

# Protocol for Evaluation of the Vocabulary Enrichment Intervention Programme

*Note: This protocol excludes aspects of the evaluation that are the sole responsibility of Bolton Council and are not requirements of the EEF or NFER.*

## ***Intervention***

The Vocabulary Enrichment Intervention Programme (VEIP) was created by Victoria Joffe, an academic at City University London, using funding from the Nuffield Foundation. The programme has two aims: to teach children new words, and to encourage them to use these words in speaking and writing. It seeks to achieve these aims by cultivating children's enthusiasm for words, and teaching them specific strategies for learning and recalling new terms. Children are taught to recognise the structure of words (prefixes, suffixes, roots), are given a range of cueing techniques to aid retrieval, and are shown how to understand and learn new terms independently, so they can continue to learn after the intervention has finished. A [trial](#) of a similar intervention in the US indicated an effect size of ~0.5 standard deviations on reading achievement. The trial participants seem to have been non-native speakers and the study was not perfect (only 17 classrooms were randomised and the experimental groups experienced differential attrition) but it is encouraging nonetheless.

## ***Research Plan***

### **Research Questions**

The primary research question is: what is the impact of VEIP on reading ability over and above any impact of Sounds Write (SW), Literacy Plus (LP) and Bridging Development (BD)?

The secondary research question is: are improvements in attainment moderated by National Curriculum reading level or whether a pupil receives the pupil premium? Such interactions may not be causal.

### **Design**

All 17 Bolton secondary schools will be approached. 800 children across 12 Bolton secondary schools will be selected to participate based on their predicted KS2 English results and their eligibility for free school meals. The 800 will then be randomly assigned to one of three groups:

- VEIP+LP+BD+SW (referred to subsequently as 'FP' i.e. Full Programme)
- LP+BD+SW (referred to subsequently as 'FP-VP')
- 'Business-as-usual' control (referred to subsequently as 'control')

Some Bolton secondary schools split each year group in half for timetabling reasons. It is therefore not possible to randomise across the whole year group and succeed in running the trial. Instead either of the following designs shall be used:

### *School design 1 (preferred)*

1. School agrees to random allocation of eligible pupils into timetable halves
2. In a randomly chosen half, eligible pupils are randomly allocated to FP and control in a ratio of 2:1
3. In the other half, eligible pupils are randomly allocated to FP-VP and control in a ratio of 2:1

### *School design 2 (for schools that do not agree to random allocation of pupils into timetable halves)*

1. Choose the timetable half with the lower average pupil ability to go forward with the study
2. In the chosen half only, eligible pupils are randomly allocated across three equally sized groups: FP, FP-VP and control

Since the second school design involves a halving of the sampling frame, inclusion criteria will be reviewed once school preferences are known in order to ensure an adequate sample of pupils is obtained.

Baseline testing will occur in September 2013 with follow-up in February 2014.

The trial will be designed, conducted and reported to CONSORT standards (<http://www.consort-statement.org/consort-statement/>).

## **Inclusion Criteria**

Year 7 pupils who were achieving at Level 3, 4c (possibly 4b depending on numbers) in reading at the end of Key Stage 2, as indicated by Key to Success data.

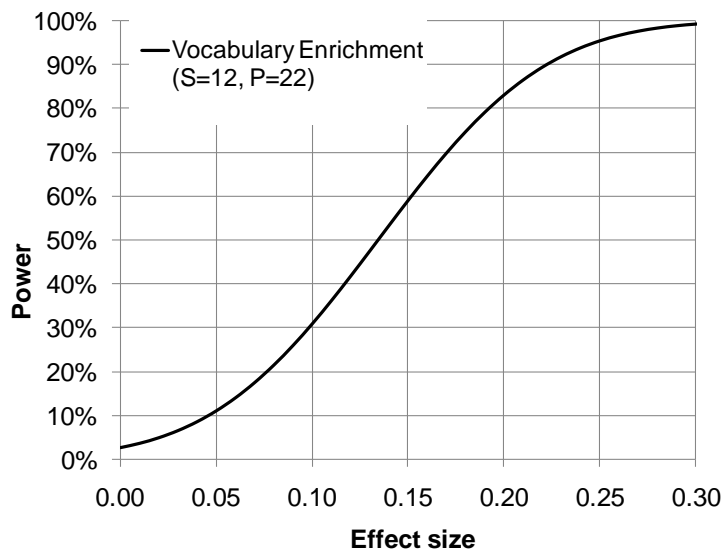
## **Randomisation methods**

All randomisations will be carried out by a statistician at NFER. Within each school, simple randomisation will be used to allocate pupils to groups in the ratios described above.

## **Outcome Measures**

The digital version of the New Group Reading Test (NGRT; GL Assessment) will be used to measure reading ability. The NGRT has two subscales – ability and comprehension, which can be combined into a composite reading score. The composite score will be used as the primary outcome. The two subscales will be used as secondary outcomes.

## Sample size calculations



S = Number of participating schools  
P = Number of participating pupils per intervention group per school

Randomisation will be conducted at the pupil level, and furthermore we will be controlling for variation in baseline scores. Intra-class correlation ( $\rho$ ) is therefore likely to have a minimal impact on the effective sample size; we have conservatively assumed a value of  $\rho=0.02$  for the purposes of our calculations. The chart illustrates that the sample sizes will be sufficient to detect effect sizes at least of the order 0.20 – 0.25. This could be considered low-moderate, equivalent to around 3 months of progress – quite reasonable for targeted interventions providing support to small groups of pupils<sup>1</sup>.

## Analysis

The primary outcome will be reading ability as assessed by the digital New Group Reading Test. Sub-group analysis on the primary outcome will be carried out on the following groups only: National Curriculum level and whether or not a pupil receives the pupil premium. The secondary outcomes will be the two NGRT subscales: reading ability and comprehension.

We will undertake basic descriptive analysis of baseline test data to provide a check that the randomisation process has been carried out successfully. Whilst we would not expect treatment and control groups to exhibit identical characteristics, we will carry out statistical tests to verify that any small differences that do arise are consistent with what one might expect assuming an unbiased randomisation.

We will then undertake our main analysis combining baseline and follow-up data. The definitive analysis will be 'intention to treat', reflecting the reality of how interventions are delivered in practice and avoiding attrition bias. We will use multi-level models to enable us to combine results across schools whilst accounting for clustering, and will include baseline data as a covariate in each

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<sup>1</sup> Note that effect sizes are for paired comparisons between two of the three groups (e.g. FP-VP vs control or FP vs FP-VP). These differential effects will be smaller, and so are less likely to be detected for a given sample size.

of our models. We will test hypotheses relating the impact of the interventions on pupils of differing abilities through the inclusion of interaction terms in the modelling.

The main analysis will be followed by an 'on-treatment' analysis where data from the teacher logs will be used to determine the extent of each pupil's involvement with the interventions. We will also incorporate school-level variables into the analysis based on the questions addressing the extent to which teachers feel they maintained fidelity to the interventions, and any perceived contamination of the control groups of pupils. This analysis would enable us to estimate a 'pure intervention effect' (net of any fidelity issues, contamination, or non-completion). However, note that this analysis may be biased due to self-selection to differing levels of exposure<sup>2</sup>.

## **Process evaluation**

Researchers will obtain and analyse the training and guidance documents and attend a training session for both SW and VEIP. Researchers will also observe two intervention sessions of FP (full programme). The evidence from these document analyses and observations will inform the schedule for the later interviews and will directly contribute to the scalability evaluation.

The teacher log, which is proposed as a fidelity check for the interventions, will also contribute to the process evaluation. The record of whether and how the programme activities took place will give information on their practicability and manageability. The questions will provide data on teachers' confidence and engagement. These analyses will provide an indication of how accessible and usable the new methods are for schools and teachers.

At the end of each intervention, researchers will gather more in-depth information on these matters by means of telephone interviews with four teachers delivering the full package. The telephone interviews will follow a semi-structured interview schedule, reflecting the distinctive features of each intervention but also following a common. We will look to gain a deeper understanding of teachers' perceptions of the intervention's impact and any barriers they perceive to exist for its wider rollout. Views would also be sought into the effectiveness of the training and guidance materials and whether any improvements to these processes and documents would make a wider rollout more likely to succeed.

Our report on the findings of the process evaluation will draw on these findings and make recommendations to ensure the sustainability and replicability of successful interventions when they are scaled up.

## ***Personnel***

The project will be led by Susan Cornwell/Bolton Project Board. The impact evaluation will be led by Dr Ben Styles at NFER. The process evaluation will be led by Becky Clarkson at NFER. Camilla Neville will have overview of the evaluation at EEF and Emily Yeomans will oversee the grant.

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<sup>2</sup> For example pupil motivation may be positively related to both levels of exposure to the intervention (through better attendance) and the amount of progress made between baseline and follow-up testing.

## ***Roles and responsibilities***

Each person will carry out their duties with the assistance of teams at their respective institutions:

Susan Cornwell – Recruitment and retention of schools, training and delivery of intervention, supply of list of eligible pupils for randomisation, administration of tests (different teachers will be used for intervention delivery and test administration)

Ben Styles – trial design, randomisation and analysis.

Becky Clarkson – process evaluation telephone interviews and visits.

## ***Data protection statement***

NFER's data protection policy is available at:

<http://www.nfer.ac.uk/nfer/about-nfer/code-of-practice/nfercop.pdf>

## ***Timeline***

**Dec 2012:** Meeting with partner organisations, write and register protocol

**Jan-Feb 2013:** Further meeting between NFER and Bolton to involve school representatives, recruit and consent schools and pupils

**Apr-Jul 2013:** Training of teachers

**Jul 2013:** Random allocation of pupils into timetable halves for 'design 1' schools

**Sept 2013:** Pre-testing and random allocation of pupils

**Sept 2013-Feb 2014:** Implementation of intervention programmes

**Feb 2014:** Post-testing

**Mar 2014:** Teacher telephone interviews, analysis

**Apr 2014:** Reporting

**May 2014:** Final report to EEF

## ***Risks***

Risk	Assessment	Countermeasures and contingencies
School, teacher or pupil attrition	<b>Likelihood:</b> moderate <b>Impact:</b> moderate	Clear information / initial meeting with schools explaining the principles of the trial and expectations. Both 'intention to treat' and 'on-treatment' analysis will be used. Attrition will be monitored and reported according to CONSORT guidelines.
Interventions are not implemented	<b>Likelihood:</b> low	Clear information / initial meeting with schools explaining the principles of the trial and expectations. Both 'intention to treat'

well	<b>Impact:</b> moderate	and 'on-treatment' analysis will be used. Process evaluation will monitor this.
Control pupils exposed to elements of the interventions	<b>Likelihood:</b> moderate <b>Impact:</b> moderate	Clear information / initial meeting with schools explaining the principles of the trial and expectations. Both 'intention to treat' and 'on-treatment' analysis will be used.
Delays in training of teachers and commencing interventions	<b>Likelihood:</b> moderate <b>Impact:</b> low	Agree a clear timetable with project teams up front Revise timetable for pre and post testing periods
Failure in recruiting pupils/schools	<b>Likelihood:</b> low <b>Impact:</b> high	Project teams could make use of NFER's Research Operations Department to recruit more schools (at additional cost)  Timescale could be revised
Poor completion of logs by teachers	<b>Likelihood:</b> moderate <b>Impact:</b> moderate	Set clear expectations at the start of the study what is required from participating teachers/schools  Clear, simple design, and pre-population of logs with pupil names ensure log is straightforward to complete.
Researchers lost to project due to sickness or absence	<b>Likelihood:</b> moderate <b>Impact:</b> low	NFER has a large research department with numerous researchers experienced in evaluation who could be redeployed.  Senior staff can stand in if necessary.
Project teams do not follow correct trial protocols	<b>Likelihood:</b> moderate <b>Impact:</b> high	Meetings with project teams at start of project.  Provision of clear guidance describing protocols for distribution to all schools.