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Project Summary

THE ESSENTIALS OF NUMERACY IN SECONDARY
SCHOOLS AND ACADEMIES: TRIALLING THE
NATIONAL NUMERACY APPROACH IN COMPULSORY
EDUCATION SETTINGS

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Background

National Numeracy is an independent charity working to raise low levels of numeracy among UK adults and children, and to promote the importance of everyday maths skills in the community, the workplace and formal education.

The 2011 Skills for Life survey showed that in England, 76% of 16 to 24 year-olds have functional mathematical skills below that expected of secondary school leavers (Level 2 / GCSE C/4 equivalent). This figure suggests that there is a disconnect between the maths in the formal secondary curriculum and the skills that are needed beyond school, in daily life and the workplace.

The 'Essentials of Numeracy in Secondary Schools & Academies' project aimed to support schools in tackling that disconnect.

Prior to this project, National Numeracy had worked with employers, maths specialists and education experts to define the 'Essentials of Numeracy': the core mathematical skills that adults need in order to be confident and competent with numbers. The equivalent model for secondary school students – the 'Essentials at 14' – outlined the core skills and understanding needed to enable 14 year-old students to confidently use numbers and data in preparation for adult life, work and further study. Both of these models have fed into the development of National Numeracy's resources and support – and a key aim of this project was to trial these approaches in secondary school settings.

By using these resources and approaches in this project, National Numeracy aimed to work with schools to enable pupils to become confident with numeracy, irrespective of how they were getting on with the school maths curriculum.

Project activities

In this project, National Numeracy worked with three secondary schools in the Nottingham area to trial using National Numeracy's resources and support in compulsory education settings. Each school selected from the same range of National Numeracy's tools and support to form their activity for the project, including:

- The National Numeracy Challenge website: an online tool encompassing a numeracy skills assessment, numeracy attitudes quiz, and access to online learning resources.
- Essentials at 14 resources: a set of four units of classroom resources for teachers to use with pupils, focused on key areas of practical numeracy.
- Becoming a Numeracy Champion workshop for staff: a workshop exploring attitudes towards numeracy, the value of numeracy, and how to motivate others to improve their numeracy.

Each school chose the cohorts to participate in the project and, with some guidance from National Numeracy, decided how they would like to use the resources above with those cohorts. Project activities varied considerably between the schools, with students from Year 7 to Year 9 taking part. One school used National Numeracy's resources in maths lessons as well as tutor sessions, while the other schools focused on using them only in numeracy or tutor sessions outside of maths.

The project ran throughout the academic year 2019-2020. Progress on the project was unfortunately interrupted by the school closures brought in due to the coronavirus pandemic, and schools remained largely closed from March 2020 until the end of the project. However, good progress was made prior to the school closures and remote support continued to be offered during the school closure period.

Project outcomes

Positive feedback was received from schools about the real-life approach taken and some good progress was observed amongst pupils.

Impact on students

All participating students were asked to take the skills assessment in the National Numeracy Challenge website at the start and end of the project. From the National Numeracy Challenge data, 43% of students who retook the assessment during the project improved on their original score. In schools that used the Essentials at 14 resources, this went up to 56%.¹

In the one school where pupils retook the assessment in the summer term, 93% of those who retook in the summer term improved on their initial score.

At the start of the project, National Numeracy benchmarked the assessment against age-related expectations (ARE) for each year group. Across the three schools, when students took their first assessment, 42% were at or above ARE for their year group. On retakes, there was a percentage increase of approximately 11% in this measure – and the same increase of 11% was seen for those retaking the assessment in the summer term.

Rather than being an assessment of students' understanding of the maths curriculum, the assessment in the National Numeracy Challenge is designed to measure learners' everyday numeracy skills and should therefore provide a good measure of the particular issue this project was looking to address. These statistics are encouraging as they suggest that despite the school closures, students did make good progress with their everyday numeracy skills across the year.

These findings are supported by the feedback gathered from teachers in the end surveys. The two lead teachers who completed the survey both agreed that 'taking part in this project has improved students' appreciation/understanding of maths in the real world' and that 'using the National Numeracy Challenge website has improved my students' understanding of numeracy in everyday life.'

Impact on staff and teaching practices

Staff appeared to appreciate the opportunity to introduce a broader, more relevant approach than just following the formal maths curriculum. The staff members who completed the end survey for participating staff agreed that 'this project has offered students more opportunities to talk about maths / numeracy in their lessons and in the school generally'.

One school opted to receive Becoming a Numeracy Champion training. This workshop was attended by non-maths teaching staff who would be going on to lead numeracy sessions with students using National Numeracy's resources. Feedback following this session was positive, with 100% of participants agreeing or strongly agreeing with the following statements:

- This workshop has...
 - helped me to understand the value and importance of practical numeracy
 - helped me to understand the role that mindsets/attitudes towards maths play in supporting pupils to improve their skills
 - given me ideas so that I can motivate and support others to improve their numeracy

¹ It should be noted that these figures come from retakes taken at varying points throughout the year and in some schools there were very few students retaking, due to the school closures.

- I intend to use what I have learnt in this workshop in the way I talk with pupils about maths
- I would recommend this workshop to colleagues.

Essentials at 14 updates

Following feedback gathered and lessons observed during school visits in early 2020, National Numeracy worked with a maths education specialist to update the Essentials at 14 resources. This work included:

- adding differentiated options for each activity so that the resources could be used more successfully with students working at different levels
- updating the teacher notes to be more accessible to non-specialist teachers
- adding real life maths discussion prompt suggestions to the teacher notes for each activity, so that teachers can more easily identify and explore the links to numeracy beyond the classroom
- improving the format and layout of the resources so that the activities are more user-friendly for both staff and students
- adding a unit overview document to each unit, outlining the content of the unit and its links to the formal maths curriculum.

Next steps

National Numeracy recommends two next steps as a result of this project.

- 1) With the Essentials at 14 resources newly updated, a key next step would be to roll these out to more schools across the UK, scaling up the reach of National Numeracy's real-life numeracy approach and evaluating the resources' impact in a more comprehensive manner.
- 2) The Becoming a Numeracy Champion programme for staff could usefully be developed further and scaled up for secondary schools. This programme emphasises the importance of a real-life approach to numeracy and could be useful for both maths and non-maths teachers in schools that want to develop their maths and numeracy provision beyond the maths curriculum, helping them to ensure that it's relevant to the workplace and life beyond school. The workshop trialled in this project focused on National Numeracy's attitudinal approach and introducing the National Numeracy Challenge but could be expanded and adapted specifically for secondary school settings to support them in building their provision.