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Zoology One Efficacy Evaluation Summary of Findings (April 2020)

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Abstract

Helping young children become proficient readers is a critical goal. Research tells us that students who experience difficulty reading in the early years of school often struggle to catch up (Stanley, Petscher, & Catts, 2018; Ozernov, , Palchik et al., 2016; Cunningham & Stanovich, 1997; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996). This study1 focuses on an innovative curriculum for kindergarten that closely integrates literacy instruction and science exposure. The research study combines a rigorous randomized controlled trial with in-depth cost and implementation studies to investigate impacts.

Keywords

Zoology One Efficacy Evaluation

Disciplines

Education | Educational Assessment, Evaluation, and Research | Elementary Education

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Zoology One Efficacy Evaluation

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Introduction

Helping young children become proficient readers is a critical goal. Research tells us that students who experience difficulty reading in the early years of school often struggle to catch up (Stanley, Petscher, & Catts, 2018; Ozernov, Palchik et al., 2016; Cunningham & Stanovich, 1997; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996). This study[1] focuses on an innovative curriculum for kindergarten that closely integrates literacy instruction and science exposure. The research study combines a rigorous randomized controlled trial with in-depth cost and implementation studies to investigate impacts.

The setting: An urban district focused on literacy

The study's setting—the School District of Philadelphia (SDP)—makes this inquiry particularly salient. SDP is a large, urban district serving a diverse and economically challenged student population. Decades-long trends of underperformance in literacy have led SDP to prioritize and invest in early literacy. This study offers a comparison of two approaches to evidenced-based literacy instruction implemented in SDP schools—a business-as-usual approach and a curriculum that includes science integration.

Research Design

- Multi-site randomized controlled study investigated the impacts of American Reading Company's *Zoology One: Kindergarten Research Labs*[2] on kindergarten students' achievement, motivation, and learning behaviors, as compared with business as usual literacy instruction.
- Students in the treatment condition experienced Zoology One in place of regular literacy instruction. Students in the control condition experienced SDP's regular program of literacy instruction.
- Data were collected from 71 classrooms (treatment and control) in 21 schools, encompassing 1,589 students in two kindergarten cohorts.
- The majority of the data were collected in 2016-17 and 2017-18 while students were in kindergarten. Some analyses examined longitudinal impacts. Additional investigation of longitudinal impacts is forthcoming.
- Baseline equivalence was established between treatment and control.
- In the total sample, approximately 8% of students had English-language learner designation; 75% were eligible for free/reduced lunch; 8% had IEPs; 15% spoke a language other than English at home. 50% of the students were female.
- Key measures were the Woodcock Reading Mastery Test (WRMT); the AIMSWeb curriculum-based assessment; the Kaufman Test of Educational Achievement in Writing (KTEA); and the Kindergarten Reading Motivation Scale (KRMS).

1,589 Students
71 Classrooms
21 Schools

1 The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305A160109 to the University of Pennsylvania. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education
2 The program has been renamed ARC CORE

Kindergarten Impacts

1. **Zoology One students outperformed control students in reading comprehension.** Impact models comparing students in the treatment and control groups on the Passage Comprehension WRMT subtest revealed that Zoo students scored significantly higher. The effect size for this difference is 0.17 standard deviations.
2. **Zoology One students outperformed control students in letter-naming fluency.** Analysis of SDP's AIMSWeb Letter Naming Fluency data revealed a positive and significant group mean difference for treatment students. The effect size for this difference is 0.27 standard deviations.
3. **Zoology One students outperformed control students in motivation to read.** Although the KRMS revealed high reading motivation across the sample, participating in Zoology One increased reading motivation by .32 standard deviations.
4. **Zoology One students scored no better or worse than control students in decoding overall.** Students of teachers who implemented Zoology One with high fidelity achieved significant impacts in decoding. The WRMT Word Attack (reading nonsense words) and Word Identification (sight word reading) revealed no significant differences between treatment and control in the overall sample. However, exploratory analysis compared literacy impacts for students of high-fidelity implementers with those of low-fidelity implementers (quartiles). This contrast revealed statistically significant impacts on WRMT Word Attack and Word Identification subtests.
5. **Zoology One students scored no better or worse in writing overall.** Students of teachers who implemented Zoology One with high fidelity achieved significant impacts in writing. Comparison of group mean differences on KTEA Writing revealed no significant differences between treatment and control students in the overall sample. However, exploratory analysis compared literacy impacts for students of high-fidelity implementers with those of low-fidelity implementers (quartiles). This contrast revealed statistically significant impacts on KTEA Writing.
6. **Zoology One students were rated higher than control students on five learning behaviors by their 1st and 2nd grade teachers.** Former Zoology One students were categorized by their first- and second- grade teachers as either "Strongest in Class" or "Above Average" at significantly higher rates than former control students on reading independence, confidence, verbal expression, love of learning, and interest in science.
7. **Girls in Zoology One classrooms defy gender stereotypes for reading interests.** Girls in treatment classrooms were statistically significantly less likely than girls in control classrooms to indicate that they preferred books with topics identified as stereotypically female (princesses, Barbies, etc). Treatment-group membership reduced the likelihood of girls' stereotypical book topic selection by 26%.
8. **Zoology One costs about $480 per student to produce these impacts.** About two-thirds of these costs were for Zoology One curricular materials and teacher coaching in school, and the remaining one-third of costs reflect the home reading component. On average, three fewer supplemental literacy programs were used in Zoo classrooms, resulting in an average expenditure reduction of $40 per student.

On average, classrooms using Zoology One achieved the same or better results than control classrooms while using three fewer instructional programs.

9. **Teachers believe Zoology One impacts learning.** A majority of teachers who offered perceptions of Zoology One's impact on their students' literacy reported that their students' literacy improved more during Zoology One implementation than in past years. Teachers who believed that their students' reading had been impacted by the curriculum often referred to the value of the independent reading time.
10. **Teachers believe Zoology One changed their perspectives or beliefs as teachers.** A majority of teachers interviewed discussed ways that their pedagogy and beliefs were impacted by Zoology One. Themes included change in their own perceptions of students' abilities to engage with and learn from the curriculum, and their beliefs about how literacy should be taught.

Next Steps

We will continue to explore longitudinal impacts on reading, science, learning behaviors, and other outcomes. Funding for this work has been approved.