Rapid Online Assessment of Reading (ROAR)

A bridge between the lab, community, and classroom

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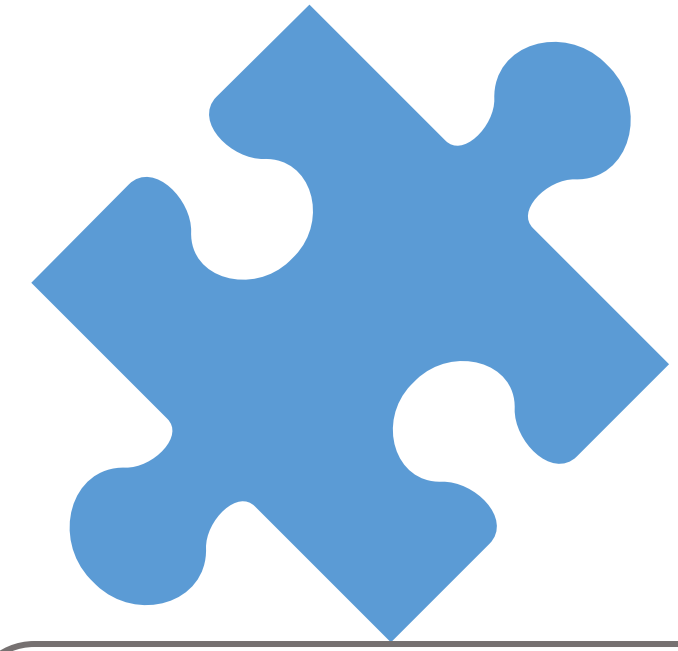
https://ROAR.Stanford.edu/

https://BrainAndEducation.com

Democratizing Access with ROAR@Home

https://roar.stanford.edu/homesignup



Democratizing Access with ROAR@Home

https://roar.stanford.edu/homesignup

The Problem: Assessments are time-consuming, resource-intensive, costly, and are often grounded in opaque proprietary products that are divorced from science.

Our Solution: The Rapid Online Assessment of Reading (ROAR)

An open-science, platform of completely automated assessments that is grounded in ongoing research and co-developed with school-district partners and community-based organization.

ROAR is...

- Kid-friendly, efficient, and automated
- Assess an entire district (K-12) in just a few minutes

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- Kid-friendly, efficient, and automated
- Assess an entire district (K-12) in just a few minutes
- Developed entirely through research-practice partnership model
- In collaboration with educators and families


So teachers can spend *more* time teaching and *less* time administering and scoring assessments!

Rapid Online Assessment of Reading (ROAR)

- More efficient, reliable screening, assessment & progress monitoring at scale
- No loss of instruction time
- Grounded in ongoing research

Collaborations with schools & clinics

Virtuous cycle of Research & Practice

Lab R&D Cycle

- Brain Imaging
- Behavioral Measures
- Interventions

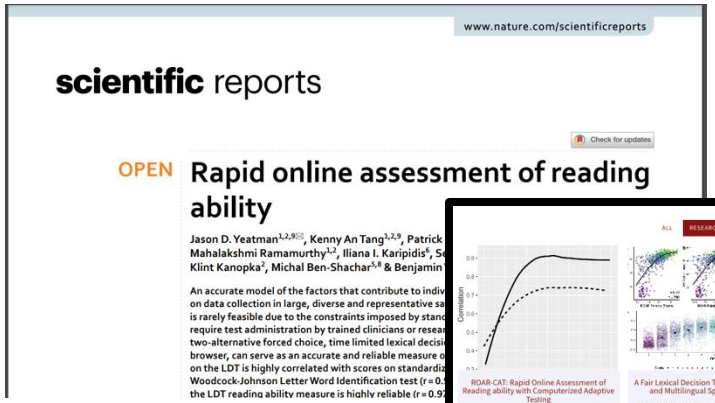
- Insights from practitioners
- Large groups of diverse research participants
- New research directions

https://roar.stanford.edu/partnerships/

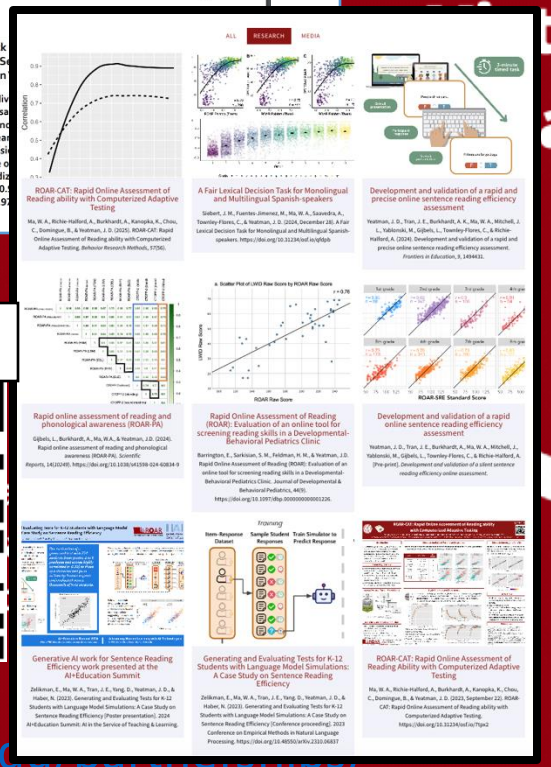
Rapid Online Assessment of Reading (ROAR)

Mission: Scientific Transparency

https://roar.stanford.edu/technical/



Publications



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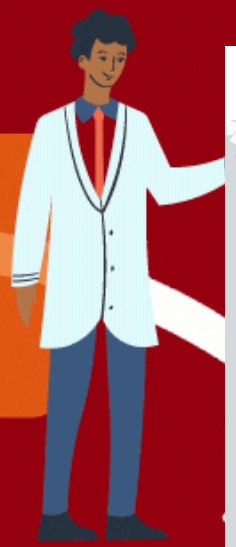
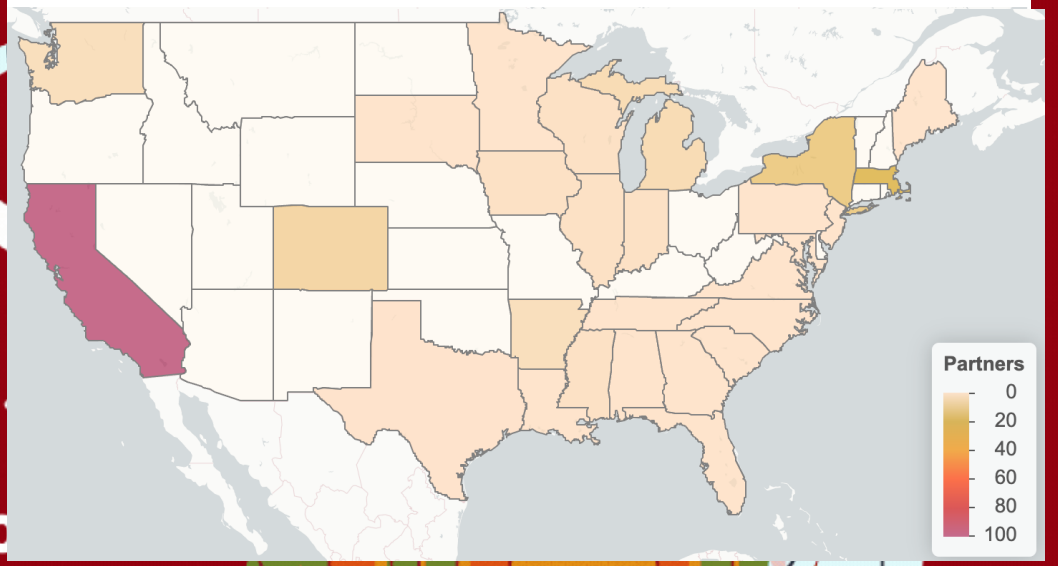


https://roar.stanford.edu/technical/intro-norms.html

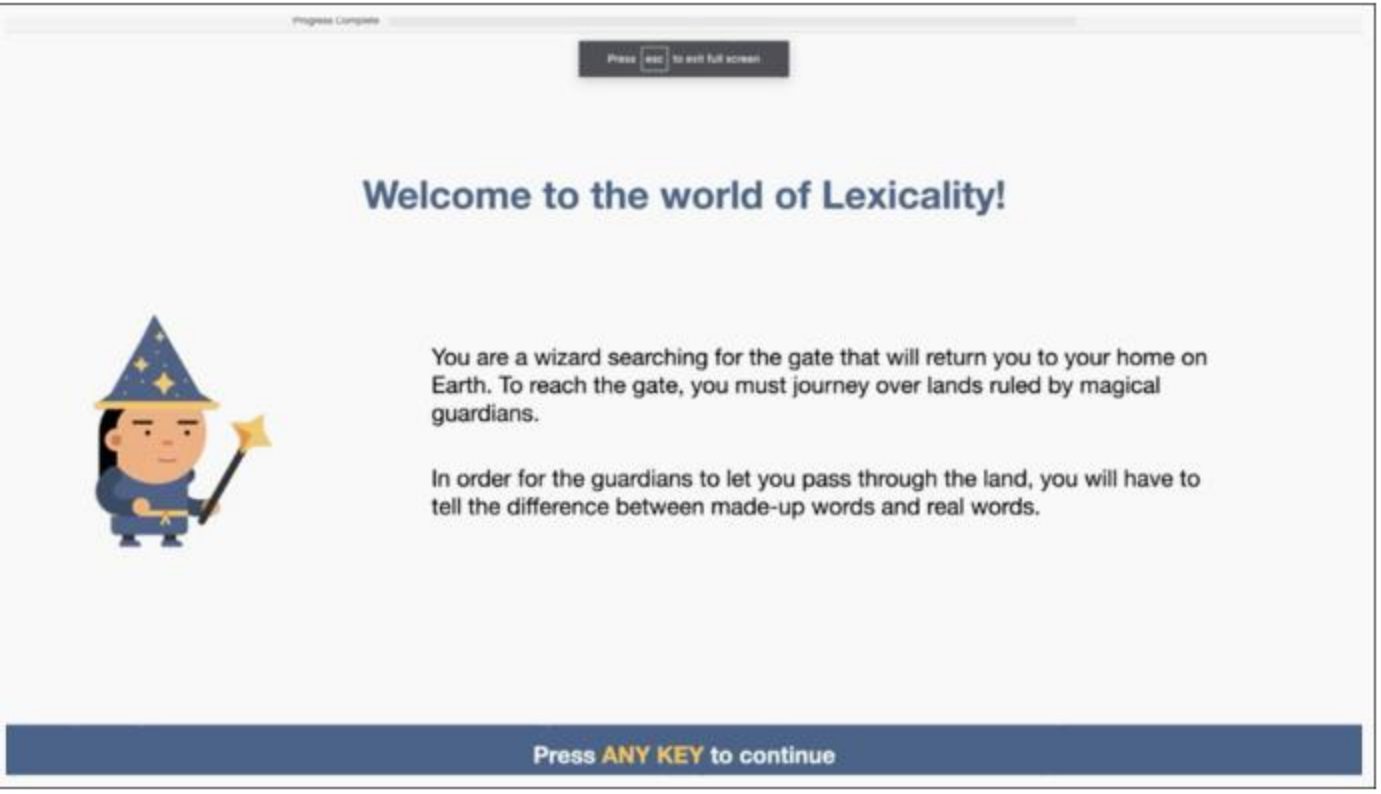


Research Practice Partnerships: 31 states, and 5 countries, >100,000 data points.

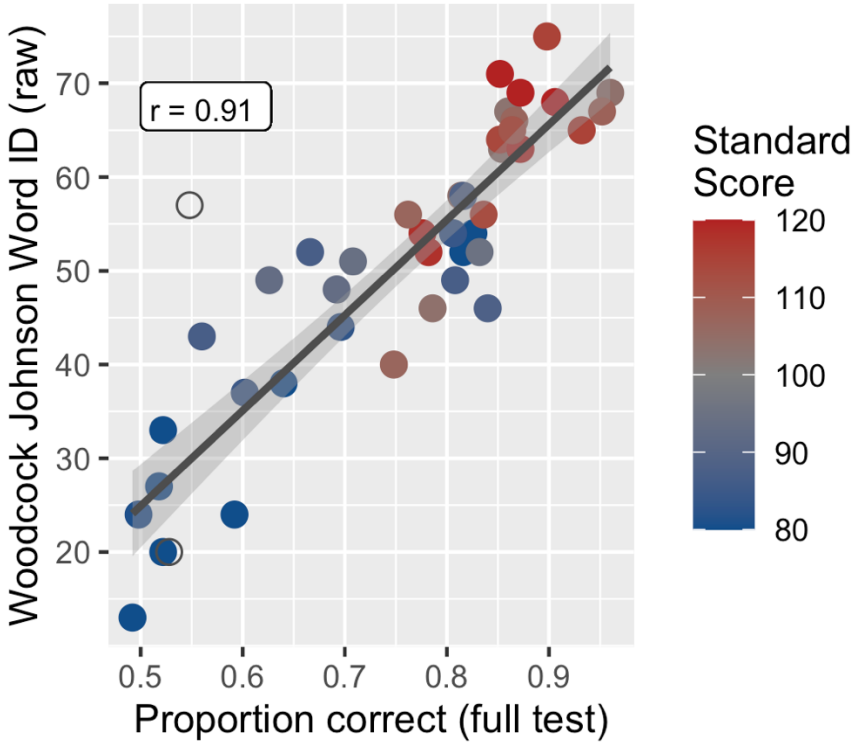
Goal: Build enduring links between research and practice, serve 1M learners for free, and unlock unprecedented research opportunities.

Grounded in cognitive neuroscience, rigorously validated in the lab and the school

It began with **a hypothesis** about an efficient and scalable way to measure **single word reading**:
A computer adaptive lexical decision task



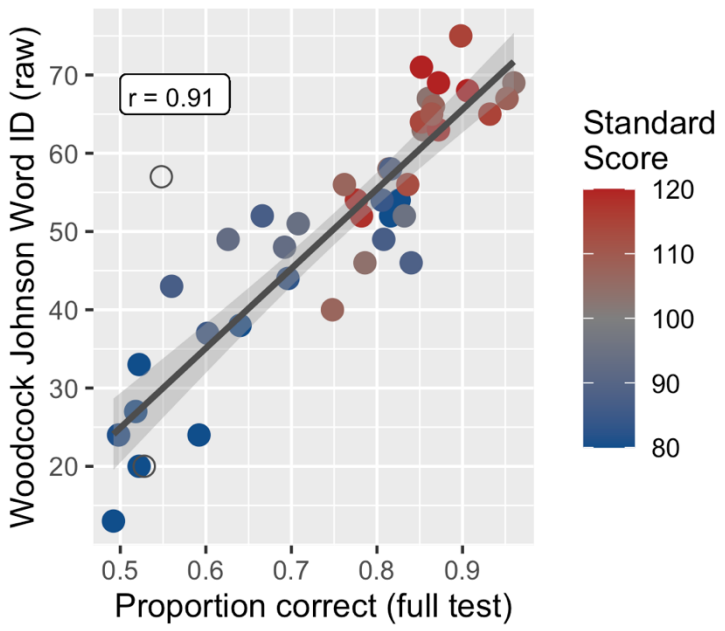
Proof-of-concept validation against "gold standard" in-person assessment



Yeatman, J. D., Tang, K. A., Donnelly, P. M., Yablonski, M., Ramamurthy, M., Karipidis, I. I., Caffarra, S., Takada, M. E., Kanopka, K., Ben-Shachar, M., & Domingue, B. W. (2021). Rapid online assessment of reading ability. *Scientific Reports*, *11*(1), 6396. https://roar.stanford.edu/#demo

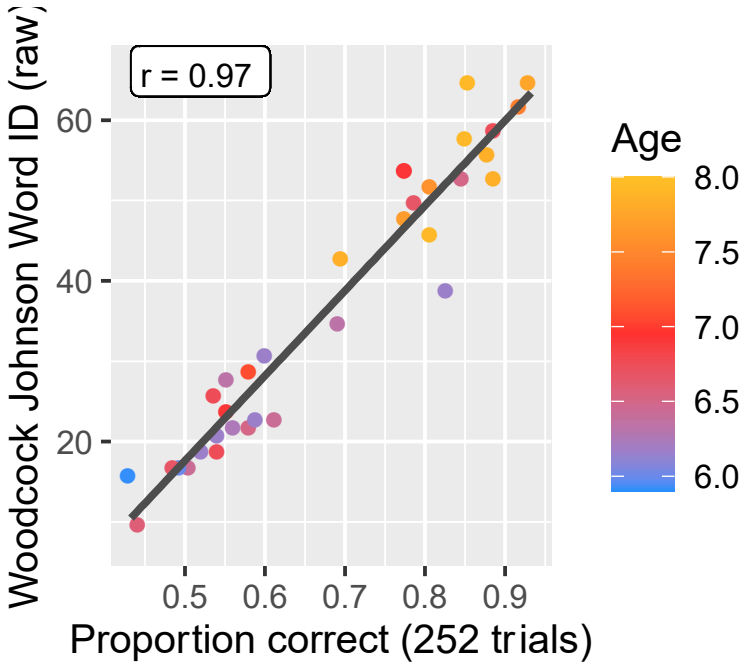
Grounded in cognitive neuroscience, rigorously validated in the lab and the school

Validation 1: Individually-administered Woodcock Johnson (ages 7-18)



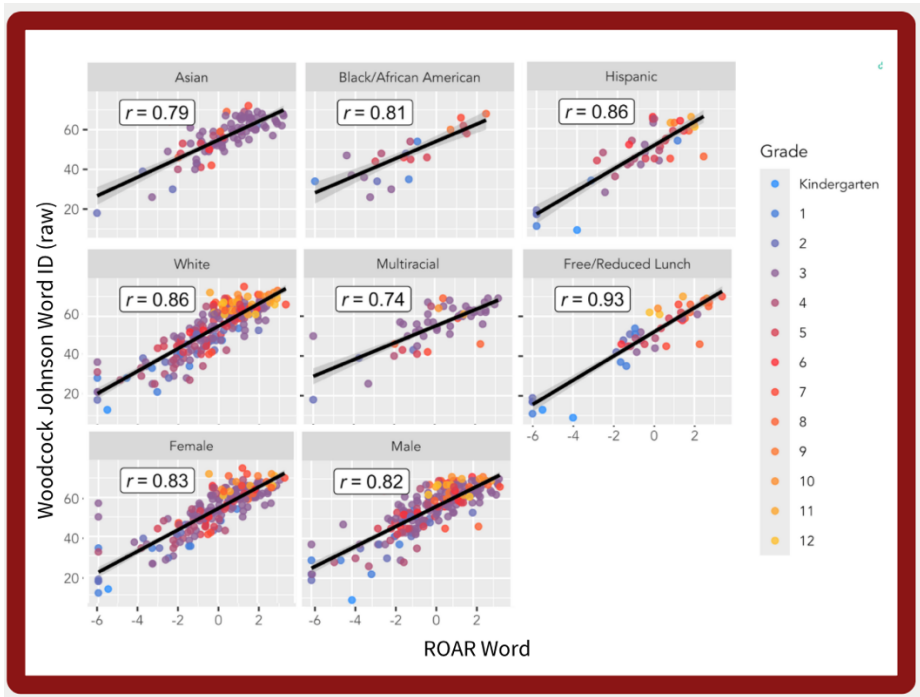
Yeatman et al. 2021; Fig. 1

Validation 2: Individually-administered Woodcock Johnson (ages 6-7)



Yeatman et al. 2021; Fig. 4

Validation 3: >5,000 students across districts around the US and Colombia (grades K-12)



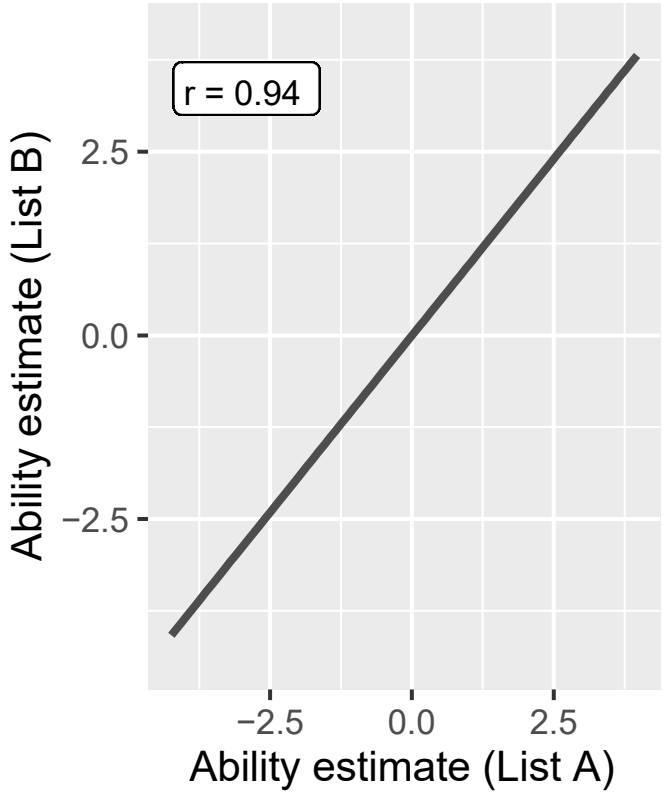
Gijbels et al. 2024; Ma et al. 2025

https://roar.stanford.edu/technical/concurrent-validity-swr.html

https://roar.stanford.edu/technical

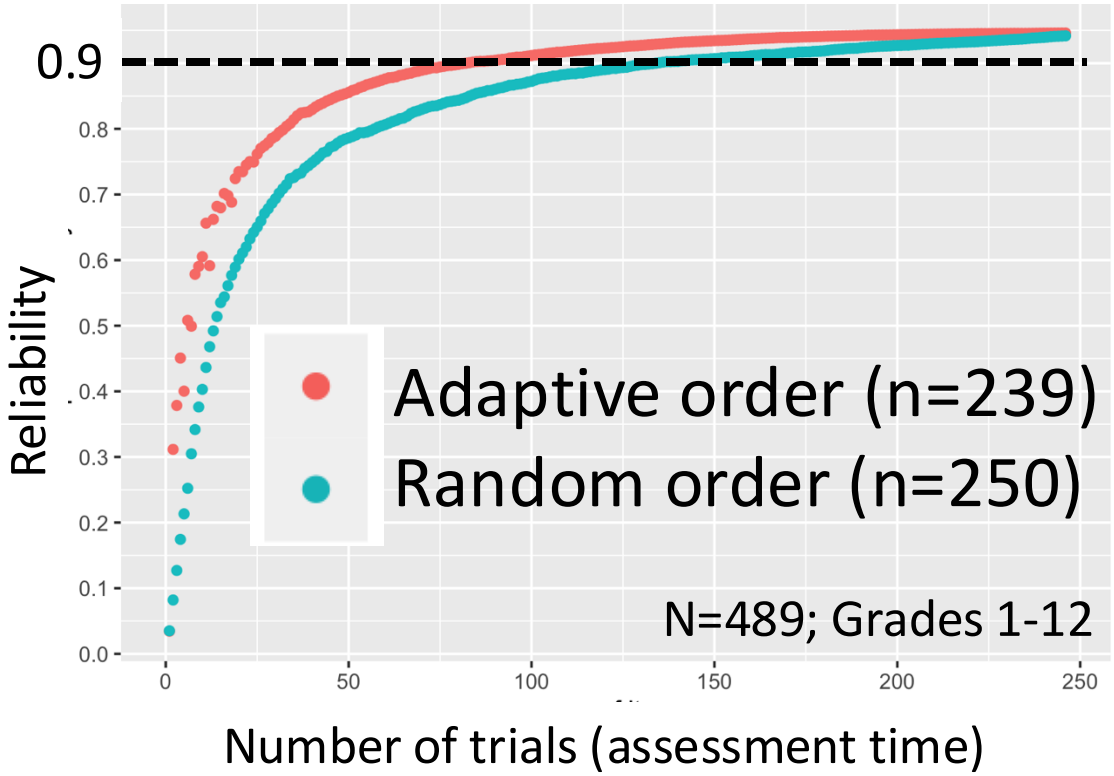
Optimized to be reliable, efficient, fun, and engaging

Test-retest reliability optimized based on Item Response Theory



Yeatman et al. 2021; Fig. 1

40% Efficiency gain with a new Computer Adaptive Testing (CAT) algorithm



Ma et al. 2025; Fig. 7

Improved reliability through **thoughtful** gamification

Ma et al. *in prep*

https://roar.stanford.edu/technical/reliability-swr.html

https://roar.stanford.edu/#demo

Foundational Reading Skills and Dyslexia Screening

Single Word Recognition

ROAR-Word

ROAR-Word measures a student's ability to **quickly recognize words**. Word recognition is at the foundation of reading ability and is important for reading fluency and comprehension.

https://roar.stanford.edu/for-educators/

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ROAR-Phoneme

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Sentence Reading Efficiency

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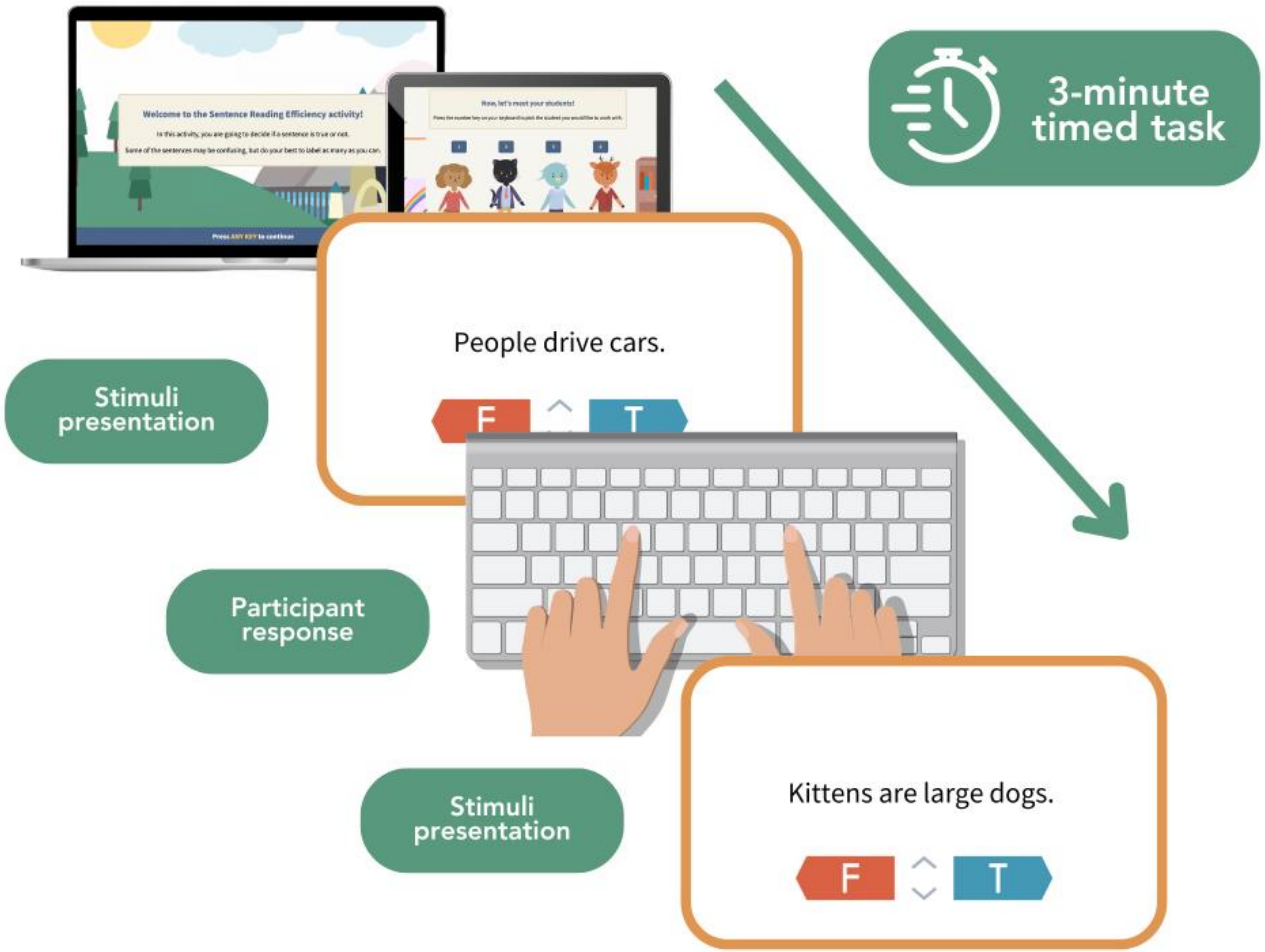
ROAR - Sentence Reading Efficiency



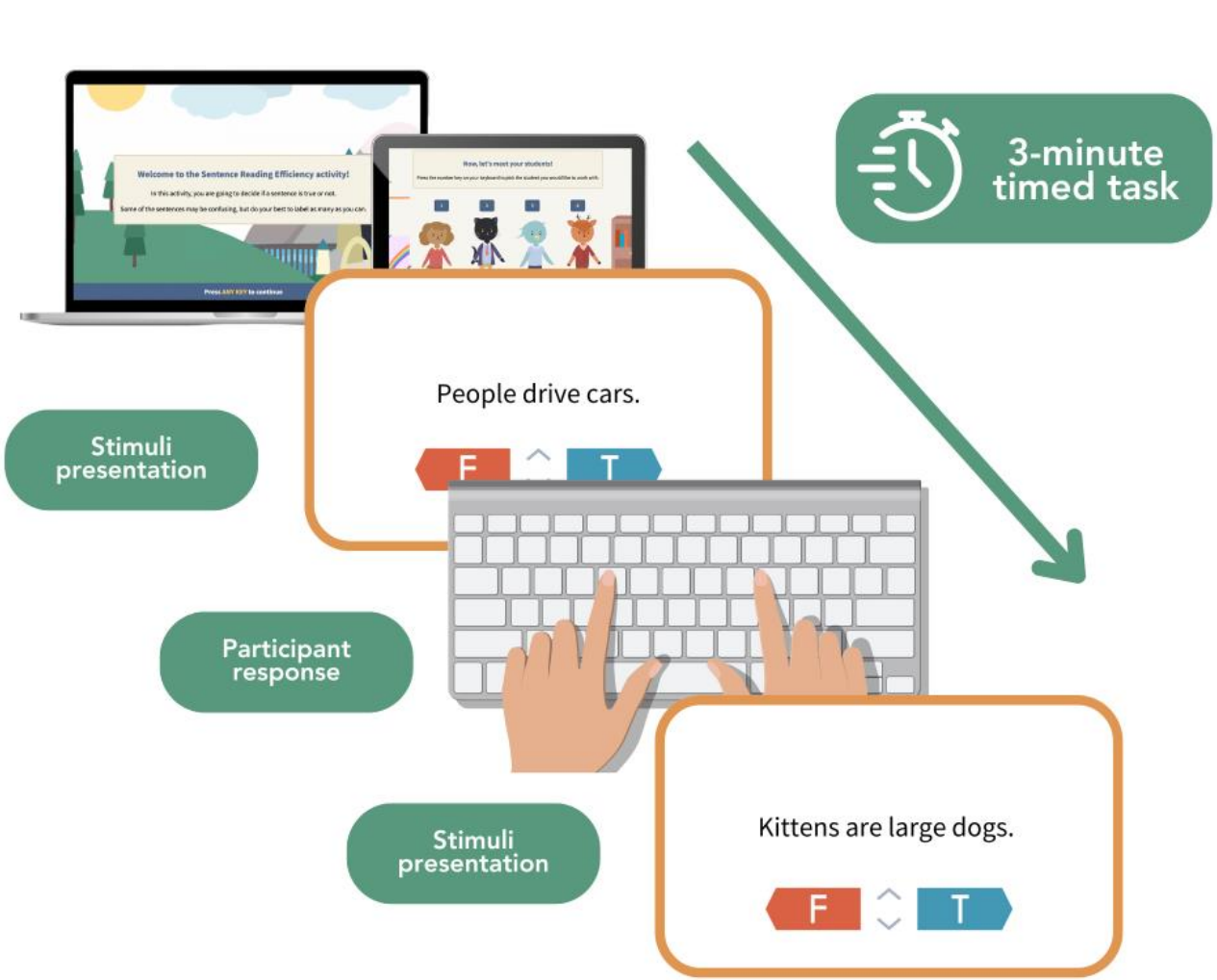
Design principles

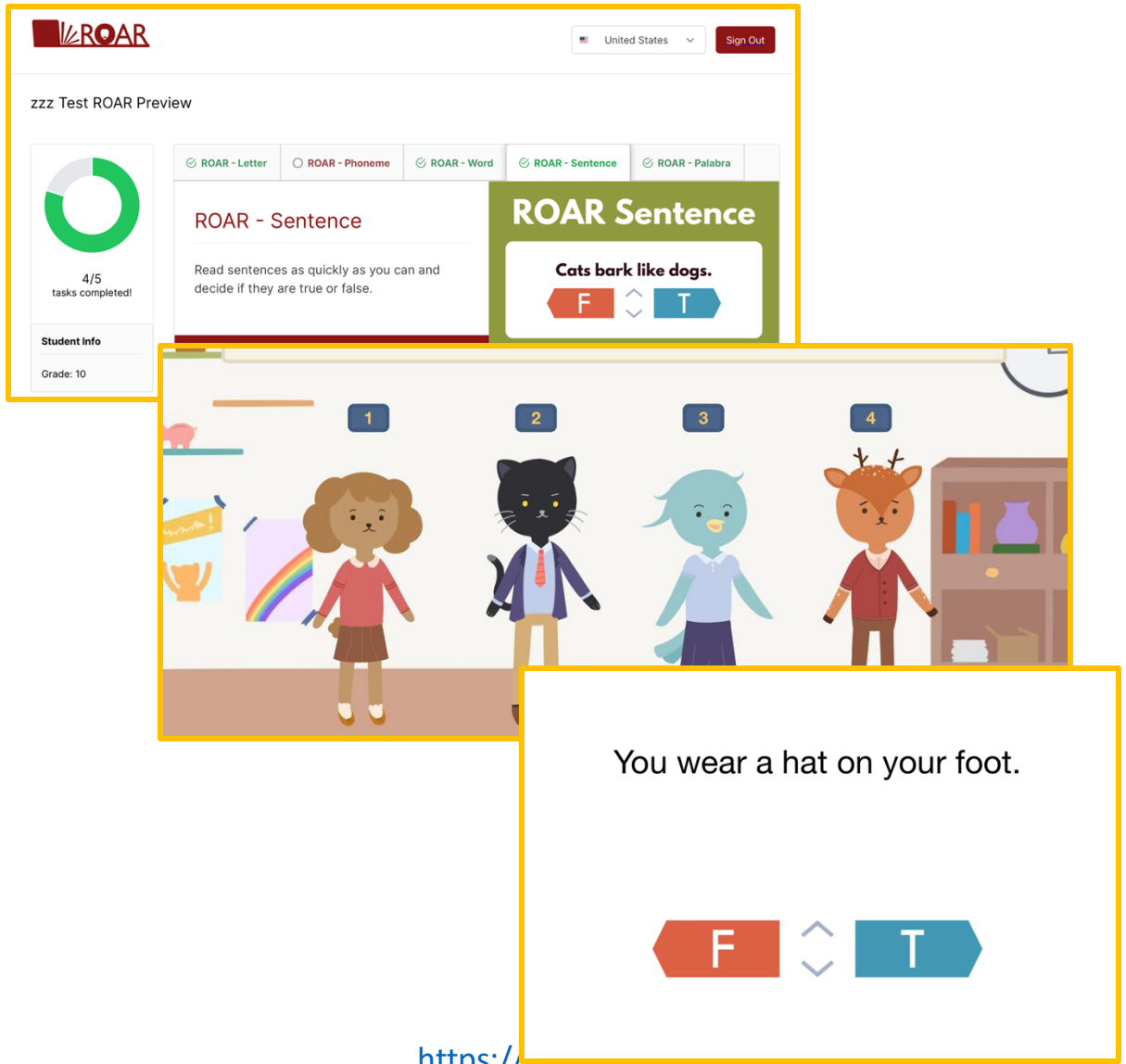
- Simple assertions that are clearly (and universally) true or false
- Minimal background knowledge
- Simple syntax
- Simple vocabulary
- Measures the efficiency of reading for understanding

Yeatman, Tran, et al., 2024, *Frontiers in Education*

https://roar.stanford.edu/technical/intro-sre.html

ROAR - Sentence Reading Efficiency





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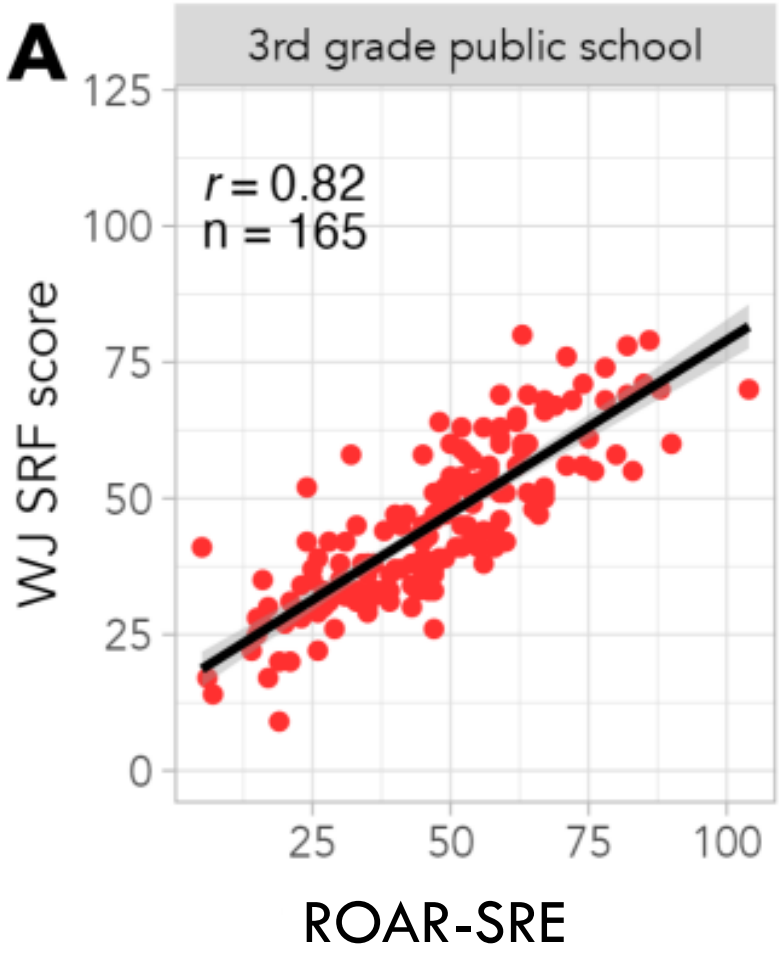
Sentence Reading Efficiency: **Fast and reliable**



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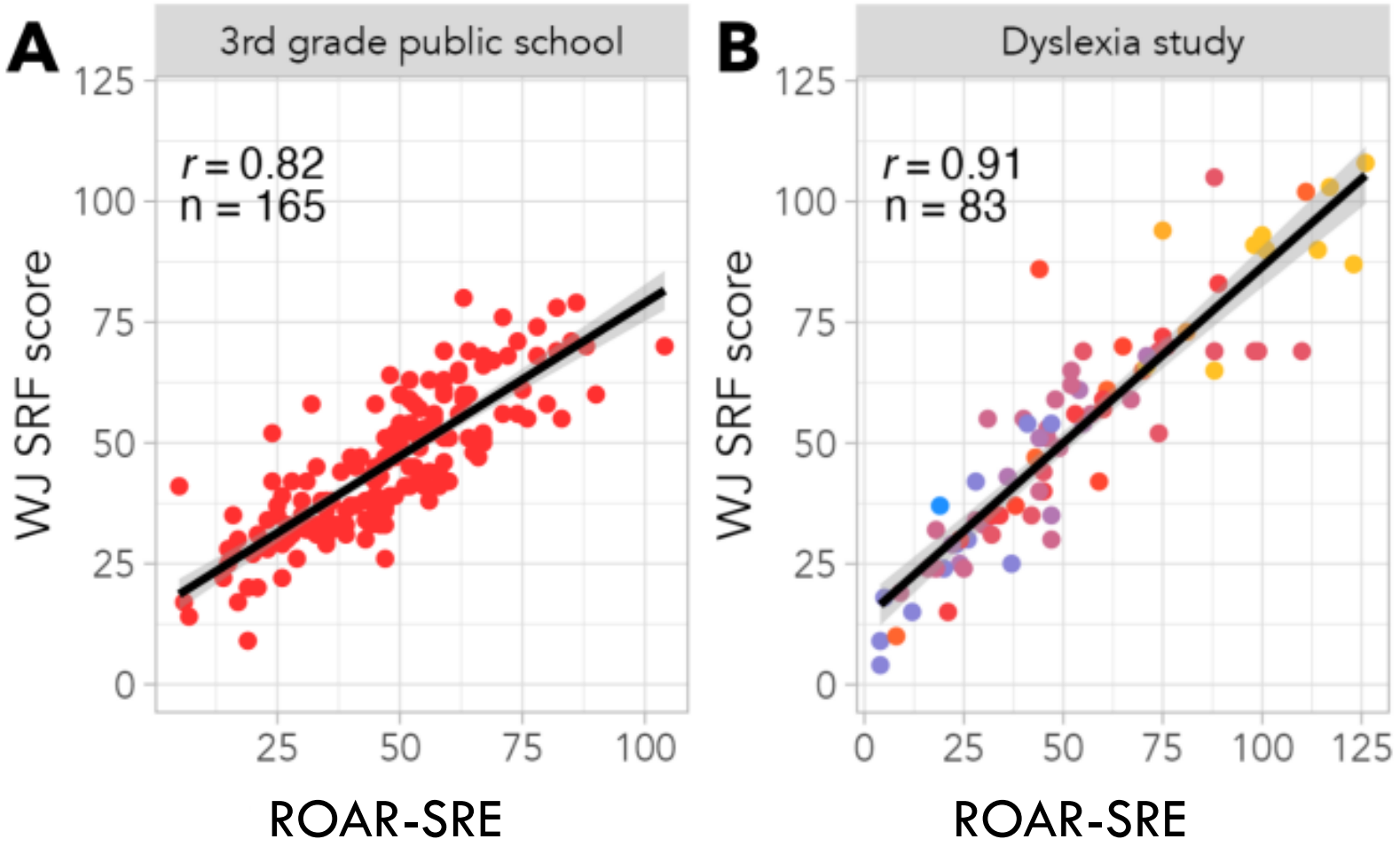

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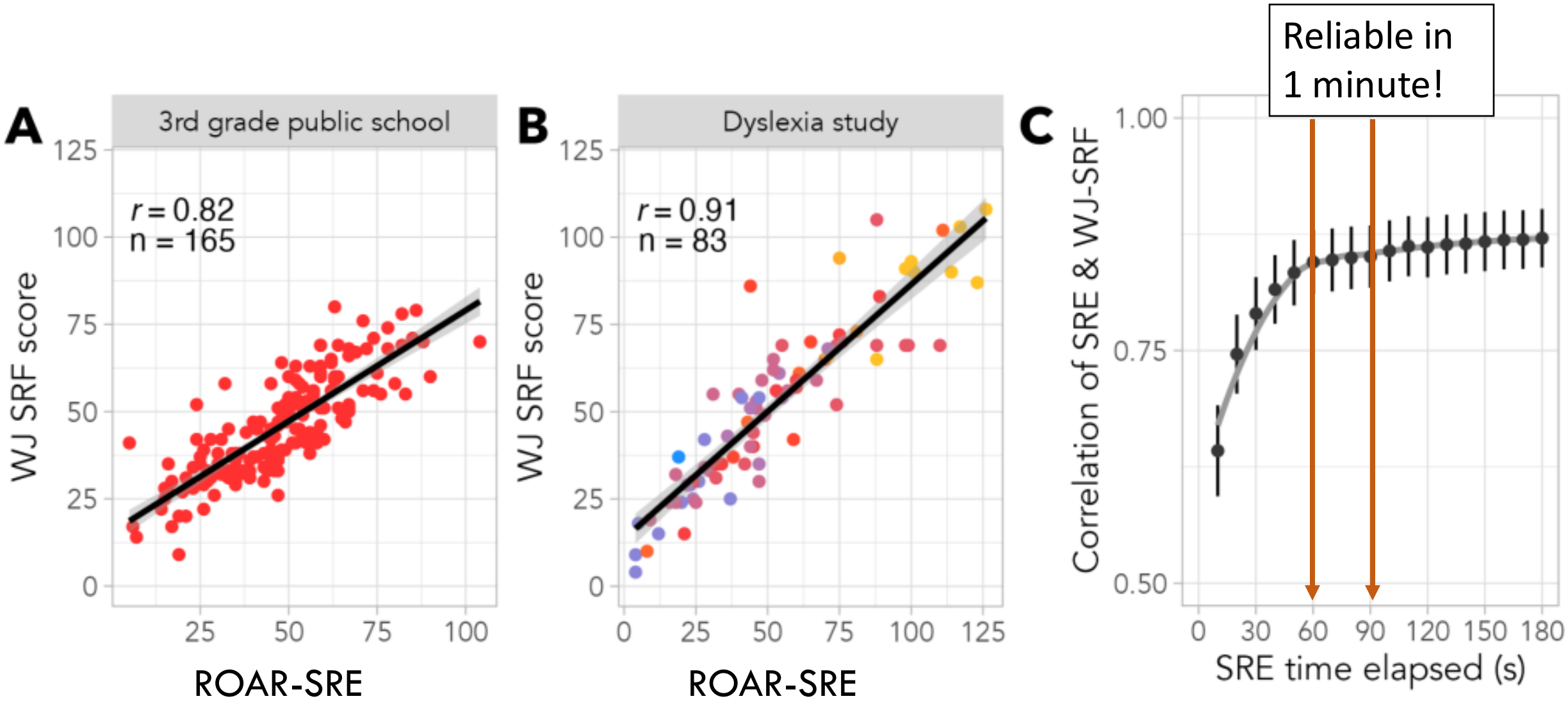
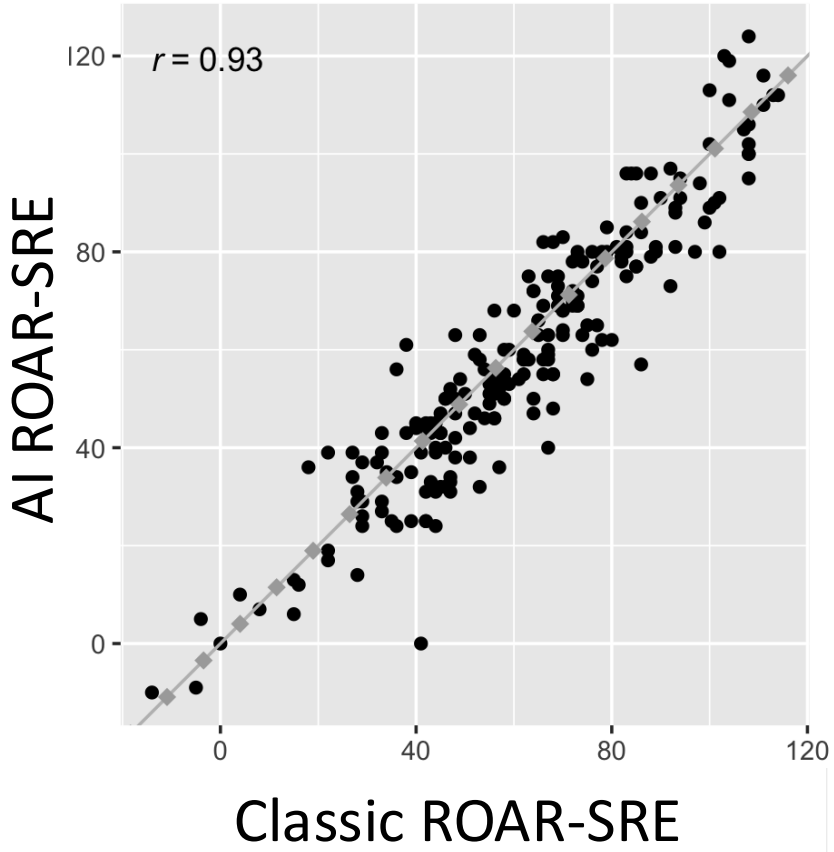


Yeatman, Tran, et al., 2024, *Frontiers in Education*

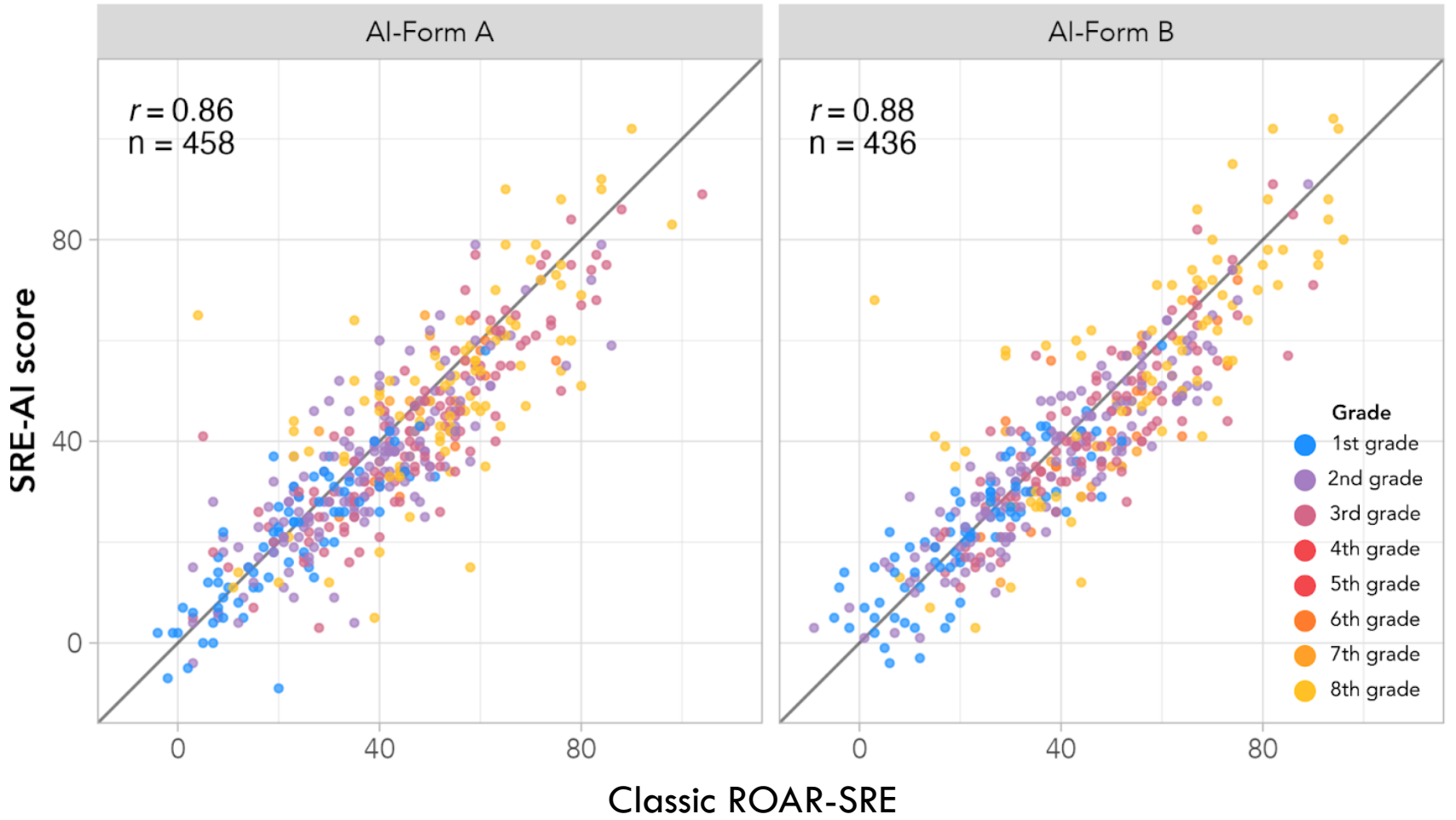
https://roar.stanford.edu/technical/concurrent-validity-sre.html

Sentence Reading Efficiency: **Fast, reliable and "infinite" parallel test forms**

New AI model can generate "infinite" matched test forms!



90s; Precise; Validated grades 1-12



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Letter Sound Knowledge

ROAR-Letter

ROAR-Letter measures knowledge of **upper and lowercase letter names** as well as **letter sounds**.

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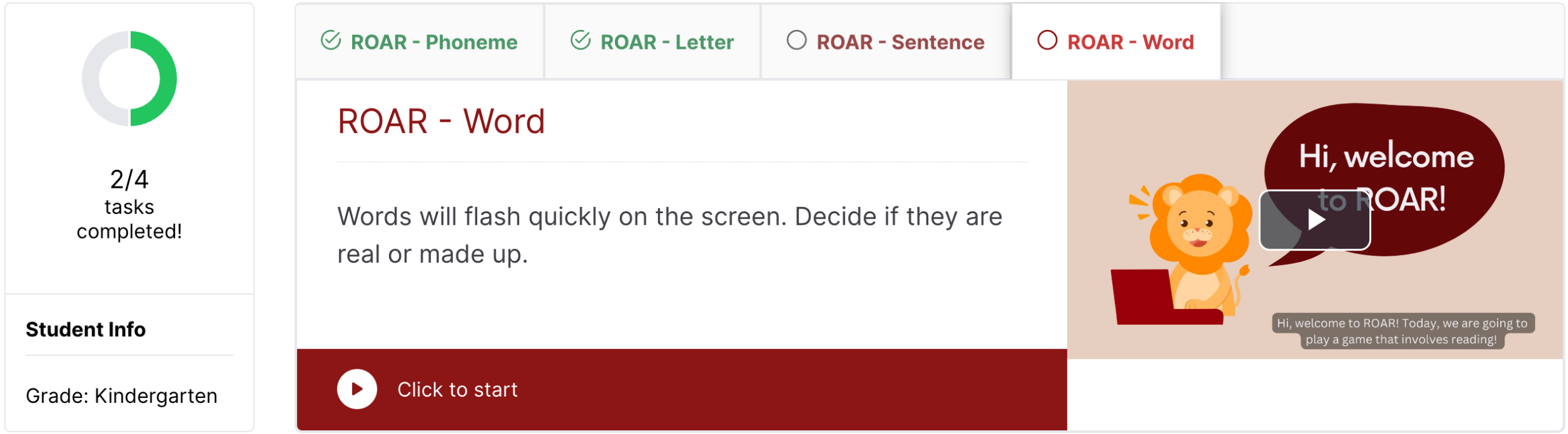
Foundational Reading Skills: Student View



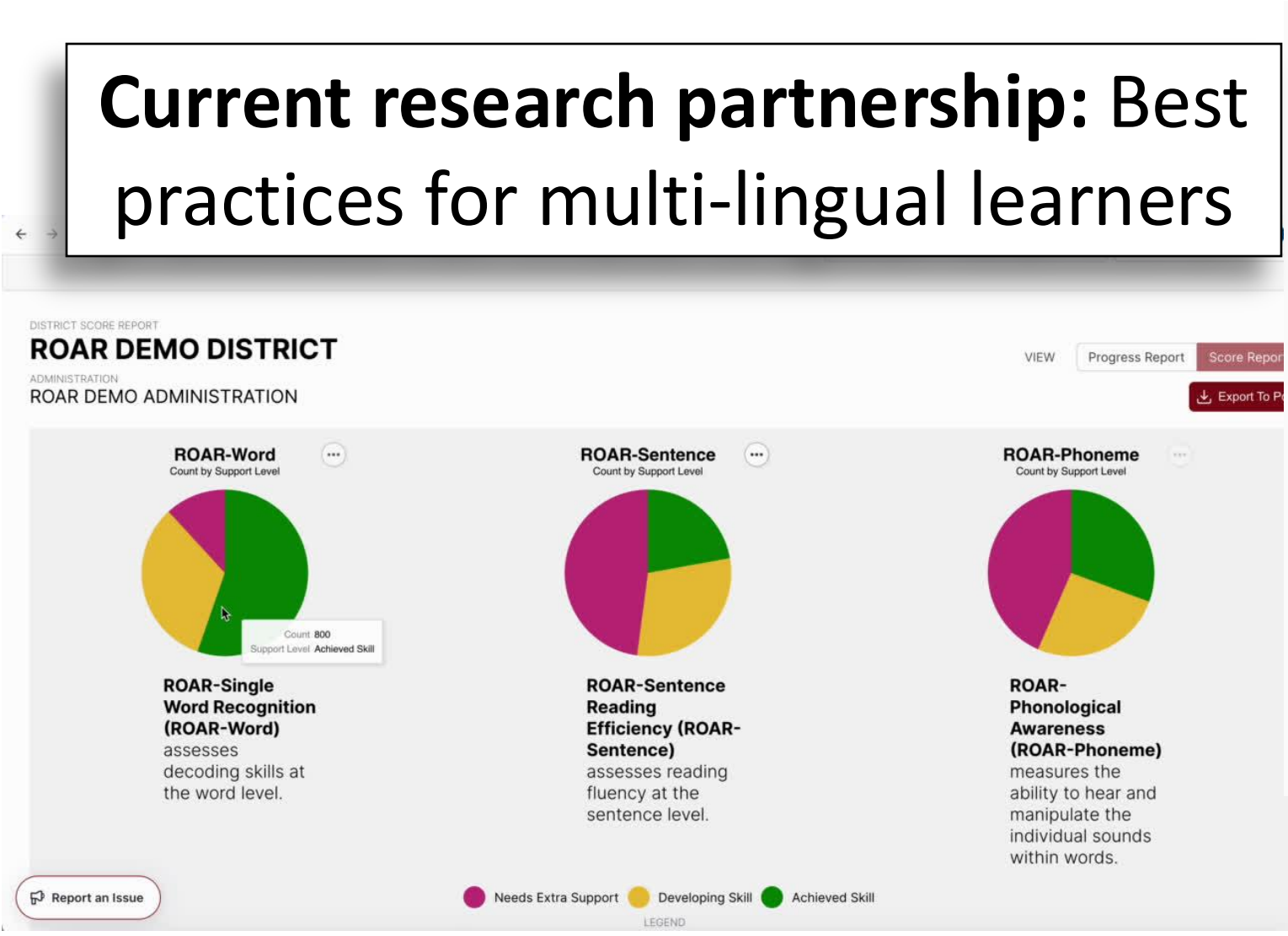
https://roar.stanford.edu/for-educators/

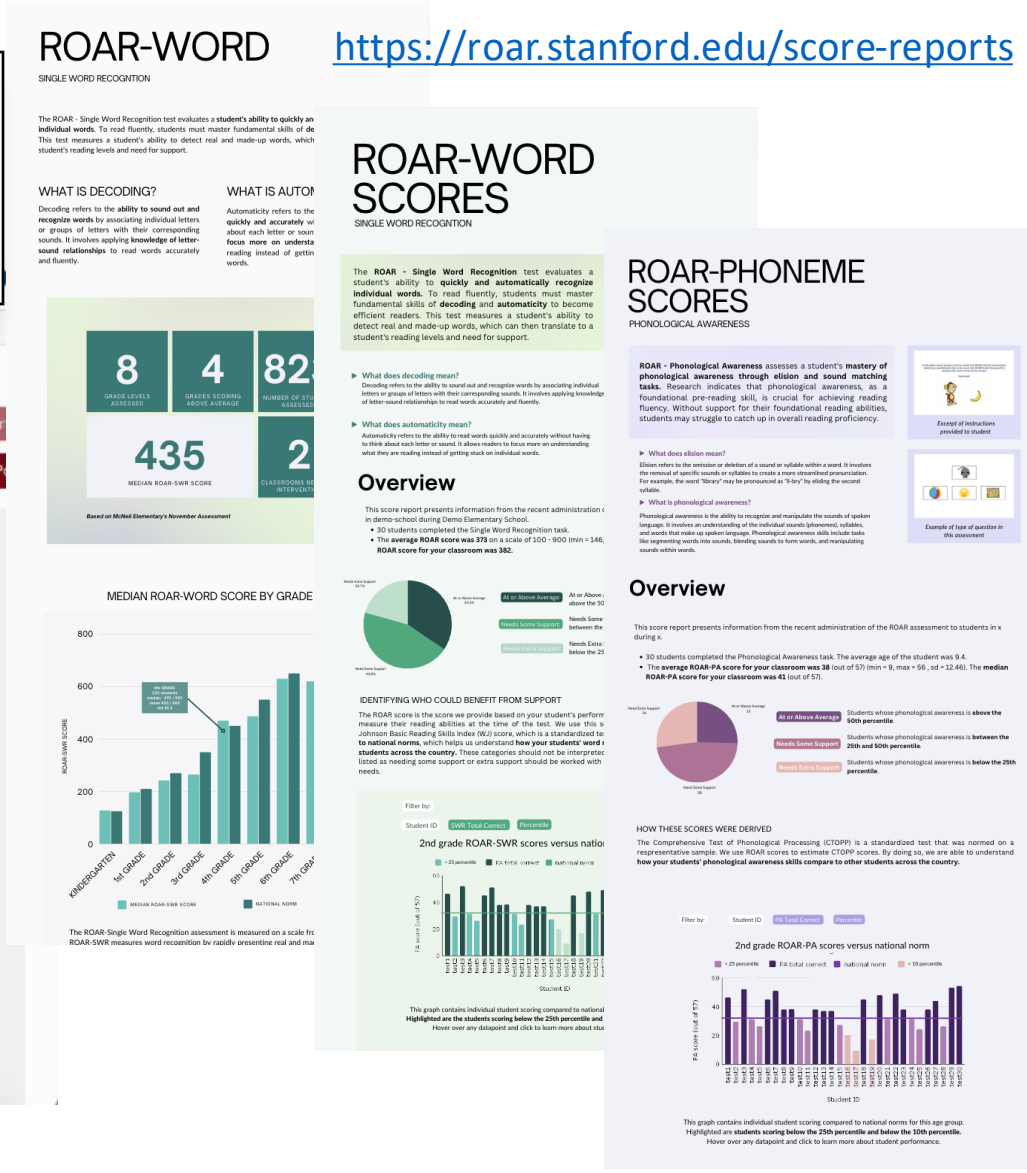
https://youtu.be/XLLxKBJEeGc

Foundational Reading Skills: Teacher/Admin View

(score reports for validated measures)

Current research partnership: Best practices for multi-lingual learners





Tour the platform: https://roar.education/

Open-access resources: roar.stanford.edu

Resources for Educators

Professional Development Protocol

Democratizing Access with ROAR@Home

https://roar.stanford.edu/homesignup

ROAR

Thank you for helping us realize the goal of building deeper, systemic relationships between research and practice to support the diversity of learners.

The Rapid Online Assessment of Reading

https://roar.stanford.edu/

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NIH National Institute of Mental Health