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Does teaching children how to play chess improve maths test performance?

Submission date
22/09/2013

Recruitment status
No longer recruiting

Registration date
04/12/2013

Overall study status
Completed

Last Edited
04/12/2013

Condition category
Other

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[_] Record updated in last year

Plain English summary of protocol

Background and study aims
This study will investigate whether teaching primary school pupils to play chess for one hour a week over 30 weeks (during normal school time) boosts academic achievement in mathematics. This initiative is called the Chess in Schools and Communities (CSC) programme.

Who can participate?
Year 5 pupils in 100 schools are involved in the trial, drawn from 11 local authorities (The City of Bristol; Hackney; Hammersmith and Fulham; Leeds; Liverpool; Middlesbrough; Newham; Sefton; Sheffield; Southwark and Tameside).

What does the study involve?
The 100 schools will be randomly allocated to one of two groups: a treatment group or a control group.
Year 5 pupils in the 50 treatment schools will be taught how to play chess, following a specially designed curriculum. A sample of the curriculum can be found on http://www.chessinschools.co.uk/sample_curriculum.htm.
In the 50 control schools, children will not receive the CSC programme and it will be business as usual.

What are the possible benefits and risks of participating?
Benefits: Children get to learn about chess. It will potentially improves maths ability. It will potentially improves other cognitive skills. Schools can say they are part of an EEF trail and academic research - which is a requirement of OFSTED.
Risks: There are no obvious risks to participation. If assigned to the control group, schools will not be able to take part in the CSC programme for the following 2 years. No known side effects.

Where is the study run from?
In 100 schools drawn from 11 local authorities. The programme will be run by the charity Chess in Schools and Community (CSC) charity. A team from the Institute of Education, led by Dr. John Jerrim, will be evaluating the impact of Chess in Schools on pupils maths test scores.

When is the study starting and how long is it expected to run for?
From September 2013 to April 2016 as follows:
Sep 2013: CSC treatment begins. Baseline survey of year 5 intervention children
Mar 2014: Observations of classroom chess sessions
Jun 2014: CSC treatment ends . On-line survey with teachers and head teachers (intervention)
Jul 2014: Telephone interviews (with teachers, coaches, etc). Follow up survey with year 5 intervention children
Jun 2015: CSC children sit their Key Stage 2 exams
Nov 2015: Key Stage 2 test results become available
Apr 2016: IoE completes report for EEF

Who is funding the study?
Education Endowment Fund, UK.

Who is the main contact?
Dr. John Jerrim
J.Jerrim@ioe.ac.uk

Contact information

Type(s)
Scientific

Contact name
Dr John Jerrim

Contact details
Department of Quantitative Social Science
Institute of Education
University of London
20 Bedford Way
London
United Kingdom
WC1H 0AL
J.Jerrim@ioe.ac.uk

Additional identifiers

Protocol serial number
N/A

Study information

Scientific Title
Chess in schools and community: A clustered randomised controlled trial

Study objectives
That teaching children how to play Chess in year 5 (age 9 /10) will improve childrens math test scores at the end of year 6 (age 11).

Ethics approval required
Old ethics approval format

Ethics approval(s)
Institute of Education, University of London Ethics Committee, 17/05/2013, Ref: FPS 504.
The study will follow BERA guidelines for ethical approval - http://www.bera.ac.uk/publications/Ethical%20Guidelines

Study design
Clustered randomised controlled trial with randomisation at the school level

Primary study design
Interventional

Study type(s)
Quality of life

Health condition(s) or problem(s) studied
Maths test scores at Key Stage 2

Interventions
Under the assumption that 100 schools are recruited, the IoE will decide in June 2013 which schools will be in the treatment group and which will be controls. They will do this approximately one week after receiving the list of 100 schools that have been recruited into the study. This will be a stratified, clustered randomised control trial with random allocation occurring at the school level. Schools will firstly be separated (stratified) into different groups by important observable characteristics (e.g. historical key stage 2 math scores at the school level, percentage receiving free school meals). Schools will then be randomly selected from within these strata into either treatment or control groups. A 50/50 sampling fraction shall be used. All children in Year 5 treatment schools will be required to use the programme to avoid selection problems.

The Chess in Schools and Communities chess programme will be given to the 50 treatment schools.

There will be no intervention in the 50 control schools (business as usual).

Duration of intervention: one hour a week over 30 weeks in one academic year (during normal school time).
Follow-up = Initial follow up testing will take place in June 2015. Longer-term follow up via the national pupil database may take place up to 2022 (depending upon data consent).

Intervention Type
Other

Phase
Not Applicable

Primary outcome(s)
Childrens overall scores on the Key Stage 2 maths test.

Key Stage 1 maths measured at baseline. Key Stage 2 maths measured 1 year after the end of intervention (June 2015).

Key secondary outcome(s))
1. Performance on Key Stage 2 English tests
2. Performance on Key Stage 2 Science tests (where available)
3. Performance on sub-domains of the Key Stage 2 Maths test (see page 24 of http://www.bris.ac.uk/cmpo/plug/support-docs/ks2userguide2011.pdf)

Measured one year after the end of the intervention.

Completion date
01/10/2016

Eligibility

Key inclusion criteria
The Institute of Education along with the Chess in Schools team will define the population of interest. Specific geographical areas in England (certain Local Authorities) will firstly be selected by Chess in Schools and Communities (CSC) where they have capacity to deliver the intervention. These areas are:
1. The City of Bristol
2. Hackney
3. Hammersmith and Fulham
4. Leeds
5. Liverpool
6. Middlesbrough
7. Newham
8. Sefton
9. Sheffield
10. Southwark
11. Tameside

The Institute of Education will then produce a list of all primary schools within these geographic regions. Private schools and schools where CSC already operate will be excluded. For logistical reasons, it has been agreed that any primary school with four-form entry shall not be included in the evaluation. We have therefore also excluded schools with more than 90 pupils currently aged 11 from the sampling frame (working on the assumption that there are approximately 30 pupils per class within primary schools and that year group size within schools does not significantly change within a short space of time). Any school that CSC approaches with four form entry shall we excluded from the study. The population of interest will be further restricted to schools with a high intake of disadvantaged pupils, based upon the percentage of children receiving Free School Meals. (This has been set to at least 37 percent of Key Stage 2 pupils who have been eligible for FSM in the last six years or who have been looked after by the local authority continuously for 6 months) . Thus the population of interest is defined as all year 5 state school pupils within the selected geographic regions, who attend a one, two or three form entry primary school, with a high proportion of disadvantaged pupils and whose school does not currently run the CSC programme.

This final list of schools produced by the IoE will contain approximately 450 schools and shall act as the sampling frame. CSC will then attempt to recruit 100 out of these 450 schools by the 3rd

week June 2013. CSC will send all interested schools an information pack those that decide to take part will complete a consent form to participate in the study and allow access NPD form and an Excel sheet of prospective year 5 pupil information prior to randomisation.

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
01/10/2013

Date of final enrolment
01/10/2016

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Department of Quantitative Social Science
London
United Kingdom
WC1H 0AL

Sponsor information

Organisation
Education Endowment Foundation (UK)

ROR
https://ror.org/03bhd6288

Funder(s)

Funder type
Charity

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?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes