

Evaluation of Butterfly Phonics, Real Action

Introduction

Real Action has worked with struggling readers for many years. Its Butterfly initiative is a structured literacy programme which teaches decoding, beginning with alphabetic principles and progressing through irregular orthography, aiming to produce proficiency in reading and spelling. It also seeks to instil confidence in the learner.

Butterfly phonics is taught by well trained staff, in a formal didactic manner, making use of published text books which are part of the Butterfly educational series. This project will focus on Year 7 pupils who are weak readers.

Design

The design is a randomised control trial featuring a treatment group of approximately 200 students, and a waiting list control group of the same number of children. The control group will receive the intervention when the study ends in their school. The design is a pragmatic individual randomized controlled trial, with random allocation at children level.

Sampling and Recruitment

Approximately 400 children from Year 7 will be recruited from five or six inner London secondary schools.

Treatment

The intervention will take a total of forty hours over four months during Year 7. There will typically be two sessions of one hour per week taking place in the morning. The lessons will involve classes of up to 15 pupils withdrawn from their classes and normally grouped by attainment level. The children will be seated in formal rows facing the teacher and structured exercises will take place based on the Butterfly Phonics books. Specially trained staff will deliver the intervention, most of whom are studying for higher degrees at London University.

Initial Selection Criteria

The children selected for the study will be struggling readers; typically they will have received lower than a level 4 in their KS2 English SATs. Many of the children will also attract pupil premium.

The children will be recruited from five or six schools based on the following eligibility criteria. Firstly, children in each school with KS2 scores below level 4 will be admitted into the trial. Secondly, children without KS2 scores but with a Yr 7 teacher assessment score for English below level 4 will be eligible. Thirdly, children with KS2 scores of level 4, but Yr 7 teacher assessments below level 4 will also be considered eligible for the trial. Lastly, in cases where no Yr 7 National Curriculum teacher assessments of English are available, a reading age on a standardised reading test in Year 7 of at least one year lower than chronological age will be accepted as evidence of eligibility in lieu of the teacher assessment. The randomization protocol will attempt to control for variability in eligibility criteria and schools by treating them as stratification factors in the randomization process such that both the intervention and the control groups have more or less the same number of children recruited using the same eligibility criteria and from the same school. This pragmatic approach for recruiting children implies that the number of children recruited into the trial may differ between schools, but since each school will have equal representation in both the experimental and control groups, the difference in the number of children recruited from the schools should have little or no effect on investigating the impact of the Butterfly phonics programme on struggling Year 7 readers.

Allocation to Groups

A list of names, dates of birth and End of KS2 English results for those children who fit the Initial Selection Criteria (above) in the participating schools will be uploaded to a secure FTP site at Durham, thus ensuring data protection. The schools will conduct the GL New Group Reading assessment, the Single Word Reading Test and the PhAB nonword reading test as the pre-test measures on which Durham then will randomly assign each child to the intervention or control group. The stratification in this random assignment will therefore be by school. Durham will inform Real Action of the pupils' allocations.

Outcome Measures

The chief outcome measure for the impact evaluation will be the NGRT score (reading comprehension), as this is the reading measure used across the transition projects and allows comparisons between them. However, as the emphasis in the Real Action Butterfly study is on phonics and decoding, the Single Word Reading Test and the PhAB nonword

reading test will provide information at this level. In this way, it will be possible to identify if any reading improvements in the children's decoding translate in a relatively short period into progress in comprehension. Nonword reading will be a measure of the success of the phonological and grapheme-phoneme correspondences taught during the programme.

Therefore, there will be three outcome measures intended to assess the main aspects of reading competence: a reading comprehension assessment in the form of the GL New Group Reading Test (NGRT); an individually administered test of single word decoding (GL Single Word Reading Test: SWRT), and a nonword reading test which is part of the Phonological Assessment Battery (PhAB), which is a one-to-one test of grapheme-phoneme conversion and phoneme blending.

The NGRT, SWRT and PhAB tests will be used as the pre-test before the intervention and again in the post-test at the end of the study. Post-testing will be carried out in a 'blinded' fashion, the children in the treatment and control groups being tested at the same time and invigilators will prevent any influences from teachers or teaching assistants.

About half of the children will receive the intervention during the period of March 2013 to July 2013, with pre-testing immediately preceding the onset of the intervention and directly following the ending of the intervention. The rest of the children will receive the intervention from September 2013 to December 2013, with pre-testing just before it in September, and post-testing once it has finished in December. These different time slots are necessary because some of the schools will not be in a position to begin the intervention in March, due to other commitments.

Summary of the Outcome Measures:

Skill Taught by Programme	Outcome Assessment	Aspect of Reading Tested by Measure	Primary or Secondary Outcome?
Phonemic relationships.	PhAB nonword reading test	Phonics: grapheme-phoneme correspondences, phoneme blending, mainly regular spellings.	Secondary
Irregular orthography.	Single Word Reading Test	Regular and irregular word reading without a semantic context.	Secondary
Written language in context.	New Group Reading Test	Decoding and understanding words in sentences and	Primary

		text.	
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Sample Size Calculations

The minimum number of participants in the experimental group has been calculated as 100, with a further 100 in the control group. These calculations are based on the following assumptions: that the minimum effect size is 0.28; minimum power value is 0.8; $p < 0.05$; 0.7 correlation with covariates, and with half the sample in the control group.

Process Evaluation

A light touch process evaluation will be carried out by Durham University during which it is intended to include: attendance at the pre-intervention meeting with the project team and the schools; observing some of the training of the staff who will deliver the intervention, and observing a Butterfly Phonics lesson. Interviews with staff who deliver the programme will take place, as well as an online survey of the staff.

Analysis

The primary outcome measure is the New Group Reading Test of comprehension, and the secondary measures are the Single Word Reading Test and the Phonological Assessment Battery test of nonword reading. Sub groups of children in receipt of free school meals will form part of the analysis.

Appropriate statistical analysis of the quantitative outcome measures (such as use of GLM, Ancova taking account of pre-test levels, and Cohen's d Effect size) will be conducted by a statistician at Durham University in order to establish the efficacy of the intervention. Qualitative as well as some quantitative data will be collated and analysed from the staff interviews and questionnaires. Perceptions of the intervention and its effects will therefore be included in the data analysis. Possible problem areas in the delivery of the intervention and the study (such as deviations from the planned timetable for the intervention, pupil exclusions or drop out, etc.) will also be identified by these more qualitative measures. This knowledge will be useful to ensure an up-scaling of the intervention, should it be shown to be effective.

Reporting the Results

The evaluators will produce a full report at the end of the analysis phase of the study. The results will be reported to CONSORT standards.

Evaluation timeline:

Activity	Detail	Responsibility	Time-scale
Recruitment of schools	Real Action will recruit the secondary schools to be involved in the project	Real Action	December 2012
Ethical Approval	Permission for the schools' and pupils' participation, including sharing data with Durham	Real Action	December 2012
Ethical Approval	To collect and analyse data from participating schools, and produce a report in which anonymity is preserved	Durham	December 2012
Order the Assessments	NGRT GL SWRT PHAB	Durham	December 2012
Request KS2 data from participating schools		Real Action	December 2012
Pre-intervention meeting with project team and schools	To explain the project, including the reasons for random assignment of pupils, share the time table and introduce Durham as the project evaluators	Real Action to organise and Durham to attend	January 2013
Analysis of End of KS2 data and other eligibility data for selection of pupils	This will be used for the selection of pupils	Durham statistician	January 2013
Pre-intervention testing of children selected for project	New Group Reading Test A, 1 st SWRT and PHAB	Real Action	February 2013
Random allocation to intervention or control group	Allocation to intervention or control group	Durham statistician	March 2013
Butterfly training		Real Action	December 2012 – March 2013
Observation of 1 Butterfly training session		Durham	March 2013
Implementation of intervention		Real Action	March-July 2013
Observation of implementation of Butterfly in one school,		Durham	June 2013

interview with the person implementing the intervention			
On-line survey of people implementing Butterfly		Durham	July 2013
Post intervention assessment of pupils	NGRT B, 2ndSWRT and PHAB	Real Action	July 2013
Collation of pupil information from all assessments		Durham	August– September 2013
Initial analysis of data		Durham	September-October 2013

SECOND PHASE

Request KS2 data from participating schools		Real Action	July 2013
Order the Assessments	NGRT GL SWRT PHAB	Durham	August 2013
Pre-intervention meeting with project team and schools	To explain the project, including the reasons for random assignment of pupils, share the time table and introduce Durham as the project evaluators	Real Action to organize and Durham to attend	September 2013
Analysis of End of KS2 data and other eligibility data for selection of pupils	This will be used for the selection of pupils	Durham statistician	September 2013
Pre-intervention testing of children selected for project	New Group Reading Test A, 1 st SWRT and PHAB	Real Action	September 2013
Random allocation to intervention or control group	Allocation to intervention or control group	Durham statistician	September 2013
Implementation of intervention		Real Action	September-December 2013
Observation of implementation of Butterfly in one school, interview with the person implementing the intervention		Durham	November 2013
On-line survey of people implementing Butterfly		Durham	December 2013
Post intervention assessment of pupils	NGRT B, 2ndSWRT and PHAB	Real Action	December 2013
Collation of pupil information from all assessments		Durham	December 2013
Analysis of data		Durham	January- February 2014

Report	Durham	March-April 2014
Prepare academic publication of project	Durham and Real Action	April 2014 onwards

Risk Table

Risk	Likely consequence	Mitigating actions
KS2 data are not provided by some schools in time.	1. Delayed onset of testing. 2. Shortened intervention period. 3. Schools begin testing and intervention at different times, which could affect the results.	Real Action visits the schools.
Loss of project personnel from Durham.	Disruption to project.	Durham has staff who can be brought into the project at short notice.