# Improving reading achievement of secondary students reading below grade level with a comprehensive Tier-1 reading intervention

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## Background

Persistent reading failure among secondary students indicates a need for greater emphasis on foundational reading skills beyond the elementary grades. In this study, we examine the efficacy of the University of Utah Reading Clinic's Tier-1 Text and Tier-1 Word Study instructional routines to remediate secondary students experiencing reading failure.

## Research Question

What effect does a comprehensive Tier-1 reading intervention have on reading achievement of secondary students reading below grade level?

## Methods

### Participants
58 general education 7th grade students reading below grade level at the beginning of the school year.
•Researchers filtered the dataset to include only students with a Test of Silent Contextual Reading Fluency (TOSCRF-2) standard score below 90 to compare students who began the school year reading below grade level.
**Treatment group:**
•22 7th grade students
•Average TOSCRF-2 Pretest Standard Score: 83.27
•All treatment group students were located in one school.
**Comparison group:**
•36 7th grade students
•Average TOSCRF-2 Pretest Standard Score: 79.25
•All comparison group students were located in a separate school in the same district as treatment group students.

### Assessment
•At the beginning of the 2021-2022 school year, UURC staff administered the Test of Silent Contextual Reading Fluency-Second Edition (TOSCRF-2; Hammill et al., 2014) to 7th grade students at two urban junior high schools, within the same city, with similar demographic makeup. A recent meta-analysis by Wissinger et al., 2023, found that performance on the TOSCRF-2 mirrors the results from other norm-referenced tests of reading, regardless of which component reading skill they measure.
•At the end of the school year, UURC staff administered the TOSCRF-2 again.

### Instruction
•**Treatment group** students were instructed at one of the two junior high schools. These students received Tier-1 intervention (UURC's Tier-1 Text and Tier-1 Word Study) 2 days a week during the 2021-22 school year. On the remaining weekdays, they received business-as-usual instruction (general English/Language Arts curriculum).
•Tier-1 intervention was delivered in a whole-class format by a trained English/Language Arts teacher, providing instruction incorporating Questioning the Author (Beck et al., 1996) and Fluency-Oriented Reading Instruction strategies (Kuhn et al., 2006), as well as:
o assisted oral reading of grade level texts
o explicit academic vocabulary instruction
o isolated monosyllabic and multisyllabic word analysis
o word reading for accuracy and fluency
•Intervention duration: approximately 46 sessions of 75-minute instruction.
•**Comparison group** students attended a separate junior high school in the same district as the treatment group. They did not receive any intervention and participated in the business-as-usual condition (general English/Language Arts curriculum) during the 2021-22 school year.

### Design
•**Initial comparison** TOSCRF-2 pretest scores were compared with a t-test to identify initial differences. An insignificant result suggested the confound of treatment condition with site was minimized. It also allowed the researchers to not include a treatment X pretest interaction in the ANCOVA.
•**ANCOVA** TOSCRF-2 posttest scores were compared with an ANCOVA using TOSCRF-2 pretest and treatment condition as covariates.

## Sample Lesson Materials

Graphic organizer for assisted reading of grade level text

Planned grade level text for assisted reading

Multi-syllabic word analysis

Academic vocabulary template

## Test of Silent Contextual Reading Fluency-Second Edition

*Test of Silent Contextual Reading Fluency- Second Edition* (TOSCRF-2) is a reliable and valid measure of reading comprehension and general reading ability that can be group administered in 3 minutes.

## Results

Students reading below grade level at the beginning of their 7th grade year who received Tier-1 intervention experienced greater growth in reading achievement than the comparison group, as measured by the TOSCRF-2, over the duration of the school year.

### Descriptive Statistics
**Intervention Group:**
•Average gain (standard score): 9.68
•Change in percentile rank equivalent of average standard score: 19

**Comparison Group:**
•Average gain (standard score): 4.50
•Change in percentile rank equivalent of average standard score: 6

### Statistical Analysis
•Significant school and pre-test effects on post-test were identified.
•The eta-squared ($\eta^2$) for the school/treatment effect is 0.066, a medium effect.

ANCOVA results for posttest TOSCRF-2 standard score

| | df | Sum Sq | Mean Sq | F | p |
|---|---|---|---|---|---|
| School / Tx | 1 | 1156.9 | 1156.92 | 11.647 | 0.0012 |
| TOSCRF SS Pre | 1 | 1882.6 | 1882.63 | 18.954 | 5.88e-05 |
| Residuals | 55 | 5463.1 | 99.33 | | |

Comparison graph depicting changes in TOSCRF-2 standard scores by condition


TOSCRF Standard Scores
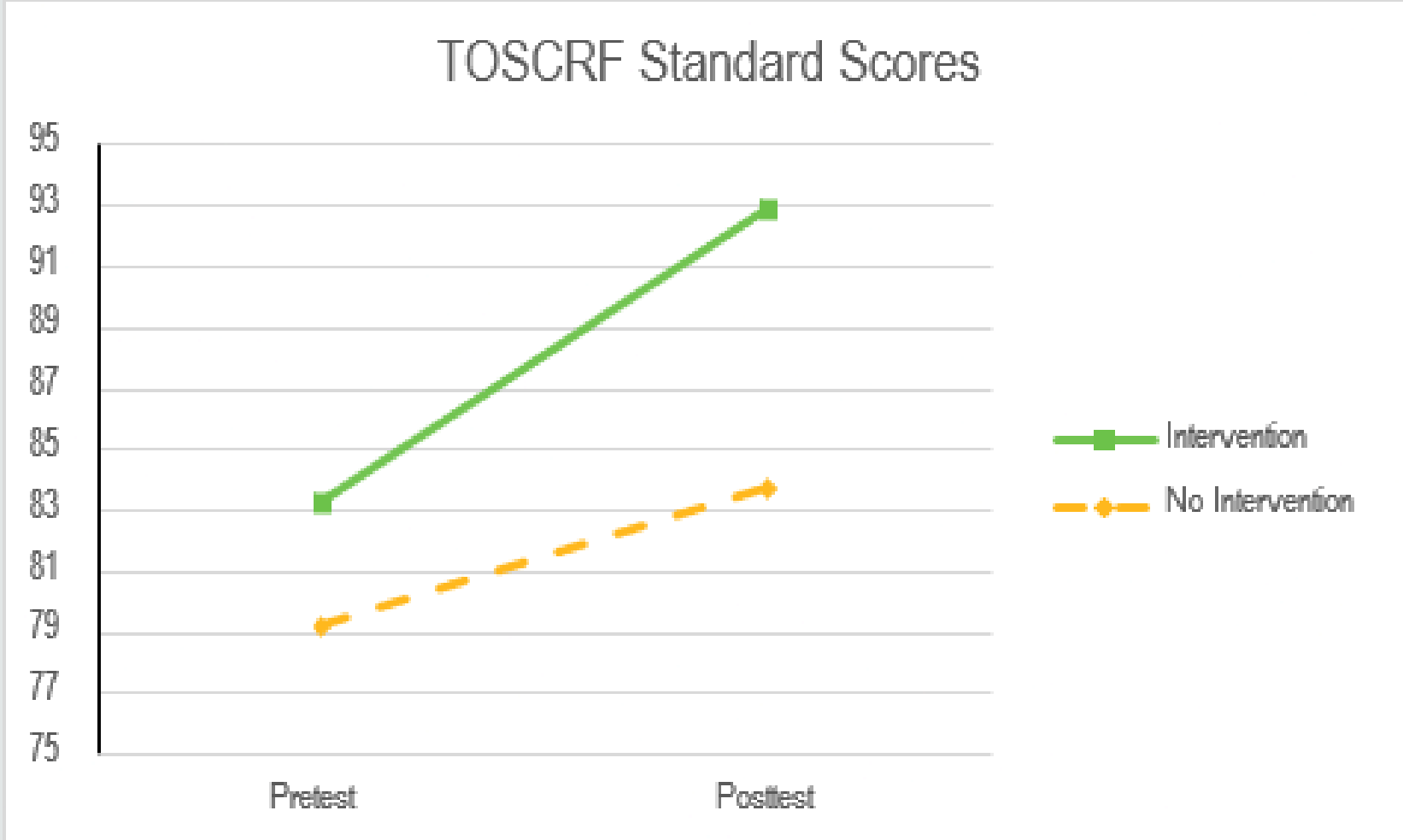
Descriptive statistics

| | Pretest SS | SD | Pretest PR Equiv | Posttest SS | SD | Posttest PR Equiv | SS Gain | PR Equiv Change |
|---|---|---|---|---|---|---|---|---|
| Tier-I Intervention | 83.27 (n=22) | 4.42 | 13 | 92.95 (n=22) | 7.31 | 32 | 9.68 (n=22) | 19 |
| No Intervention | 79.25 (n=36) | 10.67 | 8 | 83.75 (n=36) | 13.34 | 14 | 4.50 (n=36) | 6 |

## Conclusions

There was a statistical treatment effect for the use of the UURC Tier-1 Text and Word Study instructional routines (F = 11.65, p <.01) compared to the general English/Language Arts curriculum, suggesting that ELA curriculum should include assisted oral reading of grade-level texts, explicit instruction of academic vocabulary, isolated monosyllabic and multisyllabic word analysis and word reading for accuracy and fluency.

The inclusion of more sites will increase the power to detect such effects, allow for generalization beyond the two schools studied, and remove the confound of having each condition be a different site.

## References

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