



Levelling Up: Case Studies

The London Mathematical Society (LMS) commissioned the Observatory for Mathematical Education to write this case study to highlight the impact and benefit of the Levelling Up: Maths scheme to participants with different roles.



**Loughborough
University**

Loughborough University, 2024

Loughborough University has just come to the end of their second year of involvement with *Levelling Up: Maths*. Colleagues in the School of Mathematical Sciences run the scheme in collaboration with the University's Schools and College Liaison team. The programme leads find the scheme refreshingly unusual compared to other outreach activities due to its longitudinal approach, with repeated activities with the same group of students over a long period of time instead of one-off events.

Loughborough consider the resources provided to be excellent, and appreciate the flexibility in the programme of activities that enable universities to adapt them to meet the needs of their students. They rate the content itself, along with the session plans and tutor notes, as very high quality.

"There are amazing resources, and each university is given the freedom to run the programme in a way that works for them."

The programme leads recommend the scheme to other universities, but point out that a commitment from the university, in the form of funding and administrative support, is key to the sustainability of the scheme as part of a long-term strategy. They also recommend coordinating with any local institutions who also run *Levelling Up: Maths* or similar schemes to avoid overlap and maximise the reach to recruiting schools.

Loughborough report that recruiting tutors who want to be part of the scheme for the right reasons has been straightforward. A real success of the scheme in Loughborough has been that tutors have a good understanding of its aims. Some tutors are from underprivileged backgrounds themselves, whilst others recognised the opportunities that were available to them are not available to all. Tutor engagement has also improved year-on-year. The tutors who remain engaged throughout the programme make vast improvements in their communication skills and gain confidence, whilst also developing a positive work ethic and sense of responsibility.



The students who apply to be tutors on the scheme are typically already interested in a teaching career. Tutors' experience of the scheme goes a long way to inform their decision of whether to pursue teacher training after their degree.

"For tutors, it's about refining what they want to do. It's without doubt a very good experience."

A tutor who was a tutee on the Leicester *Levelling Up: Maths* scheme described the experience as 'transformational'. The scheme gave them the confidence that university was for them. Loughborough's programme leaders are sure that the scheme improves the mathematical ability of students as well, since the nature of the problems in the resources require some imagination to solve them, using techniques from different curriculum areas they have studied in school.

With Loughborough's *Levelling Up: Maths* still in its infancy, the programme leaders are keen to learn from other institutions how to integrate the excellent scheme with other forms of outreach work. Finding ways to efficiently administer the programme will help justify the investment from schools and secure ongoing funding.

Tutor*, Loughborough University

This *Levelling Up: Maths* tutor was previously a participant themselves during A Levels and so has already experienced the benefits of the scheme. Looking back, they remember not being sure whether to study maths or not at university, and the scheme was a chance to connect with a university student doing maths. In fact, it was their *Levelling Up: Maths* tutor who told them about the existence of integrated Master's degrees, which is the course they ended up studying. During the second year of their MMath Mathematics degree, they jumped at the chance to be part of the *Levelling Up: Maths* scheme again as a tutor.

They already had experience of one-to-one tutoring through a different scheme but appreciated the group approach of *Levelling Up: Maths*. The scheme helps develop the communication skills of both tutors and students through being able to explain the problems and their solutions to one another. They also consider it worthwhile getting involved because tutors also gain leadership, organisational, and planning skills. Tutors are given preparation time and excellent resources, including tutor notes, questions, and solutions.

The tutor finds the training thorough and useful, covering everything from safeguarding to running group sessions and supporting individual students. The academic running the scheme at Loughborough University was so supportive that they ran a one-to-one training session because the tutor was unable to get to the main training session.



The tutor was lucky enough to have an excellent and highly engaged group of participants, with all sessions being well-attended. It helped that the tutor was placed in the same school where they did their A Levels, so they could relate to their tutees' experience directly. Although the tutor doesn't know if the *Levelling Up: Maths* scheme directly influenced their tutees' decision to apply for university, it certainly improved their confidence to do so, and participants felt comfortable asking about university applications and they had an opportunity ask for practical advice.

"Tutoring is one of the best ways to gain experience as a university student, and in the Levelling Up scheme they know you're a student and cater to your timetable."

An issue highlighted by the tutor is that participants sometimes haven't done the pre-reading, so tutors plan flexibly in case participants are seeing the material for the first time in the session. The tutor also observes that many of the questions designed for the sessions involve a high degree of problem-solving and are quite different to typical A Level questions. Whilst questions of this type are good to stretch and challenge students, the inclusion of some simpler, calculation-based, questions helps to build their confidence first.

The tutor is uncertain about what they want to do after their degree, but being involved in the Levelling Up: Maths scheme has made them realise that tutoring or teaching is always an option, since they have found the role of a tutor highly fulfilling. Their work on the scheme has also enabled them to develop, and evidence, employability skills which will be useful when they start applying for jobs. Whatever they do, they recognise the importance of mathematics in their future career.

"It's one of the best ways to do what you love and make some money out of it."

•This tutor's name is withheld because they wish to remain anonymous.