Making Maths Fun
Report of Activities 2012-13

Introduction and background

Maths on Toast 'makes maths family fun'. We do this through community events, aimed at children aged between 5 and 12, their parents and their teachers. We give families the opportunity to learn about, play with and discuss maths through enjoyable, collaborative, hands-on activities. Our events take place in schools and other community spaces: our first, Festival of Triangles, has engaged 1,400 people so far.

Why are we doing this? Family learning matters, and opportunities are noticeably absent for maths. An independent report for the Department for Children, Schools and Families (The Impact of Parental Involvement on Children's Education, 2008) has highlighted the link between family based learning and higher educational achievement. It also mentions that (based on a 2002 study, Parental Involvement in Education (DFES)) 72% of parents would like greater involvement in their children's education. Meanwhile, National Numeracy warn that negative attitudes to maths are prevalent in the UK, and can be inherited and lead to poor achievement. They also point out the negative effects of poor adult numeracy on unemployment, earnings and health.

Despite this evidence, there are few projects nationally that strive to support family engagement in maths. It is this gap that we are starting to fill. After just one year we have seen evidence that people enjoy our events and see maths differently because of them, and received comments from teachers showing an impact beyond the day of the event itself. Our next step is to enhance the impact from our events on attainment, in a way which is both systemic and consistent.

Our ambition is for a country where everyone believes maths to be enjoyable and achievable: we are seeking to abolish 'I can't do maths' and its impact on attainment. This report describes what we have achieved in our first year of existence and sets out our aims for the next.

Objectives and outcomes

Our overarching objective is to give as many people as possible meaningful, positive encounters with maths. We aim that during our events:

- Our thoughtful activities promote mathematical engagement within and between family units and appeal to a wide cross-section of the community
- Maths is experienced as achievable, enjoyable and fun

- Families engage in mathematical activities in which encourage concentration and persistence
- Families find out about some maths that is new to them, and broaden their view of what maths is
- Volunteers have an enjoyable and worthwhile experience
- People interact (through maths) with others in the community who they might not otherwise have met
- We are approachable, professional and run a sustainable business.

We aim that after attending one of our events:

- Families will remember it as an enjoyable experience, and realise it was maths (as well as fun)
- Parents will feel more confident to engage with their children's mathematical ideas
- Children will be more excited and enthusiastic about maths
- Teachers and/or community leaders will feel they have supported a worthwhile family event
- Teachers will see ways of connecting the mathematics at the event with classroom activities.

Case study - Ivydale Primary School, London
May 2013

Our Festival of Triangles at Ivydale involved every child in the school, their teachers, the PTA and a group of corporate volunteers. We developed activities to take place before, during and after the event, and participants created a triangle sculpture which acts as a visible legacy of the day.

Before the event, every child (around 400 in total) produced a flag showing 'a triangle doing something useful' and made a tetrahedron from drinking straws, which contributed to the giant structure built on the day itself. We provided guidance for these activities, including a YouTube video on 'how to make a tetrahedron'.

At the event itself, visitors used drinking straws to make over 400 triangles, assembled into a mixture of icosahedrons, tetrahedrons and other shapes. They decorated 23 'my triangle story' flags, coloured in 89 2D triangle patterns, made 16 3D shapes from paper and voted on their favourite triangle (equilateral won).

The teachers at Ivydale were "thrilled" with the event, noting the range of parents who attended with their children, the very positive feedback received from parents and the focus and engagement of the children in the activities.

"My class were talking constantly about triangles. We had a review session a while afterwards, maybe 2 weeks later. I held up a tetrahedron and they all knew its name. I really wasn't expecting them to." (Key Stage 1 teacher & Maths Coordinator)

First year of operations

Festival of Triangles

In the period June 2012 – August 2013, we

- Engaged with 1,424 people (parents and children) through our Festival of Triangles events
- Included 45 more children through schools via activities on our website, Facebook and Twitter, involving 1,469 people in total.

Sales and marketing

As of 31 August 2013, we

- Have 424 followers on Twitter and 34 "likes" on Facebook
- Are in contact with 115 people via our mailing list
- Were mentioned on the Time Out – London website (May 2012) and the Guardian's "Alex's Adventures in Numberland" blog (June 2013). National Numeracy linked to us from their website and tweeted about our first event in June 2012, and we were featured in Maths Teaching magazine, published by the Association of Teachers of Mathematics (May 2013)
- Proved the market for our event by selling it to two schools.

Financial and other support

In the period ending 31 August 2013, we raised

- £9,000 through private donations
- £2,400 grant funding
- £1,650 trading income.

Support 'in kind'

- Our volunteers have provided: our logo; design and creation of our prototype event; 5-10 helpers per event; a detailed analysis of the costings of our event; this report. Our Trustee body is of course also composed of volunteers.
- Our founder and CEO, Alexandra Fitzsimmons, graduated from the School for Social Entrepreneurs (attendance on the programme valued at £8,000)
- Alexandra became a member of the PwC Social Entrepreneurs Club, which gives access to networking opportunities, business consultancy and contributions in kind including support from employee volunteers.

Impact of our activities

Our activities are aimed at children aged between 5 and 12 and their parents, teachers, and members of the wider community. We have summarised below some of the feedback we have received from our stakeholders, linked to each of our objectives and outcomes.

Audience	Objective / outcome	Feedback
Children	Maths is experienced as achievable, enjoyable and fun	"I liked making my 3D diamond with triangles" "Awesome" "Fantastic maths and straws"
	Children will be more excited and enthusiastic about maths	"We bought straws and made more polyhedra together. Grandson insisted on taking them into his reception class. We compared the shapes, learnt the names. I might try making some origami polyhedra... "
Parents	Our thoughtful activities promote mathematical engagement within and between family units and appeal to a wide cross-section of the community	"Collective involvement in constructing the Sierpinski Tetrahedron"
	Families find out about some maths that is new to them, and broaden their view of what maths is	"Straws! Lovely way to educate the children. Maths is everywhere... "
	Families engage in mathematical activities in which encourage concentration and persistence	"It changed my perception of what a four year old can understand" *(Asked about the best aspect of the event)* "Sitting and interacting with my own child for 10 minutes"
	Families will remember it as an enjoyable experience, and realise it was maths (as well as fun) Parents will feel more confident to engage with their children's mathematical ideas	" ... I never really enjoyed maths at school yet found the activities therapeutic and did not have to think too hard about maths theory which made it enjoyable" "Anything that helps make maths fun is helpful to parents"
Teachers & community leaders	Teachers will see ways of connecting the mathematics at the event with classroom activities	"What's great was valuing skills in shape as well as number. Some of the children who are less strong in some subjects are really good in shape so it was great for them to shine" "The children learnt more about shape and were able to relate it to a real life context" "I'm a maths teacher, so will probably try out the modelling with straws with some of my reluctant GCSE resit students"

	Teachers and/or community leaders will feel they have supported a worthwhile family event	"Parents were able to access the website and watch the video so they could support their children with the tetrahedron" "I would say it was worthwhile and enjoyable, the children engaged well with the homework and we had a good response back" "Thank you for coming over to Little People's World, Rye Oak, and delivering the 'Festivals of Triangles'. It was great to have you in, to offer something different and refreshing for the parents and children … from the general feel of the day, I thought it was going quite well, and a lot of children and parents were engaged"
	People interact (through maths) with others in the community who they might not otherwise have met We are approachable, easy to engage with and run a sustainable business	"Having the volunteers there made such a difference. Having a big group of people who came with so much energy to deliver the event ... children listen with different ears to a fresh voice"
Volunteers	Volunteers have an enjoyable and worthwhile experience	"I really enjoyed interacting with the children ... and also meeting the other volunteers, being part of something that felt positive and fun"

Learning and development

We are regularly reviewing, evaluating and developing our activities. In response to the events we have run this year and the feedback we have received, our key areas of focus and improvement for the year ended 31 August 2014 include:

- Developing our networks in the communities in which we work, so that our attendees' changed engagement with maths can be followed up by other organisations, such as schools and adult educators.
- Improving the mechanism through which we obtain feedback from children, parents, teachers, volunteers and other stakeholders. Our experience so far has shown that collecting feedback on the day of the event is more successful than requesting structured feedback retrospectively. However, overall it has proved difficult to obtain comments from a large proportion of attendees. In some case this is due to language challenges or literacy. We have adapted our methods throughout the year in response – for example, involving our volunteers more in evaluation. We will continue to develop our methods of collecting measurable, meaningful information.
- Developing the community of Maths on Toast volunteers who can support the project as it scales up and reaches more families.

As well as pursuing the learning points above, we are using our existing funds to

- Develop a series of activities on the Secret Maths of Spies for the Imperial War Museum, to be held on HMS Belfast during the February 2014 half term.
- Prepare a business case for running a series of activities throughout the borough of Camden starting in January 2014, having reached Stage 2 of the application process for Camden Council's Innovation and Development Fund (round 3).
- Develop our proposition for schools and community locations, to include a single pricing structure which will be viable, sustainable and scalable for different types and sizes of event.
- Streamline and professionalise the product "kit" used to run the Festival of Triangles. We aim to produce a kit which is high quality and durable but also easily scalable and replicable, enabling our events to be run by a wider group of staff and volunteers. Firstly, this will allow us to broaden our reach in a financially viable way and potentially run events outside London (not currently possible due to staff constraints). Secondly, it will give us the opportunity to market our events more effectively to schools, running them efficiently and, in due course, profitably.
- Respond to the demand for another event, from those schools where we have already run workshops. We are developing a second event to run alongside the Festival of Triangles, and will be piloting it over the next year. We also intend to pilot 'fun maths' products to be sold to parents and children, to supplement their learning after attending a Maths on Toast event.

We plan to run at least 20 further events during the year ended 31 August 2014.

Issued by the Board of Trustees, November 2013

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Further information

If you would like further information about our activities, would like to enquire about running a Maths on Toast event within your organisation, or have any other queries or comments, please do not hesitate to contact us:

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