It’s mentoring, but not as we know it

Rebecca Turvill describes a peer-mentoring programme that she has developed for learners who are retaking their GCSE mathematics examination.

This article outlines a peer-mentoring program with a twist. The mentoring program has been developed to support students who are re-taking their GCSE examinations. The twist is that the students themselves are the mentors. They become mentors to younger students also at risk of low-attainment in mathematics. Here I outline the programme and the early outcomes from the students’ perspective. I discuss how a group of students who had failed their GCSE mathematics, between two and five times, approached the mentoring programme and how they supported younger students within their school. I share the outcomes from the first year of the project and share the wider benefits of the programme including the increased attainment of low-attaining students in their first year of secondary education.

There is a tradition of mathematics mentoring in schools, with older and more successful students supporting those who are finding learning a particular subject more challenging. Students taking A-level mathematics or on degree courses support younger or less confident students. In some schools, peer-mentoring has been developed, where students support other students within the same year group.

Such programmes are designed to benefit both parties, with a particular focus on the mentee strengthening their mathematical skills. The intention is usually that the mentee will be better placed to succeed in examinations, through the support of a peer. The mentor also develops skills, such as teaching and coaching. Mentoring programmes are attractive for schools as they are cost efficient. In fact, although recent studies are inconclusive about efficacy of particular projects (see EEF, 2018), peer mentoring is considered one of the most economical methods by which to enhance pupil performance.

However, mentoring programmes are not unproblematic. A model with a successful mentor and a less-confident mentee could be seen to exacerbate the gulf between these two groups of pupils, those who can and those who cannot succeed in mathematics. Examining peer-mentoring schemes allows a window into the difficult situation in which schools find themselves. Mentoring is both cheap and effective and both groups of students appear to gain. However, there is potential to exacerbate the attainment gap between mentor and mentee, rather than address it.

In light of this, I have been developing an alternative version of mentoring, one where the benefits and gains are for those who most need them. I have used the GCSE mathematics re-sit cohorts as mentors. Anna Bellamy discussed the challenges and difficulties of the GCSE re-sit programme in MT258 but it is the policy context in which we currently work and through which students currently experience mathematics. So, this project aims to support and develop students for whom the learning of mathematics might not have been positive.

Pilot mentoring project

The mathematics mentoring program ran as a pilot in two sixth forms in schools in West Sussex in 2016-2017. The students involved had all failed their GCSE mathematics at least twice, some up to 5 times, before embarking on the programme. They were all enrolled on level 3 courses at school and had mostly achieved a grade D, with the exception of some students who achieved a grade E. I am going to focus my discussion of the programme on the students with whom I worked. The cohort in the second school were led by a member of staff in their own mathematics department.

The cohort of GCSE re-sit students became mentors for a group of low-attaining 11-12-year-old students in their school. They had 8 scheduled mathematics sessions a fortnight, however it should be noted that due to time-tabling restrictions, not all of the cohort could attend all of the sessions scheduled. For the period following the November re-sit until Easter, two sessions a fortnight were devoted to the mentoring programme. In one session, the mentors learned and played mathematical games which would be suitable to use with the younger students. The next day, the mentors worked with small groups of younger students teaching them the games and supporting them with the mathematics being developed.
The games form the basis for the mentoring programme. They were largely well-established games which many mathematics teachers are likely to be familiar with. These games were used with the mentors to emphasise that they were not revisiting a fractions game, or a place-value activity, because they had misunderstandings in this area, they were learning how to use the games to help someone else who needed to learn the mathematics underpinning the game. The reason the mentors became engaged with the mathematics, was to help someone else. This simple shift in purpose meant that the feeling about the activities changed too. I was able to discuss with the students, aspects of the mathematics which they found tricky, which we might need to consider with the younger students to help them understand the topic better. Right from the start of the project this worked well. Over time, some of the students were also able to adapt some simple games, like top trumps, to add greater challenge. As the mentors took more ownership of the games and the mentoring more broadly, the younger students enjoyed the sessions more.

The philosophy behind the project was to allow the mentors to build their confidence with mathematics by putting them in the role of expert. By allowing them to see themselves as having something to offer with mathematics, and at the same time, for them to be rehearsing key concepts in mathematics which would support them with their planned re-sit of the GCSE examination.

Sample games and activities

The games used in the programme were ones with which many students and teachers will be familiar. One of the key ice-breaker games was the traditional top trumps card game, as well as more mathematical variations of the same game. The students enjoyed this, but also felt confident with the format and mathematical content of the game. Because of this, the mentors also felt able to begin to adapt the game, using dice rolls alongside the top trumps categories and multiplying the two numbers together to increase the challenge. This was the first activity that the mentors themselves began to adapt. Starting from a point of confidence for both groups seemed to be an important part of the programme.

Another popular activity was the bricks game (see figures 1 and 2).
them with several opportunities to practise the skills. The mentors supporting the younger students needed to check all of the calculations were correct, which demonstrates the level of practice and repetition they were undertaking.

**Outcomes from the mentoring project**

The main intention of the programme was to support students in their GCSE re-sits. Of the 12 students who were able to participate in the sessions, two secured a grade C and three more students were very close, one improving to a grade D. The cohort showed an improvement in their scores, despite not all achieving the necessary grade C.

This data is obviously based on a very small cohort, however, it is important to note that this group had already taken the GCSE exam at least twice. Beyond the grades, the attitudes of the group are of importance. As I reported above, the students in re-sit cohorts often have a very negative perception of mathematics and are not confident in their own mathematical skills. Yet they are required to continue studying it. This was true of the cohort with whom I worked. One student, who I interviewed following her role as a mentor, was positive about the opportunity to work in this way. She stated that she has always hated mathematics, although she had enjoyed it more at the start of secondary school when they had more opportunity for group work. She said that she had enjoyed the mentoring process and would consider doing it again voluntarily. She also commented that she found the games had supported her own revision and felt she had particularly developed speed and accuracy in addition skills. Beyond this, however, she also commented that she would refer to her participation in the project on her University application form and that she had developed confidence through working on the project. She also said that her communication skills had improved, which she thought would be beneficial in her future working life. This summarises two key benefits of this mentoring project. Not only are students who would benefit from spending more time learning mathematics, having the opportunity to engage with mathematics, but they have the opportunity to do so in a positive way. In addition, they are gaining a broader set of skills which positions them more strongly for future opportunities such as university applications or future careers.

Of course, having GCSE mathematics is one of the most important ways to improve one’s future chances. But the data is suggesting that this is not necessarily an easy or likely outcome for this group of students. However, keeping them meaningfully engaged in mathematics whilst developing a broader skill set could both enhance their chances of gaining the qualification as well as enabling them to see the relevance in continuing to study for it.

**Unexpected outcomes**

In addition to the outcomes for the mentors which I have outlined above, there were some unexpected findings which are worth highlighting here. Firstly, the younger students mentored by the older students had a positive response to the programme. They enjoyed working with the older students and were keen to continue for as long as possible. Unprompted one student commented that, “it was good because we get more individual attention”. They liked the small group format and were well engaged throughout the sessions, despite being a low-attaining group. There were positive relationships built between groups of students around the mathematics mentoring. Mathematics became a positive part of the school day, so important for these low-attaining groups.

By the end of the year, four of the students who had been mentored were identified to move into higher-attaining sets. The majority of the group had moved from being “below age-related expectations” on leaving primary school to “working at age-related expectations” at the end of the year. Of course, this was part of a wider programme of support for these students. But, I would argue, at a time of restricted budgets and reduced support for all students, this programme offers a potential opportunity to make a difference for those students at greatest risk of under-attainment early in their secondary school career, giving them more chance of success in examinations at the end of secondary school.

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**Reference**

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