

Amendments

Page 6 – Section 3.3.2 - Pupil data collection from schools such as year 7 pupil names, DOBs and UPNs cannot be collected before randomisation as this requires schools to administer parental consent to opt out from the data collection. This will take place after the randomisation.

Page 9 – Section 3.4.2 – Attend training/briefing event for schools (autumn term 2015). This should read 'summer term 2015'.

Page 9 – Section 3.4.3 – Telephone interviews with Heads of English and Mathematics (pilot and summer 2015 and 2016). This should read 'pilot year (summer 2015) and summer terms 2016 and 2017'.

Page 11 – Table 5.1 – There is an omission. The following activity is taking place.
Month: May-June 2015 –Telephone interviews with Heads of English and Mathematics in pilot schools.

Page 11- Table 5.1 – June 1015 (consent and collection of pupil names, DOBs and UPNs). This will take place in September 2015.

Page 11- Table 5.1 - September 2015 (Attend launch/training event for intervention schools). This will take place in July 2015.

Page 11- Table 5.1- Months: September 2015 – July 2016 (Obtain key stage 2 results for all randomised pupils). This should read all pupils.

Page 11 – The project will be led on a day-to-day basis by Palak Mehta (not Matt Walker) and she will also oversee the impact evaluation. The process evaluation will be led by Dr. Julie Nelson.

Protocol for the Evaluation of Best Practice in Grouping Students

Intervention B – Mixed Attainment Grouping

Note: This protocol excludes aspects of the evaluation that are the sole responsibility of King's College London and are not requirements of NFER.

1 Introduction

The Education Endowment Foundation (EEF) has commissioned King's College London (KCL) to investigate best practice in grouping students by attainment. The project will consist of two trials. The first trial (Intervention A) will test an intervention which trains schools in a best practice approach to setting. The second trial (Intervention B) is a feasibility study exploring the use of mixed attainment grouping in secondary schools. This protocol refers to the second trial (Intervention B); the protocol for Intervention A can also be found on the EEF website.

Intervention B will run as a pilot study, with the project team initially working with three secondary schools between September 2014 and July 2015. The pilot will be used to develop the intervention and to examine the barriers to using mixed attainment grouping in secondary schools. Following this developmental phase the approach will be piloted as a randomised controlled trial (RCT), starting in September 2015 and following children through Years 7 and 8. The sample for the evaluation will be 20 secondary schools, randomised to either receive the intervention or to be part of a control group.

The National Foundation for Educational Research (NFER) has been commissioned to design and manage the pilot RCT, undertake the process evaluation and to administer English and mathematics tests suitable for use at Year 8 to ensure that mixed attainment grouping does not result in a drop in attainment in mathematics and/or English.

2 KCL Project Background

A range of research has suggested that young people with low prior attainment make better progress in mixed attainment groups than when placed in (low) sets and streams. This intervention seeks to test this hypothesis, instigating research-informed practices that represent good practice in heterogeneous grouping.

Feasibility study

The developers will design and pilot an intervention ‘Best practice in heterogeneous grouping’ with three secondary schools in 2014/15, leading to a small-scale RCT to run parallel to the ‘Best practice in setting’ RCT in academic years 2015/16 and 2016/17. Should this demonstrate that it is possible to run a trial on mixed attainment grouping and not indicate a significant negative effect on attainment, this might then be scaled to be a future large-scale RCT.

In the autumn term of 2014/15, the developers will work with three secondary schools to develop an intervention based on key principles for pedagogy, and exemplar curriculum and assessment materials, for English and Mathematics at Year 7. The principles and exemplars will be based on the existing research literature. The work with three schools will involve intensive cross-school collaborative work with groups of staff from the English and Mathematics departments. To ensure capacity and quality, the three participant schools will be rated by Ofsted as at least ‘Good’, preferably ‘Outstanding’, and have some experience of mixed attainment practice. The developers will be responsible for ensuring effective progress and production of the final materials to support the intervention. The intervention pilot will extend throughout the school year, with on-going engagement, support and monitoring from the research team.

The application of the intervention will involve presentation and application of the key pedagogic principles (see below for elaboration). This will be facilitated by intensive¹ workshops which a) outline and justify² the principles to be applied; and b) provide time, space and guidance for Year 7 mathematics and English teachers to design appropriate grouping approaches, support to pupils, and curriculum, for application of the principles in their own school context. There may need to be buy-out/replacement costs for all the teachers concerned.

An additional question to be explored in the pilot phase is, what would enable schools to take up heterogeneous (‘mixed attainment’) grouping? This will be addressed via interviews with teachers from Mathematics and Science Departments, and representatives from SLT, within those schools involved in both intervention pilots (Best Practice in Setting and Best Practice in Mixed Attainment Grouping).

RCT

The intervention will then be applied in English and mathematics lessons for the Year 7 pupil cohort in 10 secondary schools in a small-scale RCT (10 treatment schools, 10 control schools: 20 in total), in 2015/16. As with the ‘best practice in setting’ intervention (Intervention A³), this would be extended to the same cohort of students the following year as they progress to Year 8, hence applying the treatment across two years. This ‘mini-RCT’ period would include further formative work on the intervention, and testing the feasibility of running a future large scale RCT.

¹ Minimum six days involvement for each key teacher in the pilot study, with additional coaching / critical friend support in school and some school time allocated for teachers to work together. It may be that less time needs to be committed by teachers in the intervention, albeit it is important to note the research evidence on necessary time commitments for effective CPD.

² According to research evidence (including that from the EEF Toolkit)

³ A separate protocol for this is available on the EEF website

KCL Intervention

The precise shape and content of the principles and supporting illustrative materials underpinning the intervention will be developed via the collaborative work with schools. Development work will begin with a mini-workshop, involving select invited schools practicing mixed attainment, and some interested in mixed attainment. Research evidence and existing good practice will be presented, facilitating discussion and development of the proposed shape and content of the intervention. However, the intervention principles and supporting materials will be informed by the existing literature on best practice in heterogeneous grouping and differentiation, including Cooper's (2011) five imperatives for best practice in mixed attainment teaching and learning. Indicatively, the intervention includes the offer and presentation of:

- Principles to be applied in grouping pupils
- Principles to be applied across groups
- Exemplar materials to illustrate and model best practice in heterogeneous grouping, and differentiation in the curriculum. Including: a briefing on different pupil grouping methods and their appropriate application, exemplar lessons, exemplar handouts, and activities that support pupils to engage indifferent grouping approaches
- Feedback from peer/research team observations of classroom practice.

These will be communicated via workshops geared to supporting practitioners to understand the principles, and to begin to plan their application in their own school contexts; and via discussion and observation feedback on classroom practice.

Agreement and active support from the headteacher will also be a vital criterion for school inclusion in the treatment group.

The principles are operationalised in instructions for participating schools, which will be incorporated in a memorandum of understanding between the schools, KCL and NFER. Schools participating in the best practice in grouping students – mixed attainment intervention in 2015-17 agree to the following approaches to teaching and learning.

Organising classes

1. Schools should allocate students to Year 7 classes primarily on the basis of their Key Stage 2 National Curriculum results in English and mathematics available in July, to ensure a broad range of attainment in each class.⁴
2. Schools should help the KCL team by:
 - i) Facilitating a questionnaire survey of all Year 7 students in autumn 2015 and all Year 8 students in summer 2017 (questionnaire provided by the KCL team)
 - ii) If requested, facilitating the researchers to interview a small sample of Year 7 and Year 8 students

⁴ Likewise, students who join Year 7 later than the beginning of the academic year should be allocated to classes according to their National Curriculum Key Stage 2 results in English and mathematics if they are available, or according to their results in other tests, gathered at the earliest opportunity.

- iii) Facilitating testing of English and mathematics progress (tests provided by NFER) to Year 8 students in summer 2017.
- 3. Two Year 7 English and two Year 7 mathematics teachers⁵ should attend regional professional development workshops⁶ on best practice in mixed attainment (provided by the project).

High expectations

- 4. Teachers should develop and maintain high expectations for the English and mathematics attainment of all students relative to their prior attainment – but regardless of their social backgrounds or characteristics.
- 5. When offering praise, teachers' comments should be task-orientated, focusing on what the student did in order to produce a piece of work (e.g. strategy and effort) rather than 'ego-orientated', avoiding a focus on what the piece of work might indicate about their attributes (e.g. ability). Teachers' comments on students' work should state specifically what went well, and then specifically what students should do to improve ('even better if...'). Teachers should actively encourage their students to use this approach to praise too.
- 6. To avoid distracting students from formative feedback, teachers should minimise provision of grades, and prioritise comments instead.

Differentiation and within-class grouping

- 7. Teachers should develop their schemes of work and plan their lessons on the basis differentiation and high expectations for all.
- 8. Teachers should use the results of assessment completed before or during a unit of work to inform teaching and learning during the unit of work, including for the grouping of students.
- 9. Teachers should have an explicit rationale for any grouping of students during English or mathematics lessons, to ensure fitness for purpose.
- 10. Teachers should avoid creating groups in which only students with similar attainment are represented.
- 11. Teachers should encourage all individuals to contribute to group work by monitoring their discussions, by asking different group members to feed back to the class on their group's work and by offering praise where appropriate.
- 12. In particular, teachers should ensure that students take turns to act as 'explainers' and as 'listeners' in group or whole-class discussions.

⁵ Where possible to include the Head of Mathematics and the Head of English.

⁶ The project will provide three full days of CPD and three twilight sessions, in addition to peer-observation and in-school collaborative work.

3 NFER Evaluation plan

3.1 Research questions

The primary research questions are:

1. Can secondary schools be recruited to a mixed attainment RCT?
2. What are the barriers to schools adopting a mixed attainment approach?

In addition, students will be tested to ensure that mixed attainment grouping does not result in a significant drop in attainment in mathematics and/or English. KCL will also be administering surveys that measure self-confidence in mathematics and English.

NFER will carry out a light-touch process evaluation that focuses on the training given to schools, the ease of and barriers to implementation and how scalable the intervention is. The process evaluation will ascertain what aspects of practice are different 'on-the-ground' between intervention and control schools.

3.2 Overall design

3.2.1 Introduction

This mixed attainment grouping trial (Intervention B) will start in September 2015 and will run until November 2017. The trial will be designed, conducted and reported to CONSORT standards (<http://www.consort-statement.org/>) and registered on <http://www.controlled-trials.com/>.

3.2.2 Overview of design

The evaluation will start with a pilot in academic year 2014/15. The main intervention will span the following two academic years. We expect a lag between implementation of mixed attainment grouping and then impact on pupils, hence testing is only being proposed in the second year of the main trial (see Table 1 below).

Table 1 Overview

Year 1	Year 2	Year 3
2014/15	2015/16	2016/17
Application of pilot interventions to three schools	Intervention introduced to year 7 pupils in 10 schools	Intervention continues. Year 8 pupils tested (summer 2017) to explore impact of two years' practice (during years 7 and 8)

3.3 Impact evaluation

3.3.1 Eligibility and recruitment

The population for this trial will be all state-funded English secondary schools. It is envisaged that most will presently employ mixed attainment grouping for one or both key stage 3 English and mathematics. However, to support recruitment any school will be eligible to take part regardless of their prior grouping arrangements. Since information on schools' grouping arrangements is not routinely available on school-level datasets, schools will need to complete a proforma at recruitment stage indicating the details of their grouping policy.

Following school recruitment, all liaison with schools will be carried out by KCL. Schools will need to sign an MoU and complete a proforma about existing grouping practices. Schools will also need to supply a list of future year 7 pupil names, DOBs and UPNs after randomisation. The DfE co-signed letter '*Provision of UPNs for research funded by the Education Endowment Foundation*' will be used for this purpose.

3.3.2 Randomisation

Randomisation will take place at the school-level. Randomisation will be carried out by a statistician at NFER using a full syntax audit trail.

The timing of random allocation of schools will be critical. Randomise too early and this does not give enough time to recruit schools. Randomise too late and this does not give schools enough time to implement the logistics of mixed attainment grouping; which involve pupil and teacher allocation to groups and rewriting schemes of work/curricula. Changing the way pupils are grouped or teachers are allocated during the school year would be very disruptive so it will be important to have changes to these strategies in place before the school year starts. Randomisation will be in June 2015. Information about participating schools will be collected by NFER after randomisation. This will include: UPNs, names and dates of birth for pupils in years 7.

In order to keep the control schools engaged with the evaluation they will receive £1000 at the end of the trial, once they have completed the year 8 tests. The payment will be administered by KCL.

3.3.3 Outcomes

While this is not a fully powered trial, testing will take place in year 8 after two years of the intervention to ensure that mixed attainment grouping does not result in a significant drop in attainment in mathematics and/or English⁷.

⁷ This will be important to establish as it will inform future decisions about whether to take the intervention to a full efficacy trial.

For a high-level structural intervention such as this, it is important that the chosen tests are as broad as possible and cover the English and mathematics curricula in use at the time. GL Assessment is presently funding the development of their New Progress in English (NPIE) and New Progress in Mathematics (NPiM) tests that will be available for use by summer 2017. Given the curriculum changes planned for September 2014, these tests will be used in preference to existing versions. NPIE for year 8 will consist of two components: spelling, punctuation and grammar (20-25 minutes) and reading comprehension (40-50 minutes). NPiM for year 8 will also consist of two components: mathematical skills and concepts (60 minutes) and mental mathematics (15 minutes). NPIE and NPiM can each be sat in a single session; they do not have to be split.

NFER will take responsibility for collecting and delivering NPIE and NPiM in paper form.

Self-confidence will be measured by KCL using a pupil survey at the start of year 7 in September 2015 and at the end of year 8 in summer 2017.

3.3.4 Sample size

The size of this pilot trial was determined by the need to run it in enough schools to demonstrate that recruitment to a larger trial would be possible. In addition, it is powered to detect a moderate effect size (in either direction) to inform decisions about whether to proceed and how large a future trial should be.

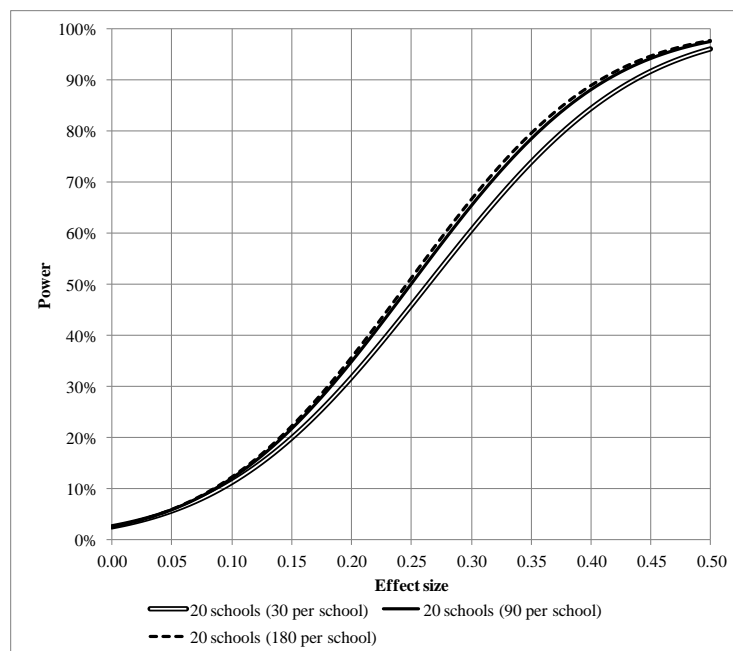
NFER will randomly select 60 pupils from the year 8 school roll from each of the 20 schools. Half of the pupils will sit the mathematics test and half will sit the English test. This option has the benefit of placing the minimum burden on schools in terms of the number of pupils affected, while still providing sufficient power. Sampled pupils will be required to be out of their normal lessons for more than one period but less than two. Tests will be administered by NFER. Test administrators play a key role in ensuring that all tests are administered the same way in all schools; they also help with response rates and with minimising the burden placed on schools.

Schools have the option to request test papers for the entire cohort, albeit these additional test papers will not be externally assessed.

3.3.5 Power calculations

Power calculations assume the same parameters for intervention A (intra-cluster correlation of 0.15 (lowered from 0.2 through the use of key stage 2 as a covariate); correlation between key stage 2 and year 8 test of 0.7 and average cohort size of 180. Figure 1 demonstrates how the power is very similar for a random sample of 60 (30 for each of English and maths) in each school or for sampling more. This pilot trial will therefore randomly select 30 pupils from the cohort to take an English test and 30 others to take a maths test.

Figure 1 Power curves for 10 schools in each group



3.3.6 Analysis

Intention-to-treat analysis of year 8 tests will initially analyse school means as there will not be enough schools to use a multi-level model. Further methods will be explored to maximise the power of the analysis and deal properly with the hierarchical nature of the data⁸. Analysis will use key stage 2 baseline data as a covariate in the model. A similar approach will be used on the self-confidence measure.

3.4 Process evaluation

The aims of the process evaluation are to:

- assist in decision making as to whether the approach is amenable to full trial
- understand the difficulties secondary schools have in introducing and implementing a mixed attainment approach
- identify how these barriers can be overcome, and how a mixed attainment approach can be introduced and implemented effectively in secondary schools.

We would investigate these aims through a light-touch evaluation process, reflecting the early development phase of the work. The process evaluation will involve three main strands of activity spread across three academic years, as detailed below.

⁸ Note that the power calculations are premised on analysis at the pupil-level within a multi-level structure. Analysing at the school level reduces power below a useful level.

Table 2: Overview of research strands associated with the process evaluation

	Year 1 (2014/15) (Pilot year)	Year 2 (2015/16)	Year 3 (2016/17)
3.4.1 Interviews with KCL team	✓	✓	✓
3.4.2 Attend training/briefing events for schools	✓	✓	
3.4.3 Telephone interviews with Heads of English and Mathematics	✓	✓	✓

Further detail on each strand is provided below.

3.4.1 Interviews with KCL team (spring term 2015)

We will Interview up to two members of the KCL team to understand the mixed attainment approach being developed. As part of the interviews we will develop an overall Theory of Change (ToC) setting out foci and aims, inputs and resources, outputs in terms of activities and participation, and desired outcomes (short, medium and longer-term). We will agree this overall ToC with EEF and KCL. This will ensure a common framework for the evaluation and identify common desired outcomes. The ToC will be important for understanding the mechanisms leading to change. It will be reviewed in years 2 and 3 and updated as necessary to reflect any modifications made to the intervention following the pilot year.

3.4.2 Attend training/briefing event for schools (summer term 2015)

We will attend a training/briefing day for schools during the start of the full trial in year 2 (2015/16). Attendance at these sessions will allow us to better understand the nature of the mixed attainment grouping approach and how schools are responding to it.

3.4.3 Telephone interviews with Heads of English and Mathematics (pilot year- summer 2015 and summer terms 2016 and 2017)

We will conduct telephone interviews with the Head of English and Head of Mathematics in both pilot and trial schools. This will involve interviews with both staff in all three pilot schools in year 1 (2014/15). In year 2 (2015/16), we will interview staff in both roles from a sample of five randomly selected intervention schools. We will then follow up with the same five schools a year later (2016/17) to gain a longitudinal perspective of how the intervention is progressing. Should any of the schools need to drop out of the follow-up interviews (e.g. due to staff illness or an Ofsted inspection), replacement schools will be randomly selected from the intervention arm. The telephone interviews will last for about 30 minutes and will explore:

- If and how teachers have responded to the intervention, including evidence of changes in behaviour/activities
- The extent to which participating teachers are following the prescribed guidance
- Respondents' views on the conditions required for success and the extent to which the intervention is scalable
- Any barriers to mixed attainment grouping, and how, if at all, these have been overcome
- Perceived outcomes for learners, and how, if at all, these differ to learners in set attainment groups
- Unintended consequences, positive or negative.

4 Reporting

NFER will provide termly progress reports to EEF. We will prepare a report of the overall evaluation findings to CONSORT standards by November 2017. This will include findings from the impact evaluation (attainment and attitudinal pupil outcome measures) together with the findings from the process evaluation.

5 Timeline

The pilot intervention will commence in September 2014 and the RCT will commence in September 2015. The primary attainment outcomes will be captured through testing in summer 2017.

5.1 Overall timeline

Month	Activity
May 2014	Inception meeting between EEF, KCL and NFER
May-July 2014	KCL recruit pilot schools; consent
Sept 2014 – July 2015	Pilot schools implement mixed attainment grouping approach. Target pupils are in year 7
May-June 2015	Telephone interviews with Heads of English and Mathematics in pilot schools
June 2015	NFER and KCL complete recruitment of pilot trial schools; NFER randomise schools
July 2015	Attend launch training/briefing event for intervention schools
September 2015	Consent and collection of pupil names, DOBs and UPNs
September 2015 – July 2016	Trial schools implement mixed attainment grouping approach. Target pupils are in year 7 Obtain Key Stage 2 results for all pupils
May-June 2016	Telephone interviews with Heads of English and Mathematics
September – Dec 2016	Continue to implement mixed attainment grouping approach Target pupils are in now year 8
May-June 2017	Telephone interviews with Heads of English and Mathematics
June/July 2017	Administer tests to schools
November 2017	Submit draft report

6 Personnel, roles and responsibilities

The project will be directed by Dr. Ben Styles at NFER, and led and managed on a day-to-day basis by Palak Mehta at NFER and she will also oversee the impact evaluation. Michael Neaves in NFER's Research and Product Operations Department will coordinate NFER test administrators and oversee the dispatch and collection of the tests to schools. Dr. Julie Nelson will oversee the process evaluation, supported by an experienced researcher.

NFER's data protection policy is available at: <http://www.nfer.ac.uk/nfer/about-nfer/code-of-practice/nfercop.pdf>.

In setting out the roles and responsibilities for this trial, the NFER will draw up a Data Sharing Agreement with KCL. This will include a description of the nature of the data being collected by KCL and NFER and how it will be passed between them. In

addition, the NFER, EEF and KCL will need an MoU with schools, explaining the nature of the data being requested of schools, how it will be collected, and how it will be passed to and shared with all the organisations involved.

7 Risks

Risk	Assessment	Countermeasures and contingencies
Insufficient schools recruited to the study	Likelihood: high Impact: high	Timescale could be revised.
School attrition	Likelihood: moderate Impact: moderate	Clear information to schools. Attrition will be monitored and reported according to CONSORT guidelines.
Intervention is not implemented well	Likelihood: low Impact: low	Clear information to schools, and initial meeting between schools and KCL, explaining the principles of the trial and expectations.
Delays in training sessions and commencing any organisational changes in schools	Likelihood: moderate Impact: low	Agree a clear timetable, with parameter windows, with the project team up front. Plan evaluation and testing timetable to allow enough time for all schools in the sample to have received training and implemented aspects of the best practice approach.
Admin data required not available or supplied in incorrect format	Likelihood: low Impact: low	Data sharing procedures will be agreed in advance with KCL.
Day-to-day trial management required by NFER	Likelihood: low Impact: low	Experienced KCL team unlikely to require support. Request from EEF that the RCT evaluator role is limited to checking the design, randomising and conducting an independent analysis of the results.
Researchers lost to project due to sickness, absence or staff turnover	Likelihood: low/moderate Impact: moderate	NFER has a large research department with numerous researchers experienced in evaluation who could be redeployed. Senior staff can stand in if necessary.
Project does not follow correct trial protocols	Likelihood: low Impact: high	Shared and agreed protocol agreement with KCL and EEF. Provision of clear guidance and protocols for distribution to all schools.