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TEEM UP: Teaching effective early mathematical understanding in primary schools

Submission date	Recruitment status	[_] Prospectively registered
11/01/2021	No longer recruiting	[X] Protocol
Registration date	**Overall study status**	[X] Statistical analysis plan
26/01/2021	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
10/02/2026	Other	

Plain English summary of protocol

Background and study aims

Research has shown that children's early achievement in mathematics predicts their mathematics and general educational achievement in later life, showing the need for quality early education to improve children's educational outcomes. Early interventions have been shown to be effective in supporting mathematics understanding in young children.

The TEEMUP CPD programme was developed to improve mathematics provision. As part of the FEEL study, an earlier version of this CPD was delivered to teachers in Australia. Results showed significant improvements in the quality of maths teaching and interactions between pupils and staff.

This study aims to evaluate the impact of an extended version of the Oxford TEEMUP professional development programme. The study will evaluate the maths development of children who are taught by teachers receiving the PD programme in Reception and Year 1 of primary school in the UK. Additionally, this study will investigate the impact of the TEEMUP PD programme on secondary outcomes including child general outcomes, child personal, social and emotional development and self-regulation, and practitioner confidence and beliefs.

Who can participate?

State-funded primary and/or infant schools in the East of England and bordering local authorities. Participating children must be aged 3-4 (starting Reception in September 2021 for cohort 1, and starting September 2022 for cohort 2) and in the classes of the pre-identified Reception teacher(s).

What does the study involve?

Participating schools will be randomly allocated to either the intervention group, where they will receive the TEEMUP PD programme, or to the control group, who will continue with their usual provision for the duration of the evaluation. From January 2022, the nominated teacher(s) in Reception and Year 1 in the intervention schools will receive the TEEMUP PD, which involves training, mentorship and access to online resources. The outcomes will be measured across two cohorts of pupils: cohort one (starting Reception in September 2021) and cohort 2 (starting September 2022). A sample of at least 15 cohort 1 children will be assessed in October

/November 2021 and again in June/July 2023. A sample of at least 15 cohort 2 children will be assessed in June/July 2023. The participating teachers will also complete a questionnaire in October/November 2021 and again in June/July 2023.

What the possible benefits and risks of participating?
Possible benefits include improving the mathematical development of participating children and the skills and confidence of participating teachers. There is a very low risk of the children experiencing distress at completing the assessments. However, this will be mitigated by having a known member of the school staff present at testing, and allowing the child to delay/stop the assessment if the child becomes distressed.

Where is the study run from?
1. University of Oxford (UK)
2. University of York (UK)

When is the study starting and how long is it expected to run for?
November 2019 to January 2024

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

Who is the main contact?
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Contact information

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Study information

Scientific Title
Independent evaluation of the Oxford Teaching Effective Early Mathematics and Understanding in Primary schools (TEEMUP) professional development programme: a two-armed cluster randomised controlled trial

Acronym
TEEMUP

Study objectives
1. What is the impact of the TEEMUP PD programme on the maths skills (as measured by BAS3 ENC) of children aged 5-6 at the end of Year 1, who have been taught by Reception and Year 1 teachers receiving TEEMUP PD, in comparison to children receiving teaching as usual? [Cohort 1]
2. What is the impact of the TEEMUP PD programme on the maths skills (as measured by BAS3 ENC) of children aged 4-5 at the end of Reception, who have been taught by Reception teachers at the end of receiving the full TEEMUP PD, in comparison to children receiving teaching as usual? [Cohort 2]

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 18/11/2020, University of York Health Sciences Research Governance Committee (Department of Health Sciences, Department of Philosophy, Heslington, York, YO10 5DD, UK; +44 (0)1904323253; smh12@york.ac.uk), ref: HSRGC/2020/382/G

Primary study design
Interventional

Study design
Two-arm cluster randomized controlled trial

Study type(s)
Other

Health condition(s) or problem(s) studied
Maths attainment of children in school years Reception and 1

Interventions
A statistician at York Trials Unit (YTU), who is not involved in school recruitment, will randomise schools on a 1:1 allocation ratio to the following trial arms:
1. The intervention arm will receive the TEEMUP PD programme. This programme aims to improve maths practice in schools and involves face-to-face workshops, coaching and mentoring in schools, and access to an online 'knowledgebase' (additional resources, materials and discussion forums).
2. The control arm will continue with their usual provision for the duration of the evaluation.

The TEEMUP intervention will run from January 2022-July 2023. Post-tests with pupils and post-intervention surveys with school staff will take place between May-July 2023

Intervention Type
Behavioural

Primary outcome(s)
The maths attainment of cohort 1 pupils, measured by the British Abilities Scale 3 Early Number Concepts (BAS3 ENC) at baseline (October – December 2021) and posttest (May-July 2023)

Key secondary outcome(s)
1. Maths attainment of cohort 2 pupils measured by the British Abilities Scale 3 Early Number Concepts (BAS3 ENC) at posttest (May-July 2023)
2. Maths attainment of cohort 1 and 2 measured by the Early Years Foundation Stage Profile (EYFSP) for as an intermediate outcome for cohort 1 (June-July 2022) and posttest for cohort two (May-July 2023)
3. General attainment/development of cohort 1 and 2, measured by the Early Years Foundation Stage Profile (EYFSP) as an intermediate outcome for cohort 1 (June-July 2022) and at posttest for cohort 2 (May-July 2023)
4. Child personal, social and emotional development (PSED) and self-regulation of cohort 1 and cohort 1 pupils, measured by the Children's Social Behaviour Questionnaire (CSBQ); baseline collected for cohort 2 (October 2022), as an intermediate outcome for cohort 1 (June-July 2022) and at posttest for cohort 2 (May-July 2023)
5. Practitioner confidence and beliefs of Reception and Year 1 Teachers collected at baseline (October-November 2021), as an intermediate outcome from Reception teachers (June-July 2022), and at posttest from Year 1 and Reception teachers (May-July 2023), assessed using a short survey adapted from Chen et al. (2014)

Completion date
31/01/2024

Eligibility

Key inclusion criteria
School inclusion criteria:
1. State primary and infant schools
2. Schools located in the East of England and bordering local authorities (Initial target area for recruitment – may be broadened if required)
3. Schools who have a reception cohort size ideally greater than 20 (excluding children with EAL

who are new to English and/or SEND that would prevent them from accessing the assessments)
4. Schools willing to nominate one YR teacher and at least one Y1 teacher (who are fulltime or majority time), who will participate in the Oxford TEEMUP PD, if their school is randomly allocated to the intervention group
5. Schools who anticipate participating YR and Y1 staff will remain teaching the same year groups (i.e. will stay teaching Reception or stay teaching Year 1) over the duration of the study
6. Schools who can commit to keeping participating children in classes taught by participating YR and Y1 teachers
7. Schools that agree to all requirements outlined in the Information for Schools and Memorandum of Understanding document
8. Schools that sign a DSA

Pupil inclusion criteria:
Cohort 1:
1. Children aged 3 to 4 years, starting reception in September 2021
2. Children in class/es of pre-identified Reception teacher/s
3. Children who complete the trial pre-test

Cohort 2:
1. Children aged 3 to 4 years, starting reception in September 2022
2. Children in class/es of pre-identified Reception teacher/s

Participant type(s)
Learner/student

Healthy volunteers allowed
No

Age group
Child

Lower age limit
3 Years

Upper age limit
4 Years

Sex
All

Total final enrolment
2650

Key exclusion criteria
School exclusion criteria:
1. Schools in a Multi-Academy Trust (MAT), where another school in the MAT is taking part in TEEMUP (only 1 school per MAT will be eligible for TEEMUP)
2. Schools already taking part in a Reception or Year 1 substantial PD related research study
3. Schools already taking part in an EEF funded trial in the early years or KS1 (for example the

White Rose maths trial or Maths Champions II trial)
4. SEND schools
5. Private schools

Pupil exclusion criteria:
1. Children with English as an Additional Language (EAL) who are new to English
2. Children with Special Educational Needs and Disabilities (SEND) that would prevent them from accessing the assessments

Date of first enrolment
01/01/2021

Date of final enrolment
31/12/2021

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
York Trials Unit
Department of Health Sciences
York
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Sponsor information

Organisation
University of York

ROR
https://ror.org/04m01e293

Funder(s)

Funder type
Charity

Funder Name
Education Endowment Foundation

Alternative Name(s)
EducEndowFoundn, The Education Endowment Foundation (EEF), 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 will be available upon request from the EEF data archive managed by the Office for National Statistics. Consent will be sought from participants for data to be stored in the EEF data archive.

IPD sharing plan summary
Stored in repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Funder report results	version 1.0.0	03/12/2025	10/02/2026	No	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Protocol file	version 1.1	04/07/2023	17/01/2025	No	No
Statistical Analysis Plan	version 1.0	04/07/2023	17/01/2025	No	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes