

## EXPLORING THE CHALLENGE OF ONLINE MEDIATION

Jenni Back, Charlie Gilderdale and Jennifer Piggott, University of Cambridge

This paper explores how mediation could be offered on a mathematics enrichment website like NRICH ([www.nrich.maths.org](http://www.nrich.maths.org)) that attempts to engage and challenge students to think mathematically. In classrooms there is often a lot of mediation at the start of lessons in which teachers prepare students for what they are about to do and on-going mediation that offers clarification and reminders. With different children and different tasks, a very varied and rich range of possible options is open to teachers. These features of classroom life are not available to students tackling problems in an online environment like NRICH.

To get some sense of what mediation might help, we asked 70 students aged between ten and eleven to try a non-standard problem from the NRICH site. The students needed to realise that the problem did not have a solution and they were required to provide a convincing argument that showed why. We then administered a questionnaire that asked them about the experience of tackling the problem.

Their responses suggested that some students could be positioned along a continuum. At one extreme of this continuum they appreciated the chance to work on something different and challenging, were motivated to persevere with the problem, saw the potential for learning and understood that working on problems offered the opportunity for gaining new insights. However, at the other extreme they did not recognise that there was anything to be gained from tackling an ‘impossible’ problem and expressed strong negative feelings about being asked to work on something which did not fit with their preconceptions about what mathematics questions are usually like.

We initially assumed that the mediation that would be necessary would only need to point to the mathematics in the problem and would be in the form of hints. The feedback from some of the students shows that this will not always be enough. Our results have highlighted the need to consider working with learners perceptions of mathematics so students are able to engage with the demanding mathematics that is offered on the NRICH website. How can this be done? We have three suggestions:

- Metacognitive mediation and advice that spells out some of the assumptions about how students are expected to work.
- Looking at solutions: this option would direct students to the solution of the problem and invite them to consider it before tackling another problem which shares some significant features with the original problem.
- Participation in webboard discussions.

Our suggested mediation strategies seek to help pupils manage their learning, offer students a range of choices that attempt to be sensitive to their cognitive and emotional needs whilst encouraging them to engage with challenging mathematics.