

**Summary of Brainy Maths Evaluation Report**

Brainy Maths is an early years maths programme developed using evidence from the field of educational neuroscience. The programme aims to build solid foundations in number for children in early years who are at risk of falling behind their peers. As well as targeting specific numerical skills, the activities in the Brainy Maths programme also incorporate use of executive functions (EF). This neurocognitive area includes working memory, attention and inhibition. These skills have been found to be as essential as core numerical knowledge when a child is developing their arithmetic skills (Menon & Uddin, 2010).

The report first summarises the research that led to the development of the programme. The main areas of research outlined include:

* The disproportionate association between both maths and EF with socioeconomic status, suggesting that focusing on these two areas could maximise the efficacy of an intervention targeting children from lower income families.
* The development of EF during the early years, showing the importance of this stage in the development of these skills – in particular working memory and inhibition.
* The association between maths and EF, providing further evidence of the potential impact a dual focus intervention, concentrating on these two areas, could achieve.

The report then provides an outline of the Brainy Maths programme that emerged as a result of the research highlighted. The ten week programme is currently aimed at children in reception who are at risk of not achieving their early learning goals in maths. It is made up of games and practical activities that address number skills whilst, simultaneously, targeting and challenging the memory, inhibition and attention skills of the children. The activities are planned in such a way as to be adaptable to the individual needs of the children, ensuring an optimal level of challenge at all times. Parental engagement is encouraged through workshops, where parents learn to play a selection of the games included in the programme, so that they can carry out these activities at home. They are also provided with a resource pack consisting of the necessary equipment and instruction sheets.

In the final section of the report, the two rounds of pilots are detailed, results are presented and next steps considered. Both rounds of pilots took part in early years settings in North London primary schools. Different schools ran the programme in various ways, according to the needs of their individual settings and children. The impact of the programme was monitored using a range of pre and post intervention data. The Sandwell maths assessment was used to provide a standardised number age for each child before and after taking part in the Brainy Maths programme. The following findings were reported after ten weeks of taking part in the programme:

* The average number age of participating children increased in all of the schools. Children from the school involved in the first pilot made an average number age gain of 11.3 months. In pilot two, the average number age gains in the four schools were: 12 months, 12 months, 14 months and 5 months
* All participating schools reported an improved attitude of the children to maths with increased concentration and confidence
* All participating schools reported an improvement in the focus and attention of the children
* The majority of participating children had number ages equivalent to or above their chronological ages by the end of the programme and those who did not had still mainly made significant progress
* An improvement in children’s memory was reported
* An improvement in parental engagement was reported
* Every participating school commented on the enjoyment of the children who took part in the programme

The report concludes that the results from the two rounds of Brainy Maths pilots highlight the potential impact of the programme on children’s maths skills at a crucial time in their learning. The data gathered also demonstrates the impact the programme has on children’s attitude towards maths as well as their memory and concentration skills in general.

Although the report finds that children still make good progress when their parents have not engaged with the programme, some increased progress is evident when parents have participated and so important next steps for the programme include considering how to increase parental commitment to attending workshops and carrying out activities with their children at home.

Other next steps include incorporating the explicit teaching of memorisation and meta cognition skills, as well as extending the programme in both directions so that it can be carried out with children in Nursery and Year 1.