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Regional Educational Laboratory At Florida State University

Regional Educational Laboratory Southeast

Identifying Evidence-Based Content in Early Childhood

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Acknowledgement and disclaimer

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Agenda

- Welcome and Introductions
- Overview, Objectives and Learning Goals
- Part I: Building Background Knowledge: Questions & Next Steps
- Part II: Specific Evidence for Early Childhood Literacy and Language
- Wrap Up Activity and Next Steps

Asking Questions

- We encourage you to ask as many questions as you have on the content of the session. As we go along there will be pause points where you can ask questions on the content presented so far.
- You can share those questions or comments in the chat panel at any time. This will help you remember the question when we pause to discuss. (Please make note of the slide number as you do.)

Overview and Objectives

- Part 1: Build background knowledge related to research in education
- Parts 1&2: Increase understanding of the rationale for and methodology being used in the systematic literature review on early childhood literacy and language instruction underway
- Part 2: Promote transparency about how we are determining which instructional methods are to be highlighted within the PLC

Learning Goals

- Develop Common Understanding of Research Models
- Build Knowledge on Intervention/Experimental Research
- Examine Available Sources of Intervention Research Findings

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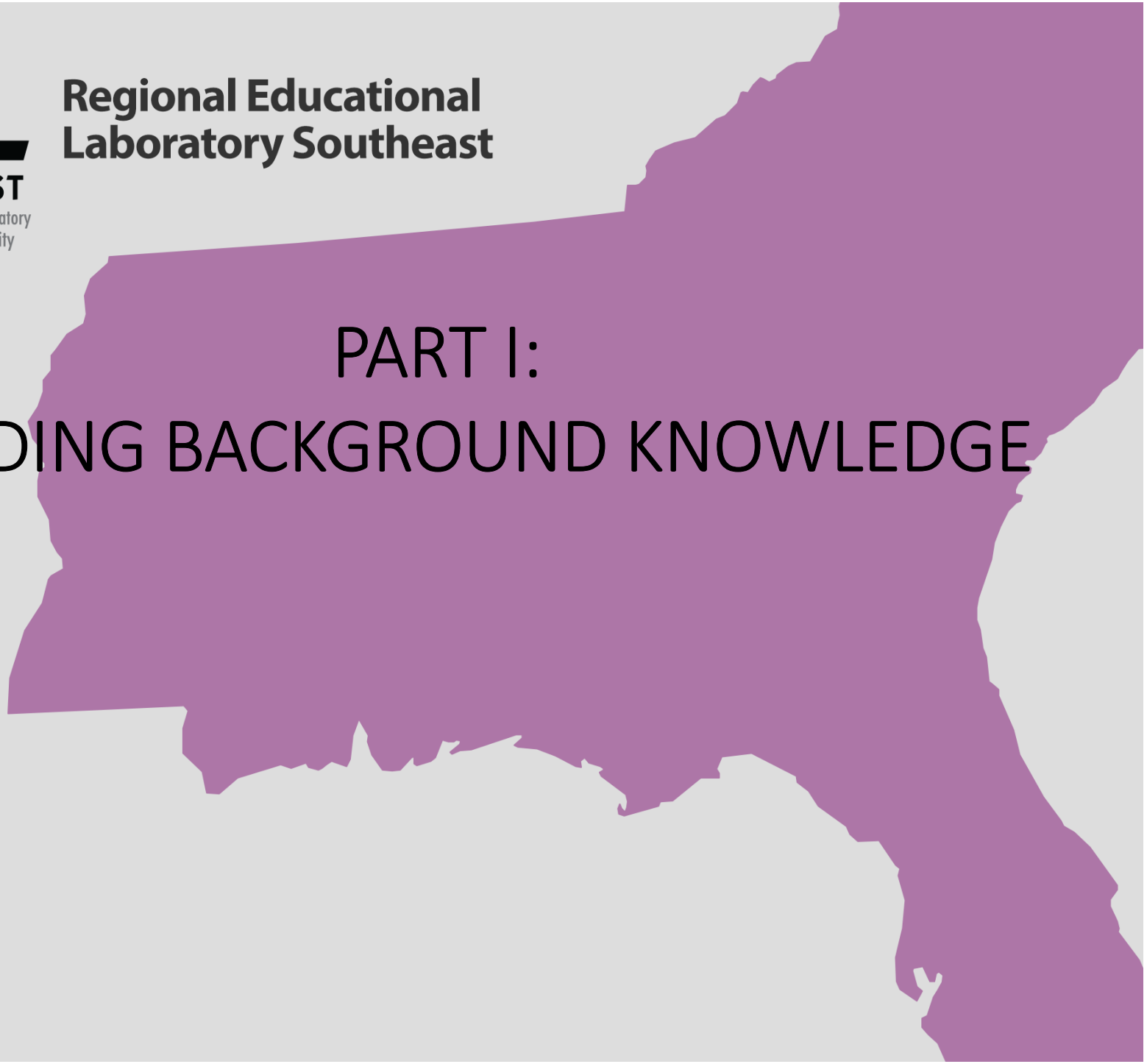


PART I:
BUILDING BACKGROUND KNOWLEDGE

Content Note

This presentation uses the broad term of instructional content

- This includes content as broad as entire programs, comprehensive curricula, targeted interventions, and even very modular practices and techniques
- The size and scope of the content does not affect the manner in which we evaluate how and whether it is effective for children
- Today we are also not considering whether content is in wide use or not, whether or not it is commercially available, etc.

Quote from: "On Evaluating Effectiveness…"

"Curricula play a vital role in educational practice. They provide a crucial link between standards and accountability measures. They shape and are shaped by the professionals who teach with them. Typically, they also determine the content of the subjects being taught. Furthermore, because decisions about curricula are typically made at the local level in the United States, a wide variety of curricula are available for any given subject area.

Source: On Evaluating Curricular Effectiveness: Judging the Quality of K-12 Mathematics Evaluations http://nap.edu/11025

(Cont.)

Quote from: "On Evaluating Effectiveness…"

Clearly, knowing how effective a particular curriculum is, and for whom and under what conditions it is effective, represents a valuable and irreplaceable source of information to decision makers, whether they are classroom teachers, parents, district curriculum specialists, school boards, state adoption boards, curriculum writers and evaluators, or national policy makers. "

Source: On Evaluating Curricular Effectiveness: Judging the Quality of K-12 Mathematics Evaluations http://nap.edu/11025

Setting the Stage

- High-quality instruction is the goal of all states' early learning programs
- Early learning guidance associated with ESSA includes the statement that high-quality includes "developmentally appropriate, culturally and linguistically responsive instruction and assessments, as well as *research-based curricula*, that are aligned with State early learning and development standards"
- ESSA also refers to "evidence-based programs"

Discussion of Terminology

There are many confusing terms out there:

- Scientifically-based
- Evidence-based
- Research-based
- Research-aligned
- Research-informed
- Effective practices
- Scientifically established as effective

Many Claims with Varied Support

- Virtually all purveyors of instructional materials, or of specific pedagogical methods/philosophies, claim that their product and views are “research-based”
- What does this mean?
- Are they all true?

Clarifying Terminology

- Often, educators and policy makers use these terms to refer to content and techniques that are *consistent* with findings of previous research.
- For example, if there was descriptive research indicating that by the age of five most children could stand on their heads for three to seven minutes,
- and longitudinal studies showed that the longer a child could maintain a headstand at age 5 the better that child's athletic ability at age 10,
- then a curriculum that worked with three- and four year-olds to develop their headstand competencies could be considered "research informed."

Clarifying Terminology

- However, this more general definition of the terms *does not* reflect what educational science means when it identifies something as evidence-based.

- To continue the example, just knowing that including content related to headstands was important for preschool age children would not indicate *whether any particular method of practice or instruction was more effective than any or at least some others in achieving the goal.*

- The way to determine this is to conduct well-designed and well-executed experimental studies that either compare what happens when teaching a skill in a particular way versus not teaching it, or that compare two or more different methods for teaching the skill.

Clarifying Terminology

IES's (and our) meaning of evidence-based:

Hinges on the Fundamental Difference between something being
Based in Research Findings

Versus

Something having **Evidence to Show** that when used it will have an impact on children's development

6 Types of Research

- Foundational Research: building core knowledge
- Exploratory Research: examining relations
- Design and Development Research: innovating possible solutions
- Efficacy Research: testing for impacts
- Effectiveness Research: validating impacts under typical conditions
- Scale-Up Research: extending impacts and studying implementation

Each type of research has its own valid designs. One key to high quality means matching the research question to the correct designs. A second key is to design and implement the study with as many high quality features as possible.

6 Types of Research

- Foundational Research: building core knowledge
- Exploratory Research: examining relations
- Design and Development Research: innovating possible solutions
- **Efficacy Research: testing for impacts**
- **Effectiveness Research: validating impacts under typical conditions**
- **Scale-Up Research: extending impacts and studying implementation**

The three final types of research questions all require experimental or certain quasi-experimental designs.

Example Questions within Different Research Types

Foundational Research:

- What percentage of teachers of 4-yr. olds in Georgia have a MS degree?
- Do girls have larger expressive vocabularies than boys at age 3?

Example Questions within Different Research Types

Exploratory Research:

- Do children in Florida with high scores on the VPK math assessment also have high scores on the VPK phonological awareness assessment?
- Does knowing how many letters a 4-yr.-old in Alabama knows at the beginning of pre-k predict how fluently they will be reading in 2nd grade?

Example Questions within Different Research Types

Efficacy Research:

- Does use of curriculum A or curriculum B in Georgia pre-k lead to more gains in language skills during the pre-k year?
- Is it more effective for SC teachers to teach letter sounds at the same time as letter names or after?

Example Questions within Different Research Types

- Effectiveness Research: If Mississippi teachers receive 10 hours of professional development on classroom management in addition to their current amount of training, will they have better behaved students, as compared to teachers who do not receive the 10-hour training?

- Scale-Up Research: Will a new intervention for preschool children with developmental disabilities that has been found to be effective in NC public-school Inclusion classes also be effective when implemented in NC Head Start classrooms? What about when implemented in Georgia?

Questions we can ask about instructional content:

- What does it teach? (content focus)
- How does it teach it? (instructional techniques)
- What is the intensity? (frequency and dose)
- What outcomes does it impact? (efficacy)

Descriptive information

causal information

What is meant by “impact”?

- Educationally meaningful impact on at least one valid measure of a skill, competency, or behavior relevant to the content focus, found within a scientifically valid, credible research study.
- Note that both aspects of this statement are necessary to say something ‘works’, or has impact, because if one finds impact on a measure but in a study that is poorly designed, the finding is not credible.

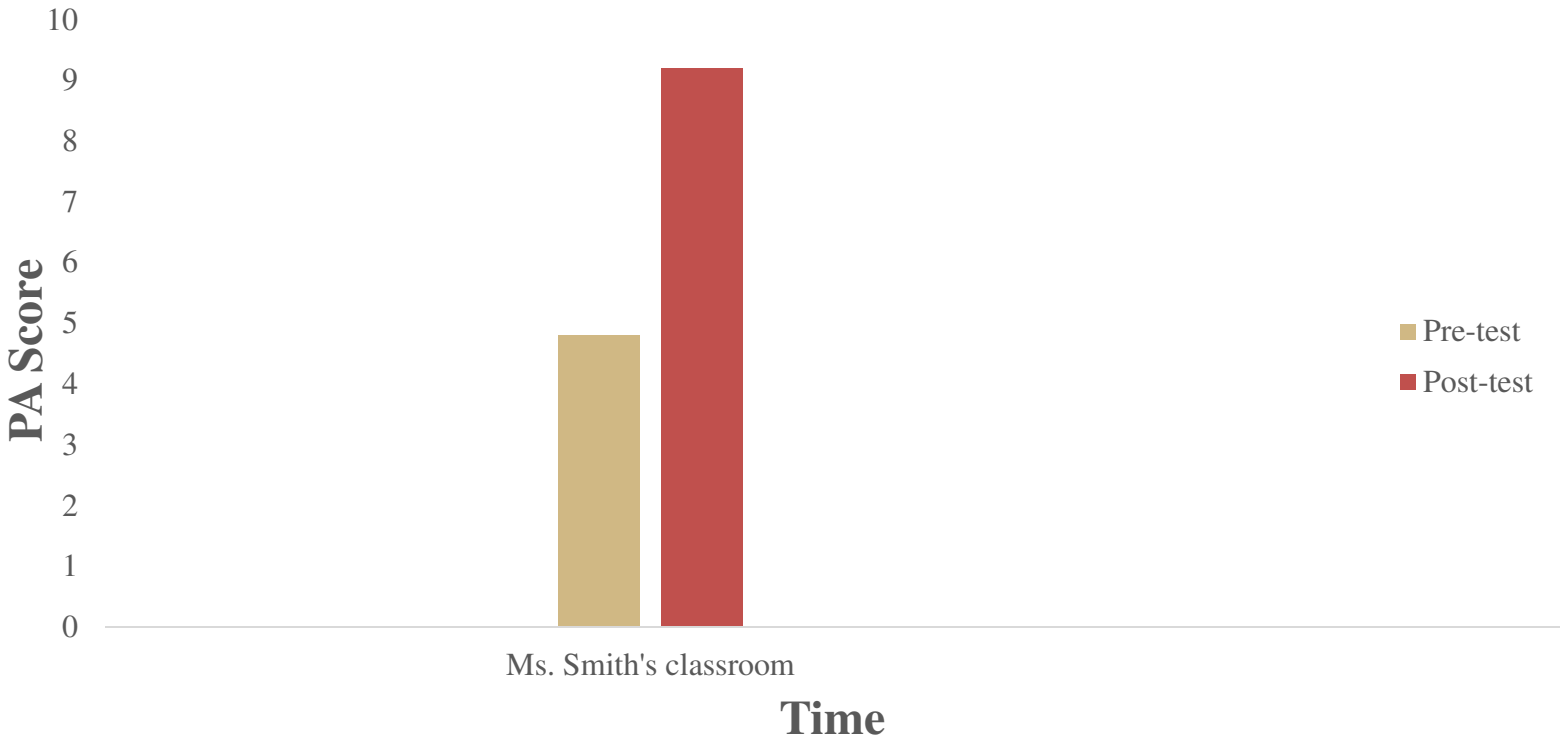
Basic Criteria for Credibility of Casual Impact Claims:

- There has to be numerical evidence that students' performance or behavior on target measures improved from baseline.
- The study design has to be one that allows us to know that it is the instructional content/technique, and not instead something else, that is the reason that there is the improvement in scores.
- There is a continuum of designs such that the better the design, the stronger the causal interpretation possible.

Study Designs that Can and Can not provide Credible Evidence of Causality:

	Types of Studies
Can	True Experiments
	Regression Discontinuity
	Single Subject Designs
	Some Quasi-Experiments
Can Not	Pre/Post Designs
	Correlational Studies
	Descriptive Studies
	Most Quasi-Experiments

Pre to Post Change Example



Nonequivalent Control Group Example

Questions so far?

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PART II:
SPECIFIC EVIDENCE FOR EARLY CHILDHOOD LITERACY AND LANGUAGE

State of the Evidence

- For K-16 instruction, most attention has been focused on studying supplemental and targeted programs rather than on general education curricula (with some math programs as the exception)
- This same trend is seen in early childhood (with some comprehensive curricula as the exception)

Where can we learn which instructional content has credible evidence?

What Works Clearinghouse: https://ies.ed.gov/ncee/wwc/

- The WWC has a very comprehensive protocol of rules and standards by which it evaluates all available research studies (published or unpublished) for their quality and credibility
- The research evidence for all interventions, curricula, etc. is treated the same, regardless of how widely used or popular something is, and regardless of the educational philosophy that underpins its instructional design
- This way, all materials can be directly compared to one another in terms of the extent of the evidence and the likelihood that their use will lead to positive impacts for children

Levels of Evidence in WWC

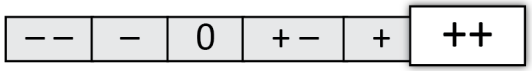
Intervention effects terminology used by the WWC:

- **Positive Effects**: Statistically significant effect favoring the treatment group in at least 1 credible study
- **Potentially positive effects**: effect favoring the treatment group in at least one credible study that was not statistically significant but was at least .25 of a standard deviation
- **Negative effect**: Statistically significant effect favoring the control group in at least 1 credible study
- **Potentially negative effects**: effect favoring the control group in at least one credible study that was not statistically significant but was at least .25 of a standard deviation
- **Inconclusive results**: An intervention did not result in any statistically significant effect size, or an effect size greater than 0.25 in credible studies **OR** there are no credible studies to be interpreted.

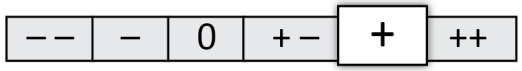
Effectiveness Rating in WWC

A summary of the effectiveness of an intervention in an outcome domain, based on the quality of research, the statistical significance of findings, the magnitude of findings, and the consistency of findings across studies.

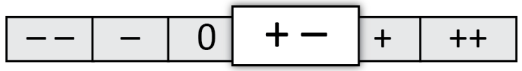
Effectiveness Rating Key



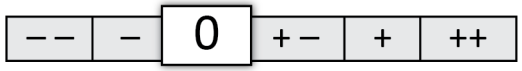
Positive: strong evidence that intervention had a positive effect on outcomes.



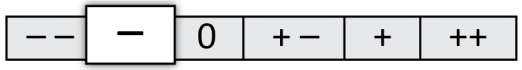
Potentially Positive: evidence that intervention had a positive effect on outcomes with no overriding contrary evidence.



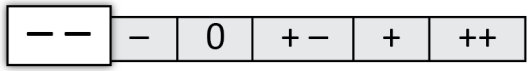
Mixed: evidence that intervention's effect on outcomes is inconsistent.



No Discernible: no evidence that intervention had an effect on outcomes.



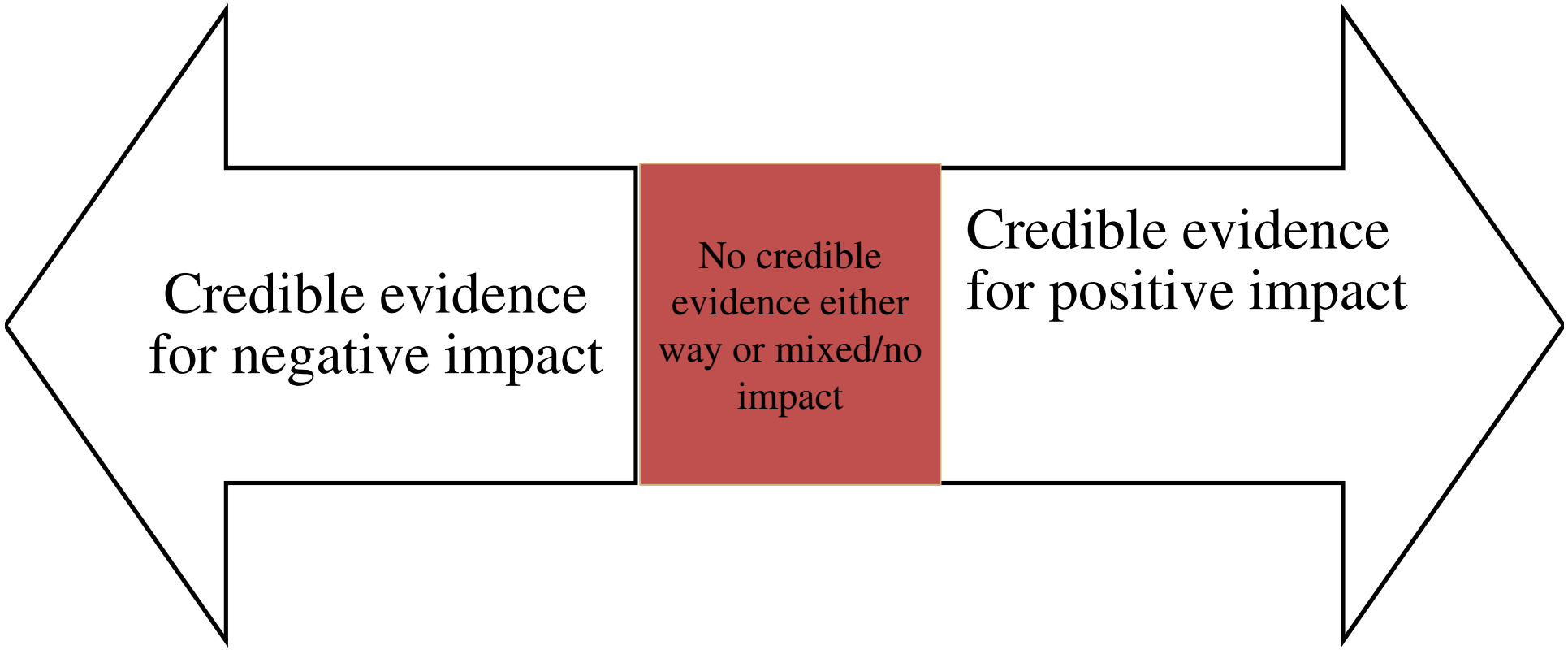
Potentially Negative: evidence that intervention had a negative effect on outcomes with no overriding contrary evidence.



Negative: strong evidence that the intervention had a negative effect on outcomes

Source: https://ies.ed.gov/ncee/wwc/Intervention

Continuum of Research Evidence

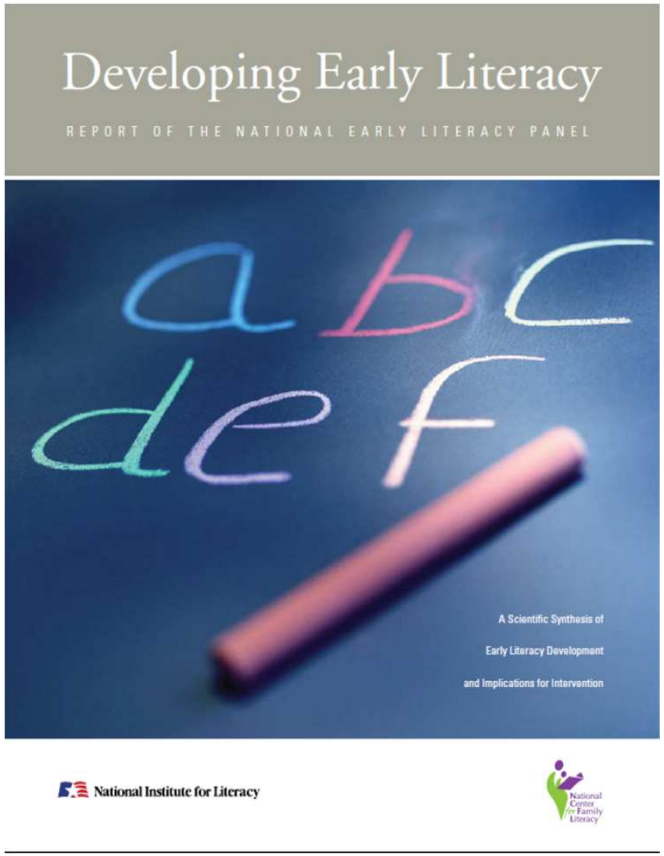


What Works Clearinghouse Findings

- WWC findings to date
  - For early childhood (including kindergarten), there are 83 programs, interventions, instructional methods or curricula that have been reviewed and categorized by the WWC (for literacy, language, math, cognitive or social-emotional outcomes):
    - 17 with positive or potentially positive effects from credible studies
    - 9 with mixed or no effects found in credible studies
    - ALL the rest with No Evidence from credible studies
- Although this does not mean all of these other tools for sure do not work, we have no evidence to date that they for sure do work

Other Sources for Evidence

- National Early Literacy Panel Meta-Analysis
  - Reviewed instructional efficacy research published through 2002 for both preschool and kindergarten
  - Used criteria for quality and credibility very similar to the WWC



NELP Findings

The NELP found and reviewed:

- 78 credible studies on code-focused interventions (Phonological awareness and print knowledge or writing)
- 19 credible studies on shared reading
- 28 credible studies on language-enhancement

NELP Findings

- Virtually all studies that found effects on code-focused skills or conventional reading skills were delivered in small group or 1:1.
- Since the NELP, some evidence supports whole group instruction, but less than supports small group instruction for these skills

Other Sources for Evidence

Cochrane Collaborative http://www.cochrane.org/

- Primarily a site for medical evidence but some educationally-relevant work and topics are included, including studies related to:
  - ADHD
  - Autism Spectrum Disorder
  - Early Speech Disorders
  - Emotional and Behavioral Problems
  - Hearing Impairments
  - Some Learning Disabilities

Other Sources for Evidence

- WWC tends to prioritize cataloguing evidence for commercially available materials
- NELP concluded with 2002 publications
- Some evidence-based practices and materials may exist currently outside of commercialization but have been tested within credible and disseminated in reports or peer-reviewed studies since 2002
- This is the motivation for our ongoing Systematic Review, which also will inform the PLC

What do we do when there is no guidance from efficacy evidence?

- When, for a specific instructional target, there is no instructional content with credible evidence for positive impact, we still often have to select something to use.
- We should select the next best alternative instructional content.

Levels of Evidence in ESSA

WHAT IS AN "EVIDENCE -BASED" INTERVENTION?

(from section 8101(21)(A) of the ESEA)

"...the term 'evidence-based,' when used with respect to a State, local educational agency, or school activity, means an activity, strategy, or intervention that –

(i) Demonstrates a statistically significant effect on improving student outcomes or other relevant outcomes based on –

(I)strong evidence from at least one well-designed and well-implemented experimental study;

(II)moderate evidence from at least one well-designed and well-implemented quasi-experimental study; or

(III)Promising evidence from at least one well-designed and well-implemented correlational study with statistical controls for selection bias; or

https://www2.ed.gov/policy/elsec/leg/essa/guidanceuseseinvestment.pdf

(Cont.) Levels of Evidence in ESSA

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(from section 8101(21)(A) of the ESEA)

"...the term 'evidence-based,' when used with respect to a State, local educational agency, or school activity, means an activity, strategy, or intervention that –

(ii) (I)demonstrates a rationale based on high-quality research findings or positive evaluation that such activity, strategy, or intervention is likely to improve student outcomes or other relevant outcomes; and

(II) includes ongoing efforts to examine the effects of such activity, strategy, or intervention.

https://www2.ed.gov/policy/elsec/leg/essa/guidanceuseseinvestment.pdf

Levels of Research Evidence

Evidence-Informed Decision Making for the PLC Materials

- The team leading the development of the PLC is relying on the WWC, the NELP Report, and other more recent peer-reviewed, credible publications to make decisions
- We also will be informed by the exhaustive search being completed by the REL Systematic Review Project

Current State of Evidence

- Content on upcoming slides summarizes the current state of the evidence for the areas of emergent literacy
- Ongoing REL-SE work aims to add to this list over the next few years

Print Knowledge

Instructional Content	Sources of Evidence
Small-group explicit instruction in letter names, letter sounds and both	NELP, WWC, peer-reviewed publications
Whole group print-referencing	Peer-reviewed publications
A small number of comprehensive curricula	WWC, Peer-reviewed publications

Phonological Awareness

Instructional Content	Sources of Evidence
Small-group explicit instruction in PA with and without joint alphabet instruction	NELP, WWC, peer-reviewed publications
Some computer software programs	Peer-reviewed publications
A small number of comprehensive curricula	WWC, Peer-reviewed publications

Vocabulary

Instructional Content	Sources of Evidence
Dialogic Reading, other interactive reading methods (but not all)	NELP, WWC, peer-reviewed publications
Explicit vocabulary instruction	Peer-reviewed publications
A small number of comprehensive curricula	WWC, Peer-reviewed publications
Morphological awareness instruction	Peer-reviewed publications

Language

Instructional Content	Sources of Evidence
Dialogic Reading, other interactive reading methods	NELP, WWC, peer-reviewed publications
Individualized language therapy	Peer-reviewed publications
A small number of comprehensive curricula	WWC, Peer-reviewed publications
Small group interactive instruction, both play-based and activity-based	NELP, Peer-reviewed publications

Patterns of Modularity

- One consistent finding across WWC and NELP bodies of evidence is about targeted impacts
- Essentially, for children to show gains in a skill, it has to be directly taught. There is very limited evidence of generalizable impacts

Questions?

Post-Webinar Activity

Using knowledge from this presentation and your experience in the field, what are frequently asked questions (FAQs) about teaching print knowledge? What are FAQs about how children acquire print knowledge?

Sources of Evidence Links

- https://ies.ed.gov/ncee/wwc/
- https://lincs.ed.gov/publications/pdf/NELPReport09.pdf
- http://www.cochrane.org/evidence
- http://www.promisingpractices.net/programs.asp

Research Resource Links

- https://ies.ed.gov/pdf/CommonGuidelines.pdf
- https://www2.ed.gov/policy/elsec/leg/essa/guidanceuseseinvestment.pdf