

Improving primary science teaching: a new approach to teaching science in primary schools

Submission date 14/08/2014	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 13/10/2014	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input checked="" type="checkbox"/> Results
Last Edited 07/12/2017	Condition category Other	<input type="checkbox"/> Individual participant data

Plain English summary of protocol

Background and study aims

This study is being done to assess the effectiveness of a training course for primary school teachers in helping pupils do better at science. The project aims to make science lessons more challenging, more practical, and more interactive. Rather than teaching science as a body of facts to be learned, the approach emphasises ideas and the principles of scientific inquiry: how to ask good questions and design simple experiments to find out the answers.

Who can participate?

Primary schools in Oxfordshire.

What does the study involve?

The participating schools are randomly allocated to either the intervention group or the control group. Year 5 teachers in the intervention group schools receive four days of professional development training in Thinking, Doing and Talking Science, and later have time to work with colleagues to ensure the programme is being implemented effectively in their school. The aim is not to provide participating teachers with a set of off-the-shelf lesson plans to be delivered in schools; rather it is to support them to be more creative and thoughtful in planning their science lessons. Previous research suggests that the programme has a substantial impact on children's attainment in science. Teachers in schools in the control group carry on teaching science as usual and do not access the Thinking, Doing, Talking Science resources (although they can participate in other science courses if they wish). The study also includes a survey on children's attitudes towards science and a questionnaire asking Year 5 teachers how they teach science.

What are the possible benefits and risks of participating?

Two teachers at each intervention group school receive professional development sessions in science teaching, and extra time to plan their science lessons. This opportunity is also given to two teachers at the control schools after the one-year trial period finishes. Schools also receive free resources.

Where is the study run from?

Institute for Effective Education, University of York (UK)

When is the study starting and how long is it expected to run for?
December 2012 to November 2015

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

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

Protocol serial number
N/A

Study information

Scientific Title
Improving primary science teaching: a new approach to teaching Year 5 science

Study objectives
The aim of the evaluation is to independently assess whether professional development, delivered through this project to two teachers in each school, leads to improved attainment in science (particularly in childrens thinking and reasoning skills in science) as well as benefiting mathematics and literacy.

Ethics approval required
Old ethics approval format

Ethics approval(s)
The Education Ethics Committee, University of York, 27/07/2012

Study design

Delayed treatment clustered randomised controlled trial, with random allocation at school level

Primary study design

Interventional

Study type(s)

Other

Health condition(s) or problem(s) studied

Science education

Interventions

Teachers in participating (intervention group) schools will receive four days of professional development training in 'Thinking, Doing and Talking Science', and will later have time to work with colleagues to ensure the programme is being implemented effectively in their school. The programme aims to share strategies for teaching science that will increase children's enthusiasm for the subject and at the same time raise their attainment.

In the schools in the control group, teachers will carry on teaching science as usual and not access the 'Thinking, Doing, Talking Science' resources (although they can participate in other science courses if they wish).

Intervention Type

Other

Phase

Not Applicable

Primary outcome(s)

Achievement scores on age-appropriate science tests designed to cover the relevant primary curriculum and address factual recall and thinking/understanding. The tests have been designed by drawing questions from standardised assessments (Russell, T. and McGuigan, L., published by CRIPSAT) across a range of science topics.

Schools were asked to administer first post-test measures between 9 and 23 June 2014.

Key secondary outcome(s)

Pupil attitudes to science questionnaire based on Kind, P., Jones, K. and Barmby, P., 'Developing Attitudes towards Science Measures', *International Journal of Science Education*, 29:7, 871 - 893.

Students will sit their KS2 SATs w/c 11/5/15 (second post-test stage).

Completion date

30/11/2015

Eligibility

Key inclusion criteria

Year 5 teachers at state primary schools in Oxfordshire, plus one colleague (preferably the science co-ordinator) in single-form entry schools so at least two teachers per school are involved. All Year 5 pupils in the 2013-4 academic year.

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Sex

All

Key exclusion criteria

Children who match the eligibility criteria but whose parents do not wish them to take part

Date of first enrolment

01/12/2012

Date of final enrolment

30/11/2015

Locations**Countries of recruitment**

United Kingdom

England

Study participating centre

Institute for Effective Education

York

United Kingdom

YO10 5DD

Sponsor information**Organisation**

Education Endowment Foundation (UK)

ROR

https://ror.org/03bhd6288

Funder(s)

Funder type

Government

Funder Name

Education Endowment Foundation (UK)

Results and Publications

Individual participant data (IPD) sharing plan

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	results			No	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes