

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 volunteers, 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 at the end of the study, beginning in September 2013.

Sampling and Recruitment

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

Treatment

The intervention will take a total of forty hours over a twenty week period in Year 7. There will be two sessions of one hour per week taking place in the morning before the start of school. The lessons will involve groups of up to 15 pupils. 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 voluntary staff will deliver the intervention, most of whom are studying for higher degrees at London University.

Initial Selection Criteria

Children in the study will be chosen on the basis of their KS2 SATs English scores being lower than Level 4 and many of the selected children will also attract pupil premium. The intention is to recruit approximately 400 children from the five schools. The same number of pupils in each school will be selected. Hence, with five schools, there would be 80 participants in

each school, 40 of whom would be allocated to the intervention group and 40 who would be in the control group.

Allocation to Groups

The participant schools will upload 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 to a secure FTP site at Durham, thus ensuring data protection. The schools will conduct the GL computerised New Group Reading assessment as the pre-test measure on which Durham will select 80 children in each school with the lowest scores and then 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 computerised reading comprehension assessment in the form of the GL New Group Reading Test (NGRT); an individually administered paper 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 paper test of grapheme-phoneme conversion and phoneme blending.

The NGRT, SWRT and PhAB tests will be used as the pre-test before the intervention (in January 2013) and again in the post-test at the end of the study in July 2013. 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.

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 text.	Primary

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 volunteers who will deliver the intervention; observing a Butterfly Phonics session. 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 Digital Version 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 organize and Durham to attend	January 2013
Analysis of End of KS2 data for selection of pupils and random allocation to intervention or control	This will be used for the selection of pupils and allocation to intervention or control group.	Durham statistician	January 2013

group			
Pre-intervention testing of children selected for project	New Group Reading Test, 1 st SWRT and PHAB	Real Action	January 2013
Data entry of SWRT and PHAB pre-intervention tests		Durham	January – Feb 2013
Collation of pupil information, NGRT scores, SWRT and PHAB scores		Durham	February 2013
Butterfly training		Real Action	December 2012 – February 2013
Observation of 1 Butterfly training session		Durham	January - February 2013
Implementation of intervention		Real Action	February-July 2013
Observation of implementation of Butterfly in one school, interview with the person implementing the intervention		Durham	May 2013
On-line survey of people implementing Butterfly		Durham	June-July 2013
Final assessment of pupils	NGRT, 2ndSWRT and PHAB	Real Action	July 2013
Data entry of NGRT, SWRT and PHAB		Durham	July – August 2013
Collation of pupil information from all assessments		Durham	August– September 2013
Analysis of data		Durham	September-October 2013
Report		Durham	October – November 2013
Prepare academic publication of project		Durham and Real Action	October 2013 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.

Computer facilities for NGRT not available, despite best efforts.

School cannot take part in the study.

School takes paper test. However, the paper NGRT is not exactly comparable to the computer test, so data will have to be part of a separate statistical analysis.

Computerised NGRT carried out but computer problems mean that the results are incomplete.

NGRT results inadequate to analyse.

Schools to check their NGRT test results are complete before they send them to Durham. If incomplete, school must arrange for test to be taken again, as soon as possible.

Loss of project personnel from Durham.

Disruption to project.

Durham has staff who can be brought into the project at short notice.
