

Evaluation Summary	
Age range	11 -16 years
Number of pupils	8-10,000
Number of schools	34
Design	Cluster randomised controlled trial
Primary Outcome	Literacy, Numeracy and Science attainment

## Background

### **Significance**

*Parental engagement* is considered to be a parent's participation in their child's learning, rather than simply parental involvement in schooling (Harris & Goodall, 2007). Thus it brings together two key contexts in a child's development; the home and school settings. The benefits of both home-based and school-based parental involvement, in terms of facilitating academic achievement (for children of all ages), have been reported in several reviews and meta-analyses of the literature (Fan & Chen, 2001; Henderson & Mapp, 2002; Cox, 2005; Jeynes, 2007; Pomerantz, Moorman & Litwack 2007). It has been identified as a key factor leading to improved behaviour, increased attendance at school, better emotional adjustment and greater well-being (Epstein, 2001; Henderson & Mapp, 2002; Jeynes, 2007; El Nokali et al., 2010, Hornby & Lafaele, 2011).

Despite the established correlational relationship between parental engagement and positive outcomes for students, it is still necessary to understand and identify what parents want and need in order to help them to better engage and participate in their children's learning experiences. This remains a challenge for schools, particularly in relation to reaching and involving parents who have chosen not to engage with their child's learning (Goodall & Vorhaus 2011; See & Gorard 2014). Traditional engagement strategies used by schools, such as talking with parents on the phone, parent meetings and school visits are often ineffective and do not truly support parent involvement (Wyn, Cahill, Holdsworth, Rowling & Carson, 2000). Recent technological advances have opened up new ways for schools to communicate with parents and Information Communications Technology (ICT) provides a convenient means for schools to send - and parents to access - up-to-date information about their child's learning (Goodall & Vorhaus 2011) and the curriculum (Lewin, Mavers & Somekh 2003). It is with this in mind that the current intervention seeks to promote the engagement of parents in their child's learning through the creative use of text messages from the school, which are intended to inform parents about various aspects of their child's attendance, learning and progress.

### **Intervention**

A research team from Harvard University and the University of Bristol are currently developing a parent communication strategy that will form the basis of the intervention to be tested in the proposed randomised controlled trial. This communication strategy will comprise text messages that are sent to parents at specific time points and intervals during the school year containing information relating to their child's attendance, performance and upcoming tests and assignments. The technical feasibility,

content, frequency and duration of the intervention are currently being piloted (between January and July 2014) by the Harvard/Bristol research team in ten schools using an experimental design. In addition, qualitative pilot research exploring current parental behaviour and attitudes towards their child's learning will be conducted in two schools. The findings from these pilot experiments and qualitative work will inform the design of the final intervention to be tested between September 2014 and July 2015.

## **Research Plan**

### ***Research questions***

The aim of the proposed evaluation is to determine the impact of the final intervention (currently in development and described above) on the academic outcomes of secondary school students and the engagement behaviour of parents in participating schools. Thus, the research questions are:

Randomised controlled trial:

- What is the impact of the intervention on the literacy, maths and science outcomes of students (primary outcomes) in addition to school attendance of students and the engagement behaviour of parents (secondary outcomes)?
- Is there a differential impact of the intervention for different groups of students? Specifically, does the impact of the programme vary according to:
  - Key Stage group
  - Gender
  - Socioeconomic/FSM status)
  - Baseline attainment
  - School size

Process evaluation:

- Was the intervention delivered with fidelity?
- What were the successes and challenges associated with implementation?
- Given the above, what are the likely challenges associated with rolling out the programme more widely, to a greater number of schools?

### ***Design***

The evaluation will include a cluster randomised controlled trial, which will start in September 2014 with pre-trial work being undertaken by the Bristol/Harvard research team prior to this time. In addition, a light touch process evaluation will run alongside the trial. To ensure that the programme is delivered appropriately, a research assistant from the Bristol/Harvard University team will support each participating school. To this end, the evaluation is an efficacy trial given that the programme is being implemented in schools with the best possible fidelity and required dosage.

The unit of randomisation will be the Key Stage group i.e. Key Stage 3 (KS3) and Key Stage 4 (KS4). Within each participating school one Key Stage group will be randomly allocated to the intervention condition. The intervention group will receive the treatment for three school terms (one academic year). The other Key Stage group will be in the control condition and receive 'business as usual'.

Schools allocated to deliver the intervention to their KS3 students will deliver it to Year 7 and Year 9 only. Schools allocated to deliver the intervention to their KS4 students will deliver it to Year 11 only. This will mean that the intervention does not have to be delivered to all year groups within each Key

Stage cohort, which will minimise disruption to schools and maximise the cost efficiency associated with both programme delivery and data collection.

As a clustered trial and in order to achieve balanced groups, minimisation (using the programme Minim) will be used to create groups that are balanced on important school level covariates likely to affect academic outcomes, including: prior attainment (proportion of A\* to C grades attained in the school's most recent GCSE results), level of deprivation (proportion of students eligible for the pupil premium) and school size (number of enrolled students). This method of allocation is a widely accepted alternative to simple or stratified randomisation, especially in small samples (Altman & Bland, 2005; Treasure & MacRae, 1998). The CEE evaluation team will undertake allocation.

### ***Specific role of the CEE evaluation team***

The role of the CEE evaluation team will be to work collaboratively with the Bristol/Harvard research team to:

- Support the pre-trial development phase as necessary (January to July 2014)
- Decide on the design of the main cluster randomised controlled trial and selection of outcome measures
- Undertake the allocation process
- Collect the educational outcome data
- Analyse the cRCT data
- Conduct accompanying process evaluation (data collection and analysis)
- Author the EEF report

### ***Participants***

#### *Schools*

Secondary schools that meet the following criteria will be eligible for inclusion in the study:

1. Meet any EEF specific inclusion criteria
2. Willing to be randomly assigned to condition at the level of the Key Stage group (i.e. KS3 and KS4)
3. Willing to engage with the intervention and implement it with students and parents
4. Willing to provide access to socio-economic and demographic data of students
5. Willing to provide access to assessment data for participating students

School recruitment will be undertaken and managed by the Bristol/Harvard research team and the Teacher Development Trust; however the CEE evaluation team will support the recruitment process and provide advice as necessary. We would suggest that schools are oversampled in case of attrition. Participating schools will be asked to sign a memorandum of understanding which will provide details of the research and stipulate what participation will entail for the school, parents and students.

#### *Parents*

The intervention will be targeted at parents of students in KS3 (i.e. Years 7 and 9) or KS4 (Year 11) in participating schools. Parents will be informed about the study through a letter from the research team sent home via the school.

#### *Students*

To determine the effectiveness of the intervention, post-test data on academic outcomes (described below) will be collected from all participating students in KS3 and KS4.

### **Consent**

School consent to take part in the study must be secured prior to the allocation process. Once school level consent has been obtained, a letter outlining the research and providing parents with the opportunity to withdraw their child from the study will be sent to the parent(s) of all eligible pupils (i.e. all pupils in Years 7, 9 and 11). This opt out consent letter will make it clear that if parents consent to take part, named data will be matched with the National Pupil Database and shared with Bristol University, the Centre for Effective Education, the Education Endowment Foundation and the UK Data Archive for research purposes. Parents will be reassured that their child's name or the name of the school will not be used in any report arising from the research.

### **Outcome measures**

*Primary outcome – student achievement in English, Maths and Science.*

In order to minimise the cost and disruption of data collection, where possible routinely collected national curriculum assessment scores will be used. To this end, and to control for prior attainment, Key Stage 2 data will be collected for all pupils via the National Pupil Database (NPD) and used as a covariate in the main analysis. The post-test data will be collected by the CEE.

The intervention will be targeted at English, Maths and Science classes thus the primary outcomes in this study are student achievement in these three subjects. Post-test achievement will be assessed in KS3 (Years 7 and 9) and KS4 (Year 11); the outcomes and proposed measures are described below and summarised in Table 1.

- Years 7 and 9 will be post-tested using the paper and pencil versions of the Hodder Access Reading, Access Mathematics and the GL Progress in Science tests.

The Hodder Access Reading and Access Maths tests are appropriate for pupils aged up to 16 years and are reliable, valid and widely used measures of literacy and numeracy outcomes. They are more efficient time wise than other comparable alternatives, taking only 30 minutes each to administer compared to other similar tests such as Progress in Maths or Progress in English, which can take up to 60 minutes to complete.

GL are currently developing a science test that we intend to use to measure outcomes in Science. Unfortunately there is no alternative test available that we could consider at this time.

Paper rather than computer based versions of the measures have been chosen because typically schools prefer this mode of administration. Computer based tests can add a layer of complexity when testing large numbers of students and schools, with schools frequently reporting difficulties in resolving timetabling issues associated with computer testing large numbers of students.

- For Year 11 GCSE English, Maths and Science results will be used as the post-test measure. These data will be available from schools and the National Pupil Database.

*Table 1: Outcomes and proposed post-test measures for each Key Stage and Year group*

Key Stage	Year Group	Outcomes and measures		
		English	Maths	Science
Key Stage 3	Year 7	Access Reading	Access Maths	Progress in Science
	Year 9	Access Reading	Access Maths	Progress in Science
Key Stage 4	Year 11	GCSE English grade	GCSE Maths grade	GCSE science grade

The CEE will be responsible for ensuring that the outcome measures are administered to KS3 (Years 7 and 9) as well as collating the outcome data for KS4 (Year 11) directly from the NPD. The CEE will liaise closely with each school around testing and schools will administer and invigilate the Reading and Maths tests under exam conditions. These assessments will take place of the school's normal end of year assessments that will be reported to parents. It will not be possible to blind teachers administering the tests to student allocation. Tests will be sent from the school directly to Hodder for scoring and analysis.

The reliability and validity of SATs and GCSEs are well established and are standardised measures that are high in contextual validity, as they constitute the main indicators of school and student academic performance. In addition, as these tests are the main indicators of school and student academic performance, it is highly likely that teachers in all treatment arms of the trial will be focused on ensuring that students succeed on them.

#### *Secondary outcomes - school attendance and parental behaviour and attitudes*

Attendance data for each student will be collected directly from the school. The previous years' attendance will be used as a baseline for this outcome. Parents will be invited to complete a short questionnaire at post-test that will collect background demographic information (see below) and data relating to aspects of the home learning environment, parental involvement in their child's education and school, and; aspirations for their child's education and future employment. In order to keep the research burden for parents to a minimum, no baseline data will be collected on these parent related outcomes (relevant covariates will be included in the analysis however). It is anticipated that these post-test data will be collected via the School Comms texting facility, which will enable parent and child data to be linked, thus parents response data will be confidential but not anonymous.

#### *Other student and parent variables*

Background information on students will include gender, age and Free School Meal/Pupil Premium entitlement and will be collected from the school and/or National Pupil Database. Parent background information will include socio-demographic characteristics e.g. parents' highest level of education and household socioeconomic status, occupation and first language spoken at home and will be collected via the parental questionnaire mentioned above.

The same data will be collected for students and parents in both the control and intervention groups.

### **Sample size calculation**

A previous evaluation of a similar intervention detected an effect size in the order of  $d=0.20$  in favour of the intervention group (Bergman, 2012). Thus it is estimated that for the proposed trial to detect a minimum effect size of  $d=0.20$  with approximately 80% power, a total sample size of 68 Key Stage groups (i.e. 34 schools) and up to 120 students per Key Stage group (approximately 8,160 students in total) would be required. These estimates are based on analysing data from both Key Stage groups together and have been calculated using Optimal Design (Version 3.01). They are based on a 2-level cluster design and the following assumptions:

- Significance level ( $\alpha$ ) = 0.05
- Power = 80%
- Effect size ( $\delta$ ) = 0.20
- Estimated intraclass correlation coefficient (ICC) = 0.15
- Estimated variance shared between KS2 and post-test scores ( $R^2$ ) = 0.5

Efforts will be made by the Bristol/Harvard research team to recruit a greater number of schools in order to allow for attrition.

### **Proposed analysis**

The initial characteristics of the intervention and control groups will be compared at baseline in relation to their core characteristics (gender, highest education qualifications of parents, deprivation, ethnicity) and mean scores on the main outcomes.

The main effects of the intervention will be estimated using multilevel modelling to take account of the clustered nature of the data and a series of models will be estimated for each outcome measure. Firstly a simple analysis will be conducted: the relevant outcome measure at post-test will form the dependent variable and the independent variables will include a dummy variable representing whether the child was a member of the intervention or control group (coded '1' and '0' respectively) and the students' baseline scores for the outcome variable in question. Subsequently, more complex models will be estimated and will include other relevant covariates representing the variables used in the allocation process, students' core characteristics and baseline scores on any other outcome measures.

The main focus for the analysis will be the estimated coefficient associated with the dummy variable that represents the difference in mean scores on the respective outcome variable between the intervention and control groups, once baseline scores and other differences at baseline have been controlled for. This coefficient will then be used to estimate the effect size of the programme in relation to the respective outcome variable as the standardised mean difference between the two groups (Hedges'  $g$ ).

In addition to the analysis of the main effects, sub-group analysis will be conducted to examine any differential impact of the intervention for different groups of students. Specifically, does the impact of the programme vary according to:

- Key Stage group
- Gender
- Socioeconomic/FSM status)
- Baseline attainment

- School size

### **Process Evaluation**

*Process evaluation January 2015 - June 2015*

A relatively light touch process evaluation will run alongside the RCT and will be conducted towards the end of the evaluation in 2015. Its purpose will be threefold:

1. To determine whether the intervention is being implemented with fidelity (with a focus on the content and frequency of text messages)
2. To explore the perceived successes, outcomes and challenges associated with the intervention and its implementation
3. To determine whether and how the intervention might be taken to scale

All schools will be asked to complete a short online survey in term two, to capture data relating to the ease of implementation and fidelity to the programme schedule.

On the basis of the questionnaire responses approximately 3 schools will be selected to take part in the next stage of the process evaluation and will be chosen to represent schools that are experiencing difficulties with implementation as well as those who are not. Schools will also be selected to represent a mix of socioeconomic and ethnic backgrounds. Care will be taken to devise a method of undertaking data collection that does not contaminate other testing procedures. The case studies will involve a range of qualitative methods, including:

- Semi-structured interviews with teachers
- Similar interviews with a member of the school management team
- Telephone interviews with a selection of parents to explore their overall perception of the intervention and its effectiveness, its usefulness and appropriateness and to determine whether the intervention is targeting and reaching the appropriate stakeholders
- Focus groups with students to explore their overall perception of the intervention and its effectiveness including, for example, whether they noticed and/or welcomed any changes in parental attitudes or involvement in their school work/life

### **CEE Evaluation team**

As Director of the Centre for Effective Education *Professor Allen Thurston* will have overall responsibility for the direction and delivery of the project. He will also provide appropriate support and advice throughout the study. Professor Thurston is a former primary school teacher who now undertakes large scale randomised controlled trials in education. He has held numerous research grants including recent grants from ESRC and EEF.

*Dr Sarah Miller* is the Principal Investigator and will have responsibility for overseeing all aspects of the design, randomisation and the analysis and write up of the data. She is a Deputy Director of the Centre for Effective Education and a psychologist with a strong quantitative and statistical background comprising considerable experience conducting complex multivariate analyses (including hierarchical linear modelling). Her experience of supervising and conducting research projects spans cluster

randomised controlled trials, systematic reviews and large-scale surveys. Currently she is Principal or Co-Investigator on three large-scale randomised controlled trials in Education and is undertaking a number of systematic reviews in related areas.

Dr Miller will be supported by Seaneen Sloan and Aideen Gildea who have considerable experience in the conduct of CRCT's, multi-level modelling and process evaluations in relation to RCT's.

*Aideen Gildea* is a researcher in the Centre for Effective Education. Aideen's work over the last decade has involved undertaking high quality quantitative and qualitative research on a range of RCTs but her expertise lies primarily in qualitative methods; specifically process evaluations that are designed to run alongside RCTs. She is particularly experienced in designing and carrying out process evaluation work including observation studies for fidelity alongside the main impact study. Aideen is a qualified health visitor, and worked for many years with parents and families in the community. She is currently the lead qualitative researcher on a trial of a school based social and emotional learning programme.

*Dr Seaneen Sloan* is a researcher in the Centre for Effective Education. She is currently responsible for the day-to-day running of a large-scale (>60 schools) cluster randomised controlled trial of a social and emotional learning programme. Having ten years' experience in research, she is skilled in recruitment and retention of schools in evaluations with long-term follow-up, training fieldwork staff and ensuring all data collection targets are met, liaising with school personnel and programme developers, administering tests on both one-to-one and whole-class basis, as well as data management, analysis (including multi-level modelling), and report writing.

### **Ethics**

All research will be conducted according to the School of Education at Queen's University ethical guidelines. Ethical approval will be obtained from the School of Education's Research and Ethics Committee prior to any data collection to be undertaken by the CEE evaluation team. Informed consent will be obtained from schools (opt-in), parents (opt-out) and children (opt-in - this consent relates to possible participation in the focus groups where parents have not opted out of this aspect of the study). Data will be anonymised and held securely on encrypted computers.

### **Risk analysis and counter measures**

A risk analysis of School of Education and CEE activity has been undertaken. This is presented below by means of establishing the potential risks to the funder and the controls and contingency measures that are in place to minimise these risks. This adds security to the funding body and peace of mind that the proposal will be delivered on specification and on time.



Risk	Assessment	Countermeasures and contingency plan
<b>1. Schools decide they no longer want to participate following randomisation</b>	<b>Likelihood:</b> <i>Low</i> <b>Impact:</b> <i>Low</i>	A Memorandum of Understanding will be established between schools and the research team prior to participation making clear the responsibilities and rights of schools.
<b>2. Bristol/Harvard and CEE have differences of opinion on trial design, measures or approach to analysis</b>	<b>Likelihood:</b> <i>Medium</i> <b>Impact:</b> <i>Medium</i>	<p>Early project initiation meetings with the research and evaluation teams to finalise project design and agree measures.</p> <p>CEE staff have experience of working closely with programme developers in a flexible way while maintaining the robustness of the study design and independence of evaluation.</p>
<b>3. Differential Pupil Attrition from control and intervention groups</b>	<b>Likelihood:</b> <i>Low</i> <b>Impact:</b> <i>Low</i>	<p>Outcome data will be collected directly from schools and the NPD. With a well-designed trial of this size we would expect some attrition but with this sample size and the proposed data collection methods, this should be evenly matched between control and intervention schools.</p> <p>Imputation methods will be used if required.</p>
<b>4. Lack of study power</b>	<b>Likelihood:</b> <i>Low</i> <b>Impact:</b> <i>Low</i>	<p>Some smaller observed effect sizes may not be significant.</p> <p>This will be dealt with in the interpretation of the impact results.</p>
<b>5. Data protection and ethics</b>	<b>Likelihood:</b> <i>Low</i> <b>Impact:</b> <i>High</i>	Robust data protection and ethical procedures are in place at CEE. Data sharing protocols will be established.
<b>6. Staffing issues: staff leaving or unavailable over extended duration of project</b>	<b>Likelihood:</b> <i>Medium</i> <b>Impact:</b> <i>High.</i>	Staff turnover in the CEE is generally low however succession planning has been built into team roles. Large CEE team can absorb problems in the short-term. Sufficient numbers of experienced staff in senior roles to cover others in the team.

### Timescales

	2014						2015						2016
	Jan-Feb	Mar-Apr	May-Jun	July-Aug	Sep-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec	Feb
<b>1. Evaluation planning</b>													
Evaluation design													
Ethical approval													
Recruitment of schools													
Randomisation of schools													
<b>2. Impact evaluation</b>													
Collection of Access Reading & Maths data - Yrs 7 & 9													
Collation of other data from the NPD and schools													
Collation of GCSE data from NPD													
Administration of parent questionnaire													
Data processing													
<b>3. Process evaluation</b>													
Interviews with teachers and school management team													
Telephone interviews with parents													
Text survey of parents													
Focus groups with students													
Analysis													
<b>4. Reporting</b>													

## References

- Altman, D.G., & Bland, J.M. (2005). Treatment allocation by minimisation, *British Medical Journal*, 330, 843.
- Cox, D. (2005). Evidence-based interventions using home–school collaboration. *School Psychology Quarterly* 20, no. 4: 473–97.
- Desforges, C., and Abouchaar, A. (2003). *The impact of parental involvement, parental support and family education on pupil achievement and adjustment: A literature review*. London, United Kingdom: Department of Education and Skills.
- El Nokali, N., E. Bachman, H., J. and Votruba-Drzal, E. (2010). Parent Involvement and Children's Academic and Social Development in Elementary School University of Pittsburgh. *Child Development*, 81, 3, 988–1005.
- Epstein, J., L. (2001). *School, family and community partnerships: Preparing educators, and improving schools*: Boulder, CO: Westview.
- Fan, X. T., and Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review*, 13,1–22.
- Goodall, J. and Vorhaus, J., 2011. *Review of best practice in parental engagement*. London.
- Harris, A. and Goodall, J., 2007. *Engaging parents in raising achievement: do parents know they matter?: a research project commissioned by the Specialist Schools and Academies Trust*.
- Henderson, A., T. and Mapp, K., L. (2002). *"A New Wave of Evidence: The Impact of School, Family, and Community Connections on Student Achievement."* Austin, TX: National Center for Family and Community Connections with Schools, Southwest Educational Developmental Laboratory.
- Hornby, G. and Lafaele, R. (2011). Barriers to parental involvement in education: an explanatory model. *Educational Review*, 63(1), 37–52.
- Jeynes, W. (2007). The relationship between parental involvement and urban secondary school student academic achievement: A meta-analysis. *Urban Education*, 42, 82-110.
- Lewin, C., Mavers D. and Somekh, B. (2003) Broadening access to the curriculum through using technology to link home and school: a critical analysis of reforms intended to improve students' educational attainment, *The Curriculum Journal*, 14:1, 23-53.
- Pomerantz, E.M., E.A. Moorman, and Litwack, S. (2007). The how, whom and why of parents' involvement in children's academic lives: More is not always better. *Review of Educational Research* 77, no. 3: 373–410.
- See, B.H. & Gorard, S., 2014. *What do rigorous evaluations tell us about the most promising parental involvement interventions? A critical review of what works for disadvantaged children in different age groups*.
- Treasure, T., MacRae, K.D. (1998). Minimisation: the platinum standard for trials, *British Medical Journal*, 317, 362-363.

Wyn, J., Cahill, H., Holdsworth, R., Rowling, L. and Carson, S. (2000). MindMatters, a whole-school approach promoting mental health and wellbeing. *Australian and New Zealand Journal of Psychiatry*, 34:594-601.