

Does teaching the Singaporean way improve maths test performance

Submission date 07/01/2013	Recruitment status No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 07/03/2013	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
Last Edited 20/01/2023	Condition category Other	<input type="checkbox"/> Individual participant data

Plain English summary of protocol

Background and study aims

Mathematics Mastery is based on a simple way to teach mathematics originally developed by the Singapore Ministry for Education. The Mathematics Mastery model is distinctive in two ways. First, it aims to give pupils a thorough understanding of mathematical concepts, rather than a set of techniques or routines to get to the right answer. Mathematics Mastery shows that problems can be solved in a variety of ways, and ensures that pupils learn in sequence first by manipulating real objects, then by drawing pictorial representations, and ultimately by using mathematical symbols. Second, Mathematics Mastery uses a 'mastery' approach, in which teachers do not move on until all pupils have acquired a basic understanding of the current topic. Additionally, the course is designed so that more able pupils can explore each topic in depth, and therefore remain engaged.

Who can participate?

We are currently asking schools to volunteer to participate in the Maths Mastery programme. In London there are only 25 funded places available in the programme and so volunteer schools will enter a lottery to determine which school is awarded a place in the programme.

What does the study involve?

For the 25 successful schools, the programme will begin in September 2013 following a summer of training teachers in Maths Mastery. Initial follow-up testing will take place in June 2014, with a further follow-up in June 2018 (childrens GCSE test scores). Only schools with a high number of disadvantaged pupils will be invited to take part (as either intervention or control schools). We will be evaluating the effectiveness of the programme and to do that we will ask schools that are not successful in the lottery to remain involved as a comparison group. All pupils in year 7 in the schools that initially volunteered to take part will be tested in June 2014 for their understanding of mathematics (both treatment and control groups). Childrens Key Stage 2 test scores shall be used as baseline controls. Note that participation in this programme (even if schools are not successful in the lottery) will meet OFSTED requirements for schools to participate in research. We will also be able to certify schools co-operation and involvement with the Education Endowment Fund.

What are the possible benefits and risks of participating?

The participation of all schools (whether they receive one of the lottery places or not) is critical to the success of the programme. All schools, even those not introducing Maths Mastery, will receive feedback at the end of the year on the level of understanding of mathematics of each child tested and the progress they have made. We are therefore hopeful that this information can be used by the school for formative purposes.

The test will take approximately one hour. The test will simply be used to measure the effectiveness of the Maths Mastery approach and not the effectiveness of any individual teacher.

Where is the study run from?

The programme will be run by the charity ARK (<http://www.arkschools.org/>). A team from the Institute of Education will be evaluating the impact of Maths Mastery on pupils understanding of mathematics.

When is the study starting and how long is it expected to run for?

The programme will begin in September 2013 following a summer of training teachers in Maths Mastery. Initial follow-up testing will take place in June 2014, with a further follow-up in June 2018 (GCSE test scores).

Who is funding the study?

Education Endowment Fund, UK.

Who is the main contact?

Dr. John Jerrim

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Contact information

Type(s)

Scientific

Contact name

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Additional identifiers

Study information

Scientific Title

Maths Mastery secondary school evaluation: a cluster randomised controlled trial

Study objectives

That the Maths Mastery programme will have a positive impact (on average) on pupils maths test scores after (i) one year and (ii) after five years.

Ethics approval required

Old ethics approval format

Ethics approval(s)

Not provided at time of registration

Study design

Cluster randomised controlled trial, with random allocation at the school level

Primary study design

Interventional

Study type(s)

Other

Health condition(s) or problem(s) studied

Maths skills

Interventions

The Maths Mastery programme aims to give pupils a thorough understanding of mathematical concepts, rather than a set of techniques or routines to get to the right answer. Mathematics Mastery shows that problems can be solved in a variety of ways, and ensures that pupils learn in sequence first by manipulating real objects, then by drawing pictorial representations, and ultimately by using mathematical symbols. Second, Mathematics Mastery uses a 'mastery' approach, in which teachers do not move on until all pupils have acquired a basic understanding of the current topic. Additionally, the course is designed so that more able pupils can explore each topic in depth, and therefore remain engaged.

Teachers in the intervention group will receive training in the maths mastery programme prior to the start of the September 2013 school year.

Those in the control group will not receive any intervention.

The skills teachers learn in Maths Mastery will then be applied throughout the school year.

Intervention Type

Other

Phase

Not Applicable

Primary outcome(s)

Current primary outcome measures as of 29/04/2013:

The primary outcome we will consider is childrens overall performance on the maths test children will sit at the end of year 7.

Previous primary outcome measures until 29/04/2013:
Scores on a standardised maths test at the end of year 7

Key secondary outcome(s)

Current secondary outcome measures as of 29/04/2013:
For secondary outcomes, ARK (the intervention provider) will identify particular questions / sub-scales of interest that they believe the Maths Mastery programme will particularly influence. They will inform the Institute of Education of these before they conduct any analysis of the test score data. The Institute of Education will then compare childrens performance on these questions / sub-scales as secondary outcomes. Corrections for multiple testing will be applied if appropriate. GCSE test scores (follow-up in June 2018) will also be a secondary outcome.

Previous secondary outcome measures until 29/04/2013:
GCSE grades / performance in national math exam at age 16

Completion date

01/09/2018

Eligibility

Key inclusion criteria

Sampling frame are the ARK schools within certain geographic areas (mainly London and the West Midlands). These are mainly schools with a high proportion of children receiving free school meals. All children within a school are included.

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Child

Sex

All

Key exclusion criteria

Those who are absent from school on the day of the test

Date of first enrolment

01/09/2013

Date of final enrolment

01/09/2018

Locations

Countries of recruitment

United Kingdom

England

Study participating centre

Institute of Education

London

United Kingdom

WC1H 0AL

Sponsor information

Organisation

Education Endowment Fund (UK)

ROR

<https://ror.org/03bhd6288>

Funder(s)

Funder type

Charity

Funder Name

Education Endowment Fund (EEF) (UK)

Results and Publications

Individual participant data (IPD) sharing plan

Not provided at time of registration

IPD sharing plan summary

Not provided at time of registration

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Funder report results		01/02/2015	20/01/2023	No	No