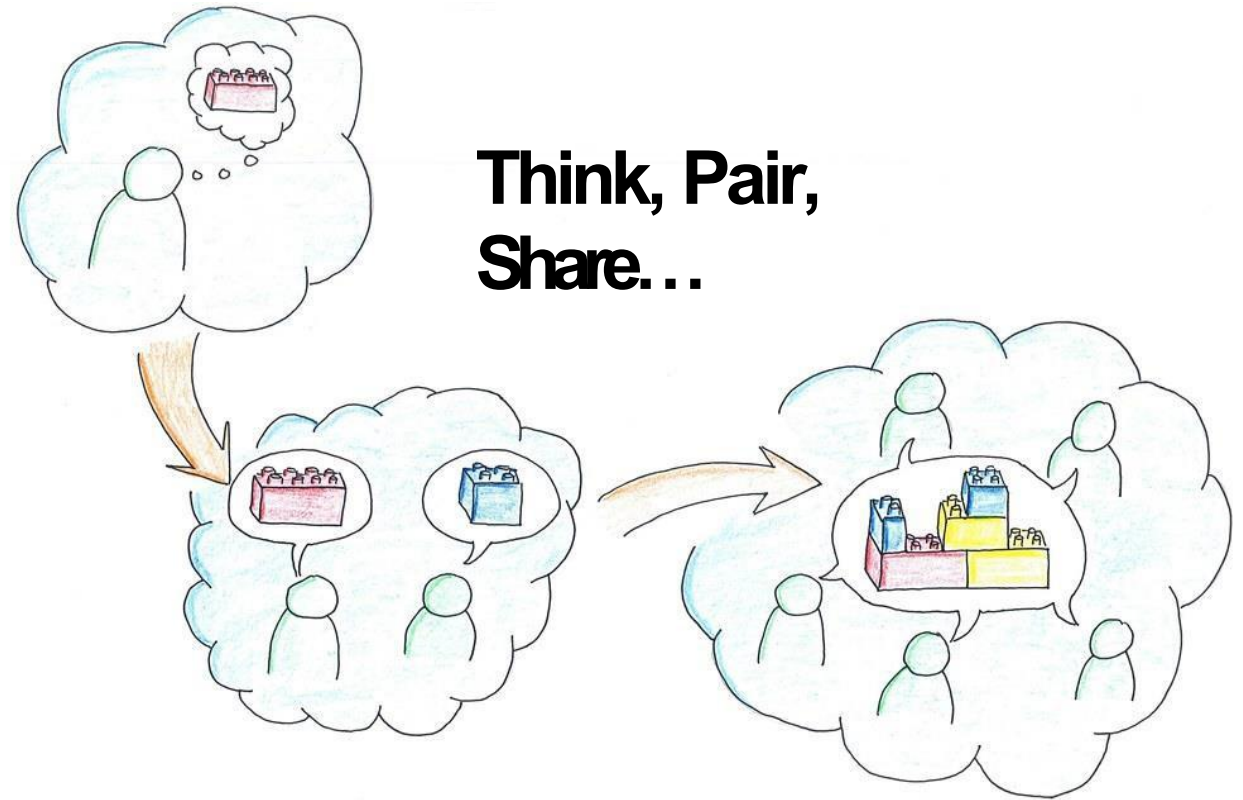
To what extent do your teachers make review and practice and intentional part of instruction?

Think, Pair, Share…

Frequent Formative Assessment

Formative versus Summative.

Formative for growth and Summative for grades.

Research about impacts of Frequent Formative Evaluation (Marzano, 2007).

| Number of Assessments over 15 Weeks	Percentile Gain
0	0
1	13.5
5	20
10	22.5
15	24.5
20	26
25	28.5
30	29

St. John's Story...Continued

- Identified curriculum concepts and skills.

- Reviewed and practiced.

- Assessed every day with review.

- Assessed every week with a short criterion referenced concept quiz. Criterions were curriculum concept definitions and skill demonstrations (e.g. introductory paragraph construction; source analysis of political cartoons, charts, and graphs).

- Used the results to inform my instructional decisions.

- So what happened on the PAT that year?

High Yield Strategies
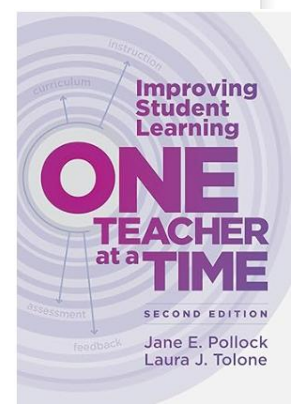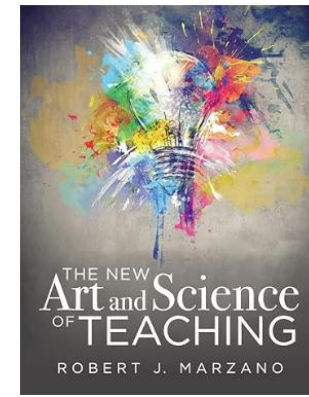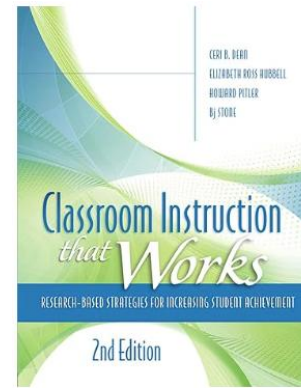
Resources for generic strategies, applicable to all grade levels and subject areas:

- Classroom Instruction that Works – Marzano (2012)
- The New Art and Science of Teaching – Marzano (2017)
- Focus – Schmoker (2018)
- Improving Student Learning One Teacher at a Time – Pollock (2020)
- Visible Learning – Hattie (2023)
- [Teaching and Learning Toolkit](#) (2024)
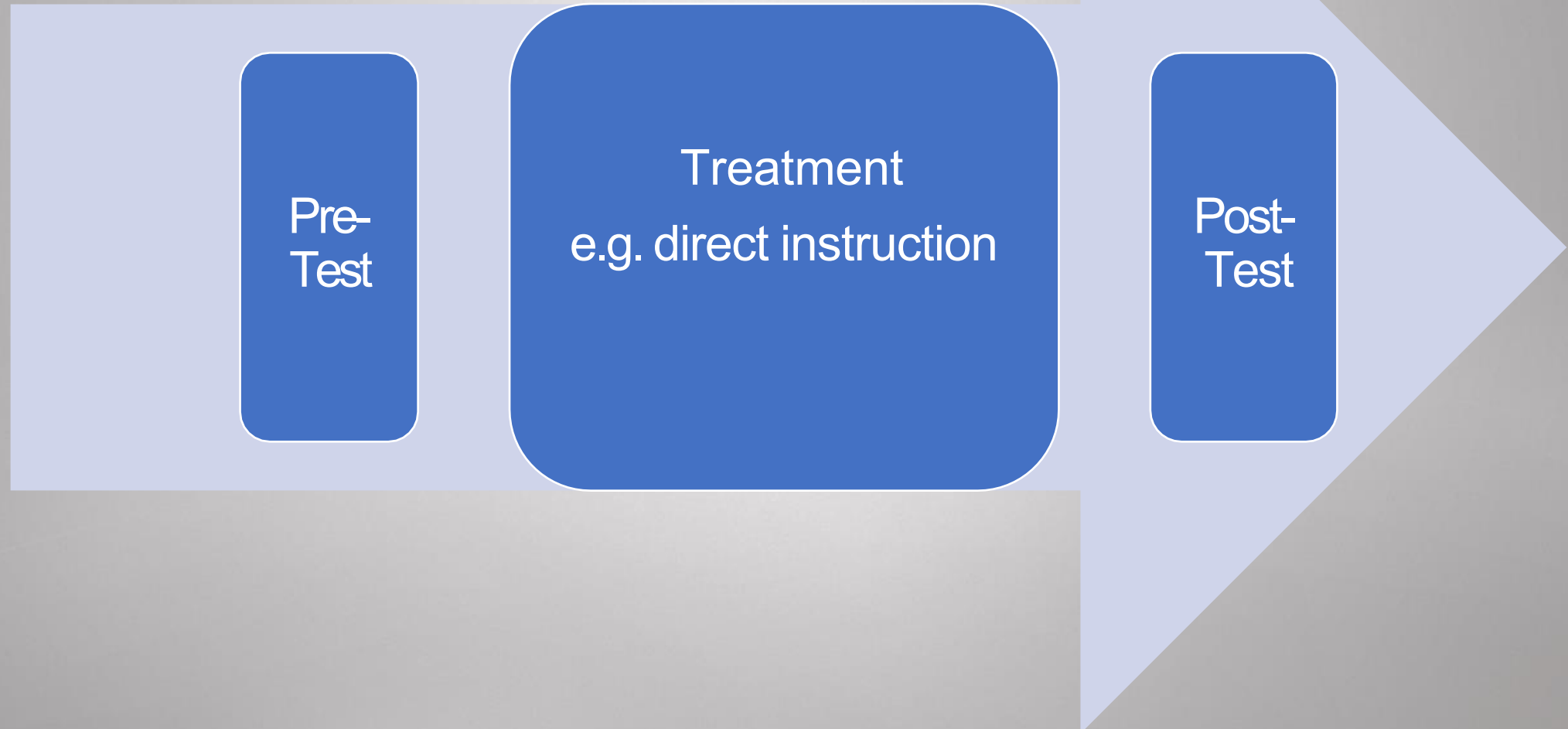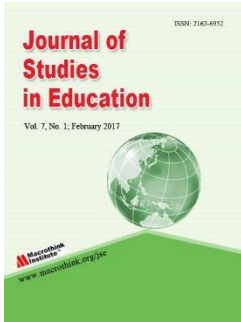- [What Works Clearinghouse](#)(2024)
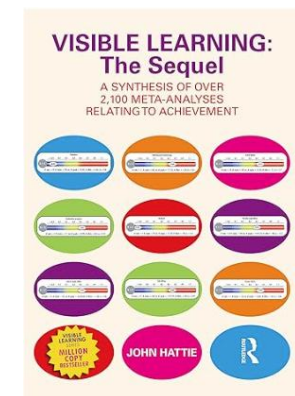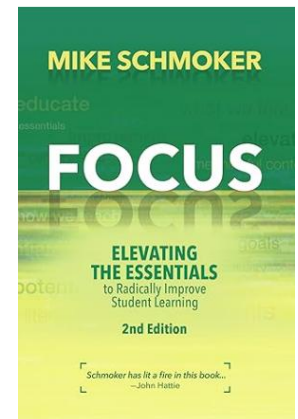
Break
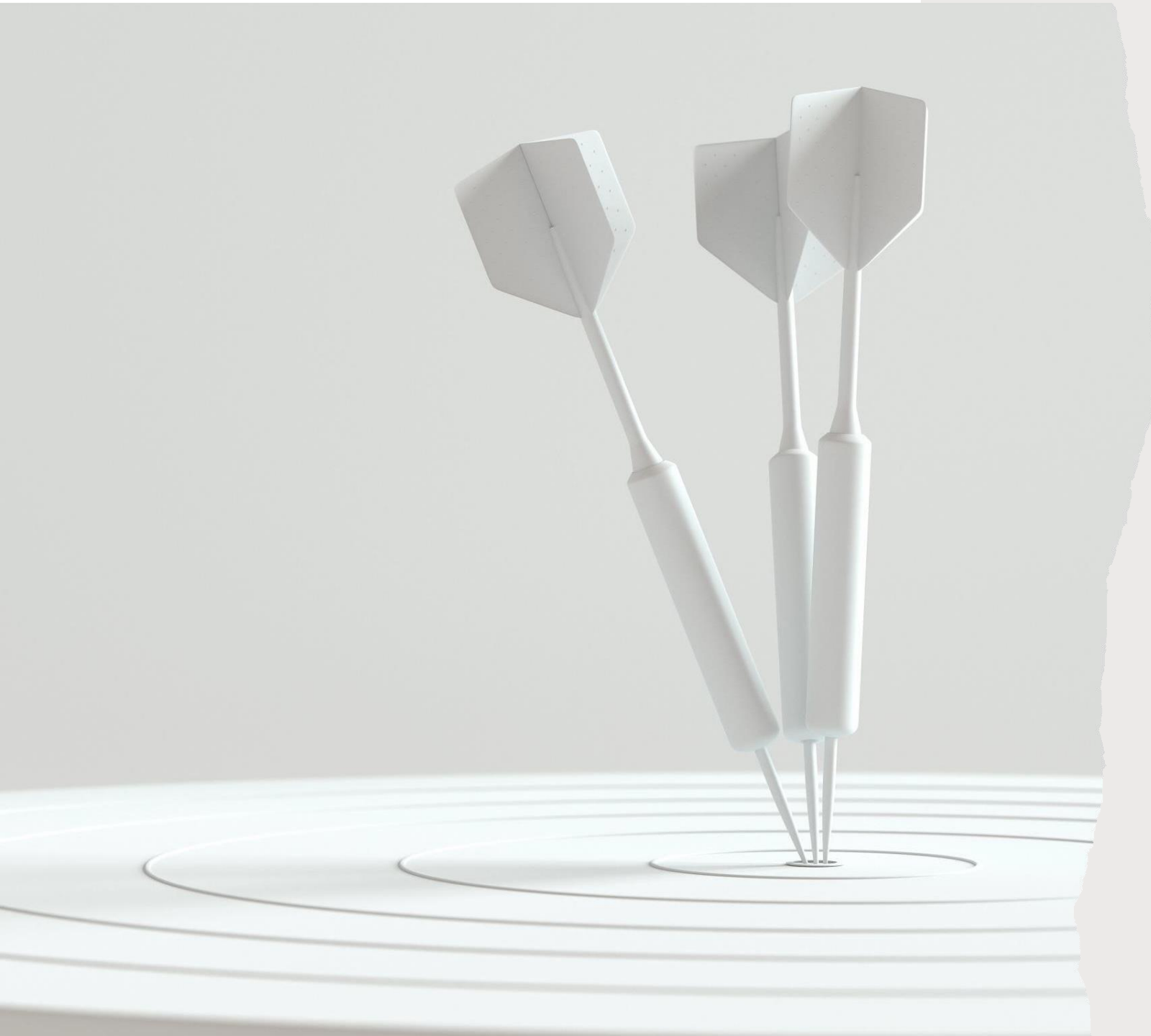
The Rating Game

Research Method

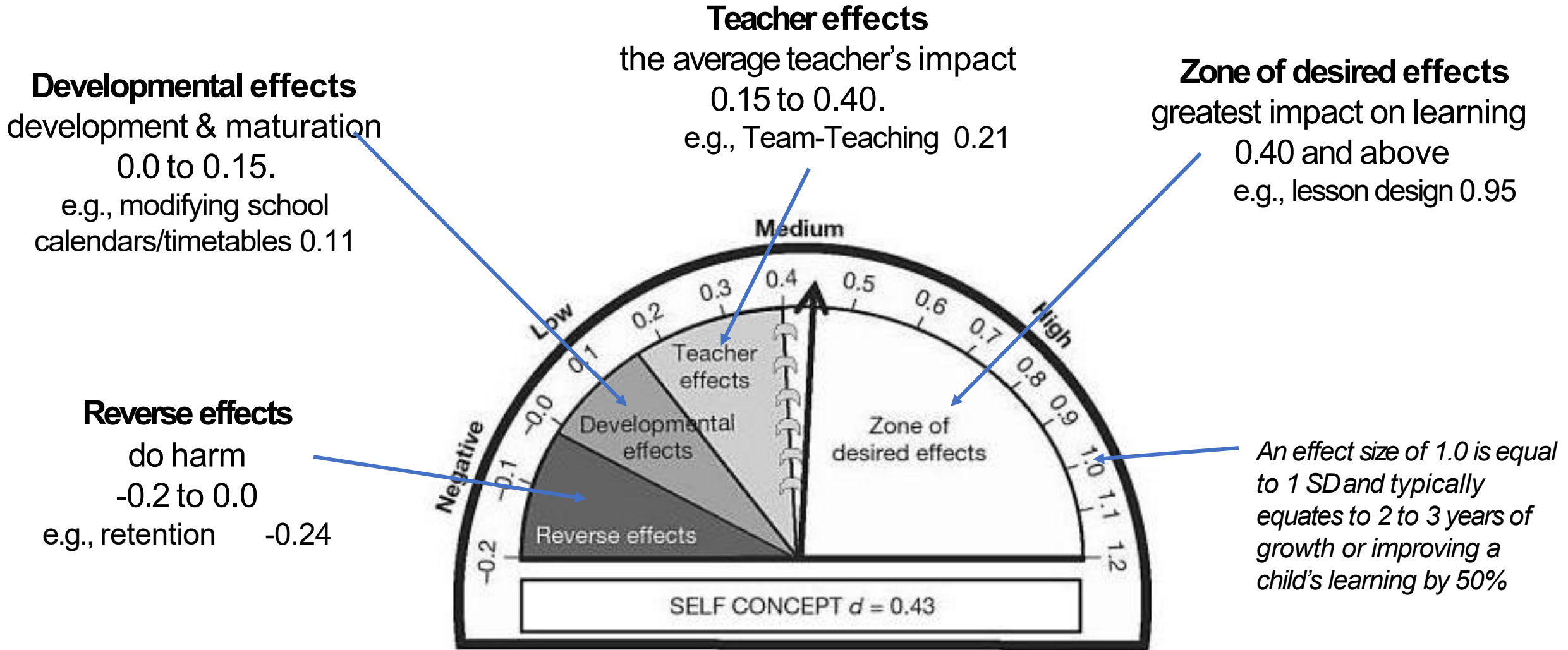# Hattie's Method

Study = one experiment one influence

Meta-analysis = multiple studies on one influence

Meta-synthesis = multiple meta-analyses on one influence

Impact on Student Achievement

Teacher effects
the average teacher's impact
0.15 to 0.40.
e.g., Team-Teaching 0.21

Developmental effects
development & maturation
0.0 to 0.15.
e.g., modifying school
calendars/timetables 0.11

Zone of desired effects
greatest impact on learning
0.40 and above
e.g., lesson design 0.95

Reverse effects
do harm
-0.2 to 0.0
e.g., retention   -0.24

*An effect size of 1.0 is equal
to 1 SD and typically
equates to 2 to 3 years of
growth or improving a
child's learning by 50%*

Medium

Low   High

0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2

-0.0

Negative

-0.1

-0.2

Teacher effects

Developmental effects

Zone of desired effects

Reverse effects

SELF CONCEPT *d* = 0.43

Hattie's Quotes from Visible Learning

Almost everything works. Setting the bar at zero is absurd.

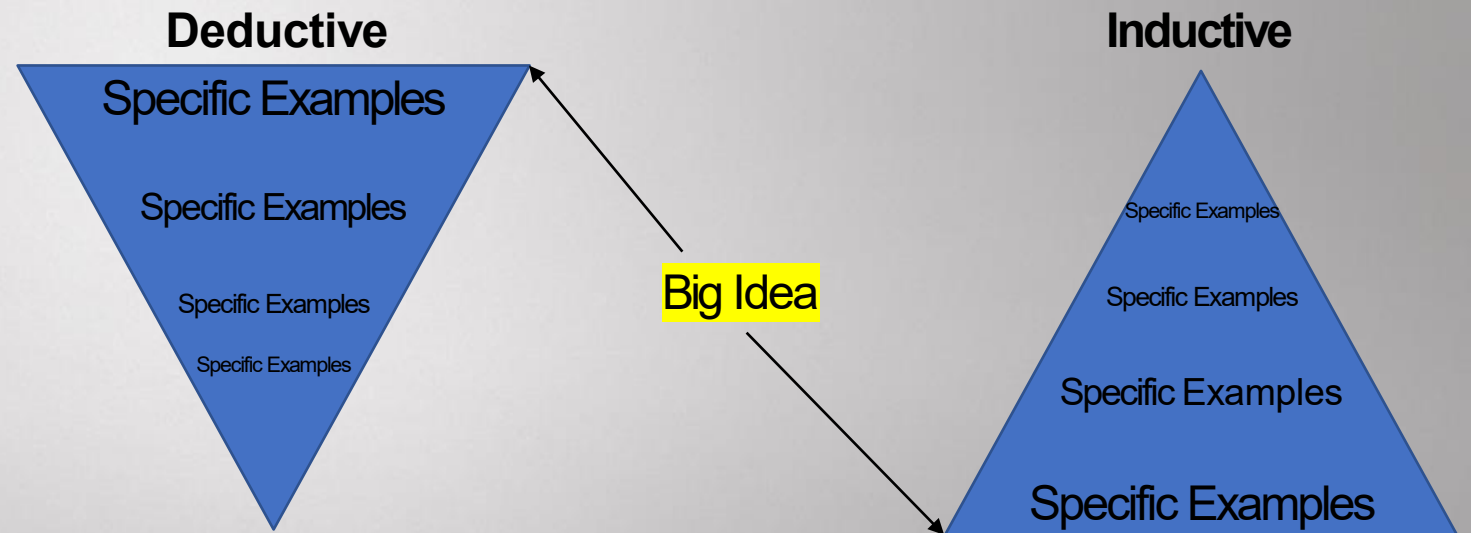Any effects below .15 are potentially harmful and probably should not be implemented.

Teachers typically can attain between .15 and .40 growth per year. This is average.

Innovation = a deliberate effort to introduce a different (not necessarily new) strategy from what they're currently using to improve learning.

References and Effect Sizes are from Hattie's (2024) *Visible Learning*

Round One

- **Reducing Class Size**

- **PowerPoint**

- **Deliberate Practice**

Reducing Class Size

Reduces the number of students in the class often with the aim of increasing the number of individualized student-teacher interactions to improve student learning.

PowerPoint

The use of software slide-presentation programs, which can include embedded links, videos, etc. to aid in instruction.

Deliberate Practice

A learning technique that involves extensive engagement in relevant practice activities in order to improve particular aspects of performance. Deliberate practice often refers to challenging, effortful repetition, often adjusted through feedback that is purposeful and systematic. While regular practice can include much repetitions, deliberate practice requires focused attention and is conducted with the specific goal of improving performance without immediate reward.

Round Two

- **Technology in Small Groups**
- **Reciprocal Teaching**
- **Student Control Over Learning**

Technology in Small Groups

The use of technology in small-group settings—either face-to-face groups or remotely interacting groups.

Reciprocal Teaching

An instructional strategy which aims to foster better reading comprehension and to monitor students who struggle with comprehension. The strategy contains four steps: summarizing, questioning, clarifying, and predicting. It is "reciprocal" in that students and the teacher take turns leading a dialogue about the text in question, asking questions following each of the four steps. The teacher can model the four steps, then reduce her or his involvement so that students take the lead and are invited to go through the four steps after they read a segment of text.

Student Control Over Learning

Involves students taking responsibility for their own instruction, their pace of learning, how much time they spend on learning each step, and control over where to go next in their learning.

Round Three

- **Direct Instruction**
- **Discovery-Based Teaching**
- **Questioning**

Direct Instruction

Direct instruction refers to instructional approaches that are structured, sequenced, and led by teachers. Direct instruction requires teachers to: have clear learning intentions and success criteria, building a commitment and engagement among the students in the learning task; use modeling and checking for understanding in their teaching; and engage in guided practice so that every student can demonstrate his or her grasp of new learning by working through an activity or exercise under the teacher's direct supervision.

Discovery-Based Teaching

A practice in which students formulate clear, testable hypotheses, which they then test via their subsequent learning.

Questioning

Teachers questioning students as part of lessons.

What do the high-yield influences have in common?

How about the low-yield influencers?

Round Four

- **Teacher Clarity**
- **Mindfulness Interventions**
- **One-on-One Laptops**

Teacher Clarity

Teacher clarity relates to organization, explanation, examples and guided practice, and assessment of student learning. It can involve clearly communicating the learning intentions of the lessons and the success criteria. Clear learning intentions describe the skills, knowledge, attitudes, and values that the student needs to learn.

Mindfulness Interventions

While often associated with South and East Asian spiritual practices, mindfulness means paying attention, on purpose, in the moment, and nonjudgmentally; to become self-aware, empathetic, calming, focused, and with-it-ness.

One-on-One Laptops

Each student learning using a laptop or computer devices (iPad, netbook, tablet, computer et al.).

Round Five

- **Repeated Reading Programs**
- **Collective Teacher Efficacy**
- **Growth vs. Fixed Mindset**

Repeated Reading Programs

Repeated reading involves students repeatedly reading the same passage (usually at least three times) to teachers. When the student miscues, the teacher can read the correct word aloud, and the student rereads the passage until reaching a satisfactory reading level. Repeated reading can also aid in a student's reading comprehension when paired with comprehension questions.

Collective Teacher Efficacy

The shared belief by a group of teachers in a particular educational environment that they have the skills to positively impact student outcomes.

Growth vs. Fixed Mindset

People with a growth mindset believe that they can develop their abilities through study and practice, while those with a fixed mindset believe that they have a certain amount of innate ability that cannot be altered.

What do the high-yield influences have in common?

How about the low-yield influencers?

Round Six

- **Outlining and Organizing**
- **Presence of Cell Phones**
- **Phonics**

Outlining and Organizing

Involves identifying the main ideas and rendering them in one's own words. The core skill is being able to distinguish between the main ideas and the supporting ideas.

Presence of Cell Phones

The presence of mobile phones in class (typically not related to the teaching and learning).

Phonics

A form of instruction that stresses the acquisition of letter-sound correspondences in reading and spelling. It involves teaching children the sounds made by individual letters or letter groups (for example, the letter "c" makes a k sound), and teaching children how to merge separate sounds together to make it one word (for example, blending the sounds k, a, t makes CAT).

Round Seven

- **Initial Teaching Education Programs**
- **Micro-Teaching / Video Review of Lessons**

# Initial Teaching Education Programs

Initial teacher education or ITEs (sometimes at the undergraduate level and sometimes at the post-graduate level) is the entry-level qualification for teaching in numerous countries, including the United States. More recently, there are school-based ITEs, non-accredited ITEs, and many online ITE programs.

Micro-Teaching / Video Review of Lessons

A technique in which a teacher delivers a short, recorded lesson that is then analyzed by the teacher and/or other teachers and leaders for the purposes of improvement. The lessons are usually videotaped to assist with the subsequent analysis.

Accessing the Research

Where can we find Hattie's most recent research?
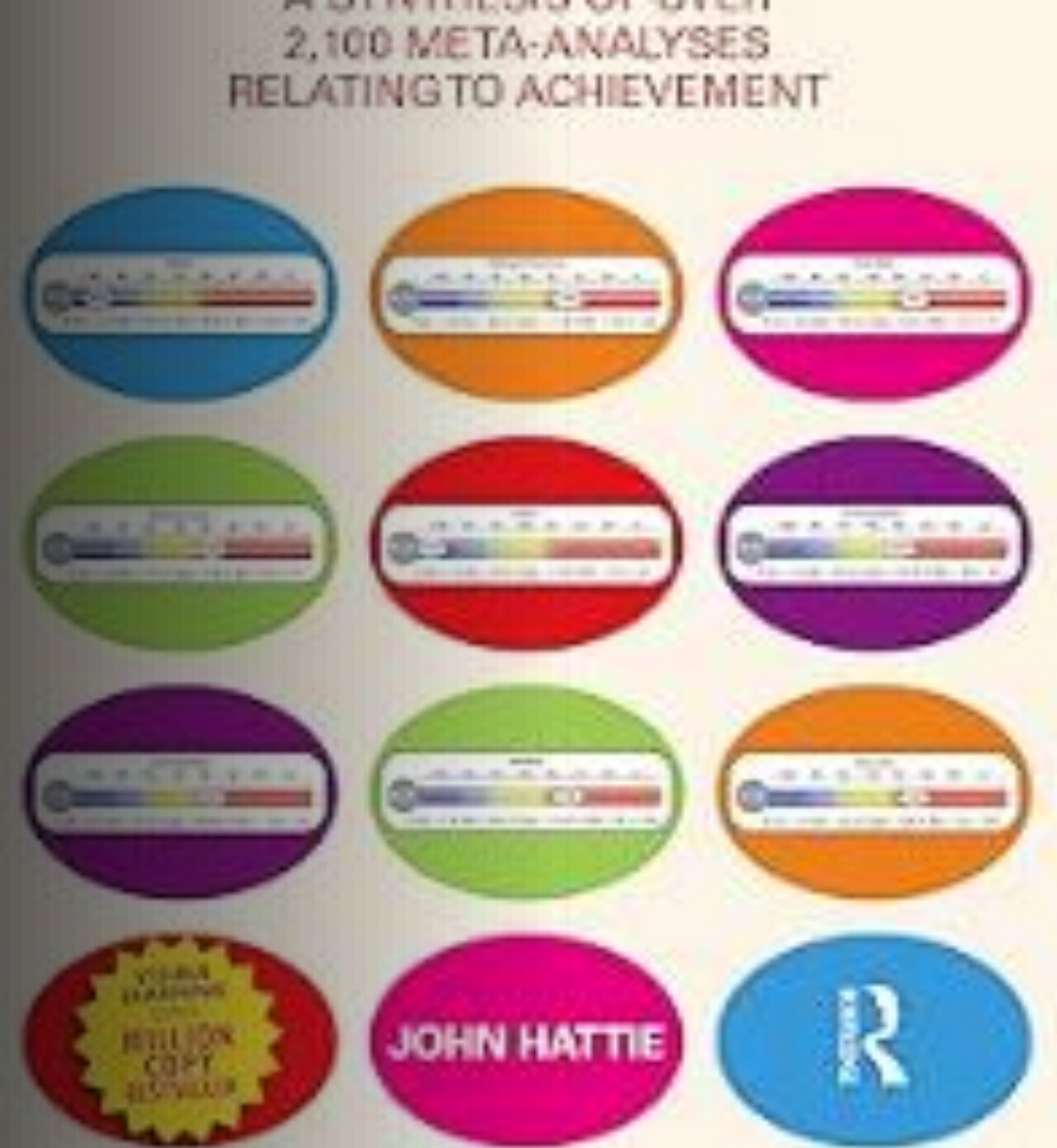
Project Follow Through

A [presentation](#) on a paper of the same name.

Thank-You