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# Young enterprise maths in context: Using real world contexts to teach GCSE maths

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| **Submission date**<br>23/05/2017 | **Recruitment status**<br>No longer recruiting | [ ] Prospectively registered<br>[ ] Protocol<br>[ ] Statistical analysis plan<br>[ ] Results<br>[ ] Individual participant data<br>[ ] Record updated in last year |
| **Registration date**<br>30/08/2017 | **Overall study status**<br>Completed | |
| **Last Edited**<br>19/04/2021 | **Condition category**<br>Other | |

**Plain English summary of protocol**
Background and study aims:
"Young Enterprise: Maths in Context" is a programme that seeks to improve children's financial capability, and specifically their financial knowledge and understanding, applied numeracy and problem-solving skills. It is delivered by Young Enterprise, the developer, and will take place over the school year 2017-18. It consists of a series of 10-12 lessons, each focused on a specific area of mathematics in the context of financial capability. The lessons are supported by lesson plans and classroom materials with teachers having taken part in a one-day external training programme and having on-going in-school support from a Young Enterprise consultant mentor. Lessons are taught by the children's usual mathematics teachers. The aim of this study is to evaluate the effect of the programme on student's attainments in mathematics, financial capability and problem-solving skills.

Who can participate?
All pupils at participating state schools who are enrolled on the GCSE mathematics course at age 14.

What does the study involve?
Participating schools are randomly allocated to one of two groups. Schools in the first group deliver the "Young Enterprise: Maths in Context" program over a series of 10-12 lesson plans, each focused on a specific area of mathematics in the context of financial capability. Schools in the second group continue to deliver business as usual for the duration of the study. Each intervention school will identify a lead teacher. Lead teachers are expected to model the teaching approach by implementing the lessons and pedagogies introduced in the training in their own lessons and more widely within their schools by providing 'cascade' training to at least three other Year 10 mathematics teachers. Children who attend school in the intervention group in group 1 (intervention group) attend the programme which involves them receiving up to 12 lessons that focus on applying numeracy and problem solving skills to financial contexts. Those in group 2 (control group) will continue to receive business as usual best practice mathematics teaching

What are the possible benefits and risks of participating?
No risks have been identified for schools, teachers or children taking part in the intervention.

Where is the study run from?
130 state schools based in London, the Midlands, Liverpool, Newcastle and East Anglia (UK)

When is study starting and how long is it expected to run for?
February 2016 to June 2019

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

Who is the main contact?
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## Additional identifiers

### Protocol serial number
SoE RO: RB12AC, Sponsor No: 548661

## Study information

### Scientific Title
Young Enterprise Maths in Context: An Education Endowment Foundation efficacy trial

### Acronym
YEMiC

### Study objectives
The evaluation will address the following primary research question:
1. Does Young Enterprise: Maths in Context have significant effect on students' attainment in mathematics at GCSE when compared to a business- as- usual control?
In addition, the evaluation will address the following secondary research questions:
2. Does Young Enterprise: Maths in Context have significant effect on students' financial capability when compared to a business- as- usual control?
3. Does the intervention have a significant effect on students' attainment in a GCSE mathematics financial capability sub-scale when compared to a business- as- usual control?
4. Does the intervention have significant effect on students' engagement in mathematics and financial capability when compared to a business- as- usual control?
5. Are the effects on mathematical attainment, financial capability and engagement different for children eligible for free school meals?
6. Are the effects on mathematical attainment, financial capability and engagement different for

girls and boys?
7. To what extent are any effects on mathematical attainment, financial capability and engagement mediated by the quantity of mathematics teaching that includes financial contexts and related problem-solving activities?
8. Are there differences in the effects on mathematical attainment, financial capability and mathematical self-efficacy between the lead teachers and other teachers in the intervention schools?

In the process evaluation, the following research questions will be assessed using an exploratory sequential design:
9. To what extent do the Young Enterprise training sessions, materials and resources enable teachers to overcome students' lack of experience and familiarity with financial products and decisions? To what extent does Young Enterprise enable teachers to use financial contexts to enhance learning of mathematics, including the application and use of mathematics in context?
10. To what extent do teachers perceive the intervention resources, training and mentoring to be effective?
11. To what extent do intervention schools, lead teachers and other teachers adhere to the intervention in terms of the delivery, the quality of delivery and how much of the intended programme is delivered? To what extent does the intervention enable teachers to use financial contexts and related problem-solving tasks more effectively in mathematics lessons? To what extent is the intervention manageable for teachers to deliver? Is the intervention sufficiently adaptable to the needs of different students and teachers?
12. How variable is the fidelity and quality of implementation between intervention schools? What school and contextual factors afford or constrain the fidelity quality of implementation? In what ways do schools support the delivery intervention, and to what extent are the different approaches effective?
13. To what extent is the intervention scalable?
14. To what extent does the intervention have an effect on teachers' confidence towards, knowledge of and pedagogical practice relating to financial capability and how it relates to mathematics? To what extent are any effects on mathematical attainment, financial capability and engagement mediated by teachers' confidence towards, knowledge of and pedagogical practice relating to financial capability and how it relates to mathematics?
15. What does usual practice relating to the teaching of financial capability in mathematics within control schools look like? To what extent (if at all), and how, do teachers in the control schools use financial contexts and related problem-solving tasks in mathematics lessons?
16. To what extent does the intervention encourage teachers to develop effective tasks and strategies to address financial capability in mathematics lessons?

## Ethics approval required
Old ethics approval format

## Ethics approval(s)
University of Nottingham School of Education Staff Research Ethics Committee, 23/05/2017, ref: 2017/56

## Study design
Cluster randomised controlled trial

## Primary study design
Interventional

## Study type(s)
Treatment

## Health condition(s) or problem(s) studied
Mathematical and financial literacy

## Interventions
Participating schools are randomised to one of two groups. Cluster-level randomisation (schools) takes place in July 2017, with baseline testing on the financial capabilities assessment taking place in June prior to schools being entered into randomisation. The process itself involves the blocked randomisation on the quartiles of school level proportions of pupils that had received free school meals at any point during their entire schooling (available from the UK Department for Education) and further broken down into North and South regions of England. The aim was to recruit a maximum of 130 schools being successfully recruited and randomised by July 2017. A further round of randomisation will take place in September, subject to the return of data by schools.

Pupils in participating schools will be re-tested using the financial capabilities assessment questionnaire in September 2018 and our team will collect their GCSE mathematics results (to be taken in summer 2019) in the form of the uniform mark scheme score from exam boards /schools in the Autumn term of 2019 and pupil grades from the Department for Education in Autumn/Winter 2019/2020.

Intervention group: Schools deliver the Young Enterprise Mathematics in Context intervention. This consists of a series of 10-12 lesson plans, each focused on a specific area of mathematics in the context of financial capability and aimed at Year 10 students, together with a one-day external training programme and on-going in-school support from a Young Enterprise consultant mentor. The lessons, which will be finalised during 2016/17, are designed for delivery to Year 10 students. Each intervention school identifies a lead teacher. Lead teachers are expected to model the teaching approach by implementing the lessons and pedagogies introduced in the training in their own lessons and more widely within their schools by providing ‘cascade’ training to at least three other Year 10 mathematics teachers. The intervention programme will be introduced with one day of external training for lead teachers in regional clusters of between 5 and 12. The training outlines the key pedagogical approaches to teaching mathematics in financial contexts, introduce the lesson plans to the lead teachers and outline possible approaches to cascade training and support for other mathematics teachers.

Control group: Schools deliver business as usual teaching practice.

## Intervention Type
Other

## Primary outcome(s)
Outcome of first attempt of GCSE Mathematics examination is measured by the pupil uniform mark scheme/grade score at age 16 in the summer of 2019, approximately 21 months after the start of the trial. Baseline measure is the pupil-level Key Stage 2 score in Mathematics, which was sat at age 11 in June 2014 and this will be collected from the Department for Education.

## Key secondary outcome(s))
1. Pupil scores on financial context items within GCSE mathematics is measured using an amalgamated scale for financial and problem-solving items from the GCSE mathematics papers,

and collected as item-by-item data directly from schools in the autumn term of 2019
2. Pupil scores on a bespoke financial knowledge and understanding instrument based on the MAS Financial Capability Outcomes Framework (Bagwell et al, 2014), developed independently by the evaluation team, administered by schools in May/June 2017 prior to randomisation, then as a post-test in September 2018

### Completion date
30/06/2019

## Eligibility

### Key inclusion criteria
Schools:
1. All state schools that have not already taken part in Young Enterprise's previous Maths in Context trial, funded by London Schools Excellence Fund pilot (PFEG, 2015)
2. Can provide a minimum of four classes of year 10's who are eligible for the intervention

Participants:
All pupils from participating schools enrolled on the GCSE mathematics course at age 14.

### Participant type(s)
Other

### Healthy volunteers allowed
No

### Age group
Child

### Lower age limit
14 years

### Sex
All

### Key exclusion criteria
Schools:
1. Schools that were part of Young Enterprise's previous Maths in Context trial, funded by London Schools Excellence Fund pilot (PFEG, 2015)
2. Those that cannot provide a minimum of four classes of year 10's

Participants:
Participants based in schools within the independent sector.

### Date of first enrolment
01/09/2016

### Date of final enrolment
03/05/2017

# Locations

**Countries of recruitment**
United Kingdom

England

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**University of Nottingham**
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**Study participating centre**
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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

# Results and Publications

## Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are/will be available upon request from the Education Endowment Foundation (info@eefoundation.org.uk).

## IPD sharing plan summary

Available on request

## 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 |