Registry of Efficacy and Effectiveness Studies

Study Title:
Evaluation of Amira for Families

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Version History

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Section I: General Study Information

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2023-08-29

Study End Date:
2024-05-30

Intervention Start Date:
2024-01-02

Timing of entry:
Prior to implementation of the intervention

Brief Abstract:
This study will evaluate the effects of the Amira program plus the Amira for Families program on parent home literacy practices, parent-teacher relationships, and children's early literacy skills compared to the standalone Amira program. Amira for Families is an AI-enabled literacy app that builds school-family partnerships and helps integrate literacy development into household activities. The goals of the app are to (a) provide parents of all literacy levels personalized tools to support their children's reading skills; (b) strengthen school-home collaborations; and (c) deliver targeted instruction to emergent readers.

SRI will recruit up to 60 classrooms and up to 10 student-parent dyads per classroom. The research team will randomly assign participating teachers into treatment and control conditions. Both treatment and control teachers will use the Amira standalone program throughotu the 2023-34 school year. Treatment assigned teachers will share Amira for Families with parents/guardians in their classroom and support their use of Amira for Families during the Spring 2024 semester. Control teachers will be given access to Amira for Families during the following school year (2024-2025). Students will complete beginning- and end-of-year literacy assessments. Parents will complete pre- and post-study surveys. Teachers will complete post-study surveys. Results will inform the development and scale-up of innovations to support parent engagement in student literacy.

Keywords:
Literacy; Parent engagement; Digital learning; Early learning; Parent-teacher relationships; Home-school connection

Comments:
-

Section II starts on the next page.

Section II: Description of Study

Type of Intervention:
Curriculum/Product

Topic Area of Intervention:
Early Childhood Education, Education Technology, Parent engagement, Reading and Writing

Number of intervention arms:
1

Target school level:
1

Target school type:
Rural, Suburban, Urban

Location of Implementation:
United States

Further description of location:
The intervention will be implemented in Racine Unified School District in Racine, WI. The intervention may also be implemented in one or more additional districts TBD.

Brief Description of Intervention Condition:
Treatment Teachers • Receive training on using the Amira program in their classrooms at the start of the school year (~30 minutes). • After randomization, in the Spring 2024 semester, receive training on Amira for Families program (~30 minutes). • Set up Amira logins for their students. • Share access to Amira for Families with parents in their classroom and support their use in the Spring 2024 semester. In addition, we will encourage but not require teachers to facilitate their students completing three 20-minute sessions per week using the Amira program. Parents of children in treatment-assigned classrooms • Set up the Amira for Families program at home by creating a login and setting up email notifications. • Use the Amira for Families program during the Spring 2024 semester. We will encourage but not require parents to use Amira for Families for about 10 minutes per week.

Brief Description of Comparison Condition:
Control Teachers
• Receive training on using the Amira program in their classrooms at the start of the school year (~30 minutes).
• After randomization, in the Spring 2024 semester, receive a second training that is not specific to Amira for Families (~30 minutes).
• Set up Amira logins for their students and facilitate their students completing three 20-minute sessions per week using the Amira program

Parents of children in control-assigned classrooms have no specific study obligations

Comparison condition:
Other

Comments:
Both treatment and control classrooms will have access to the Amira standalone program throughout the 2023-24 academic year. This study is intended to isolate the effect of adding Amira for Families to the Amira standalone

program. Therefore, only classrooms randomly assigned to the treatment group will have access to the Amira for Families program during the research study. We consider the control condition an alternative treatment because control classrooms will use the Amira standalone program without the Amira for Families component.

Section III: Research Questions

Confirmatory research questions:

Question 1:
Do parents who are offered Amira for Families engage in home literacy practices at greater rates than control-assigned parents?

Question 2:
Do parents offered Amira for Families establish stronger relationships with their child’s classroom teacher than control-assigned parents?

Question 3:
Do parents offered Amira for Families report a greater confidence in their understanding of their child's strengths and weaknesses as a reader than control-assigned parents?

Question 4:
Do parents offered Amira for Families report having greater access to information they need to support their child's reading skills than control-assigned parents?

Question 5:
Do first grade students who are offered Amira for Families demonstrate stronger phonics skills than control-assigned students?

Question 6:
Do first grade students who are offered Amira for Families demonstrate stronger phonological awareness skills than control-assigned students?

Exploratory research questions:

Question 1:
Do first grade students who are offered Amira for Families demonstrate stronger oral reading fluency than control-assigned students?

Question 2:
Do first grade teachers whose students are offered Amira for Families report stronger parent-teacher relationships?

Question 3:
Do first grade teachers whose students are offered Amira for Families report less perceived burden associated with literacy instruction?

Comments:
-

Section IV-A: Study Design (Selection)

Study Design:

Randomized Trial (RT)

Comments:
-

Section IV-B: Study Design (Input)

Study Design: Input

Unit of random assignment of intervention:
Teacher

Assignment within sites or blocks:
Yes

Define the sites or blocks:
School

Probability of assignment to treatment the same across sites or blocks:
Yes

Probability of assignment to treatment:
.50

Unit outcome data measured:
Student

Intermediate clusters between unit of random assignment and unit of measurement:
No

Comments:
We will recruit up to 60 first-grade teachers to participate in this study. Half will be randomly assigned to use Amira with Amira for Families (the treatment condition), and the other half will be randomly assigned to use Amira without Amira for Families (the control condition). We will block randomize within schools, and within districts if recruitment yields multiple districts. All parents in participating teachers' classrooms will be invited to complete an online consent form and eligibility screener. From among the parents who meet eligibility criteria, we will select up to 10 per classroom to participate in the study. All participating parents will receive the same condition (treatment or control) as their child's classroom teacher was assigned to.

Design Classification

Based on the responses above, this study has been classified as:
RT: Multisite (Blocked) Cluster Randomized Trial

Section V: Sample Characteristics

Approximate number of students per teacher: 6

Approximate number of teachers in the comparision condition within each school: 2

Approximate number of teachers in the intervention condition within each school: 2

Number of schools: 15

Were there certain students that were targeted for the study?
No

Were there certain students that were excluded from the study?
Yes - Students who are not verbal. Students who do not speak English. Students whose teachers do not consent to participate in the study.

Were there certain teachers that were targeted for the study?
Yes - Their school has previously used the Amira program. They are teaching a first grade classroom during the 2023-2024 school year. They are willing to use the Amira program as a component of their literacy instruction during the 2023-2024 school year. They are a classroom lead teacher or co-teacher (not a teacher's assistant or paraprofessional). They have access to reliable WiFi in their classroom.

Were there certain teachers that were excluded from the study?
Yes - Teachers who teach in a self-contained special education classroom. Teachers who teach in a self-contained English as a second language classroom.

Were there certain schools that were targeted for the study?
No

Were there certain schools that were excluded from the study?
No

Comments:
We will include parents in the study if their child's teacher consents to participate in the study, the parent consents to participate in the study, the parent has only one child attending first grade during the 2023-24 academic year, the parent has access to a reliable internet connection or cellular data to use Amira for Families and respond to study surveys, the parent feels comfortable reading and writing in English, and their first-grade child feels comfortable speaking in English.

Section VI: Outcomes (Input)

Confirmatory question 1: Outcome Measure 1

Outcome domain: Student Outcome Domain - Parent engagement in home literacy practices
Minimum detectable effect size: .21
Outcome measure: Home literacy practices scale (McCormick, et al. 2020; Puma et al., 2005)
Scale of outcome measure: Continuous
Normed or state test: No
Test-retest reliability: N/A
Internal consistency: .81-.87
Inter-rater reliability: N/A
Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 2: Outcome Measure 1

Outcome domain: Student Outcome Domain - Parent-teacher relationship
Minimum detectable effect size: .21
Outcome measure: Parent-reported Parent-Teacher Relationship Scale II Communication-to-Other subscale

(Vickers & Minke, 1995)

Scale of outcome measure: Continuous

Normed or state test: No

Test-retest reliability:

Internal consistency: .92

Inter-rater reliability:

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 3: Outcome Measure 1

Outcome domain: Student Outcome Domain - Parent understanding of their child's strengths and weaknesses as a reader

Minimum detectable effect size: .21

Outcome measure: Parent understanding of their child's strengths and weaknesses as a reader item

Scale of outcome measure: Continuous

Normed or state test: No

Test-retest reliability: N/A

Internal consistency: N/A

Inter-rater reliability: N/A

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 4: Outcome Measure 1

Outcome domain: Student Outcome Domain - Parent report of access to information they need to support their child's reading skills

Minimum detectable effect size: .21

Outcome measure: Access to reading support information item

Scale of outcome measure: Continuous

Normed or state test: No

Test-retest reliability: N/A

Internal consistency: N/A

Inter-rater reliability: N/A

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 5: Outcome Measure 1

Outcome domain: Student Achievement - Literacy

Minimum detectable effect size: .21

Outcome measure: Woodcock Reading Mastery Test-Third Edition (WRMT-III; Woodcock, 2011) Basic Skills subscale

Scale of outcome measure: Continuous

Normed or state test: Yes

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 6: Outcome Measure 1

Outcome domain: Student Achievement - Literacy

Minimum detectable effect size: .21

Outcome measure: Woodcock Reading Mastery Test-Third Edition (WRMT-III; Woodcock, 2011) Phonological Awareness subscale

Scale of outcome measure: Continuous

Normed or state test: Yes

Same outcome measure in treatment and comparison groups: Yes

Comments:
Description of measures:

Home literacy practices scale (McCormick, et al. 2020; Puma et al., 2005): This survey measures parent-child engagement in home-based literacy activities. Parents rate how often they engage in each activity with their child on a scale from 1 to 4 (1=Never; 2=Once or twice a week; 3=Three to six times a week; 4=Everyday).

Parent-reported Parent-Teacher Relationship Scale II Communication-to-Other subscale (Vickers & Minke, 1995): . This 5-item scale captures parent-reported communication to teachers (e.g., “I ask this teacher for suggestions.”). Items are scored on a scale from 1 to 5 (1=Almost Never to 5=Almost Always).

Parent understanding of their child's strengths and weaknesses as a reader item: This researcher-developed item asks parents to rate their agreement or disagreement with the statement, “I am aware of my child's strengths and weaknesses as a reader.” The item is rated on a scale from 1 to 5 (1 = Strongly disagree to 5 = Strongly agree).

Access to reading support information item: This researcher-developed item asks parents to rate their agreement or disagreement with the statement, “I have the information I need to support my child in developing their reading skills.” The item is rated on a scale from 1 to 5 (1 = Strongly disagree to 5 = Strongly agree).

Woodcock Reading Mastery Test-Third Edition (WRMT-III; Woodcock, 2011) Basic Skills subscale
The WRMT-III is a comprehensive battery of individually administered tests that measures students’ reading readiness and reading achievement. The WMRT-III has been normed for ages 4 years through adulthood and has demonstrated strong reliability and validity (Abu-Hamour et al., 2012; Lohman, 2004). The basic skills subscale provides a broad measure of students’ phonics skills. It is calculated from the word identification and word attack subtests.

Woodcock Reading Mastery Test-Third Edition (WRMT-III; Woodcock, 2011) Phonological Awareness subscale. Students complete items grouped into five sections that target the following skills: first-sound matching, last-sound matching, rhyme production, blending, and deletion.

Section VII: Analysis Plan

Baseline data collected prior to start of intervention:
Yes

Description of baseline data:
Baseline data for students: The Amira in-app literacy assessment will be used to capture students’ beginning-of-year and end-of year literacy skills, specifically their phonics skills, phonological awareness skills, and oral reading fluency.

Baseline data for parents: Parents will complete a beginning-of-year survey to measure engagement in home literacy practices, relationships with the child's classroom teacher, understanding of the child's strengths and weaknesses as a reader, and access to information needed to support their child's reading skills.

Covariates you plan to include in the model:
English Language Learner Status, Free and Reduced Lunch Status, Gender, Grade, Race, Special Education Status, Student Pretest

Covariates you plan to include in the model:
Education level, Race/ethnicity, Teacher used a published literacy curriculum during the 2023-24 school year (Yes/No), Years of teaching experience, Years teaching at present school

Analytic model:
We will use one set of two-level HLM models to analyze effects of Amira for Families on parents, and another set of two-level HLM models to analyze effects of Amira for Families on students. We will also use an ordinary least squares regression model to examine impacts on teachers.

The first set of models is intended to measure the effects of Amira for Families on parents. Level 1 is the parent level, and Level 2 is the teacher level.

$$Y_{pt}^{posttest} = y_{00} + y_{01} Pretest_{pt} + y_{02} AFF_t + y_{03} COV_{pt} + /omega_{/kappa} + e_{pt} + /mu_t$$

where p represents parents,t represents teachers; $Pretest_{pt}$is the parent pre-test value; AFF_t = 1 for intervention teachers and 0 for comparison teachers;COV_{pt} is parent- or teacher- level covariates, $/omega_{/kappa}$, a vector of randomization block fixed effects, accountsfor the blocked randomization, and e_{pt} and mu_{0t} are parent and teacher random effects.

A second set of models is intended to measure the effects of Amira for Families on students. Level 1 is the student level, and Level 2 is the teacher level.

$$Y_{st}^{posttest} = y_{00} + y_{01} Pretest_{st} + y_{02} AFF_t + y_{03} COV_{st} + /omega_{/kappa} + e_{st} + /mu_t$$

Where s represents students, t represents; $Pretest_{st}$is the student's baseline test score; AFF_t = 1 for intervention teachers and 0 for comparison teachers; COV_{st} is student- or teacher- level covariates, , $/omega_{/kappa}$, a vector of randomization block fixed effects, accounts for the blocked randomization, and e_{st} and $mu_{0t}$are student and teacher random effects.

Our analysis of teacher outcomes will use the following ordinary least squares regression model:

$$Y = /beta_0 + /beta_1 Trt + beta_2 Cov + /varepsilon$$

Where Y represents the outcome of interest;

$\beta 0$ represents the intercept;

$\beta 1$TRT is a dummy variable equal to 1 if the teacher was assigned to the treatment group and zero if the teacher belongs to the

control group;

$\beta 2$Cov is a vector of demographic characteristics; and

ε represents the teacher-specific error term.

Plan to handle cases with missing outcome data:
Delete cases with missing data for the outcome being analyzed

Comments:
Potential child covariates include child demographics and Amira in-app pre-test scores. Potential parent covariates include demographics. Potential teacher covariates are pre-intervention characteristics that would not be impacted by the intervention (e.g., years of teaching experience),measured at post-test only.

Although we plan to use covariates in the HLM models to reduce the error in generating the impact estimates, we hope to choose a parsimonious number of covariates centered at their grand mean. First, we will use a correlation matrix, the variance inflation factor (VIF), and condition index will to diagnose multicollinearity among teacher-, student-, and parent-level covariates. If multicollinearity is detected and the highly correlated covariates are at the same level (for example, both from the child level), highly correlated covariates with the most missing data will be removed from the final model. If multicollinearity is detected and the highly correlated covariates are at different levels (for example, one from the child level and one from the teacher level), highly correlated covariates from the superordinate (e.g., teacher) level will be removed from the final model. Second, we will use a backward selection method to select covariates (Budtz-Jorgensen, Keiding, Grandjean, & Weihe, 2006; Maldonado & Greenland, 2006). We will predict the outcome from the covariates, delete the least significant covariate, recompute the regression, and so on, until all the p values for individual covariates are less than .20.

Section VIII: Additional Information

Links:
No links have been added yet.

Files:
File Name: Power analysis Amira Literacy REES pre-registration.docx
Description: Power analysis

Comments:
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