

**Mathematics education 14-18
and gender: *participation and
attainment***

Background

The Joint Mathematical Council of the UK is concerned about ongoing patterns of gendered participation and performance in 14-18 mathematics pathways across the UK. Although much has been written in this area over a long period, the JMC is keen to understand whether developments and events over the last few years shed light on these issues. The Council, which covers the four countries of the UK, would also like to understand more about how different educational settings and qualification arrangements in the four countries influence, if at all, gendered patterns of participation and attainment.

Three significant changes make this an opportune time to revisit this issue: 1) reforms of high stakes assessments in the UK (e.g. GCSE and A level), 2) the introduction of new mathematics qualifications (e.g. GCSE Numeracy in Wales; Core Maths in England; Higher Applications of Mathematics in Scotland) and 3) the impact of Covid and different national approaches to awarding (e.g. Centre Assessed Grades).

The aim of this piece of work is therefore to produce a comparative evidence synthesis that starts by assembling publicly available longitudinal data from the four countries of the UK, including that produced for the November 2020 JMC meeting. The project aims not only to gather together the data, but to read *between* available data and then move *beyond* the data (Friel et al 2001¹) to produce an informative synthesis of value to the JMC, its partners and mathematics education stakeholder in the UK more generally. This will inform the Council as to whether the above changes have altered patterns in the participation and/or attainment of boys and girls and what this might tell us about this problem.

This piece of work will complement another study being commissioned the JMC which is seeking to produce an evidence synthesis for members on affective issues relating to mathematics and gender (aged 5-14)

The project

The Trustees of the Joint Mathematical Council are seeking expressions of interest to undertake a piece of work that will

- Collate an evidence base of participation and attainment data from the four countries of the UK. This will cover certification cohorts from summer 2016 to 2020 but may, if instructive, go back further;
- Synthesise and represent this data in charts, tables and other infographics to show patterns over time and, where appropriate, for between-country comparisons;
- Draw on recent, relevant, UK-focused education research linked to the participation and attainment in 14-18 mathematics;
- Where possible, explore relationships between any changes. For example, is there evidence of whether changes in GCSE grading have impacted A level uptake? Have new level 3 qualifications altered choices between pathways? [The successful bidder will set out a fuller list of questions for consideration]
- Produce a full report of the analysis to include, where appropriate, meaningful comparisons between the four nations. This report has the organisations of the JMC as the primary audience.

¹ Friel, S. N., Curcio, F. R., & Bright, G. W. (2001). Making sense of graphs: Critical factors influencing comprehension and instructional implications. *Journal for Research in Mathematics Education*, 32(2), 124-158.

- Produce a summary report (maximum 4 pages) containing high-level patterns, findings and matters for further investigation. This should be presented in more of a 'policy brief' style and suitable to a wider readership of interested stakeholders.

The successful bidder will agree a delivery timeline with the JMC trustees at the outset of the project and will engage in a progress review in the middle of the process.

The Council anticipates around 8 days' work and a fee of up to £3200, including any VAT payable, is available.

Expressions of interest in the form of a short **CV and a 2-page statement setting out your initial thoughts on your proposed approach and likely timeline** should be submitted to the Secretary of the JMC (secretary@jmc.org.uk) by 2359h on Friday 21 May 2021. Outcomes will be communicated to applicants by Friday 28 May 2021.

Selection criteria

Proposals will be evaluated against the criteria below, which potential suppliers must respond to clearly.

The selection criteria are as follows:

Criteria		Weighting
1	Task and methodology: the proposal should demonstrate good understanding of the requirements and clearly describe the planned methodology.	50%
2	Quality of written communication: the proposal should demonstrate clear and coherent organisation of information.	10%
3	Project management: the proposal should outline the approach to management, including a proposed delivery timeline.	10%
4	The team and resources: the proposal should detail the team and relevant experience. Short CVs for each member of the team should be included (one side of A4, 11-point). Applicants should provide the name and contact details of a potential referee.	30%
Total		100%

The following scoring will be used to evaluate bids:

Description	Score
Very high standard with no reservations	5
High standard	4
Good standard	3
Generally, of a good standard with some reservations	2
Basic compliance only	1
Fails to meet the minimum requirements	0