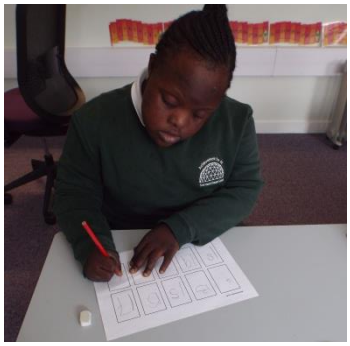


HTSA
HACKNEY TEACHING SCHOOLS' ALLIANCE

Research &
Development Impact Report

# How effective is the 1st Class@Number intervention for secondary age students working within Year 1 and Year 2 National Curriculum expectations?

'I liked it a lot because it helped me with my numbers – the numbers I didn't actually learn properly. In my actual Maths I'll be able to understand and answer.'

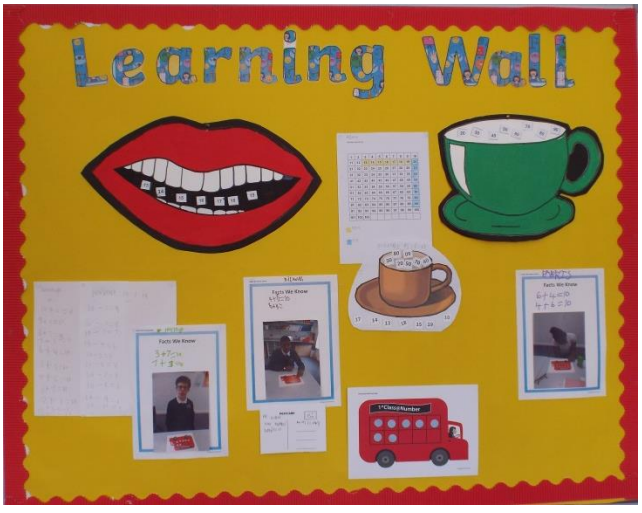
Year 10, Stormont House School

'1st class helped me with my Maths…it'll help when we go to the shop because I'll know what change I'm going to get'

Year 10 (one term after the intervention)

**Who might find this research useful?**

- Secondary mainstream schools, special schools, FE or alternative provision settings with learners who are of secondary age but still working within Year 1 National Curriculum expectations




**For further information please contact:**

Fiona Matthews, Maths Subject Lead,
Stormont House School, Hackney, London E5 8NP
fmatthews@stormonthouse.hackney.sch.uk

Patricia Knight, 1st Class@Number Teacher,
Stormont House School, Hackney, London E5 8NP
pknight@stormonthouse.hackney.sch.uk

**If you are interested in developing this programme at your school please contact:**
Garry Minto, ECC lead trainer, NCETM accredited PD lead
Kingsmead Primary School, Kingsmead Way
Hackney, London, E9 5PP
gminto@kingsmead.hackney.sch.uk

# Research & Development Impact Report

## The effectiveness of '1st Class @ Number' as an intervention for secondary students working well below age-related expectations

| | | | |
|---|---|---|---|
| Project Participants | Fiona Matthews (Maths Lead)<br>Patricia Knight (1stClass Teacher)<br>Kevin McDonnell (Headteacher) | Phase(s) | EY/ Pri/ Sec/ Spec/ FE/ All |

School context relevant to this research:

- Stormont House School is a secondary day special school (11-17)
- Students have complex and inter-related special educational needs to the extent that their ability to learn, thrive and develop in a secondary mainstream setting would be significantly affected.
- The vast majority of students arrive on secondary transfer from mainstream primary schools and are working within Year 1 or 2 National Curriculum descriptors/expectations.
- Statutory teacher assessment for such learners at the end of Key Stage 2 lacks the detail necessary to plan either class teaching or accurate interventions
- The school is using the Pupil Premium Grant to pay for training, salary costs and materials.
- This Report is key to evaluating impact of the intervention and its value for money

Starting point(s):

- 1stClass@Number is an intensive intervention for small groups of learners in Years 1 to 3 who have the greatest difficulties with mathematics. It is delivered by a specially trained teaching assistant.
- The evidence base for the effectiveness of 1stclass@Number is therefore very largely based on its effectiveness with much younger learners

**Key R&D question(s)**

### How effective is the 1stClass@Number intervention for secondary age students working within Year 1 and Year 2 National Curriculum expectations?

**Is this developing the findings of existing research evidence?**

- The Every Child Counts (ECC) team at Edge Hill University, Ormskirk, Lancashire, has established a significant evidence base for 1stClass@Number; Over 55,000 pupils in Years 1 to 11 have been supported by 1stClass@Number and they made an average Number Age gain of 13 months in only 4 months – over 3 times the expected progress. ECC say that 93% of pupils showed more confidence and interest in learning mathematics in class after 1stClass@Number.
- The Education Endowment Foundation (EEF) reports that 'pupils who received 1stClass@Number made two months' additional progress in maths, on average, compared to pupils in the control group'[1].
- In 2016 Kevin McDonnell and Sue Keavy evaluated the impact of the Numbers Count intervention for secondary pupils at Stormont House. This report was published by the Hackney Teaching Schools' Alliance and, subsequently, by Every child Counts at Edge Hill University[2]

| Intended successful outcomes | Success criteria/ Impact measures |
|---|---|
| • Students undertaking the 1stClass@Number programme make significantly greater progress in Number Age than the increase in their chronological age (3-4 months). (This progress would be even more significant for learners of this age than those in Years 1-3 as they will have had at least 6 more years of education already).<br>• Impact is also significantly positive when calculated using the John Hattie 'Effect Size' methodology | • 1stClass teacher identified and trained<br>• The increase in Number Age during the intervention period is significantly higher than the increase in chronological age for the vast majority of participants<br>• The 'Effect Size' of the intervention calculated using John Hattie's Visible Learning methodology is significantly greater than the 'hinge point' expectation of 0.4 |

[1] https://educationendowmentfoundation.org.uk/public/files/1stClass@Number_evaluation_report.pdf
[2] https://everychildcounts.edgehill.ac.uk/wp-content/uploads/2015/11/HTSA-RD-Secondary-Numbers-Count-2.pdf

**Summary plan of action**

- Identify and train a part-time 1stClass@Number teacher
- Resource a dedicated 1stClass@Number room/space with display boards and room for active learning
- Establish good lines of communication between 1st class teacher, NC advisor, NC teacher, maths subject lead and headteacher
- Identify initial and subsequent student cohorts
- Implement the programme
- Evaluate the impact of the programme

**Timescale**: Spanning 3 academic years: 2016-17, 2017-18 and 2018-19

**Initial resource allocation (human, material and financial)**

A teaching assistant was identified in 2016 as being willing and able after training to confidently deliver the 1stClass@Number programme. There were 6 half days of training in the year 2016-2017 and two visits from the ECC trainer. In 2018-19 the new Numbers Count teacher, Tim Saunders, has provided extra support and renewed training particularly in assessment. Patricia Knight is not used as a class teaching assistant for 5 lessons a week; 4 lessons for delivery of the 1stClass programme and 1 lesson for planning. The opportunity to use the Pupil Premium Grant was invaluable in this respect, as was guidance and support from the Every Child Counts Trainer Garry Minto.

*'I liked it when we had Ms Knight and Mr Saunders in the room together'*

Harry, Year 9

*'I like using number mats and the little people.'* (Mary)

*'I really liked using the money, we used real coins not plastic ones!'* (Jody)

(Year 9's describing practical equipment they used)

**Other points to note**

Locally-sourced training: The school has benefited from the ECC programmes being available locally from Kingsmead School, one of the 2 Teaching Schools within the HTSA. The 1stClass@Number programme is highly structured and provides the following:

**Training and Professional Development**

- 6 half days of local training by an accredited ECC Trainer
- 2 school visits by the Trainer
- ECC accreditation for teacher and school
- Ongoing CPD and school visits every year

**Resources and Support**

- Detailed handbook guidance
- Online guidance and downloadable resources
- Interactive and easily adaptable session plans
- Extensive ready-made resources that are organised topic by topic.
- Access to the ECC data system, providing detailed analyses of impact and children's progress
- Phone and e-mail support from ECC and the Trainer
- Support from both the Maths subject lead and Numbers Count teacher at the school

**Programme**

"The lessons focus on number and calculation, developing children's mathematical understanding, communication and reasoning skills. Stimulating, enjoyable games and activities engage the children and build their confidence.

Each topic starts with a simple assessment that helps the teaching assistant to tailor sessions to the children's needs."[3]

## Progress and Impact Review June 2019

**Visible Actions completed**

- A part-time 1stClass@Number Teaching Assistant was identified and trained during the 2016-17 school year
- A 1stClass@Number room within the school was identified, furnished and resourced. It is not used for other purposes and work, displays and resources can remain readily accessible and visible. The room is individually resourced and these resources aren't used by other teachers.
- Good lines of communication were established between the 1stClass teacher, ECC advisor, Numbers Count (NC) teacher, maths subject lead and headteacher. The NC teacher has changed in 2019 and the new NC teacher, Tim Saunders, has been able to continue developing good communication and support with the 1stClass teacher.
- Initial and subsequent student cohorts were identified based on assessments using the 'fundamentals' of the primary maths curriculum[4]
- The programme has been implemented and evaluated for 28 students to date.

**Outcomes to date *(refer to intended outcomes and success criteria)***

The following is based on 28 participants over 3 school years, ranked in order of Start Number Age (months)

[3] The information on this page is taken from: https://everychildcounts.edgehill.ac.uk/mathematics/1stclassnumber/

[4] See: http://www.primaryadvantage.co.uk/files/files/Hackney%20Approach%20to%20Assessment%20-%20CPD.pdf

| | Start | Exit | Increase in Number Age | Percentage increase/ decrease |
|---|---|---|---|---|
| 1 | 65 | 82 | 17 | 21% |
| 2 | 65 | 74 | 9 | 12% |
| 3 | 67 | 86 | 19 | 22% |
| 4 | 68 | 92 | 24 | 26% |
| 5 | 69 | 83 | 14 | 17% |
| 6 | 71 | 81 | 10 | 12% |
| 7 | 72 | 93 | 21 | 23% |
| 8 | 73 | 89 | 16 | 18% |
| 9 | 74 | 90 | 16 | 18% |
| 10 | 74 | 100 | 26 | 26% |
| 11 | 75 | 93 | 18 | 19% |
| 12 | 76 | 93 | 17 | 18% |
| 13 | 76 | 91 | 15 | 16% |
| 14 | 81 | 89 | 8 | 9% |
| 15 | 81 | 92 | 11 | 12% |
| 16 | 82 | 88 | 6 | 7% |
| 17 | 82 | 88 | 6 | 7% |
| 18 | 82 | 89 | 7 | 8% |
| 19 | 83 | 99 | 16 | 16% |
| 20 | 84 | 92 | 8 | 9% |
| 21 | 88 | 102 | 14 | 14% |
| 22 | 89 | 101 | 12 | 12% |
| 23 | 89 | 99 | 10 | 10% |
| 24 | 90 | 102 | 12 | 12% |
| 25 | 90 | 103 | 13 | 13% |
| 26 | 91 | 98 | 7 | 7% |
| 27 | 92 | 103 | 11 | 11% |
| 28 | 97 | 100 | 3 | 3% |
| | **80** | **93** | **13** | **14%** |

**Analysis**

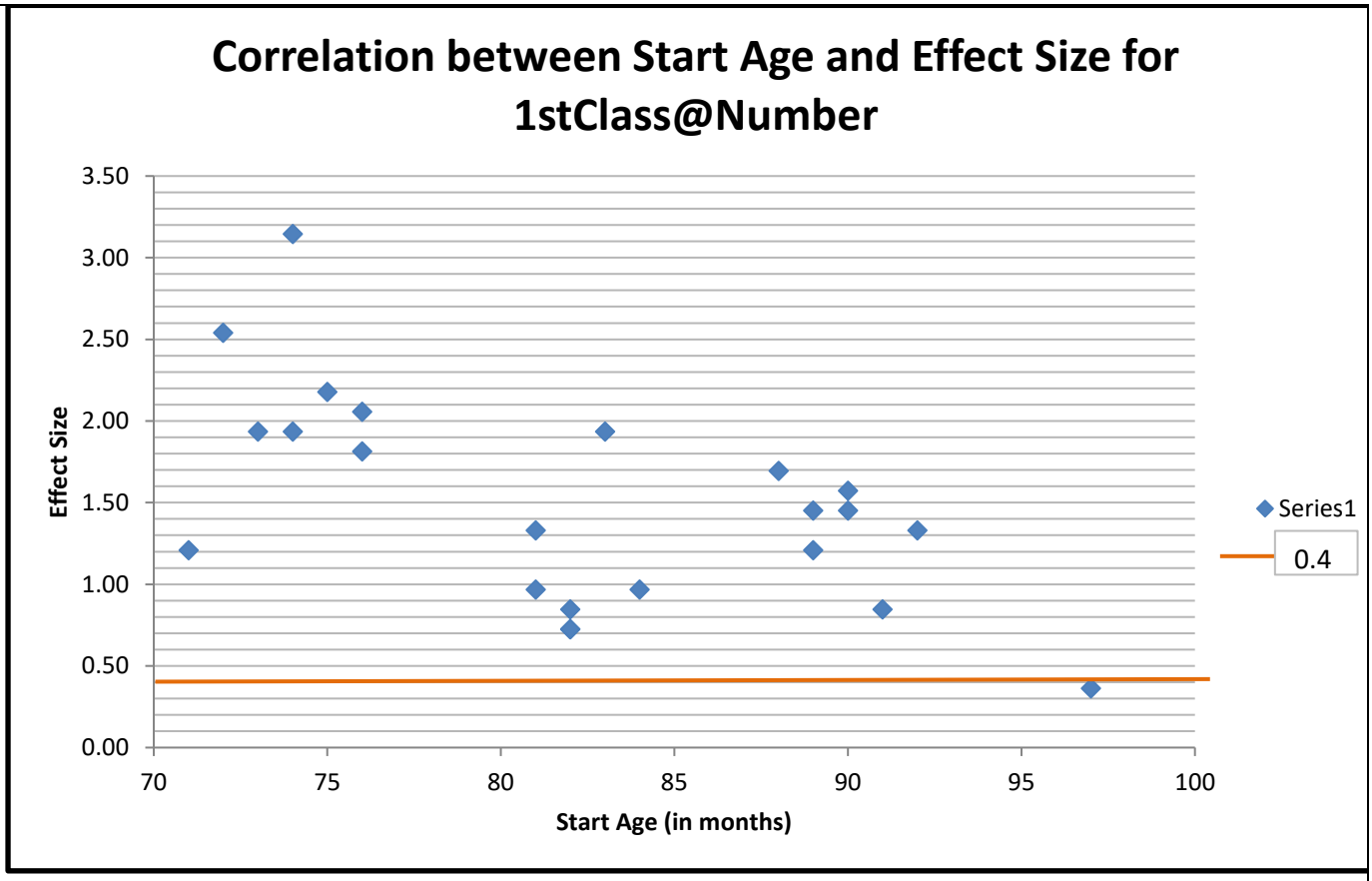
- The average Number Age at the start of the intervention was 6 years 8 months rising to 7 years 9 months at the end. This was approximately 7 years less than the learners' chronological ages.
- All bar one student made a greater gain in Number Age than their rise in Chronological Age (approx. 3 months)
- There was a wide variation in the gains recorded, and no correlation could be established with gender or deprivation (ethnicity was too varied in this small sample size)
- There does seem to be a slight correlation between the learner's start Number Age and the gains made. The lower the start age, the more months the student gained.
- The average gain in Number Age was 13 months which is more than three times the expected progress for a typically developing young person over the same period

**Evaluation**

- Based on the limited data available, 1stClass@Number is an effective intervention for secondary students working well below age-related expectations
- The average gain in number age for these secondary pupils with additional needs was exactly the same as EEC report for their sample of 55000 students which is surprising and very positive.

**Effect Size Calculation**

| | Start | Exit | Effect Size |
|---|---|---|---|
| 1 | 65 | 82 | 2.06 |
| 2 | 65 | 74 | 1.09 |
| 3 | 67 | 86 | 2.30 |
| 4 | 68 | 92 | 2.90 |
| 5 | 69 | 83 | 1.69 |
| 6 | 71 | 81 | 1.21 |
| 7 | 72 | 93 | 2.54 |
| 8 | 73 | 89 | 1.94 |
| 9 | 74 | 90 | 1.94 |
| 10 | 74 | 100 | 3.15 |
| 11 | 75 | 93 | 2.18 |
| 12 | 76 | 93 | 2.06 |
| 13 | 76 | 91 | 1.81 |
| 14 | 81 | 89 | 0.97 |
| 15 | 81 | 92 | 1.33 |
| 16 | 82 | 88 | 0.73 |
| 17 | 82 | 88 | 0.73 |
| 18 | 82 | 89 | 0.85 |
| 19 | 83 | 99 | 1.94 |
| 20 | 84 | 92 | 0.97 |
| 21 | 88 | 102 | 1.69 |
| 22 | 89 | 101 | 1.45 |
| 23 | 89 | 99 | 1.21 |
| 24 | 90 | 102 | 1.45 |
| 25 | 90 | 103 | 1.57 |
| 26 | 91 | 98 | 0.85 |
| 27 | 92 | 103 | 1.33 |
| 28 | 97 | 100 | 0.36 |
| | **80** | **93** | **1.58** |




**Analysis**

- The average Effect Size calculated using John Hattie's Visible Learning methodology was 1.58; close to 4 times the 'hinge point' expectation of 0.4[5]. An effect size of 1.00 is reportedly broadly equivalent to a leap of 2 grades at GCSE
- For all students except one the effect size was greater than 0.4. This student was in the first year of the 1stClass intervention and it was agreed after this that 97 was too high as a starting point for this intervention.
- There was a wide variation in the gains recorded, and no correlation could be established with gender or deprivation (ethnicity was too varied in this small sample size)
- As the graph above shows there does seem to be a negative correlation between the learner's start Number Age and the Effect Size of the intervention; the bigger the start age in months, the smaller the effect size.

**Evaluation**

- Based on the limited data available, 1stClass@Number appears to be an effective intervention for secondary students working well below age-related expectations (even though it was developed for primary age children)
- The researchers have been unable to establish to what extent Effect Size remains a robust comparative measure when participants do not form a 'typical' cross-section of the overall population. However, the impact of approximately 4 times the expected progress measured using actual increase in Number Age, percentage increase in Number Age or Effect Size appears significant and supports investment in further implementation of the programme for this target group of students.

[5] http://www.teacherstoolbox.co.uk/T_effect_sizes.html

**Other outcomes and impact**

"The biggest difference we see when students have been in 1stClass@Number for a term is a huge increase in their confidence in Maths lessons. They seem so much happier to contribute to class discussion and they feel more positive about Maths. They also feel more able to use resources in class to support their learning and don't feel worried about using these after the intervention.

Ms Fiona Matthews, Maths and Assessment Lead

**What next? / Wider learning**

- The Intervention evidences high impact relative to cost. This evaluation indicates that is a highly effective use of the Pupil Premium Grant.
- To what extent are the additional gains made retained as students progress through the school?
- How could we modify our 'core' maths teaching so that they incorporate appropriate elements of the ECC approach from both Numbers Count and 1stClass@Number?
- Consider whether the 1stClass@Number2 programme would be better suited to students with a number age of 6 years and 6 months and above.

**Review of resource allocation (human, material and financial)**

1. 1st Class @Number runs 4:1 four times a week, and requires a TA to lead the intervention, in place of their usual classroom support.
2. The impact of the intervention is very significant for the recipients both on their assessed progress but also on their confidence and attitude towards Maths.
3. High quality training and ongoing support have been essential to success, as has the provision of a dedicated space and additional physical maths resources.
4. The school judges 1stClass@Number to be a very effective use of the Pupil Premium Grant.

**References**


Education Endowment Fund. (2016). *1stClass@Number Evaluation report and executive summary*. [ONLINE] Available at: https://educationendowmentfoundation.org.uk/public/files/1stClass@Number_evaluation_report.pdf. [Accessed 26 June 2019].

1stClass@Number [ONLINE] Available at: https://everychildcounts.edgehill.ac.uk/mathematics/1stclassnumber/. [Accessed 26 June 2019].

HTSA. (2016) *Research & Development Impact Report: How effective is the Numbers Count intervention for learners who are of secondary age but still working within Year 1 National Curriculum expectations?* [ONLINE] Available at: https://everychildcounts.edgehill.ac.uk/wp-content/uploads/2015/11/HTSA-RD-Secondary-Numbers-Count-2.pdf
[Accessed 24 June 2019].

Cogniton Education (2013-) *Visible Learning*$^{plus}$ Series. Auckland: Author see http://cognitioneducation.com/ or http://visiblelearningplus.com. Particularly Visible Learning into Action for Teachers workbook 1

Cambridge Regional College. (2011) *Professor John Hattie's table of effect sizes*. [ONLINE] Available at: http://www.teacherstoolbox.co.uk/T_effect_sizes.html [Accessed: 22 June 2019].

Primary Advantage Maths – Hackney Assessment Approach Fundamentals [ONLINE] http://www.primaryadvantage.co.uk/files/files/Hackney%20Approach%20to%20Assessment%20-%20CPD.pdf [Accessed: 29 June 2019]


Fiona Matthews June 2019 [All student names have been changed to protect privacy]