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## PTAS Project Report (for SMALL PROJECT GRANTS)

**Project Title:** Widening Participation in Maths Circles

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**Principal Investigator :** Ben Goddard  
**School / Department :** Mathematics

**Team members :** Francesca Iezzi, Zoe Wyatt

**For further information, please contact:** Ben Goddard (b.goddard@ed.ac.uk)

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Grant recipients are expected to submit a brief report at the conclusion of their project which outlines briefly the following: nature of work completed; outcomes; benefits to student learning/student experience; dissemination activity (where relevant – actual and planned) and how the activity could inform future work or be transferred to other subject areas in the University. The brief report will be published on the IAD web pages.

### **Brief Report (maximum 500 words)**

#### **What did you do?**

Edinburgh Maths Circles have run since 2016, with events on Saturdays at King's Buildings. In order to widen participation in these events, we organised and delivered events in schools, libraries, and online. To facilitate this, we produced three boxes of materials to be sent to schools and libraries, and delivered five events before Covid-19. We also ran four training courses for teachers and other community workers, which were attended by about 100 people in total. In response to the pandemic, we switched to online Maths Circles, which have been very successful. We have delivered ten of them, with an average attendance of 100 families per event. We also ran eight online training workshops, attended by about 350 teachers in total. Furthermore, we ran twelve workshops in schools, libraries or communities.

#### **What did you find out?**

Primarily, we discovered that teachers and other community workers are very keen to engage with Maths Circle-style activities. We have made contacts in North Ayrshire, the Borders and Aberdeen libraries, and have a firm plan for involving Maths Circles in widening participation.

We also learnt a lot about delivering large-scale online events for children and families. We have started to analyse the effectiveness of virtual events in increasing participation.

#### **How did you disseminate your findings?**

Externally, as well as the training sessions, we ran a session at the Scottish Mathematical Council Meeting in 2021 in which we demonstrated the effectiveness of Maths Circles to a wide range of Scottish teachers. We also produced a video for the Outreach section of the BMC/BAMC (the premier UK Mathematics conferences). Following this, we were invited to present (virtually) at the US National Museum of Mathematics for their Family Friday events.

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Within the University, we ran an information session, open to all staff and students from across the University. This was very well attended and has spawned discussions with Informatics, Physics, and Linguistics, with the aim of running similar events in their disciplines. As a result of the workshop, in collaboration with colleagues from the School of Philosophy, Psychology and Language Sciences, we are working on the production of resources which lie at the interface between Mathematics and Linguistics. Such activities will be the basis of interdisciplinary workshops focussing on problem-solving.

### **What have been the benefits to student learning?**

At first, the events were primarily led by the three applicants. However, over the past year, we have trained a large team of students, who now have the expertise and drive to run online Maths Circles themselves. This has benefited students in a range of 'soft' skills, such as presentation, written communication, public engagement, organisation, event management, problem solving, and leadership. They have also developed their subject-specific knowledge, both widening it and developing a sense of what is appropriate for various age and ability groups.

### **How could these benefits be extended to other parts of the university?**

As mentioned, we are keen to collaborate with other disciplines to introduce similar events across the University, the project with Linguistics looks likely to have events starting in the autumn. We are also keen to pursue a larger, transdisciplinary problem-solving approach in public engagement and widening participation.

### **Who can be contacted for further details?**

Ben Goddard ([b.goddard@ed.ac.uk](mailto:b.goddard@ed.ac.uk)), Francesca Iezzi ([Francesca.iezzi@ed.ac.uk](mailto:Francesca.iezzi@ed.ac.uk))