

Registry of Efficacy and Effectiveness Studies

Study Title:

Evaluation the effect of Can't Wait to Learn integrated into formal education compared to education-as-usual in government schools in Southwest Uganda on foundational numeracy and reading outcomes: a cluster randomized controlled trial

Registry ID: 14080.1v1

Section I: General Study Information

PI name: Mark Jordans

PI affiliation: University of Amsterdam

Co-PI name: Nikhit D'Sa

Co-PI affiliation: University of Notre Dame

Primary Funding Source(s):

International Development Research Center

Award Number(s):

109296-001

IRB Name:

The AIDS Support Organisation (TASO) Research Ethics Committee

IRB Approval Date:

2021-08-27

IRB Approval Number:

TASOREC/056/2021-UG-REC-009

Other Registration Name:

Uganda National Council of Science and Technology (UNCST)

Other Registration Date:

2021-10-22

Other Registration Number:

SS1024ES

Study Start Date:

2022-07-13

Study End Date:

2022-12-31

Intervention Start Date:

2022-05-15

Timing of entry:

Prior to collection of outcome data

Brief Abstract:

Rigorous evaluation and evidence of effectiveness for EdTech in low-resources settings is lacking. We aim to evaluate the effectiveness of an EdTech programme - Can't Wait to Learn - for numeracy and reading in a cluster randomised controlled trial, implemented in state schools (n=30) in Isingiro district, Uganda, with children in P3 (n=1500). The trial will evaluate the effectiveness of Can't Wait to Learn integrated into standard education against education-as-usual.

Keywords:

randomised controlled trial; EdTech; numeracy; reading; Uganda; low-resource

Comments:

-

Section II starts on the next page.

Section II: Description of Study

Type of Intervention:

Practice

Topic Area of Intervention:

Numeracy, Reading

Number of intervention arms:

2

Target school level:

3

Target school type:

Rural, Suburban

Location of Implementation:

International : Africa

Further description of location:

30 schools from Isingiro District, Uganda.

Brief Description of Intervention Condition:

Can't Wait to Learn (CWTL): CWTL is an English reading and numeracy game-based learning programme delivered on a tablet. It is aligned with the national P3 curriculum, with all content approved by the National Curriculum Development Centre (NCDC). The game includes three main components: 1) the game world, which is an experiential setting with characters and stories, 2) instructional videos of local children and adults explaining academic concepts and tasks, and 3) mini-games, in which children engage with academic content and progress to more difficult concepts and skills when they get above a predetermined proportion of questions correct, i.e. progression through the content and curriculum is based on individual performance. An animated game guide begins each mini-game by instructing on the task at hand, and children receive in-game rewards to foster motivation. Each child has their own account which generated log data on usage and progression through the game content. The game world, characters and storyline were co-created with children, resulting in an interface that reflects children's reality and aspirations. The game is offline and the tablets are secured in custom-made and locally manufactured cages, and charged using solar power generated from procured solar panels. Before implementation, teachers are trained in the use of the game, tablet management and basic maintenance, how to foster independent learning, and how to blend CWTL with their scholastic timetable. Dosage: Three 45-minute sessions of CWTL numeracy and three 45-minute sessions reading per week are implemented per week. Two CWTL numeracy and two CWTL reading sessions replace normal Maths and English lessons per week.

Brief Description of Comparison Condition:

Education-as-usual (EAU):

EAU consists of 1 hour per day of numeracy and 1 hour per day of literacy, both in English, taught by the class teacher. In addition, classes like sports and art are often replaced with catch-up classes for numeracy and literacy, led and designed by the class teacher. In some schools, phonics lessons replace sports and art.

Comparison condition:

Business-as-usual

Comments:

-

Section III: Research Questions

Confirmatory research questions:

Question 1:

What is the effect of CWTL combined with education-as-usual (EAU) on reading outcomes, compared to EAU alone?

Question 2:

What is the effect of CWTL combined with education-as-usual (EAU) on numeracy outcomes, compared to EAU alone?

Exploratory research questions:

Question 1:

What is the effect of CWTL on children's psychosocial wellbeing outcomes compared to that of education-as-usual?

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:

School

Assignment within sites or blocks:

No

Probability of assignment to treatment:

50%

Unit outcome data measured:

Student

Intermediate clusters between unit of random assignment and unit of measurement:

No

Comments:

Only students from one class (Primary 3; P3) per school were included. The intervention was implemented with all children in P3, and the research participants were a random selection from P3. We do not consider class an intermediate cluster, as there was no randomised selection or allocation at the class level.

Design Classification

Based on the responses above, this study has been classified as:

RT: 2-level Cluster Randomized Trial

Section V: Sample Characteristics

Approximate number of students per school: 50

Number of schools in the comparison condition: 15

Number of schools in the intervention condition1: 15

Number of schools in the intervention condition2:

Were there certain students that were targeted for the study?

Yes - (1) Assents to participating in the research (2) Caregiver consent is obtained. (3) Is enrolled in grade P3.

Were there certain students that were excluded from the study?

Yes - (1) Hearing, vision, and speech impediments that significantly impair the child's ability to listen to or watch a video on a tablet, see images on a screen, and/or participate in assessments. (2) Children unable to understand pedagogical explanations for reading or numeracy (3) Behaviour that poses risks to the safety of other children or pedagogical materials. (4) Resides in a child-headed household, i.e. head of household is under 18 years old.

Were there certain schools that were targeted for the study?

Yes - (1) Must be a public primary school (2) Outside of the refugee settlements (3) Where education staff are willing to accept research conditions and responsibilities, namely: a) Will receive visitors b) Host data collection and lesson observations c) Agreement to random allocation of condition d) Regularly submit attendance data e) Report on adverse events f) Adhere to child protection and child safeguarding standards (4) For intervention schools only: a) Has sufficient storage space for tablets b) Has a classroom dedicated to the P3 class c) It is possible to install solar panels

Were there certain schools that were excluded from the study?

Yes - (1) NGO-aided, private or community schools (2) Prior digital learning programme implemented in the school (3) School is less than 6km away from existing CWTL implementation or another school selected for the research (4) More than 120 students enrolled in P3 (5) Less than 55 students enrolled in P3 (6) school participation in the feasibility study

Comments:

-

Section VI: Outcomes (Input)

Confirmatory question 1: Outcome Measure 1

Outcome domain: Student Achievement- Reading

Minimum detectable effect size: 0.4

Outcome measure: Letter knowledge

Scale of outcome measure: Continuous

Normed or state test: No

Test-retest reliability:

Internal consistency: 0.927

Inter-rater reliability:

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 1: Outcome Measure 2

Outcome domain: Student Achievement- Reading

Minimum detectable effect size: 0.4

Outcome measure: Phonemic awareness

Scale of outcome measure: Continuous

Normed or state test: No

Test-retest reliability:

Internal consistency: 0.932

Inter-rater reliability:

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 1: Outcome Measure 3

Outcome domain: Student Achievement- Reading

Minimum detectable effect size: 0.4

Outcome measure: Reading fluency

Scale of outcome measure: Continuous

Normed or state test: No

Test-retest reliability:

Internal consistency:

Inter-rater reliability:

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 1: Outcome Measure 4

Outcome domain: Student Achievement- Reading

Minimum detectable effect size: 0.4

Outcome measure: Reading comprehension

Scale of outcome measure: Continuous

Normed or state test: No

Test-retest reliability:

Internal consistency: 0.84

Inter-rater reliability:

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 2: Outcome Measure 1

Outcome domain: Student Achievement- Numeracy

Minimum detectable effect size: 0.4

Outcome measure: Missing numbers

Scale of outcome measure: Continuous

Normed or state test: No

Test-retest reliability:

Internal consistency: 0.844

Inter-rater reliability:

Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 2: Outcome Measure 2

Outcome domain: Student Achievement- Numeracy
Minimum detectable effect size: 0.4
Outcome measure: Timed addition
Scale of outcome measure: Continuous
Normed or state test: No
Test-retest reliability:
Internal consistency: 0.966
Inter-rater reliability:
Same outcome measure in treatment and comparison groups: Yes

Confirmatory question 2: Outcome Measure 3

Outcome domain: Student Achievement- Numeracy
Minimum detectable effect size: 0.4
Outcome measure: Timed subtraction
Scale of outcome measure: Continuous
Normed or state test: No
Test-retest reliability:
Internal consistency: 0.977
Inter-rater reliability:
Same outcome measure in treatment and comparison groups: Yes

Section VII: Analysis Plan

Baseline data collected prior to start of intervention:

Yes

Description of baseline data:

From caregivers: Child, caregiver and household demographics.

From children: academic assessment data (literacy and numeracy) and Stirling Child Wellbeing Scale

From teachers: demographics and Warwick-Edinburgh Mental Wellbeing Scale

Covariates you plan to include in the model:

Gender, School attendance

Covariates you plan to include in the model:

Analytic model:

See additional materials

Plan to handle cases with missing outcome data:

We will provide a detailed explanation of missingness and how we believe it will affect the findings.

Planned multiple comparisons adjustment, confirmatory question 1 (Student Achievement):

Yes

Number of planned comparisons to adjust, confirmatory question 1 (Student Achievement):

4

Correction for multiple comparisons, confirmatory question 1 (Student Achievement):

other

Planned multiple comparisons adjustment, confirmatory question 2 :

Yes

Number of planned comparisons to adjust, confirmatory question 2 :

3

Correction for multiple comparisons, confirmatory question 2 :

other

Comments:

-

Section VIII: Additional Information

Links:

No links have been added yet.

Files:

File Name: [Data Analysis Plan_final.docx](#)

Description:

File Name: [RPubs - Cluster size Uganda_30Aug2021.html](#)

Description: Power calculations

Comments:

-
