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Regional Educational Laboratory At WestEd

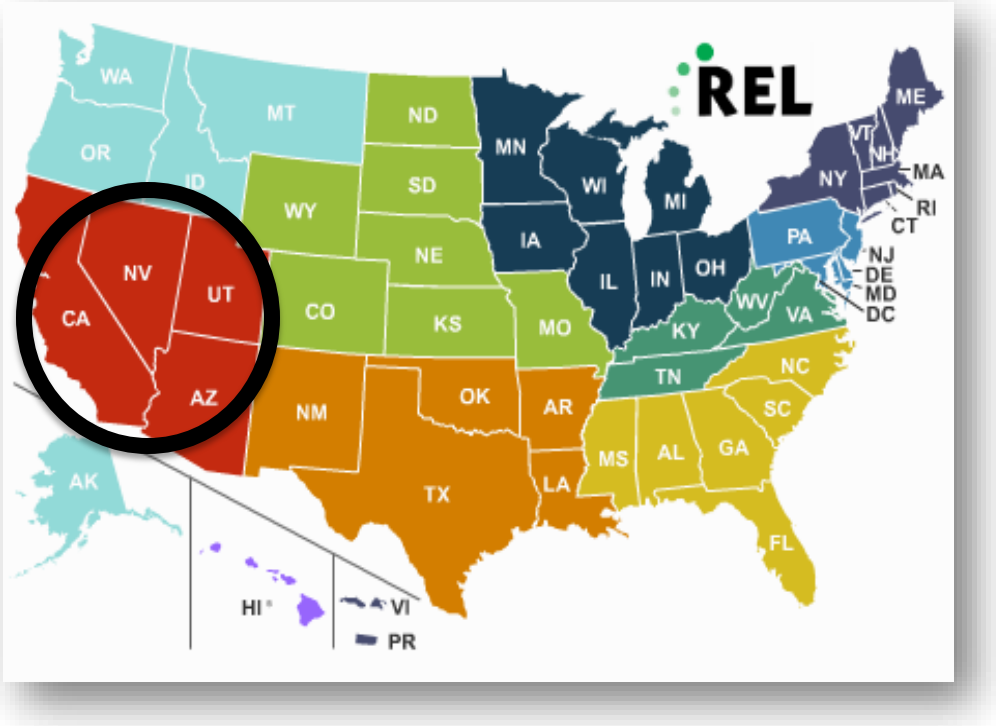
High-Quality Tutoring to Accelerate Learning:
A Deeper Dive into Literacy and Mathematics

November 17, 2021

IES Institute of Education Sciences

Regional Educational Laboratory West

- Conduct applied research
- Provide technical support around data collection, evidence use, and research
- Facilitate dissemination of actionable research evidence



Series: High-Quality Tutoring to Accelerate Learning

Part 1 – Archived: Research Evidence and Best Practices

Part 2 – Archived: Implementing and Improving Your Program

Part 3 – Today: A Deeper Dive into Literacy and Mathematics

Today's Presenters

Lindsay Dolce
Reading and Math Corps

Katie Drummond
REL West at WestEd

Marc Hernandez
NORC

Sandra Pulles
Reading and Math Corps

Alicia Sanborn
Washington Unified School District

Agenda

- Overview of Reading and Math Tutoring
- Models for Math and Reading Tutoring
- Reading Tutoring in Practice
- Math Tutoring in Practice
- Audience Questions
- Closing and Survey

Goals

Participants will:

- Learn research findings and best practices related to systematic tutoring, focused on math and reading outcomes.
- Explore key issues with respect to delivery of reading and math tutoring interventions, including tutor selection, instructional content, assessment of student progress, and tutor oversight.
- Hear examples of reading and mathematics tutoring as designed by one national service tutoring program and as implemented by program personnel from one district.
- Have an opportunity to ask questions and receive resources to guide their own work.

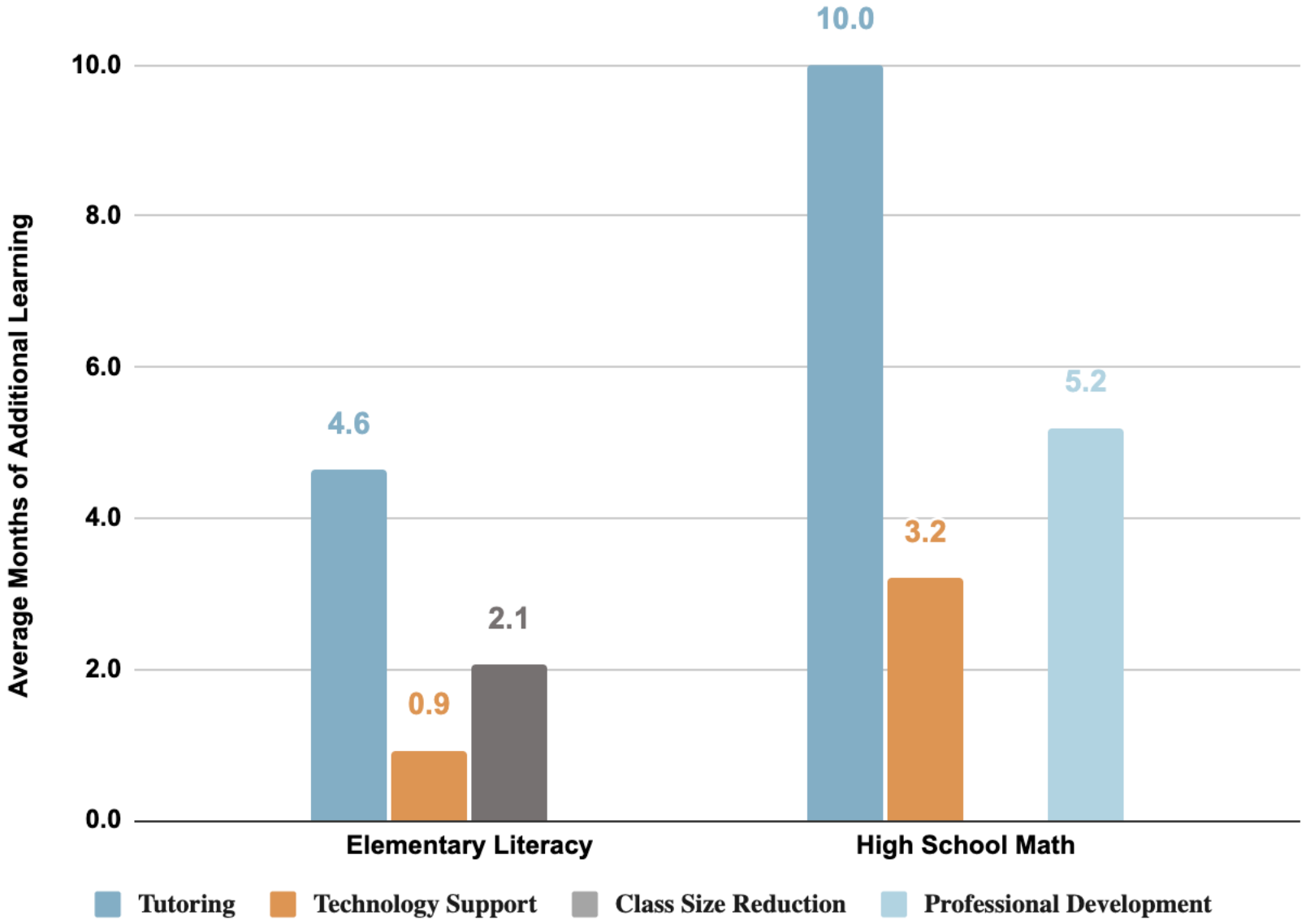
Overview of Math and Reading Tutoring Research: Key Findings Review

Katie Drummond
REL West

Why Tutoring?

- Millions of US students are behind grade level
- Students of color and students from low-income communities are more likely to fall behind and to attend under-resourced schools lacking sufficient student supports
- COVID-19 has exacerbated these issues, pushing students further behind and widening race- and income-based educational gaps
    - Up to 5 to 9 months of unfinished learning by June 2021
- Evidence identifies tutoring as one of the most impactful tools to improve student learning.

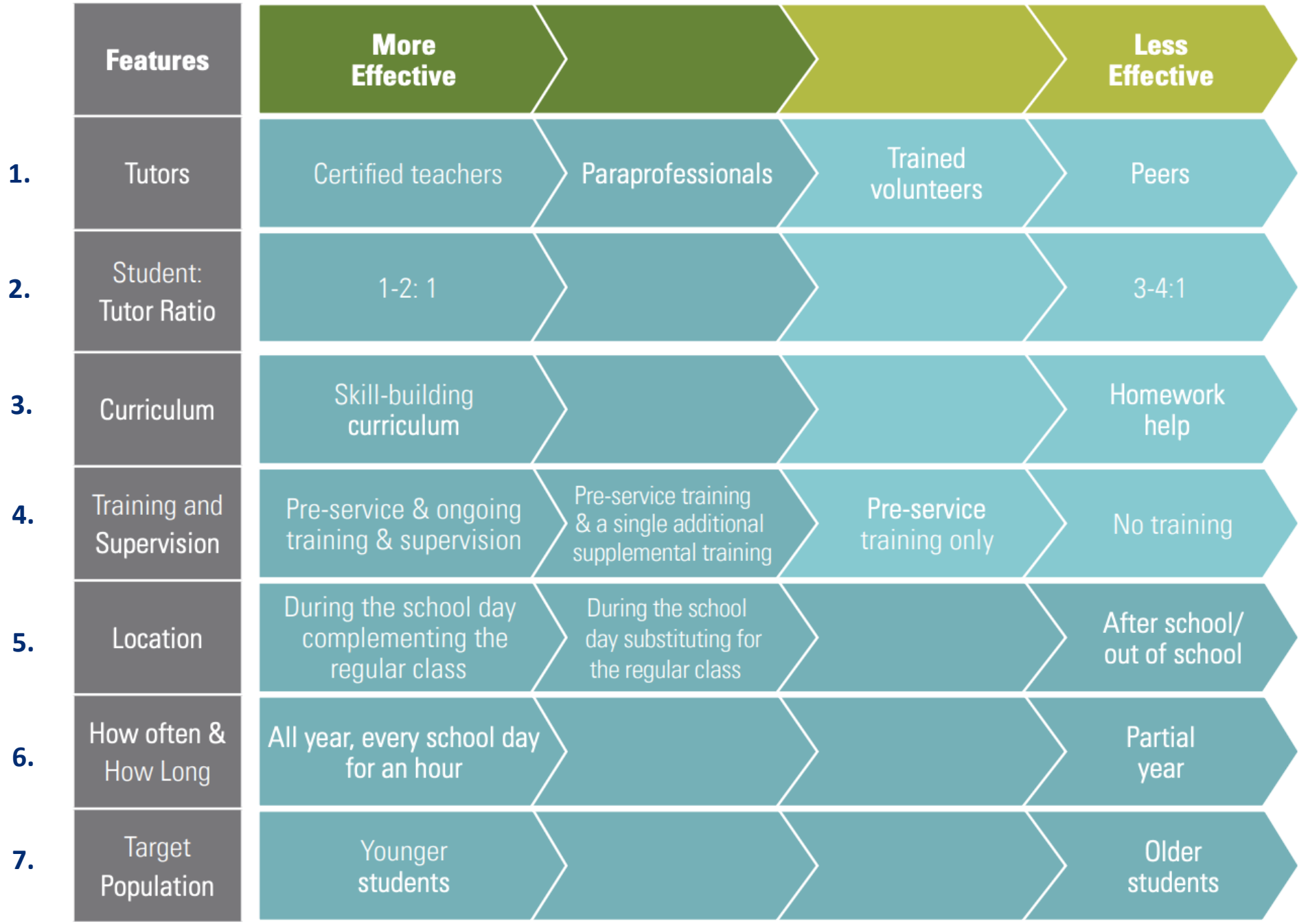
(Dorn et al., 2020; Nickow et al., 2020; Robinson et al., 2021; U.S. Department of Education, 2021)



Sources: See citations on “References 2” slide at the end of this presentation.

What Are the Most Effective Approaches to Tutoring?

- Targeted and intensive
- Conducted in consideration of students (grouping, scheduling) and tutors (hiring, staffing, training)
- Data can be used to identify who is most in need of support, and effectively target funds and resources



Education Trust and MDRC (2021, March).

Most Effective Content Approach for Reading & Math Tutoring

- Focused skill-building
- Aligned with core math & reading curriculum
- Targeted to student's academic needs

Age-Related Findings for Reading & Math Tutoring

- According to one meta-analysis with 96 studies on tutoring (Nickow et al., 2020)
  - The overall effects for math and literacy tutoring interventions are similar to one another 0.38 and 0.35 standard deviations
  - Age-related effects

Literacy:
0.50 standard deviations = PreK & K
0.43 standard deviations = Grade 1
0.22 standard deviations = Grades 2–5

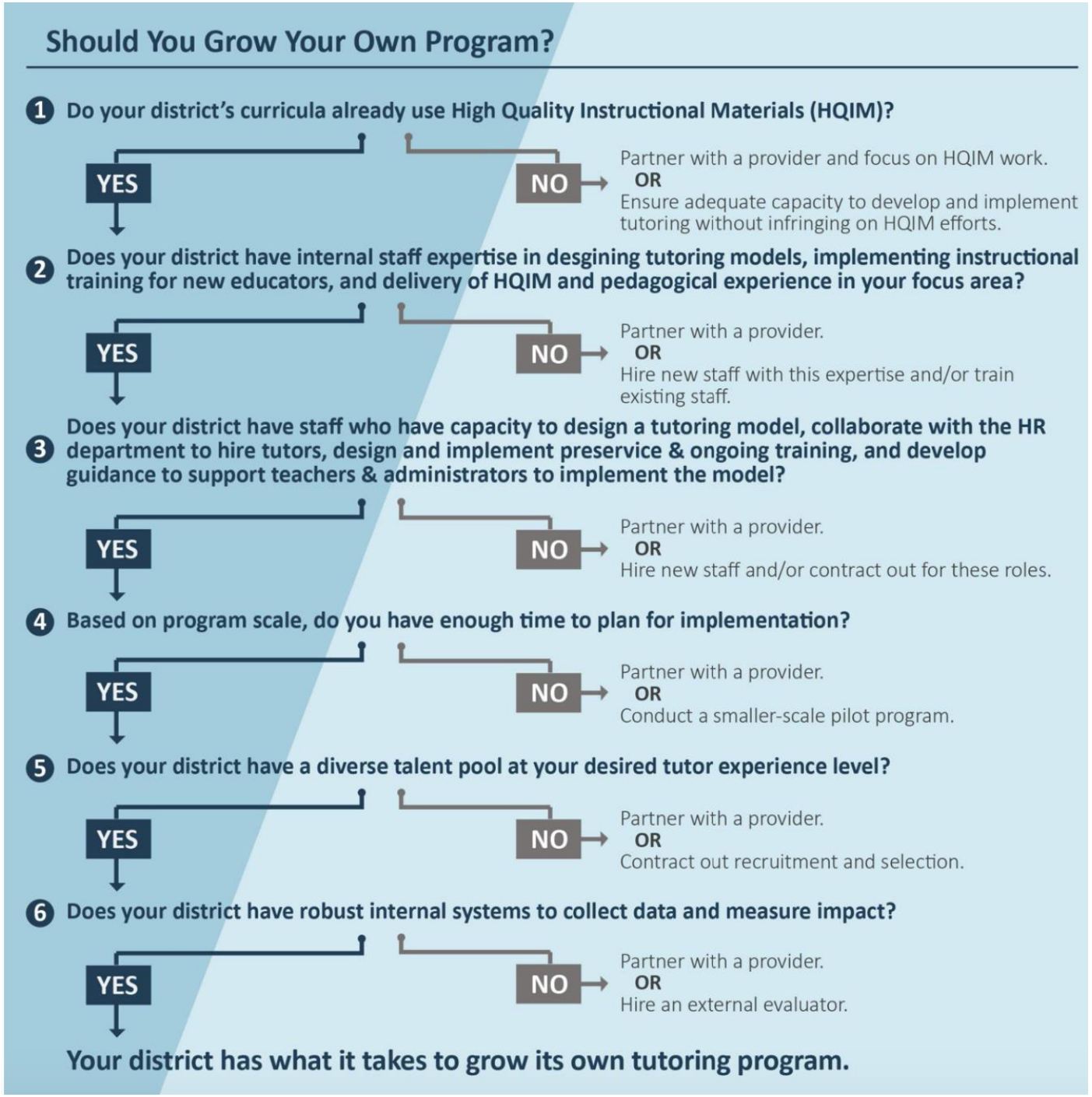
Math:
0.38 standard deviations = Grade 1
0.44 standard deviations = Grades 2–5

NOTE:
- 80% studies = literacy; 25% studies = math
- >50% included 1st graders; <7% included students at or above Grade 6

Partner With Tutor Provider vs. Design Own Program

- **If Provider**
  - Select & contract with partner
  - Work with partner to ensure model is adapted for local needs
- **If Own Program**
  - Design program based on best practices
  - Recruit and train tutors

Source: National Student Support Accelerator (2021)



Source: National Student Support Accelerator (2021)

Reading and Math Tutoring Models

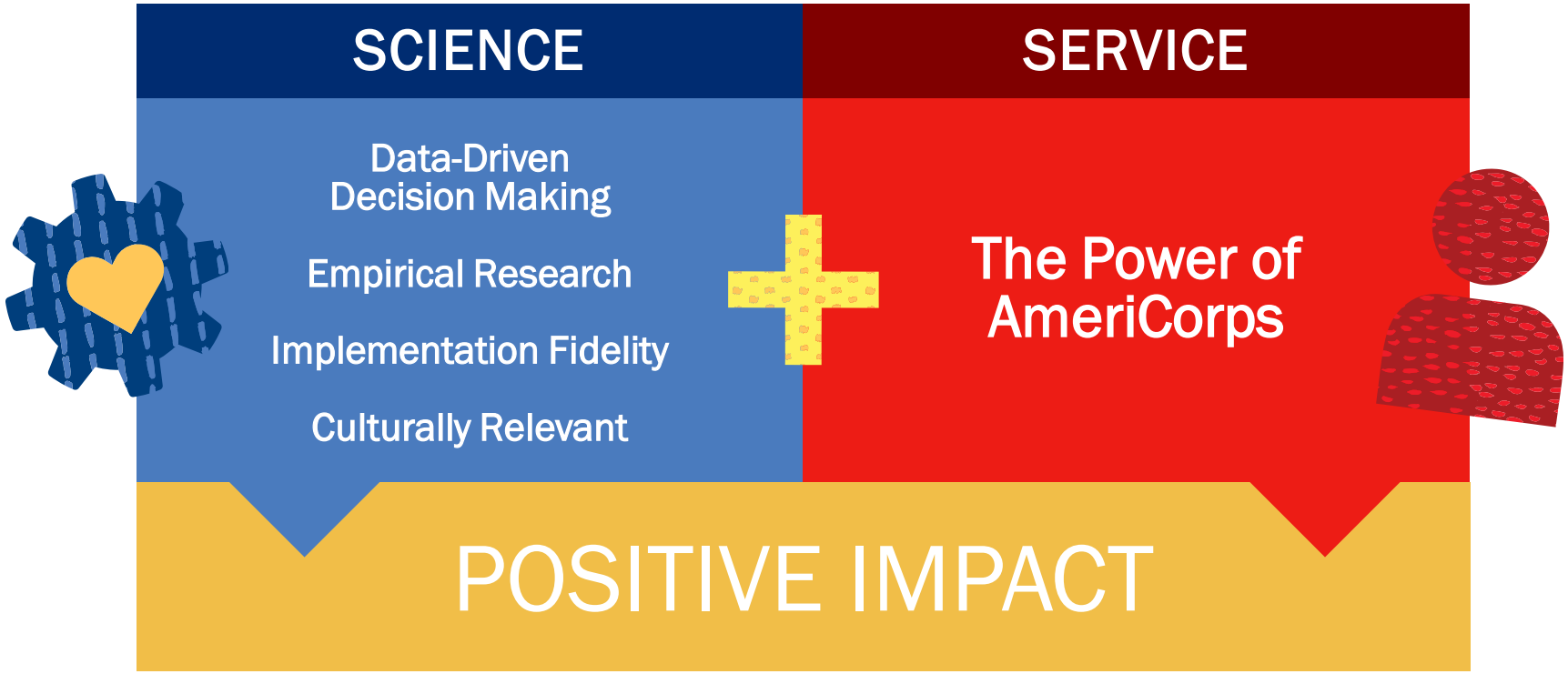
Marc Hernandez
NORC

Lindsay Dolce
Reading and Math Corps

IES Institute of Education Sciences

MAKING AN IMPACT

BLENDING THE PEOPLE POWER OF AMERICORPS WITH THE SCIENCE OF WHAT WORKS



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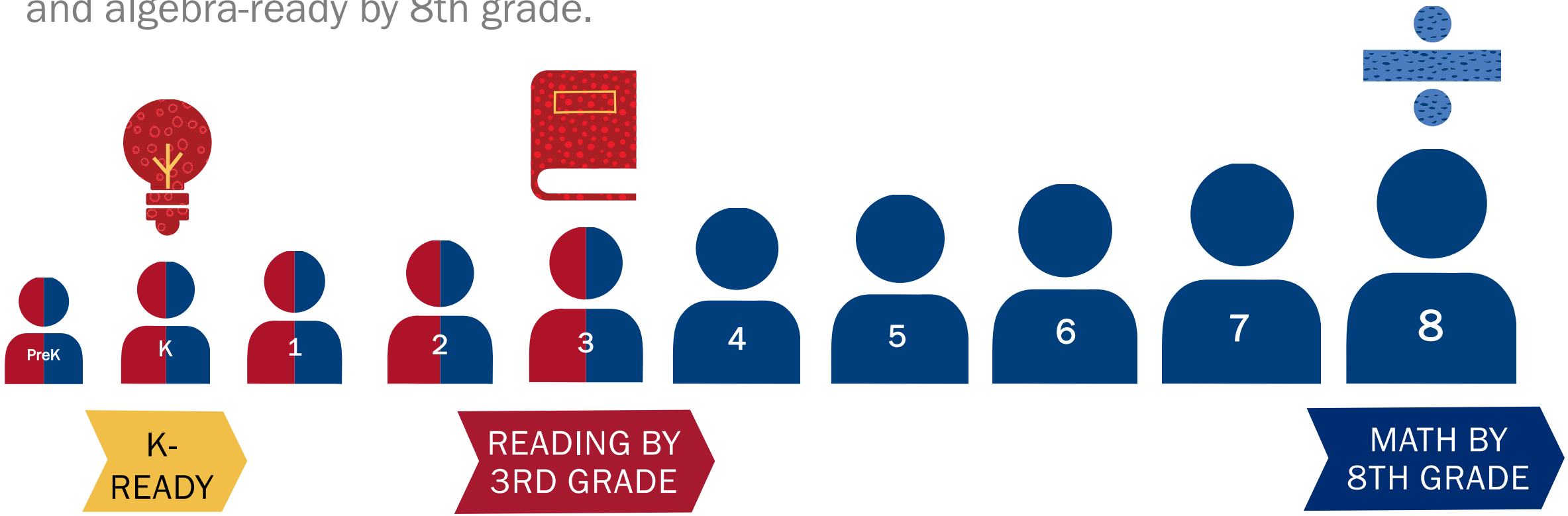
MEETING MILESTONES

Vision: All children proficient, confident readers by 3rd grade and algebra-ready by 8th grade.



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EXPANSION
from Original Minnesota Site

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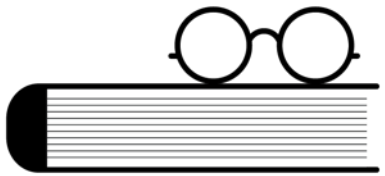
REPLICABILITY

- Literacy coaching and training
  - Robust training
  - Data-based decisionmaking
  - Ongoing coaching support
- The model has been replicated in multiple settings
  - Urban
  - Suburban
  - Rural



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AMERICORPS MODEL OF TUTORING

- Manages all aspects of hiring tutors
  - Background checks
  - Interviews (schools may participate)
- Supervises the members and manages administrative tasks
  - Payroll
  - Insurance/benefits
- Facilitates Internal Coach
  - Schools provide in-kind coaching support from a staff member (6–9 hours/month)

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READING: AGE 3 TO GRADE 3 STUDENTS

IN PREK SETTINGS, tutors…

- Embed in classroom and collaborate with teaching team
- Spend their days helping children talk, read, write, sing, and play in order to develop early literacy skills and get ready for Kindergarten

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READING: AGE 3 TO GRADE 3 STUDENTS

K–3 SETTINGS, tutors…

- Provide one-on-one, 20-minute tutoring sessions throughout the day
- Have caseload of up to 15 students
- Help students build foundational reading skills

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READING TUTORING: ACTIVE INGREDIENTS

EARLY ORAL LANGUAGE AND LITERACY INSTRUCTION

- Continuous assessments of child's progress
- Differentiated instruction
- Small group instruction
- Active book reading and conversation (start early!)
- Parent engagement (start early!)
- Ongoing support for tutors for children's specific skill development (coaching, professional development)

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WHAT DO READING TUTORING SESSIONS LOOK LIKE?

Logistics

- **Timing:** 5–10 min **(PreK)** | 20 min **(K–3)**
- **Frequency:** Daily
- **When:** During the school day
- **What:** Scripted practice interventions

Instructional Content

- Evidence-based, standardized intervention protocols target content identified by reading science and research-based practice guides (e.g., WWC Practice Guide, Foorman et al., 2016)

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WHAT DO READING TUTORING SESSIONS LOOK LIKE? (cont.)

Instructional Content (cont.)

- **PreK Example:** Repeated read-alouds build vocabulary and listening comprehension backed by multiple robust meta-analyses/literature reviews (e.g., Marulis & Neuman, 2013).
- **K–3 Example:** Repeated reading with comprehension strategies builds fluency

Formative Assessment

- Valid/reliable assessments used to
  - determine student need, assess progress (**PreK:** monthly | **K3**: weekly)
  - determine when service is no longer needed.

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MATH TUTORING: ACTIVE INGREDIENTS

Targeted skills practice:

Conceptual Understanding + Computational Proficiency + Word Problem Solving

- Tutors are trained in “I Do, We Do, You Do” method
- Grades 4–8 students start with previous grade-level content and move on after unit checks demonstrate mastery of skill

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WHAT DO MATH TUTORING SESSIONS LOOK LIKE?

Logistics

- **Timing:** 30–45 min **(Grades 4–8)**
- **Frequency:** 2–3 times per week
- **When:** During the school day
- **What:** Scripted practice interventions

Instructional Content

- Evidence-based, standardized intervention protocols target content identified by math researchers and research-based practice guides (e.g., WWC Practice Guide, Fuchs et al., 2021)

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WHAT DO MATH TUTORING SESSIONS LOOK LIKE? (cont.)

Instructional Content (cont.)

- **Example:** "Conceptual, Representational, Abstract" instructional strategies build students' conceptual understanding of key math concepts (e.g., Barbieri et al., 2020)

Formative Assessment

- Valid/reliable assessments are used to determine student need, assess progress, and determine when service is no longer needed.

EVALUATION TAKEAWAYS: PreK Reading

- The Minnesota Reading Corps PreK program is effective model for improving preschool students' emergent literacy skills
  - Significant and substantively large effects for growth across all five areas of emergent literacy skills for 4- and 5-year-olds
  - Significant effects for two of four areas of emergent literacy skills for 3-year-olds
- Process findings support outcome evaluation findings
- The program is replicable in multiple settings and across different student characteristics

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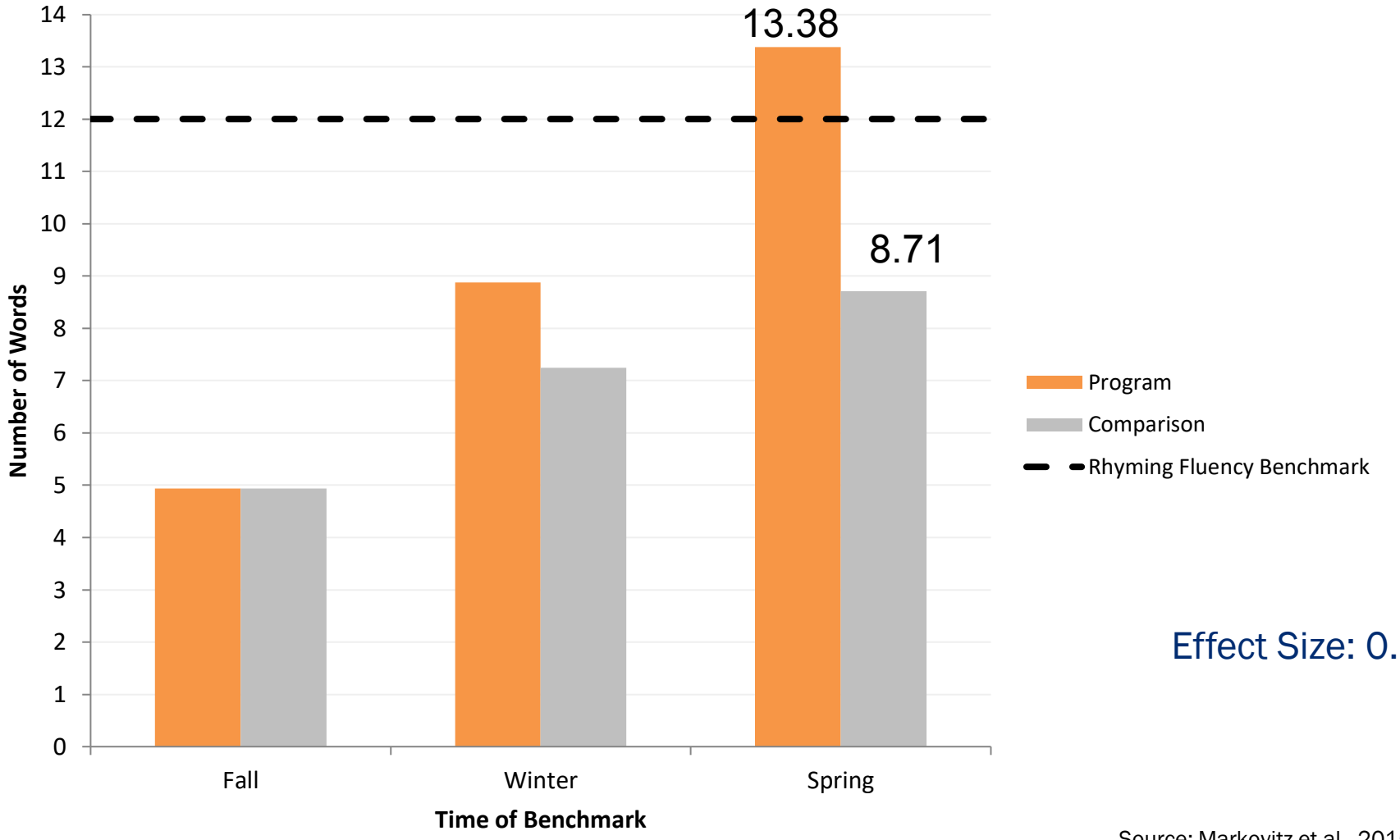
PRE-K EVALUATION RESULTS

Reading Corps participants outperformed peers on four out of five key measures of early literacy

- Rhyming
- Alliteration
- Letter Sounds
- Letter Names
- Picture Names

Source: Markovitz et al., 2015

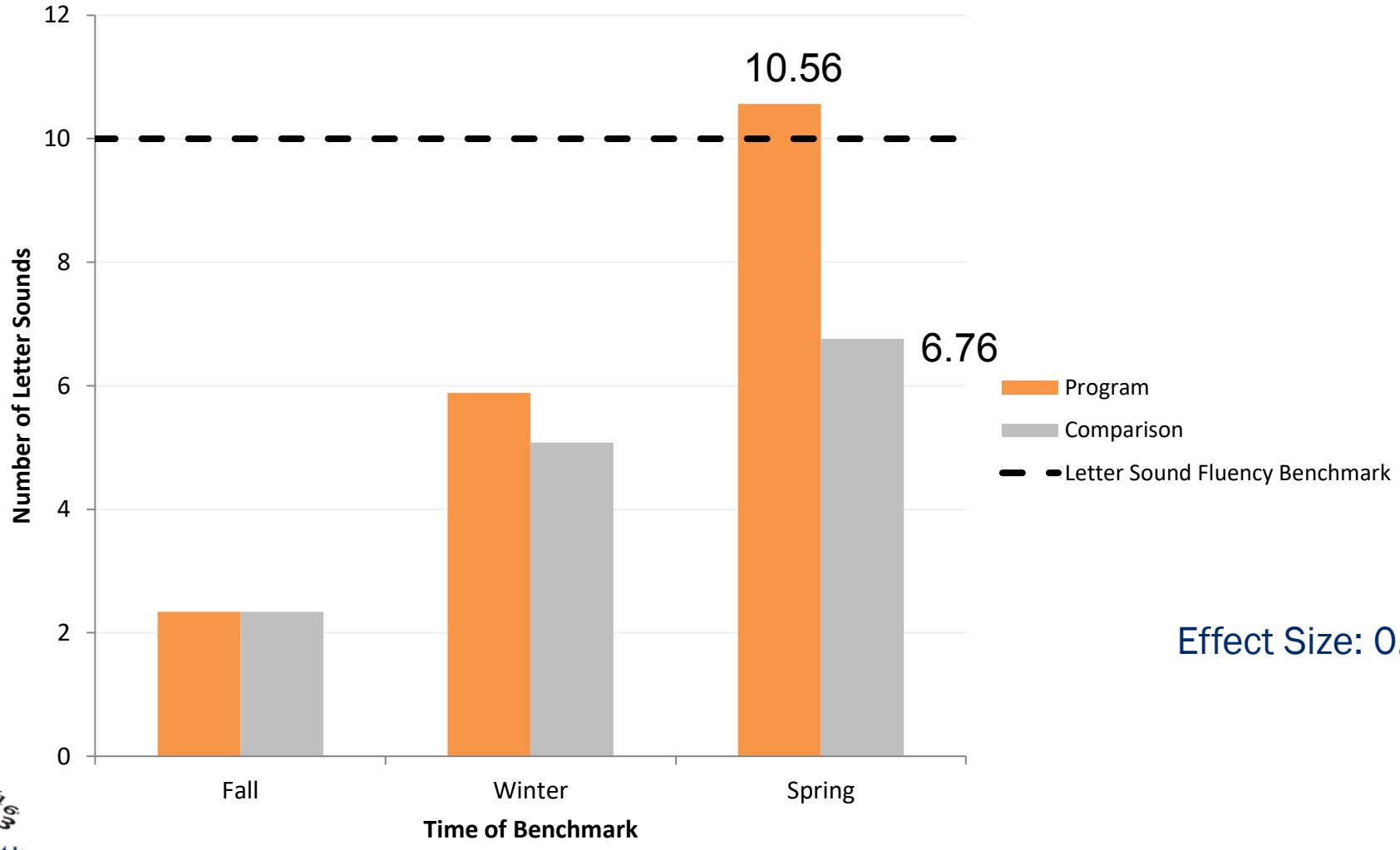
EXAMPLE FINDING: RHYMING FLUENCY



Effect Size: 0.66

Source: Markovitz et al., 2015

EXAMPLE FINDING: LETTER SOUND FLUENCY



Effect Size: 0.71

Source: Markovitz et al., 2015

EVALUATION TAKEAWAYS: Grades K-3 Reading

- Significant, meaningful effects in all grades K through 3rd grade
- Black and ELL students, often considered at risk, particularly benefited from the program
- Because the program produces big effects quickly among younger students (K–1), more students can be impacted at earlier grades
- 2nd and 3rd grade students furthest from benchmark in Fall also significantly benefited
- More than one semester of tutoring can produce significant, positive impacts on 2nd and 3rd grade students' oral reading fluency

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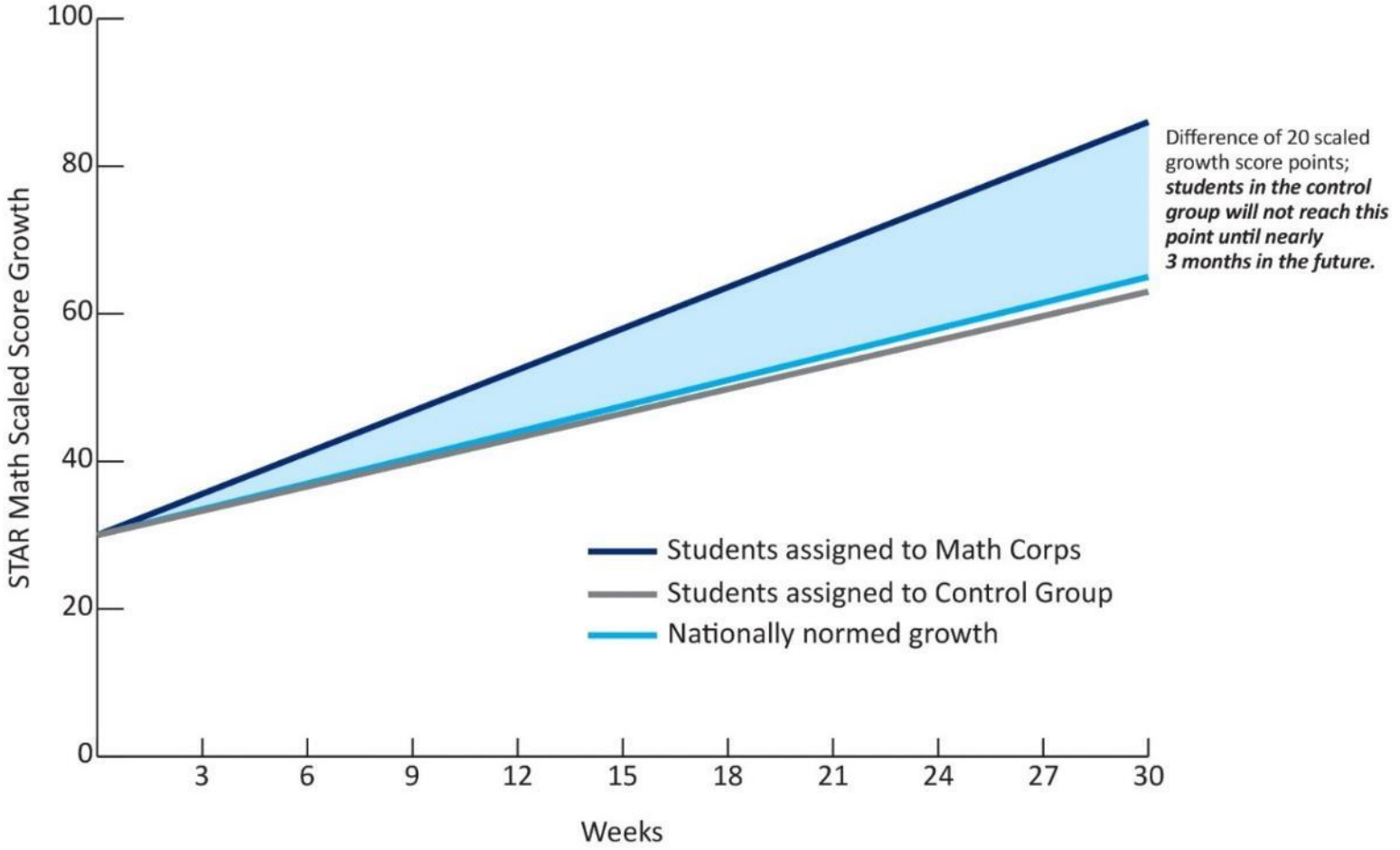
Source: Markovitz et al., 2014; 2018

EVALUATION RESULTS : Grades 4-8 Math



- Students in grades 4–8 made gains in math skills that were significantly larger than students who did not receive Math Corps support.
- Students were 2x more likely to achieve math fact fluency and meet end-of-year math benchmark.

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Source: AmeriCorps, 2019; Parker, 2019

Reading Tutoring in Practice

Alicia Sanborn
Washington Unified
School District

IES Institute of Education Sciences

READING TUTORING: REFLECTIONS ON IMPLEMENTATION FROM CALIFORNIA

- District context and how we became interested in using reading tutoring
- Reflections on planning and launching reading tutoring (scale, funding, operations, challenges/lessons along the way)

Of Note:

- Internal Coach role gets valuable professional development
- Coaching Specialists support Principals and Internal Coaches in using reading data

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Math Tutoring in Practice

Sandy Moran Pulles
ServeMN

IES Institute of Education Sciences

MATH TUTORING: REFLECTIONS ON IMPLEMENTATION FROM GEORGIA

- Typical context and key drivers of districts that use math tutoring
- Reflections on launching math tutoring (scale, funding, operations, challenges/lessons along the way)

Of Note:

- Use of math tutoring in rural context
- Motivation of building an educated local workforce

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Thank You!

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References

AmeriCorps. (2019). *Evaluation of a math tutoring program implemented with community support: A systematic replication & extension.* https://americorps.gov/sites/default/files/evidenceexchange/ReadingandMathInc_20AC220018_Report_Revised_508_1.pdf

Barbieri, C. A., Rodrigues, J., Dyson, N., & Jordan, N. C. (2020). Improving fraction understanding in sixth graders with mathematics difficulties: Effects of a number line approach combined with cognitive learning strategies. *Journal of Educational Psychology*, *112*(3), 628–648. https://doi.org/10.1037/edu0000384

The Education Trust and MDRC. (2021, March). *Strategies to solve unfinished learning*. Author. https://edtrust.org/wp-content/uploads/2021/03/Targeted-Intensive-Tutoring-as-a-Strategy-to-Solve-Unfinished-Learning-March-2021.pdf

Foorman, B., Beyler, N., Borradaile, K., Coyne, M., Denton, C. A., Dimino, J., Furgeson, J., Hayes, L., Henke, J., Justice, L., Keating, B., Lewis, W., Sattar, S., Streke, A., Wagner, R., & Wissel, S. (2016). *Foundational skills to support reading for understanding in kindergarten through 3rd grade* (NCEE 2016-4008). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://whatworks.ed.gov.

References

Fuchs, L. S., Newman-Gonchar, R., Schumacher, R., Dougherty, B., Bucka, N., Karp, K. S., Woodward, J., Clarke, B., Jordan, N. C., Gersten, R., Jayanthi, M., Keating, B., & Morgan, S. (2021). *Assisting students struggling with mathematics: Intervention in the elementary grades* (WWC 2021006). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://whatworks.ed.gov/.

Markovitz, C., Hernandez, M., Hedberg, E., & Silberglitt, B. (2014). *Impact evaluation of the Minnesota Reading Corps K-3 Program*. Chicago, IL: NORC at the University of Chicago.

Markovitz, C., Hernandez, M., Hedberg, E., & Silberglitt, B. (2015). *Outcome evaluation of the Minnesota Reading Corps PreK Program*. Chicago, IL: NORC at the University of Chicago.

Markovitz, C., Hernandez, M., Hedberg, E., & Neishi, K. (2018). *Impact evaluation of the Wisconsin Reading Corps Program*. Chicago, IL: NORC at the University of Chicago.

References

Marulis, L., & Neuman, S. (2013). How vocabulary interventions affect young children at risk: A meta-analytic review. *Journal of Research on Educational Effectiveness, 6*, 223–262.

National Student Support Accelerator. (2021). *High-impact tutoring: District playbook*. Brown University. https://studentsupportaccelerator.com/sites/default/files/District%20Playbook_2.pdf

Parker, D. C., Nelson, P. M., Zaslofsky, A. F., Kanive, R., Foegen, A., Kaiser, P., & Heisted, D. (2019). Evaluation of a math intervention program implemented with community support. *Journal of Research on Educational Effectiveness*, *12*(3), 391–412.

References 2:
Effect size comparisons, tutoring vs. other interventions

Cook, P. J., Dodge, K., Farkas, G., Fryer, R. G., Guryan, J., Ludwig, J., Mayer, S., Pollack, H., & Steinberg, L. (2015). *Not too late: Improving academic outcomes for disadvantaged youth*. Institute for Policy Research Northwestern University Working Paper WP-15, 1.

Krueger, A. B. (1999). Experimental estimates of education production functions. *The Quarterly Journal of Economics, 114*(2), 497–532.

Lynch, K., Hill, H. C., Gonzalez, K, & Pollard, C. (2019). *Strengthening the research base that informs STEM instructional improvement efforts: A meta-analysis*. Brown University Working Paper.

Neitzel, A., Lake, C., Pellegrini, M., & Slavin, R. (2020). A synthesis of quantitative research on programs for struggling readers in elementary schools.

Nickow, A., Oreopoulos, P., & Quan, V. (2020).. *The impressive effects of tutoring on PreK-12 learning: A systematic review and meta-analysis of the experimental evidence* National Bureau of Economic Research Working Paper Series(w27476).

Pellegrini, M., Lake, C., Neitzel, A., & Slavin, R. E. (2020, May). *Effective programs in elementary mathematics: A best-evidence synthesis*. Manuscript under review.

Slavin, R. E., Lake, C., & Groff, C. (2009). Effective programs in middle and high school mathematics: A best-evidence synthesis. *Review of Educational Research, 79*(2), 839–11.