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Examining sustainment of an evidence-based kindergarten literacy curriculum

REPORT BRIEF

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About This Study

Our team previously conducted an efficacy evaluation of *Zoology One: Kindergarten Research Labs*, a kindergarten curriculum that integrates literacy instruction and science exposure. Two cohorts of kindergarten students and their teachers participated in a randomized controlled trial (RCT) during the 2016-17 and 2017-18 school years. In each of those school years, kindergarten teachers assigned to the *Zoology One* condition were expected to implement the *Zoology One* curriculum and received training, coaching, and materials to support their implementation. Findings revealed that *Zoology One* students outperformed control students in reading comprehension, letter naming-fluency, and motivation to read. The full set of findings from the RCT can be found [here](#).

The study discussed here aims to better understand teachers' continued use of the curriculum one year after their participation in the RCT. We surveyed 28 teachers and interviewed 19 of those teachers from the treatment group in the spring one year after their participation in the RCT. Surveys and interviews asked teachers about the extent to which they continued to use various components and materials from the *Zoology One* curriculum. We also used data about teachers' fidelity to *Zoology One* collected during the RCT, as well as teachers' years of teaching experience to examine the extent to which these variables predicted sustainment.

Introduction

The role that curriculum plays in student academic outcomes is often the subject of research studies which then inform education policies at the state, district, and school-levels about which curricula to adopt and implement (Slavin, 2003). These curricula can vary widely across classrooms, schools, districts, and states (Vaughn, Scales, Stevens, Kline, Barrett-Tatum, Van Wig, Yoder, & Wellman, 2021), and although teacher autonomy regarding curriculum adoption has waned over the past few decades (Sparks & Malkus, 2015), many teachers in this study retained some level of control over which instructional materials they used.

Teachers who participate in efficacy studies evaluating a curriculum are expected to implement the assigned curriculum and are often provided with resources to support them in doing so (e.g., professional development, coaching, and access to classroom materials). However, once the study ends and many of these supports are removed, teachers are left with choices regarding the extent to which they continue

implementing (i.e., sustain) the curriculum. This provides an opportunity to understand the extent to which teachers sustain a curriculum, and what adaptations they make once they are no longer required to implement it nor offered implementation supports. It also provides an opportunity to examine which teachers are most likely to sustain implementation.

Addressing questions regarding sustainment are important to inform the development of new curricula and to identify the types of supports necessary for sustained implementation. Previous research has identified potential predictors of sustainment, including teachers' fidelity of implementation during the original project period (Sanford DeRousie & Bierman, 2012) and teachers' years of experience (Clements, Sarama, Wolfe, & Spitler, 2015). However, findings regarding these factors have been mixed (see Clements et al., 2015; Sanford DeRousie & Bierman, 2012), and it is therefore important to continue to explore their relationship with teachers' sustainment across different settings and curricula. This is particularly critical because implementation fidelity often relates to student outcomes (Durlak & DuPre, 2008; Humphrey, Barlow, & Lendrum, 2018), but fidelity can wane over time (Combs, Buckley, Lain, Drewelow, Urano, & Kerns, 2022). Additionally, the availability of professional development to teachers has also been shown to influence sustainment practices (Baker, Gersten, Dimino, & Griffiths, 2004; Shapiro, Prinz, & Sanders, 2015). Therefore, approaches to support teachers' sustained fidelity to effective curricula are needed to ensure that curriculum costs are worthwhile (Sanford DeRousie & Bierman, 2012; Fishman, Penuel, Hegedus, & Roschelle, 2011) and that student outcomes continue to be positively impacted.

To address this need, the current study uses data collected from teachers one year following their participation in the *Zoology One* RCT to understand which curriculum components were sustained, and what teacher factors predicted teachers' sustained implementation when it was no longer required. A separate paper (currently under review) examines factors across the individual, school, and macro levels that teachers describe influencing their sustainment or discontinuation of curriculum components.

The RCT

Our team's RCT found that the *Zoology One* curriculum improved students' reading comprehension, letter-naming fluency, and motivation to read at the end of kindergarten (Gray, Sirinides, Fink, & Bowden, 2022). During the RCT, teachers in the treatment group were provided with in-person professional development orienting them to the *Zoology One* curriculum and 10 in-school coaching sessions provided by a coach from the curriculum's publisher. Teachers also received the materials needed to implement the curriculum as intended, including a curriculum guide, over 450 student texts, Big Books for read-alouds, a Foundational Skills Toolkit, Power Word Cards, the Independent Reading Leveling Assessment (IRLA), and science kits with clipboards, magnifying glasses and other science lab materials. At the end of the RCT, teachers no longer received coaching or professional development specific to *Zoology One*; however, they were permitted to retain all of the curricula instructional materials they

had received. At this time, teachers also had access to other curricula that were either suggested or required by school administration. These curricula, and the teachers' autonomy in curricula use decisions, varied across schools.

Current Findings

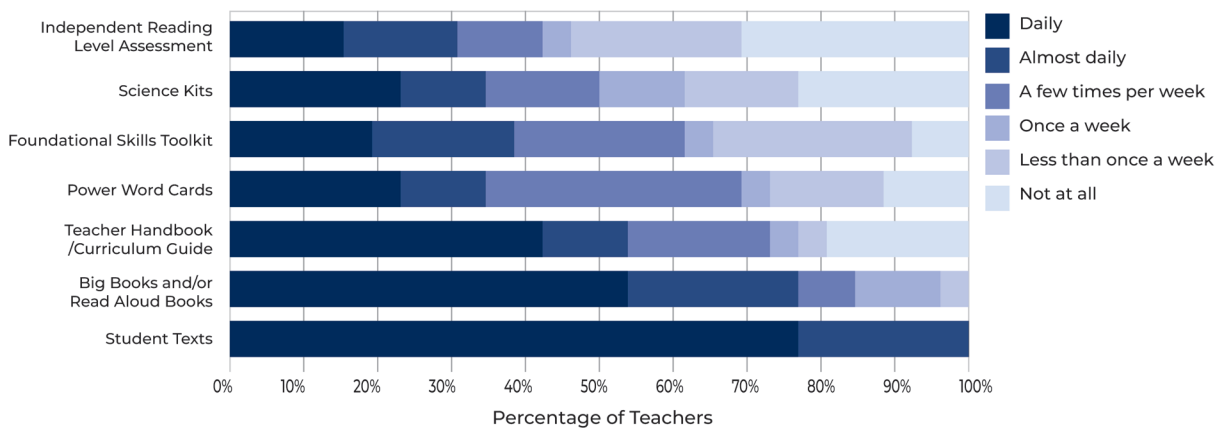
SUSTAINMENT

Overall, 96% (27 of 28 teachers) of survey respondents reported continuing to use the Zoology One curriculum in some capacity one year after their participation in the RCT. Specifically:

- » 19 teachers reported they were using the *Zoology One* curriculum “in combination with other literacy curricula”,
- » 8 teachers reported they were using the curriculum “exclusively” to teach literacy, and
- » 1 teacher reported no longer using the curriculum at all.

FIGURE 1

Teachers' Use of Zoology Materials, One Year After Evaluation Completion



Teachers also reported on the frequency with which they continued to use specific Zoology One materials (i.e., the curriculum guide, student texts, IRLA, etc.) on a six-point scale that ranged from “not at all” to “daily.” If implemented as intended, each material should be used daily. There was considerable variability in teachers' continued use of the materials. These results are shown in the figure above.

- » All teachers indicated on the survey that they continued to use the student texts either “daily” or “almost daily”. The student texts were used for independent reading in the classroom, as well as sent home with students for their home reading assignments.
- » Big Books and Read Aloud Books, which were used for whole-group and shared reading activities to develop reading skills, increase academic vocabulary, and build classroom community, were also used by all teachers to some extent, with 77% of teachers using them either “daily” or “almost daily”.
- » The IRLA and the Foundational Skills Toolkits were intended to be used daily in the classroom to assist teachers in providing differentiated, targeted, skill instruction for each student within a strategically structured small group, though only 46% of teachers continued to use the IRLA once a week or more with only 15% continuing to use it daily.
- » The Power Word Cards are small flashcards that teachers and students may use to assist students in learning the associated power words with a student’s current reading level. 23% of teachers continued to use this material on a daily basis.

ADAPTATIONS

Interviews with 19 teachers from across both cohorts of the study helped to provide a more nuanced understanding of the ways in which teachers sustained and adapted their use of the *Zoology One* curriculum materials one year after the RCT ended. Interview findings were consistent with the general pattern from the survey in that a majority of teachers shared that they continued to use *Zoology One* in some capacity, most often supplementing it with additional curricula, interventions, or resources.

In interviews, teachers who described altering one or more of the *Zoology One* components or supplementing it with other curricula, most often discussed: 1) using a structured phonics program, 2) having students use a computer-based individualized support, 3) supplementing the writing component, or 4) adopting an approach for traditional guided reading. These results are described in more detail below.

Phonics. Most teachers who continued to use *Zoology One* for their literacy instruction described using a structured stand-alone phonics program that was widely used across the school district as a supplement to the *Zoology One* curriculum. Teachers described their use of the phonics program as something that would happen separately from *Zoology One* during their literacy block, sometimes first thing in the morning and sometimes as homework. While some teachers reported using a supplemental phonics program in its entirety to completely replace *Zoology One*’s phonics approach, other teachers reported using some components of *Zoology One* and some components of a supplemental phonics curriculum.

Computer-based individual support. Teachers also mentioned using a computer-based

individualized support in addition to Zoology One, with many teachers referencing a program widely used across the district. Some teachers described having only students with an identified need use this support. In contrast, other teachers talked about every student being required to accumulate a certain number of minutes per week using the program. The computer-based program was sometimes used as a literacy center activity or assigned for homework.

Writing. Teachers talked specifically about the writing component of their literacy block and discussed the ways in which they supplemented Zoology One's approach by providing a more structured writing block that offered students opportunities to experiment with a variety of writing purposes. Zoology One's writing component has a strong focus on factual writing, while many teachers felt their students needed exposure to fictional, opinion, and narrative writing.

Guided reading. Finally, some teachers described how they adopted their approach to guided reading in their classrooms that they had used prior to implementing Zoology One. Teachers using the Zoology One approach utilize a formative assessment system to identify specific areas of needs for students and then meets with groups of students who are working to master the same set of skills. Some teachers discussed instead using the approach to guided reading they had used prior to implementing Zoology One: meeting with fixed small groups of students to work together on general reading comprehension strategies. Based on our analysis, teachers reported returning to this approach for 2 reasons: (1) personal preference for doing guided reading the way they had been trained in the past; and (2) a requirement from either school administration or a literacy coach for teachers to use a specific guided reading approach.

Predictors of Sustainment

FIDELITY

Across both cohorts of teachers, there was a moderate correlation between teachers' fidelity to the curriculum during the RCT and their sustainment of *Zoology One* curriculum use one year following RCT completion. The correlation coefficient was .49, which is considered a medium effect size.

TEACHING EXPERIENCE

There was no linear relationship between teachers' years of experience teaching K-12 and sustainment pooling both cohorts. Similarly, teachers' years of experience teaching kindergarten also did not predict sustainment.

Implications

In the year following their participation in an RCT where teachers were required to use a specific literacy curriculum, teachers retained access to curricular materials and we found there was considerable variability between the different types of materials in the frequency with which teachers continued to use them. However, nearly all teachers continued to use the curriculum to some extent even when they were not longer required to do so. Furthermore, when given the freedom to do so, some teachers did supplement or alter certain aspects of their literacy instruction while still keeping many facets of Zoology One. This study also provides an example of how researchers can examine teachers' sustainment of a curriculum following participation in an RCT.

Understanding the ways in which teachers adapt evidence-based curriculum can provide insight for curriculum developers to include have built-in adaptations that teachers can use to best meet the needs within their specific context and for their student population. Understanding teachers' sustainment of curricula can also inform districts as to what supports may be needed beyond initial coaching and professional development. Furthermore, understanding the cost and cost-effectiveness of sustained, adapted or supplemented curricular implementation is an important direction for future research. Our team is now exploring additional qualitative data from the Zoology One sustainment study to understand factors that may influence teachers' sustainment of new curricula.

For more information and to read additional publications, visit <https://www.cpre.org/efficacy-evaluation-zoology-one-1>.

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Maurice Spillane was a Research Specialist at the Consortium for Policy Research in Education at the time this brief was prepared. Currently, he is a Data Analytics and Insights Manager at CVS Health. He earned his Masters Degree in Social Science from the National University of Ireland Maynooth and a Bachelor's Degree in Social Work from Dundalk Institute of Technology. Maurice specializes in quantitative methods, survey methodology and statistical analysis.

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