

EVALUATION OF THE *CATCH UP NUMERACY* PROJECT

**SECOND INTERIM REPORT ON THE
RESEARCH AND DEVELOPMENT PROJECT**

A report for Catch Up

April 2008

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FOREWORD

In January 2007 I was invited by Julie Lawes, the Director of Catch Up, to undertake an evaluation study of the new *Catch Up Numeracy* project which had recently been established with the support of the Esmée Fairbairn Foundation. The project was to run over a period of two years and establish the intervention in pilot schools in invited local authorities throughout England and Wales. *Catch Up Numeracy* aimed to make a major contribution to improving the standard of numeracy of pupils in primary schools in England and Wales.

In the first year of the pilot study, I undertook an evaluation study covering the phase 1 of the research and development stage of the project in 40 schools from six local authorities in England and Wales, and four schools in the Oxford area. An interim evaluation report was submitted to the Director and to the Board of Trustees of the Caxton Trust in August 2007.

This second evaluation report relates to phase 2 of the research and development stage of the project in three new local authorities in England, covering a period from September 2007 to March 2008. For this second evaluation study I was joined by Julia Marriott, a senior practitioner and researcher, who conducted a proportion of the interviews and helped to identify and shape the main findings, and the conclusions and recommendations. I wish to place on record my thanks for her incisive comments and her wary eye throughout the various stages of producing this report.

I hope this evaluation report will be of value to the Board of Trustees of the Caxton Trust in the further development of the *Catch Up Numeracy* intervention.

Alan Evans
Independent Evaluator
Cardiff School of Social Sciences
Cardiff University
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1 INTRODUCTION

- 1.1 This is the second evaluation report of the *Catch Up Numeracy* intervention which started in February 2007. The *Catch Up Numeracy* intervention is a trial two-year programme which builds on the *Numeracy Recovery* project initiated by Dr Ann Dowker, lecturer at St Hilda's College, Oxford, and university research lecturer at the Department of Experimental Psychology. The programme is funded by the Esmée Fairbairn Foundation.
- 1.2 The *Catch Up Numeracy* programme is being developed in order to produce an affordable, practical, realistic and sustainable numeracy intervention for 6–13 year olds. The intention is that the intervention should be developed for use by existing school-based teachers and teaching assistants to help support those who struggle with numeracy.
- 1.3 In addition, the programme is intended to produce:
- child-centred, numeracy-focused, attitudinal and skill/knowledge-based assessments
 - intervention resources and a cross-referenced resource bank
 - information materials for carers and parents
 - a comprehensive OCN accredited training package for existing school-based teachers and teaching assistants
 - an OCN accredited 'training the trainer' programme and six trained *Catch Up Numeracy* programme trainers
 - further development of training materials that will be used in future training of teachers and teaching assistants
 - management support with training for school-based staff.
- 1.4 Six local authorities (Brent, Hampshire, North Tyneside, Powys, Sandwell and the Vale of Glamorgan) and 40 selected primary schools started to participate in the action research stage of the project during the academic year 2006/07, starting in February 2007. During the academic year 2007/08 three new local authorities (Ealing, Norfolk and Stockton) and 17 selected primary schools joined a second phase of the project.
- 1.5 In each of the schools involved in this second phase of the research and development project, six pupils were identified: four who would participate fully in the intervention and two as a control group. It was intended that all of the pupils involved in the intervention would receive one-to-one assessment and tutorial support from October 2007 to March 2008 for two 15-minute withdrawal periods per week. Within the control group, one pupil would experience one-to-one support in improving their learning but not using the *Catch Up* approach, while the other would receive more generalised support in aspects of their learning.
- 1.6 The aim of the research and development project was to offer the new cohort of volunteer schools the opportunity to participate in training and briefing with a view to establishing the *Catch Up Numeracy* project in each of the schools. Having identified the pupils who would participate in the

intervention, the teachers and teaching assistants (TAs) involved would then undertake formative pupil assessments in the ten components (increased from nine in phase 1) and administer Standardised Tests (Basic Number Screening Tests A and B), as well as undertake practical activities and guidance with the pupils involved.

- 1.7 The cohort of pilot schools in phase 2 of the project in each of the new local authorities concerned were offered, through their headteachers, the opportunity to participate in the research and development stage of the project. Following a briefing for headteachers and other teachers in a leadership role, the headteachers agreed to commit their respective schools to participate in this phase of the intervention.
- 1.8 In addition, a new project (phase 3) has been initiated in Wales which will trial the *Catch Up Numeracy* approach in a bilingual context and in year 7 of secondary schools. Five new Welsh local authorities from the swamwac consortium have joined this project (Carmarthenshire, Ceredigion, Neath and Port Talbot, Pembrokeshire, and Swansea) while Powys (also part of swamwac) and the Vale of Glamorgan have transferred to the new project following their original involvement in phase 1 of the research and development project.

Training

- 1.9 During phase 1 of the project, training was provided for teachers and TAs drawn from the volunteer schools by Graham Sigley, Head of Training and Numeracy Development at Catch Up, with the support of the respective local authority coordinators. This training consisted of two half-day sessions focusing firstly on the aims and mode of operation and secondly on the nine components and the application of the assessment instruments. During phase 2 of the project, the training provided by Graham Sigley and his colleagues was expanded to three consecutive morning sessions, followed by a final afternoon session on day 3, this final session covering the management of *Catch Up Numeracy*. In this phase of the project the number of components was increased to ten.
- 1.10 The three days' initial training was underpinned by a file (*Catch Up Numeracy: Pilot Materials 2007*) which covers the four stages of the intervention as well as providing a *raison d'être* for the research and development project (see Appendix 2). Additional materials were also provided to support the review meetings, which were held in education centres in each of the three local authorities involved.

2 MANAGEMENT AND STRUCTURE OF THE PROJECT

- 2.1 The overall coordination and management of the *Catch Up Numeracy* project is invested in Graham Sigley. In particular, he has initiated the developments that produced the action research plan and has brought into the project, over its two phases, nine local authorities and 57 schools (61

schools including the Oxford area) in which the *Catch Up Numeracy* intervention has been implemented. Graham Sigley is accountable for his responsibilities to the Catch Up Director, Julie Lawes, and the Caxton Trust Board of Trustees.

- 2.2 He is supported by the Numeracy Research Consultant, Dr Ann Dowker, and Communications Consultant, Wayne Holmes. In turn Ann Dowker has the support of two research assistants, Peter Morris and Chongying Wang, who collect data from schools for the British Ability Scales (BAS).
- 2.3 In establishing and developing the project, Graham Sigley has led the briefing of and consulting with headteachers, which was a key factor in schools electing to join the project. He has also led, with the support of Donna Clark, Tracey Riley and Carleen Schofield from Catch Up, the training sessions in the local authorities and schools involved in phases 1 and 2 of the *Catch Up Numeracy* intervention.
- 2.4 The majority of schools sent both teachers (often the SENCO) and TAs to the two/three training days. The management of the project in the schools has tended to reside either with the SENCO or with the maths subject coordinator. In a majority of schools the lead practitioners responsible for the one-to-one sessions with pupils in the intervention are the TAs, while in other schools the responsibility is divided between the TAs and the SENCO/teachers.
- 2.5 After the final day of training the schools set about implementing the action research stage of the project.
- 2.6 In each local authority in phase 2 there is an adviser/coordinator (often the maths adviser) who liaises with the Catch Up headquarters team and the volunteer schools. The adviser provided a level of support which ensured that the consultative and training events were attended by all of the parties concerned and that all of the central features of the project were appropriately adhered to. In addition, the adviser made arrangements for the respective meetings of teachers and TAs which were held in each local authority in March to review the progress of the intervention over the previous five months.

3 AIMS AND APPROACH OF THE EVALUATION STUDY

- 3.1 The focus of the evaluation of phase 2 was the three new LEAs who had joined the project: Ealing, Norfolk and Stockton. In both Ealing and Stockton six schools were selected, while in Norfolk the five schools selected were in Attleborough, a small town with a large rural hinterland. One of the schools in Attleborough was an all-through special school.
- 3.2 As with the evaluation of phase 1 of the project, the aims of the evaluation were:

To provide an evaluative overview of the *Catch Up Numeracy* project, assessing the outcomes of the activities against the aims and objectives of the project. In particular the evaluation has sought to:

- provide a qualitative evaluation of the impact of the strategic intervention on the pupils and schools involved, addressing, *inter alia*, the impact on motivation and attitude as well as on learning
- take an overview of the quantitative data provided by the schools in their respective local authorities and compare it against the findings emerging from the qualitative information gathered
- provide an evaluation perspective to assist key players in *Catch Up Numeracy* in deciding on the development of the project in the second and subsequent years
- provide an evaluative overview across the duration of the project, a comparison between each of the years and an evaluation of the impact of the developments in the project
- make recommendations to strengthen and improve *Catch Up Numeracy*.

3.3 The following methods were used to collect data for the evaluation of phase 2 of the project:

- one-to-one interviews with the key players involved, including the programme coordinators and other personnel in each local authority, headteachers, teachers and TAs in the participating schools (see Appendix 1)
- one-to-one and group interviews (26 and 2 respectively) conducted in the second and third week of March
- observation of one training event in Ealing
- observation of two review meetings, one in Stockton and one in Ealing
- analysis of documents relating to the project, including training materials, resource packs and school-produced materials
- analysis of the quantitative data gathered by the *Catch Up* research team.

4 FINDINGS OF THE EVALUATION STUDY

4.1 Training

4.1.1 It was the general view of the interviewees that the training for phase 2 was valuable and well thought through. A key aspect which participants considered to be particularly helpful was being taken step-by-step through the intervention (as set out in the file). This was felt to be a vital contribution to developing an understanding of how to improve numeracy and how to align properly the assessment process for each of the components to the needs of the pupils.

4.1.2 The majority of those who participated in the training maintained that without it they would not have had a sufficient grasp of the *Catch Up*

Numeracy approach and would not have been able to implement the intervention appropriately in their respective schools. A minority of the participants interviewed suggested that the training might have included more ideas and strategies for teaching.

- 4.1.3 The following comments from participants reflect the effectiveness of the training:

'Yes, they [the training sessions] were crucial – they taught me how to deliver Catch Up Numeracy.'

'We went through the whole file step by step and by doing the tasks and discussion it didn't seem so daunting.'

'My colleague and I did the role-play sessions – it puts you on the spot. It was so useful. It was exactly what was needed.'

'They [the training sessions] were hugely valuable in helping to understand the project and how to implement it.'

'It was invaluable that we practised on each other during the training. I do not think the assessments could have been done without the practice.'

'The sessions were really valuable to hear other people's comments on how children felt about maths. it brought home the struggle many children have with maths.'

- 4.1.4 In terms of additional input to the training which would be helpful to the participants, the suggestion was made that a video be produced which showed a one-to-one teaching session and also included sections on carrying out the assessment and on record keeping.

4.2 Implementation of the project

- 4.2.1 In going back to their schools to commence the implementation of the project, the phase 2 teachers/TAs found in general that the pace of the intervention was appropriate and that having a set routine laid down was useful. One of the teachers interviewed commented that the pace and routine of the intervention meant that *'the TA can't afford to drift'*.

- 4.2.2 In relation to individual pupils, teachers and TAs found that the pace and style of the intervention meant that they could work in a way appropriate to the individual, picking up on specific areas of weakness to help move them on.

'What I like best is that it deals with specific and small objectives – you can see what the child has missed out on and work on it with him/her.'

- 4.2.3 The teachers noted that the intervention was particularly valuable in that it meant that pupils who had previously struggled to keep up now had extra time on a one-to-one basis.

'I like it being a one-to-one programme. It is important because it can really focus on the child's individual needs and the child doesn't feel embarrassed.'

'The pupils love the one-to-one, rather than being in a group situation. They can talk about their worries.'

- 4.2.4 A number of the interviewees said that, in retrospect, their decision to implement the intervention with older pupils might not have been the best choice and that it would have been better to have started with pupils lower down in the school. One interviewee noted:

'I think we were teaching the wrong age group and the next time I would choose younger children.'

- 4.2.5 A number of those interviewed pointed to the need for additional resources in order to help them with the practical implementation of the intervention. Many TAs suggested that a form of tool kit or resource box would be particularly valuable. An alternative proposed by one interviewee was for additional material to be provided on the website.

- 4.2.6 The majority of schools involved in *Catch Up Numeracy* had already participated in *Catch Up Literacy*, and the implementation of the former clearly benefited from following on from the latter. Both teachers and TAs already had an understanding of the benefits of one-to-one interventions and were therefore more willing to try *Catch Up Numeracy*, which also benefited from a confidence and belief that it would be successful.

- 4.2.7 On the other hand, the fact that the formative assessments at the start of the *Catch Up Literacy* intervention were easier to administer and manage than those for *Catch Up Numeracy* meant that some schools did not give the TAs adequate time to undertake the formative assessments for *Catch Up Numeracy* and there was therefore a delay in starting the intervention.

- 4.2.8 One of the interviewees noted that in implementing the intervention it was important that the headteacher and senior staff gave clear support for the project and took an active interest:

'I think the most important thing a school can give is support from the management. There is no point not doing it seriously and it needs to be managed and properly monitored.'

- 4.2.9 A small minority of the teachers interviewed expressed some reservations about managing a class where the individual pupils involved in *Catch Up Numeracy* went out one at a time; the teachers found this difficult to handle.

- 4.2.10 A successful aspect of the implementation in phase 2 was the way in which the project had been explained to the parents of the pupils who were selected to receive the *Catch Up Numeracy* intervention, as well as the parents of pupils in the control group. In some schools a standard letter had

been produced for the parents, while in others there were face-to-face meetings.

4.3 Assessment

4.3.1 Formative assessment is a central feature of the initiative. Twenty-two assessments covering the ten components are assessed to provide an approximate indication of the learner's ability in each of the components and sub-components of early numeracy. The assessments are essential pointers for the teachers/TAs to help them target the appropriate teaching for the individual learner.

4.3.2 Many of the interviewees commented that the assessments took a long time; two schools did not progress beyond the formative assessment stage, and a small number of schools only held a limited number of one-to-one teaching sessions. Some interviewees pointed out that this was because of specific reasons particular to their schools, such as staff absence, competing school priorities, etc.

4.3.3 In general, however, the teachers/TAs were of the opinion that the assessments, although lengthy, gave them a very clear profile of the needs of the individual learners.

'It is worthwhile, with a finely tuned assessment system. The assessment picks out the holes in the pupils' knowledge and we know what to work on to bring them up to standard.'

'If possible, it would be good to make the assessments less time-consuming – but you do need them. They're the backbone and it's surprising what you find out.'

'It is a structured programme where the assessments are clear and understandable. The children's needs are highlighted and then all the activities are there to address those needs/gaps.'

4.3.4 The formative nature of the assessments was seen as making a positive contribution to the pupils' learning, which could proceed whilst they were undertaking the assessment.

4.3.5 Several of those interviewed suggested that the assessment booklets should be made more attractive, in order to better engage the pupils' interest and commitment. Some alteration of the page design to include colour and pictures was suggested. In addition, it was suggested that the file of pilot materials was too cumbersome and that the section devoted to formative assessments could be presented in a separate file, to reduce the need to flip backwards and forwards within one folder.

4.4 Impact of the project

4.4.1 There was a strong view amongst those interviewed that the intervention had undoubtedly improved the confidence of the pupils with whom they had

worked. One interviewee reported that one of her pupils had said *'I am no longer at the bottom, with a little help I can do this.'* Another reported *'You can see the way they walk – their body language has changed as their confidence has grown.'*

- 4.4.2 A key impact of the intervention was the improvement in the pupils' understanding of maths, giving them a wider range of mathematical strategies on which to draw and also providing them with the correct mathematical language.

'The project has made a difference to the understanding of maths. It tunes them [the pupils] into maths. It has been the key to learning maths.'

'I think the project helps the children grow in confidence; it helps them enjoy maths more than they would normally do.'

'I think the pupils use correct mathematical language now. It has put more strategies in place for them.'

- 4.4.3 A further impact of the project was that it helped the pupils who had been struggling to start enjoying maths:

'I think that this project helps a child to grow in confidence as it helps them to enjoy maths more than they would normally do.'

- 4.4.4 A specific appeal of the project for a large number of the pupils was that they were able to work in a one-to-one setting. This improved their confidence in talking about what they were doing mathematically, and they were more prepared to discuss the maths work in which they were involved. This they would not have been prepared to do in a group situation. The one-to-one setting meant that the pupils were able to ask questions and make mistakes without feeling embarrassed. This then increased the confidence of the pupils in the class setting; one of the boys had said that he no longer minded answering questions in class *'because of Catch Up'*.

'The one-to-one gives more concentrated opportunity for learning. It gives them better understanding and they can ask questions without being afraid.'

'They are able to discuss what they are doing and how they are able to do it.'

'They can talk about their worries in a one-to-one session – they would not do that in a group.'

- 4.4.5 In phase 2 of the intervention, both the BAS and Standardised Test A were used in October 2007 as baseline tests, and a further set of tests was conducted in March 2008. The intervention period was five months and each pupil who was involved in the *Catch Up Numeracy* intervention received approximately 5.75 hours of support. The Standardised Tests provisionally revealed that, on average, the cohort of 33 pupils involved in the intervention gained 11.6 months in their number ages, while the control

group of 16 pupils gained 6.75 months. The average *Catch Up* learner gained 11.6 months after 5.75 hours of additional intervention support.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

- 5.1.1 Many of the teachers and TAs involved in the project considered that *Catch Up Numeracy* had raised the self-esteem and confidence of the pupils, as well as their knowledge and skills in number. There was also some evidence of a positive spill-over into other areas of school life as a consequence of this improved confidence.
- 5.1.2 There was a clear message from all those interviewed that the training was of a very high standard and that it would not have been possible to implement the intervention in the schools without the training. Undertaking elements of the activities together during the training sessions was felt to be key to the value of the training, providing the necessary pedagogic insights.
- 5.1.3 A number of the schools found the management and administration of the formative assessments a daunting task and took so long over these assessments that they managed only a limited number of individual teaching sessions, or in some cases none.
- 5.1.4 A number of participants felt that they had targeted the wrong age group (e.g. years 5 and 6) and, in retrospect, wished that they had started the intervention with younger children (years 3 and 4) .
- 5.1.5 The way in which the project was explained to the parents of the pupils who were to benefit from the *Catch Up Numeracy* intervention, as well as those in the control group, worked well.
- 5.1.6 The implementation of *Catch Up Numeracy* benefited from the fact that, in many of the participating schools, it followed on from the *Catch Up Literacy* intervention. This meant that teachers and TAs already had some understanding of the benefits of one-to-one interventions and started with a positive assumption about the potential success of *Catch Up Numeracy*.
- 5.1.7 Several teachers/TAs expressed the view that the file (*Catch Up Numeracy: Pilot Materials 2007*) was physically too large and somewhat cumbersome, particularly in dealing with formative assessment.

5.2 Recommendations

- 5.2.1 In the light of the experience of schools with the formative assessment in phase 2, it should be emphasised during the training that a priority should be given to this activity, which should be undertaken in a specified and limited period of time, i.e. three to four weeks. This would mean that appropriate momentum could be given to the implementation of the *Catch Up Numeracy* intervention in the schools and that the one-to-one teaching

could begin more promptly for the pupils concerned. This one-to-one teaching should be undertaken in twice-weekly sessions as originally specified.

- 5.2.2 It follows that the headteachers in committing their schools to involvement in the project should guarantee that time will be made available for the TAs and SENCOs/Maths Coordinators to undertake the formative assessment within an agreed timescale.
- 5.2.3 Within six to eight weeks of the implementation of the intervention in schools, the local authority coordinator should convene a meeting of all the schools involved. The date of the meeting should be set at the same time as the date of the training sessions is set. The meeting would involve a review of progress to date and would enable participants to air successes and any difficulties encountered, as well as share ideas about approaches to the intervention and any new materials and resources which have been developed.
- 5.2.4 The size of the file of pilot materials should be reduced, with consideration being given to the production of a separate file covering formative assessment.
- 5.2.5 In order to help with the practical implementation of the intervention, consideration should be given to providing schools with additional resources in the form of a tool kit or resource box, as well as additional guidance and materials on the website.

APPENDIX 1

Schools participating in the evaluation study, September 2007 to March 2008

Norfolk

Rocklands Community Primary School
Great Ellingham Primary School
Attleborough Junior School
Hingham Primary School
Chapel Road School

Stockton

Crooksbarne Primary School
Pentland Primary School
Junction Farm Primary School
Whitehouse Primary School
Roseberry Junior School
Whinstone Primary School

Ealing

Mayfield Primary School
John Perryn Primary School
Downe Manor Primary School
Allenby Primary School
Our Lady of the Visitation Roman Catholic Primary School
Coston Primary School

APPENDIX 2

The *Catch Up Numeracy* Pilot Materials

Contents

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- 2 Learners who struggle with numeracy
- 3 What do we do when we do numeracy?
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