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Using the 5Rs approach to improve GCSE Maths attainment

Submission date
10/11/2022

Recruitment status
No longer recruiting

Registration date
14/11/2022

Overall study status
Completed

Last Edited
11/11/2022

Condition category
Other

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

Plain English summary of protocol

Background and study aims
Funding regulations (2014/15) mean that full-time students aged 16-19 with a grade 3 or below in GCSE maths must continue studying GCSE maths as a "condition of funding" of their education. Maths resit challenges are two-fold, impacting on both students and colleges. Recent surveys by the Association of Colleges identified pressures caused by maths resits as one of greatest concerns for colleges (AoC, 2018b) and vacancies for maths teachers as the fourth most difficult to fill (AoC, 2022). In 2019, only 21.5% of those aged 17 taking GCSE maths achieved a grade 4 or above (Ofqual, 2019). While students may understand the importance of reaching a grade 4 or above in maths, students have reported feeling like a 'failure' for not achieving this level and of finding maths difficult to understand (Playfair, 2019). This has potential knock-on effects such as lower confidence in maths, lower motivation and less engagement in (and outside of) maths lessons. Thus, the aim of 5Rs is to RE-Vision, that is to view maths concepts in a different and therefore more understandable way, to heighten a sense of achievement, motivation and confidence.

Who can participate?
Post-16 education providers in England are eligible to take part in the trial. This includes FE colleges, Sixth Form colleges, School Sixth forms and UTCs. Settings are eligible to participate if the following criteria are met: They have a minimum of 15 students aged 16-19 re-taking GCSE maths in the year 2021-2022 (Cohort 1) / 2022/2023 (Cohort 2) and expect this number to stay constant or rise in 2022-2023 (Cohort 1) / 2023/2024 (Cohort 2). GCSE students are enrolled by September 2022 (Cohort 1) / September 2023 (Cohort 2) for the full academic year.

What does the study involve?
Settings who sign up to the trial will be allocated to either the control group (business as usual) or the intervention group. Those allocated to the intervention will receive initial online training via a webinar delivered by Julia Smith, developer of the 5Rs programme. A maximum of five teachers per setting will be allowed to participate. The training will outline the method and theory behind the intervention and will take place in September 2022 for Cohort 1 and then September 2023 for Cohort 2). This will be followed by a further two training days, one at the beginning of each of the following two terms, which will incorporate a review of the previous terms' delivery, identify new resources and approaches, address problem-solving for longer

questions and consider remote learning in more detail. A helpline will also be available for further support for teachers throughout the academic year. Teachers should be able to start using the 5Rs model in the classroom after the first training day. Additionally, students will have access to various online resources via the Padlet application to facilitate their study both inside and outside the classroom.

What are the possible benefits and risks of participating?
The possible benefits of taking part are for settings to improve overall maths GCSE resit grades. For teachers, they will learn a new way to teach maths using the 5Rs approach. For students, a possible better chance at achieving a grade 4 or above for their maths GCSE resit. There isn't thought to be any possible risks of taking part but the IPE will explore any unintended consequences of the trial.

Where is the study run from?
The study is being evaluated by the University of York (UK)

When is the study starting and how long is it expected to run for?
December 2021 to December 2024

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

Who is the main contact?
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Contact information

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Principal investigator

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Study information

Scientific Title
Using the 5Rs approach to improve GCSE Maths resit attainment, a two-armed cluster randomized control trial: 5Rs Efficacy Retrial, Evaluation Protocol

Study objectives
The central aim of the trial is to evaluate the impact of 5Rs on GCSE maths attainment for students aged 16-19 who are resitting GCSE maths to try to achieve a grade 4 or above.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 02/02/2022, University of York Department of Education Ethics Committee (University of York, Department of Education, Heslington, York, YO10 5DD, UK; +441904 328160; education-research-admin@york.ac.uk), ref: Z4855807

Primary study design
Interventional

Study design
Two-arm cluster randomized controlled trial with random allocation at the setting level

Study type(s)
Other

Health condition(s) or problem(s) studied
The impact of 5Rs on GCSE maths attainment for students aged 16-19 who are resitting GCSE maths

Interventions
Post-16 education providers in England are eligible to take part in the trial. This includes FE colleges, Sixth Form colleges and School Sixth forms, Settings will be allocated to either the intervention or act as a control (teaching as usual), using minimisation by type of setting and number of students. The intervention will be implemented in settings through normal maths lessons over a 1-year period (in two cohorts: cohort 1 - 2022-2023, cohort 2 - 2023-2024).

Those allocated to the intervention will receive initial online training via a webinar delivered by Julia Smith, developer of the 5Rs programme. A maximum of five teachers per setting will be allowed to participate. The training will outline the method and theory behind the intervention and will take place in September 2022 for Cohort 1 and then September 2023 for Cohort 2). This will be followed by a further two training days, one at the beginning of each of the following two terms, which will incorporate a review of the previous terms' delivery, identify new resources and approaches, address problem-solving for longer questions and consider remote learning in more detail. A helpline will also be available for further support for teachers throughout the academic year. Teachers should be able to start using the 5Rs model in the classroom after the first training day. Additionally, students will have access to various online resources via the Padlet application to facilitate their study both inside and outside the classroom.

Intervention Type
Behavioural

Primary outcome(s)
GCSE maths attainment is measured using GCSE maths raw score (converted to Z score for analysis) at baseline and endline (1 year)

Key secondary outcome(s)
1. GCSE maths grade is measured using GCSE (9-1) as a binary measure i.e. achieving a grade 3 or below, or grade 4 or above, at baseline and endline (1 year)
2. Exam attendance rates are measured using student attendance at each of the exam sessions at endline
3. Attitudes towards maths is measured using an adapted Attitudes Towards Maths (ATMI) (Tapia & Marsh, 2000), at baseline and endline (7 months)

Completion date
31/12/2024

Eligibility

Key inclusion criteria
Settings are eligible to participate if the following criteria are met:
1. They have a minimum of 15 students aged 16-19 re-taking GCSE maths in the year 2021-2022 (Cohort 1) / 2022/2023 (Cohort 2) and expect this number to stay constant or rise in 2022-2023 (Cohort 1) / 2023/2024 (Cohort 2)
2. GCSE students are enrolled by September 2022 (Cohort 1) / September 2023 (Cohort 2) for the full academic year

Participant type(s)
Other

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
16 Years

Upper age limit
19 Years

Sex
All

Key exclusion criteria
Settings will not be eligible if any of the following apply:
1. They operate roll-on roll-off recruitment of students
2. They or their staff have previously been trained in, or used, the 5Rs programme, including accessing the 5Rs materials available on the AQA website. AQA have agreed to check potential participants against their records and will confirm whether or not they have been previously involved (data protection regulations do not allow the researchers direct access to this information).
3. They were involved in the 2019-2020 trial and were in the group that received the 5Rs programme (those settings that followed teaching-as-usual – the "control group" – will be eligible for 2022-2023 (Cohort 1). Those who were selected as a control group for 2019-2020 and 2022-2023 will not be eligible to minimise dropout.

Date of first enrolment
03/02/2022

Date of final enrolment
30/08/2023

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Association of Colleges
2-5 Stedham Place
London
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, 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 current data sharing plans for this study are currently unknown and will be made available at a later date.

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol file	version 1.2		11/11/2022	No	No
Study website	Study website	11/11/2025	11/11/2025	No	Yes