

Evaluation of Dialogic Teaching: Improving Classroom Talk

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Evaluation Summary	
Age range	Year 5 - 6
Number of pupils	~4800
Number of schools	80 schools (40 intervention, 40 control)
Design	Efficacy trial: 3-level clustered RCT
Primary Outcomes	1. Literacy after one year, measured using the Progress Test in English, GL Assessments 2. Numeracy after one year, measured using the Progress Test in Maths, GL Assessments 3. Science after one year, measured using the Progress Test in Science, GL Assessments
Secondary Outcomes	Engagement and Oracy at classroom level after one year, measured using quantitative analysis of video classroom observation. Key Stage 2 assessments in English and Mathematics after two years

BACKGROUND

Significance

- An explanation of the theoretical and scientific background, policy context and rationale for the evaluation (including the evidence for equipoise). The theoretical and scientific background for the intervention is fully explained in Alexander (2008).¹ Its policy context is set out in Alexander (2012).²

Intervention

- The Dialogic Teaching intervention is designed to improve the quality of classroom talk as a means of increasing pupils' engagement, learning, and attainment, particularly those from disadvantaged backgrounds. The programme builds on the Dialogic Teaching approach previously developed by Professor Alexander,³ and successfully piloted in several local authorities. It emphasises dialogue through which pupils learn to reason, discuss, argue and explain, in order to develop their higher order thinking and articulacy.

¹ Alexander, R.J. (2008) *Towards Dialogic Teaching: rethinking classroom talk*, York, Dialogos.

² Alexander, R.J. (2012) 'Improving oracy and classroom talk in English schools: achievements and challenges', paper given at seminar on Oracy, the National Curriculum and Educational Standards, Department for Education, February.

³ Alexander, R.J. (2015) 'Dialogic teaching and the study of classroom talk: a developmental bibliography', <http://www.robinalexander.org.uk/wp-content/uploads/2012/10/Alexander-dialogic-teaching-bibliography1.pdf>

The programme includes training for teachers, ongoing in-school monitoring and support, and a pack containing study and reference materials and a development and mentoring manual. Schools are being loaned all necessary equipment for video and audio recording, which are essential parts of the process, and cover is being paid for any time when participating teachers are away from their classrooms.

Although there is strong evidence that this approach can improve motivation, engagement, participation, thinking, and understanding, there has not yet been a UK randomised controlled trial to assess its effectiveness. The study is taking place in two phases. The development phase is currently underway in ten schools Barking and Dagenham, some of which have participated in an earlier pilot of the Dialogic Teaching approach,⁴ and is being used to refine the programme design. The RCT will take place in 2016/15 in 80 primary schools in Birmingham and Leeds with no prior involvement in dialogic teaching. The evaluation report will be published in autumn 2016.

DEVELOPMENT PHASE

We plan to undertake the following activities:

- Attend the mentor meeting on 10th February 2015, CEME Centre, Dagenham.
- Involve Roberta Taylor and Nick Moore in analysis of videoed lessons by delivery team. This will ensure the evaluation team share the delivery team's understanding of the qualities of dialogic teaching that the intervention is designed to promote. It will also provide an opportunity for Roberta to provide an additional perspective on the analysis of classroom interaction relating to the intervention. Roberta will be involved in the reliability analysis of Engagement and Oracy measures as part of the main impact evaluation - involvement in the analysis training during the development phase will support later reliability analysis.

Dr Roberta Taylor's and Nick Moore's involvement in co-analysis of lessons will take place in the summer term, 2015. The timing of this will be negotiated with the delivery team.

TRIAL PHASE: RESEARCH PLAN

Research questions

- Impact Evaluation:
 - Does the Dialogic Teaching intervention improve pupil attainment across the curriculum after one year (science, maths, and literacy)?
 - Does the Dialogic Teaching intervention raise levels of pupil engagement after one year?
 - Does the Dialogic Teaching intervention raise levels of pupil oracy after one year?
 - Does the Dialogic Teaching intervention improve Key Stage 2 attainment in English and Mathematics after 2 years?

The theory of change for this intervention suggests that changes in teaching practice will lead to increases in the quality of pupil engagement and pupil spoken language (oracy) observable in the classroom. These changes in pupils' responses to classroom activity are in

⁴ Alexander, R.J. (2005), *Teaching Through Dialogue: the first year*, London: London Borough of Barking and Dagenham Council. <http://www.robinaalexander.org.uk/wp-content/uploads/2015/02/Bardaglea---eval---report---05.pdf>

turn predicted to raise levels of attainment in science, literacy, and numeracy (i.e. across the curriculum)

- Process Evaluation:
 - What are the relationships between the training programme, teachers' changing practice, changing classroom interactions, and pupil outcomes?
 - Are there differences in the way that the intervention has been implemented by teachers in different schools?

Design

- This trial will employ a 3-level (pupils within classes within schools) Clustered RCT design. Randomisation will be at school level, with half of the schools forming the intervention group and half of the schools forming a control group.

Randomisation

- Minimisation methods⁵ will be employed in order to achieve balance across intervention and control groups. A minimum of eighty schools will be signed up to take part in the project. Some schools may be recruited in federations or alliances, and the majority as individual schools. Large alliances of 6 schools or more will be split into two groups using the minimisation method, based on the percentage of pupils eligible for free school meals (FSM), the percentage of pupils using English as an additional language (EAL), and KS2 attainment. Of these split alliances, one group will be randomly allocated to the treatment condition, and one to the control condition. The remaining schools recruited will be in units of either single schools, or federations or alliances with groups of two to five schools. These units will then be allocated to the treatment or control group using the minimisation method, based on the percentage of pupils eligible for free school meals (FSM), the percentage of pupils using English as an additional language (EAL), KS2 attainment and the number of years' combined teaching experience of the participating teachers. For each variable entered into the minimisation procedure, a median split will be used to designate schools as either 'high' or 'low' for that measure. The majority of units will comprise single schools; however, this method allows for federations of schools or alliances who want to work together.
- Variables (except for those relating to school alliances) used for minimisation will also be included in any analysis as covariates

Participants

- Schools in Leeds, Birmingham and Bradford will be invited to participate in the trial. Recruitment is being led by the Delivery Team (Robin Alexander from CPRT, supported by Mark Longmore from IEE).
- Eligible schools will be those having at least two Year 5 classes, and a high proportion of FSM children (over 20%).

⁵ Pocock, S. J., & Simon, R. (1975). Sequential treatment assignment with balancing for prognostic factors in the controlled clinical trial. *Biometrics*, 103-115.

- Recruitment will be through officers of Leeds Local Authority, Bradford Local Authority and Birmingham Educational Partnership in the first instance, led by Delivery Team. Once recruitment is finalised, Mark Longmore will visit and liaise with each school.
- Recruitment will be completed by the end of May, so that minimisation can take place in early June, and schools in the Intervention group can take part in the first training activities taking place in July 2015.
- SHU will comment on recruitment plans and materials, and will attend recruitment or launch events that are organised by the Delivery Team.
- The condition for schools to be entered into the trial prior to the allocation of schools to treatment and control groups will be that the headteacher and chair of governors have signed the Memorandum of Understanding (MoU), prepared by the delivery team. This MoU will include seeking opt-out consent from pupils who will be in the Year 5 cohort in 2015/16 and providing:
 - class lists;
 - names, dates of births and Unique Pupil Numbers (UPNs) for 2015/16 Y5 pupils;
 - pupils with EAL;
 - pupils eligible for FSM;
 - the details of teachers who will be involved in the CPD intervention (names, job title, qualification year);
 - details of the mentor for the school (name, job title, qualification year);
 - agreement to support the CPD of teachers for the duration of the intervention, including releasing members of staff for the initial intervention training session in July 2015;
 - agreement that teachers will complete surveys in the Spring term.
- There will be at least 40 schools in each group. Schools in the control group will have access to the intervention and associated equipment at the end of the project.
- For the primary outcome measures, samples of one-third of pupils per classroom (approximately 10 pupils per classroom) will be each be assessed using the Progress Test in English, the Progress Test in Mathematics and the Progress Test in Science (all GL Assessments). That is to say that one-third of pupils will be assessed in English, one-third in Maths, and one-third in Science. Sampling will be random, with stratification by FSM eligibility.
- For the secondary outcome measures, all children in participating schools for the duration of the trial, and who have not opted-out, will be included in analyses.

Outcome Measures

- Literacy after one year will be measured using the Progress Test in English assessment, taken in May/June 2016, after the intervention has been running for approximately one year. This

test provides measures of reading accuracy, fluency and comprehension, standardised for UK populations. This test is administered as a pencil and paper test in groups.

- Numeracy after one year will be measured using the Progress Test in Maths assessment, taken in May/June 2016, after the intervention has been running for approximately one year. This test provides measures of fluency in facts and procedures, fluency in conceptual understanding, mathematical reasoning and problem solving, and has been standardised for UK populations.
- Science attainment after one year will be measured using the Progress Test in Science assessment, taken in May/June 2016, after the intervention has been running for approximately one year. This test provides measures of knowledge, and ability to work scientifically, in physics, chemistry and biology, and has been standardised for UK populations.
- The first set of secondary outcomes - Pupil engagement and Pupil oracy - will be measured using quantitative analysis of classroom video observations, recorded during term 4 of the intervention (before Easter 2016). This analysis will be carried out by the delivery team, with the evaluation team providing additional analysis of reliability. The evaluation team will analyse a sample of 4 videos (10% of the dataset), and will calculate measures of inter-rater reliability with scores derived by the delivery team. These measures will be generated for 20 classes of pupils in each condition.
- Analysis of videos to produce measures of pupil engagement and oracy will be carried out by assessors who are blind to the experimental condition. This applies to assessors from both the delivery team and the evaluation team.
- The second set of secondary outcomes will be Key Stage 2 attainment scores in English and Mathematics. These tests will be taken by pupils in May 2017, approximately two years after the start of the intervention. Data will be obtained from the National Pupil Database when they become available (predicted to be January 2018). However, it is understood that the effects of the intervention are likely to be mitigated, and possibly compromised, by (a) change of teacher (from a teacher trained in dialogic teaching to one who is not) from Y5 to Y6, (b) change in pedagogy as pupils approach the KS2 SATs (less extended dialogue, more IRE and text-based teaching).

Sample size calculations

- A power analysis for this 3-level CRT design, with 80 schools, 2 classes per school and 10 pupils per class has been carried out. We have assumed that the Intra-Cluster Correlation Coefficient (ICC) for both class and school levels is 0.1 and that Key Stage 1 attainment scores (used as a baseline measure) account for 36% of the variance in the primary outcome measure ($r=.6$).
- The results of this analysis suggest an MDES (minimum detectable effect size) of approximately 0.25 with power of 0.8.
- Power calculations have also been carried out for this design for the subgroup of pupils eligible for FSM. Assuming 2 pupils eligible for FSM per class (~20%), and other assumptions as above, MDES is approximately 0.42.

Analysis plan

- The primary analysis at the end of the first year will employ the 3-level design described above. The analyses will be conducted separately for each of the scores from the three assessments described above, with KS1 scores, teacher experience, FSM eligibility and EAL as covariates (i.e. the minimisation factors), and experimental group as the independent variable.
- The primary analyses will use scores standardised for age, in order to control for any effects of small differences in distribution of age across groups.
- The primary analyses will take an intention-to-treat approach, including all schools.

- Secondary analyses of Pupil Engagement and Oracy (both of these measures at class level, for 20 classes in each condition) will also be carried out at the end of the first year. The smaller sample of classes included in this analysis is due to the fact that we expect to see larger effect sizes for these measures than for attainment in literacy and numeracy. Similar analyses will be carried out for Pupil Engagement and Oracy as for primary outcomes as described above. In addition, regression analyses will be carried out in order to test for the strength of relationship between Pupil Engagement and Oracy (predictors) and literacy and numeracy (outcomes). These analyses will help to validate the theory of change for the intervention.
- At the end of the second year, we will again employ the 3-level clustered design, with KS2 scores for English and Mathematics as outcome variables, KS1 scores as covariate, and experimental group and eligibility for free school meals as predictors.
- Subgroup analyses of pupils eligible for FSM will be carried out for both primary and secondary analyses. Tests for interaction will be conducted to assess whether or not there are differential effects for pupils eligible for FSM relative to other pupils.
- Subgroup analyses of pupils with low prior attainment will be carried out for both primary and secondary analyses. Tests for interaction will be conducted to assess whether or not there are differential outcomes for children with low prior attainment relative to other pupils.

Process evaluation methods

- A process evaluation of changes in classroom practices will be largely carried out by the delivery team using observation software and transcript analysis, with independent reliability analysis of quantitative aspects by the evaluation team. Some light touch independent evaluation will also be carried by the evaluation team. The activities described below in this section are those to be conducted by the evaluation team.
- A combination of survey, interviews and a small number (3-4) of lesson observations will be carried out, as well as an analysis of the training materials, the Delivery Team's contingent induction, training, support and monitoring, and the Delivery Team's records of schools' participation in various aspects of the intervention. The Evaluation Team will also carry out an analysis of a sample of 3-4 classroom video observation recordings, as part of their analysis of the reliability of measures of Pupil Engagement and Oracy derived by the Delivery Team from these recordings.
- Survey design will be informed by our analysis of the training materials and contingent induction, training, support and monitoring, and by work carried out during the development phase. The survey for teachers in intervention schools will address research questions relating to: effectiveness of the training; changes in teaching practice; and perceived effects on classroom interactions, pupil engagement, attitudes and attainment. It will also aim to inform the design of teacher interviews by beginning to address links between these components. For example, it would be useful to know which elements of the induction, training and support are perceived as most useful, and which changes in teaching practice are perceived to have been most important in changing patterns of classroom interaction. Similar surveys will be designed for mentors and headteachers. These will have the additional aim of establishing how the whole-school approach to this intervention has impacted on its effectiveness in schools, and whether there have been any effects of the

intervention outside the two target classrooms. All classroom teachers, mentors and headteachers in intervention schools will be asked to complete these surveys.

- Telephone interviews will be carried out with teachers, mentors and headteachers from a sample of eight intervention schools, and with local authority educational support officers in Leeds and Birmingham. These will be designed to add depth to our understanding of the effectiveness of the intervention in improving classroom interactions, and to understand the ways in which the whole-school approach, and support from the local authority, have contributed to the effectiveness of the intervention. Telephone interviews will take place with teachers, mentors and headteachers in a sample of intervention schools, and with one educational support officer in each of Leeds and Birmingham local authorities.
- The evaluation team will carry out independent observations of up to a total of four lessons in treatment schools, in order to explore connections between the training and classroom practice. Wherever possible, the observations will take place during sessions that are already being video- and audio recorded as part of the intervention. The video from the observations will be used as an elicitation device in teacher interviews adding depth of understanding to the findings of the survey and telephone interviews. In particular, these will enable us to explore links between the training, teacher perceptions of dialogic teaching and changes in classroom interaction. This would provide insight into aspects of the intervention that are considered to have been most important or influential.
- The evaluation team will analyse a sample of 3-4 classroom video observations, using the analytical framework devised by the Delivery Team, to provide an independent judgement of the reliability of the measures of Pupil Engagement and Pupil Oracy.

ETHICS AND REGISTRATION

- To respect the aims and integrity of the intervention, minimise attrition and keep schools on-side (especially those in the control group), the intervention and evaluation terminology used publicly with participating schools will follow the presentational framework provided by the Delivery Team (which, for example, avoids terms such as ‘delivery team’, ‘treatment’, ‘dosage’, ‘intervention group’, ‘control group’, ‘primary outcome’, ‘secondary outcome’ etc). This approach fully accepts EEF modalities, but confines the attendant terminology to this protocol and the internal discussions and workings of the intervention and evaluation teams and their dealings with EEF. The presentational framework, for use by both teams with participating schools, will be provided by the Delivery Team.
- Ethical approval for delivery of the intervention will be obtained by the Delivery Team, through IEE, University of York
- The Delivery Team will arrange for schools to gain opt-out consent from parents of the cohort of pupils in Year 4 at the time of recruitment. This is a condition of participation in the trial.
- Ethical approval for the evaluation activities will be obtained by the Evaluation Team, through the Faculty of Development and Society Ethics Committee, Sheffield Hallam University.
- [International Standard Randomised Controlled Trial Number \(ISRCTN\)](https://www.controlled-trials.com) (register the trial at: www.controlled-trials.com)

PERSONNEL

- For the Evaluation Team:
 - Dr Tim Jay - project director
 - Dr Peter Thomas - lead statistician, responsible for minimisation and analysis
 - Dr Roberta Taylor, Nick Moore, Prof Cathy Burnett, Prof Guy Merchant - leading on process evaluation
 - Ben Willis - project manager
- For the Delivery Team:
 - Professor Robin Alexander (University of Cambridge and Cambridge Primary Review Trust), Co-Director
 - Professor Frank Hardman (Institute for Effective Education, University of York), Co-Director
 - Dr Jan Hardman (Department of Education, University of York), classroom data analysis
 - Dr Taha Rajab (Institute for Effective Education), Research Fellow
 - Mark Longmore (Consultant), Schools Liaison, Years 1 and 2
 - David Reedy (Consultant), Schools Liaison, Year 1

RISKS

Risk	Possible Effects	Mitigation
Delivery team fails to recruit 80 schools to the project	MDES would be increase - potentially to a level that is not viable for the evaluation	Delay the start of the project
Data not received from schools for minimisation	Minimisation would be delayed, with potential knock-on effects on the start of the project	Dedicated school liaison officer Mark Longmore - will be main point of contact to chase schools for data and signed MoU
High levels of attrition	Drop out could affect the balance of intervention and control group. Primary outcome measures taken in May/June 2016 could be refused by schools that drop out of the study.	Incentive for control schools in the form of training and equipment. High levels of support for intervention schools Include on-treatment analysis, of schools engaged with the project throughout
Usability of analysis protocol for secondary measures	The analysis protocol is yet to be fully developed by the Delivery Team. This will need to be ready for use for blind assessments in May/June 2016, otherwise the timings for later analysis and reporting may be delayed.	Agreement of the analysis protocol to be agreed by the end of 2015. Initial inter-rater reliability measure to be conducted by the Delivery Team by the end of March 2016.
Delivery of data for secondary measures	Data relating to the secondary outcome measures of pupil engagement and pupil oracy will need to be received from the Delivery Team early enough that they can be incorporated into analyses for reporting	
CEIR staffing	If team members leave SHU, this could affect the ability of the team to deliver the evaluation	There is redundancy within CEIR for all key skills. Key aspects of data collection and analysis are all assigned to at least 2 members of the Evaluation team.

TIMELINE

	Sep/Dec 14	Jan/ Feb 15	Mar/ April 15	May/ June 15	July/ Aug 15	Sept//Oct 15	Nov/Dec 15	Jan/ Feb 16	Mar/ April 16	May/ June 16	July/ Aug 16	Sept//Oct 16	Nov/Dec 16	Jan/ Feb 17	Mar/ April 17	May/ June 17	July/ Aug 17	Sept//Oct 17	Nov/Dec 17	Jan/Feb 18
1. Development phase																				
Inception including meetings with York/Cambridge and EEF																				
Attendance at recruitment introductions with two local authorities																				
Attendance at Mentor meeting																				
Co-analysis of video observations to inform reliability analysis of pupil engagement and pupil oracy measures																				
2. Recruitment/trial set up																				
Recruitment of schools including receipt of all pupil/school related data. Consent forms/MoU signed.																				
All schools send out parental consent forms and allow 2 weeks to receive back, notifying York/SHU of any pupils opted out.																				
Minimisation																				
3. Primary outcome measures																				
Making testing arrangements with schools																				
Recruiting/training invigilators																				
Primary outcome measures - testing																				
Review and analysis of Primary Outcome 1																				
4. Secondary outcomes measures																				
2nd outcome measure 1: Pupil engagement +pupil oracy. (Video Observations)																				
Reliability analysis of secondary measures																				
2 nd outcome measure 2: KS2 attainment scores in English and Maths																				

	Sep/Dec 14	Jan/ Feb 15	Mar/ April 15	May/ June 15	July/ Aug 15	Sept//Oct 15	Nov/Dec 15	Jan/ Feb 16	Mar/ April 16	May/ June 16	July/ Aug 16	Sept//Oct 16	Nov/Dec 16	Jan/ Feb 17	Mar/ April 17	May/ June 17	July/ Aug 17	Sept//Oct 17	Nov/Dec 17	Jan/Feb 18
5. Process evaluation																				
Survey of teachers, mentors and headteachers																				
Telephone interviews with a sample of teachers, mentors and headteachers																				
Case studies of 4 intervention schools, including visit for interviews and classroom observation																				
6. Reporting																				
Main final evaluation report writing																				