



Dramatic Maths with Half Moon

a signature curriculum programme to engage children in maths through drama

Funded by:

Ocean Maths

The aim:

Dramatic Maths aims to support children in making a positive start to education and to bring to life a subject which students often find difficult to grasp. The project set out to work with approximately 180 children in Tower Hamlets to develop and practise their understanding of numbers and mathematical skills, physicalising the maths wherever possible, using a story context to help frame the learning for the children. The maths skills that the children would learn and practise over the eleven-week programme were to include: addition, multiplication, subtraction and division; measuring of volume and angles; problem-solving and number patterns; coordinates; fractions, ratio and proportions. The sixth and eleventh sessions of the programme would be a chance for parents and carers to attend an assembly where the children would present their maths skills and take part in a problem-solving competition to bring their achievements to life and involve their parents in their school maths learning. Children would be invited to complete homework tasks following each sessions' activities.

Participants:

Marner Primary School
St Matthias Primary School
Stebon Primary School

176 children took part of which:

79 are girls;

119 receive Free School Meals;

142 are of an ethnic group other than White British;

23 have Special Education Needs;

2 have a disability

The project:

The project worked with two classes of children in Years 3 and 4 from St Matthias Primary, delivering eleven weekly hour-long workshop sessions to each class over the Autumn Term. Schools selected classes they felt would benefit from exploring maths in a different way. We also worked with two groups of 30 Year 3 to Year 6 children from Marner Primary School and two groups of 30 Year 3 to Year 6 children from Stebon Primary School who were all attending their SHINE Saturday School classes.

Half Moon's team of two Lead Tutors and three Support Tutors were already experienced in delivering curriculum projects of this nature and they had two day-long planning sessions (and two additional sessions just for the Lead Tutors to plan the homework tasks) to ensure the programme was tailored to the different age groups with whom they were working.

The workshops took the children on an imaginative journey to storyland, featuring familiar fairytale narratives and hands-on encounters of mathematical problems and scenarios, which were brought to life through storytelling and drama.



Fairytales and workshop scenarios included:

- The seven dwarves' beds have been broken by Happy jumping up and down on them. The children must help the dwarves make new ones, measuring the perimeter of the beds.
- Cinderella is really ill. The children are tasked with measuring out different flavours of juices to make a nice tasting medicine for her to help her get better. They make a scale of 20ml intervals in a cup and then make a recipe for 200ml of medicine.
 - Sleeping Beauty and the Prince are stuck in the forest. Using a map of the forest, the children have to find them a route to get out, using coordinates.
 - Aladdin is stuck in a pyramid and the lamp is guarded by some invisible laser beams. He knows the angles of the laser beams and must work with the children to work out a safe route through the laser beams.



Evaluation of the Programme and achievement of outcomes:

The programme structure enabled all groups to explore the chosen maths topics under one overarching framework, which kept the children engaged throughout the programme. The children were really excited by the story framework which had a positive impact on how they approached the maths exercises each week. They were encouraged to investigate and the children took that responsibility on themselves, eagerly. By working in small groups for parts of some sessions the children were learning different things and then sharing back and working as a class to solve problems. We created homework tasks for each of the workshop sessions for the children to complete at home with family members. We also created accompanying literacy tasks for the teachers to use in class with the children either in preparation for our sessions, or as a follow-up.

Some of the maths techniques introduced were new to the groups (angles for Year 3, for instance) and it meant that these groups tackled new concepts with enthusiasm and excitement. The creative approach to teaching maths challenged some teachers but then encouraged them to carry on using the techniques in the future. Having two sharing sessions, that engaged parents in the children's maths learning in the middle and the end of the project, offered a chance for parents to feel more connected with their children's learning and see ways they might be able to help their children at home with practical exercises and 'fun' maths problem-solving.

The tutors gathered anecdotal information throughout, as well as completing a final evaluation report, detailing the impact that the children's participation had upon their understanding and enjoyment of maths. We did impact measurement questionnaires with the majority of the children at the start and the end of the project to measure changes in the confidence of the children in maths, as well as their enthusiasm for the subject.

Data Analysis of Pre- and Post-Project Questionnaires:

Children taking part in the project were all asked to complete questionnaires at the start and end of the project. The questions asked were the same at the start and the end of the project to see how the project impacted on the young people's feelings about their maths learning, with particular emphasis on confidence and anxiety related to their maths learning. Below you can see some of the results when we analysed the data gathered.

The children were asked to look at a number of statements and tick how frequently that statement was true for them:

- Never*
- Hardly ever*
- Most of the time*
- All of the time*

I feel confident answering questions in maths lessons

At the start of the project, 35% of children felt confident 'all of the time' answering questions in maths lessons. At the end of the project, 54% of children felt confident 'all of the time'.

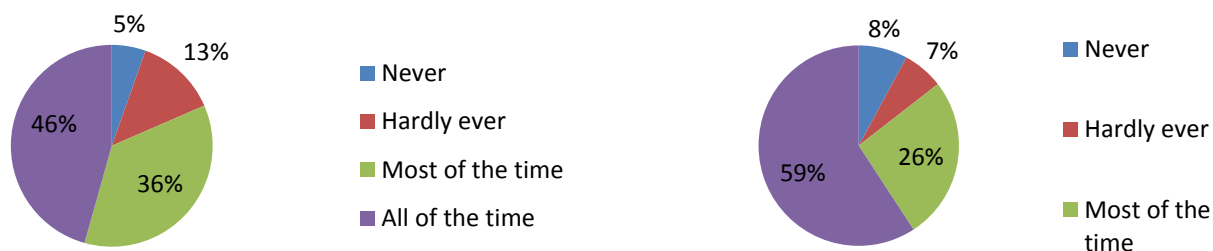
I feel confident answering questions in maths lessons (start and end)



I look forward to maths lessons

At the start of the project, 46% of children looked forward to their maths lessons 'all of the time'. At the end of the project, 59% of children looked forward to their maths lessons 'all of the time'.

I look forward to maths lessons (start and end)



I feel excited when I do maths that is new to me

At the start of the project, 44% of children felt excited about new maths learning 'all of the time' but at the end of the project this had increased to 67% of children. At the start of the programme 24% of children 'never' or 'hardly ever' felt excited but by the end this was only 12% of children.

I feel excited when I do maths that is new to me (start and end)



I feel confident about how to use maths at home

At the start of the project, 34% of children felt confident 'all of the time' about using maths at home. By the end of the project, 59% of the children felt confident 'all of the time'.

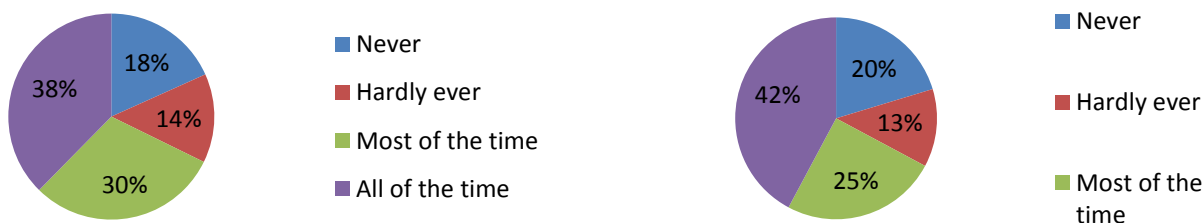
I feel confident about how to use maths at home (start and end)



I talk to my family about the maths I do at school

We did not observe an overall positive change by the end of the project regarding the amount of children who said that they would talk to their family 'all of the time' or 'most of the time' about the maths they do at school. When analysing the data in more detail, we see that the children who still felt worried about their maths learning were often those who do not talk to their family about the maths they do at school. Although we had two sharing sessions for the project in each school to enable the children to share their learning with their parents, they were in the main not well attended by parents. In one school lots of parents came to the first sharing but not the second. We did get some feedback from schools that the homework tasks were well received by the children who were keen to follow-up what they had done in class with some activities at home which they shared with their family.

I talk to my family about the maths I do at school (start and end)



This data suggests that to change the way in which some children communicate with their family about their maths learning, the project would need to be done over a longer period of time. Alternatively, the project needs to be followed by other activities that the school offers where families are invited to share in their children's maths learning. This would generate a culture over a period of time for parents to come into school to share in their children's maths learning and for children to feel more confident talking about their maths learning with their family.

Feedback from the tutors:

For teaching maths through drama this is such a brilliant project and completely meets that aim. The groups were so excited and loved the project. The children always wanted to know what was coming next week. They engaged with all the activities. Even the children who struggled with maths and were a bit scared were excited and engaged with the maths with the same energy with which they came to the drama elements. Brilliant for the children who find sitting at desks for their learning very difficult. Kinaesthetic learners just loved it. It's so active!

Some of our highlights from the project include:

- *The first sharing at one of the schools was really lovely – children LOVED taking their parents up to do the activities – it was like they could say to their parents: "We've got this covered";*
- *Angles are a revelation for most of the children. They have heard of them but they haven't connected it to what they actually are. Having them marked out, they do see the connection – sometimes for the first time. They know the degrees sign by the end of this project! They have a lightbulb moment. They see something in space that they've only seen written down before;*
- *When the children became the numbers in the sequence – and the difference in the pattern – it really helped them to see it (especially if they don't have natural sequence brains).*

Feedback from teachers involved:

The project was fantastic! The children were totally engaged in the sessions. The variety of maths was excellent and at times challenging which was also good. I liked in particular the session measuring angles with the string which was very exciting and the one on co-ordinates. The children worked collaboratively which really helped them work on some of the more challenging parts. I liked that there were challenges and areas of maths were covered which were sometimes new to the younger children, for example. We are going to take forward the idea of combining drama and movement with topics and other subject areas. – Deputy Head

Every session was engaging and creative, which inspired children to carry out and complete the challenges set. The link to traditional tales contextualized the maths, which made the learning fun and more likely for the children to remember what they had been taught. I was inspired by the use of stories as a means to teach maths so will be doing something similar when approaching problem-solving lessons and writing up problems for the class to solve. The children thoroughly enjoyed the homework tasks. Most children were eager to continue the learning at home. The project has had a positive and a memorable impact on the children's maths learning. They were very sad that the project would not continue in the second term. – Class teacher

I thought the kids were kept well engaged during lessons and the tasks they were asked to do were very engaging. The lessons were creative and inspiring. It's definitely made me think about how I can make lessons that don't typically lend themselves to much creativity more exciting for children. Will be using some of the ideas that I have seen in the sessions. I loved that the homework linked to the session. The kids enjoyed doing this as well. – Class teacher