# Do the onebillion maths apps promote young children's mathematics attainment?

Submission date	Recruitment status  No longer recruiting	Prospectively registered		
16/05/2018		☐ Protocol		
Registration date	Overall study status Completed	Statistical analysis plan		
30/05/2018		[X] Results		
Last Edited	Condition category	Individual participant data		
05/09/2019	Mental and Behavioural Disorders			

## Plain English summary of protocol

Background and study aims

The aim of this study is to evaluate whether children who practise mathematical concepts and vocabulary using the onebillion maths apps in a tablet make more progress in mathematics than children of comparable age and ability who did not use the apps during their first year in school. Two maths apps – one for ages 3 to 5 and the other for ages 4 to 6 – are being evaluated. They are used as a sequence: the children first complete all the activities in the app for 3 to 5 years and then go on to the second one, for ages 4 to 6.

The apps were developed by Onebillion.org, a non-profit organization registered as a charity in England and Wales (Number 1159480). They are designed using principles from instructional psychology known as the sequence "model, lead, test". This means that the children first see a worked out example of the activity they need to do; then they have the opportunity to do the same thing as they receive instruction from a teacher built into the apps; after a sufficient large amount of practise, they are tested on the same activity. At the end of the test, children who get all the answers right are rewarded by the appearance of a star on the screen. If they do not receive the star, they are encouraged to go back, practise again, and repeat the quiz. Pupils progress through topics on their own and at their own pace. The apps cover several topics: for example, counting (with activities organized in different levels, taking counting up to 100), classification by different criteria (shape, color), shape (geometrical shapes vocabulary, symmetry), lines and patterns (straight or curved; repetitions of figures in a pattern), position (vocabulary about spatial relations), measures (length, time, mass and capacity), addition and subtraction (arithmetic with pictures, number bonds and number line work), sharing and fractions (half and quarter).

The apps have been evaluated in Malawi and in a small study in England with promising results. The Education Endowment Foundation is funding this large scale study in order to support schools in their decision regarding whether to acquire the apps.

Who can participate?

Children aged 5-6 years in Year 1 at a participating school in the 2017/18 academic year

What does the study involve?

At the start of the study, all schools nominate 9 or 10 pupils who are struggling with mathematics and could benefit from additional support.

The schools are randomly allocated to one of two groups, after the children participate in a pre-

test of mathematical achievement. Schools in the first group take part in the onebillion programme. At the end of the project, children in both intervention and control schools are tested in the outcome measure.

What are the possible benefits and risks of participating? Participants may benefit from improved skills in maths. There are no notable risks involved with participating.

Where is the study run from? 113 schools, mostly in the Greater Manchester, Lancashire, Liverpool, and West Yorkshire regions (UK)

When is the study starting and how long is it expected to run for? September 2017 to December 2018

Who is funding the study? Education Endowment Foundation (UK)

Who is the main contact?

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# Contact information

# Type(s)

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# Additional identifiers

Protocol serial number

n/a

# Study information

#### Scientific Title

A randomised control trial of the impact of the onebillion maths apps on Year 1 children's mathematics attainment

# Study objectives

Primary hypothesis:

Children identified by their teachers as struggling with mathematics at the start of Year 1 who participate in the onebillion intervention should show greater progress in mathematics than children identified by their teachers as struggling with mathematics at the start of Year 1 who do not participate in the intervention.

# Secondary hypotheses:

- 1. The onebillion intervention is as effective for children entitled to FSM as for other children from the onebillion intervention, as assessed by the progress test in maths
- 2. The onebillion intervention is as effective for boys as for girls, as assessed by the progress test in maths

# Ethics approval required

Old ethics approval format

# Ethics approval(s)

Central University Research Ethics Committee of the University of Oxford, 06/11/2018, ref: ED-CIA-17-014

#### Study design

Cluster randomised controlled trial

### Primary study design

Interventional

# Study type(s)

Treatment

## Health condition(s) or problem(s) studied

Mathematic attainment

#### **Interventions**

All schools nominate 9 to 10 pupils, depending on the number of year 1 children in the classroom, who are considered by teachers to need additional practice with mathematics.

When this has been provided to the evaluation team, the schools are randomly assigned either to an intervention or to a control group by the evaluation team, with an equal allocation of schools to each group.

Intervention group: The intervention is delivered to the children who work individually on an iPad tablet through two different onebillions apps. It is managed by teaching assistants (TAs) who supervise the children as a group and provide pedagogical and technical support where needed. Teaching Assistants (TAs) and/or schools receive the opportunity to be trained in person or via online communication to enable their delivery of the intervention. These TAs supervise the children for four 30 minute sessions each week for twelve weeks. These sessions are in addition to usual, daily classes of mathematics. In this RCT, the sessions are delivered during the end of term 2 and the remainder during term 3 of Year 1.

Control group: Schools take a business as usual approach to supporting pupils who struggle with mathematics. The schools are offered a financial incentive of £1,000 in order to cooperate with the evaluation team up to the end of the trial and the further incentive of receiving free access to the app once the project is completed.

# Intervention Type

Behavioural

# Primary outcome(s)

Mathematics ability is assessed using the Progress Test in Maths 5, from GL Assessments, in February before the start of the intervention and the parallel form the Progress Test in Maths 6, in June/July, at the end of the academic year. This assessment is given immediately after the end of the intervention. It is administered by teachers to children individually.

# Key secondary outcome(s))

There are no secondary outcome measures

# Completion date

01/12/2018

# **Eligibility**

# Key inclusion criteria

- 1. Year 1 pupils in English state supported primary schools in the 2017/18 academic year
- 2. Children identified by their teachers as struggling with mathematics at the start of the year

#### Participant type(s)

Other

# Healthy volunteers allowed

No

#### Age group

Child

#### Sex

All

#### Total final enrolment

1124

#### Key exclusion criteria

- 1. Children in the higher half of their class according to the teachers assessment for mathematics
- 2. Children with a statement of special educational needs
- 3. Children who have difficulty in understanding English

#### Date of first enrolment

01/09/2017

#### Date of final enrolment

01/01/2018

# Locations

#### Countries of recruitment

**United Kingdom** 

# Study participating centre

#### 113 schools in the UK

Mostly in the Greater Manchester, Lancashire, Liverpool, and West Yorkshire regions Nottingham United Kingdom

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# **Sponsor information**

# Organisation

#### **Education Endowment Foundation**

#### **ROR**

https://ror.org/03bhd6288

# Funder(s)

# Funder type

Charity

#### Funder Name

**Education Endowment Foundation** 

### Alternative Name(s)

EducEndowFoundn, Education Endowment Foundation | London, EEF

#### **Funding Body Type**

Private sector organisation

#### **Funding Body Subtype**

Trusts, charities, foundations (both public and private)

#### Location

United Kingdom

# **Results and Publications**

# Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are not expected to be made available to anyone outside of the team. Anonymised data is sent to the funders, The Education Endowment Foundation. They keep this archived and allow access following an application through the Department for Education.

# IPD sharing plan summary

Not expected to be made available

# **Study outputs**

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Basic results		22/03/2019	25/03/2019	No	No
Funder report results	results			No	No
Participant information sheet	version v1	30/05/2018	02/04/2019	No	Yes
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes