The effects of grouping students by academic attainment on educational outcomes in secondary schools

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TITLE OF THE REVIEW

The effects of grouping students by academic attainment on educational outcomes in secondary schools: a systematic review

BACKGROUND

The grouping of students by their previous academic attainment for the purposes of teaching is a widespread practice in secondary or high schools and can take several forms. **Streaming** describes the practice of grouping students according to their prior attainment across all or most subjects, such that students are taught in the same, streamed groups for all lessons. **Setting** refers to a system where students are organised by prior attainment only for certain subjects, most typically maths and English. In this approach, students may be undifferentiated for most subjects but organised by prior attainment into sets for mathematics, English or another particular subject. **Tracking** is a term most commonly used in the US and refers to both streaming and setting. **Within-class grouping** refers to the practice of organising students into similar groups by prior attainment within classes. By contrast, **mixed-attainment teaching** describes the practice where schools specifically organise classes to ensure that each includes students with a range of prior attainment levels.

Advocates of approaches that organise students by prior attainment maintain that they enable teachers to be more effective and efficient as they can adapt instruction to the needs of a diverse student body; providing more complex and challenging material to high achievers and more appropriately-paced support to lower achievers (Sukhnandan and Lee, 1998). Critics of the practice have drawn attention to the negative effects that this can have on low-attaining students. While recognising that attainment grouping can lead to small positive effects for high-attaining students, it is claimed that this is at the expense of more significant negative effects for low-attaining students who tend to be exposed to lower expectations and to have less access to better resources, higher quality instruction and more experienced teachers. Within this, a key concern has been with the risk that students allocated to low-attainment groups will experience a reduction in self-confidence and that this can, in turn, reduce motivation and lead to disengagement. This is especially problematic because it has been shown that pupils from disadvantaged backgrounds and particular ethnic groups tend to be over-represented in these low attainment groups, leading to a potential 'double disadvantage'.

In contrast, mixed-attainment teaching is believed to address many of these negative social consequences associated with attainment grouping. Moreover, it is felt to reduce inequalities in education and promote equality of opportunity by avoiding students being labelled and allocated to low-attainment groups that they will find increasingly difficult to move out of. Rather, mixed-attainment teaching is believed to help ensure that all students have access to the same teachers, same core curriculum and range of resources. However, advocates of

attainment grouping claim that mixed-attainment teaching is inefficient and is demanding on teachers who need to spend more time preparing for a much wider range of needs within their class. Moreover, not only is it believed that mixed-attainment teaching holds back high-achieving students, as teachers need to pace their instruction in relation to the majority of the class, but it is also felt that it overlooks the particular needs and specific demands of low-achieving students.

Most reviews of the existing evidence would appear to suggest that there is little evidence that different forms of between-class attainment grouping are effective overall compared to mixed-attainment teaching (Slavin, 1987, 1990; Harlen and Malcolm, 1997; Steenbergen-Hu *et al.*, 2016), although some have suggested that it may lead to small positive gains for all students (Kulik and Kulik, 1982, 1987). There is, however, stronger and more consistent evidence that the more flexible approach associated with within-class grouping is associated with small positive effects (Lou *et al.*, 1996; Puzio and Colby, 2010; Steenbergen-Hu *et al.*, 2016).

Although the overall view would appear to be that attainment grouping has no beneficial effect on students' achievement compared to mixed-attainment teaching, on average, there is a stronger belief that it tends to provide a small positive boost to high-achieving students whilst having a negative impact on low-achievers (Gamoran, 1992; Sukhnandan and Lee, 1998; Kutnick *et al.*, 2005; Higgins *et al.*, 2013). There is also some evidence that specific grouping of 'gifted and talented' students may also have a positive effect for this group (Steenbergen-Hu *et al.*, 2016). Although there have been many qualitative studies exploring the effects on students of being allocated to low sets/streams (Boaler and Wiliam, 2001), the precise nature of these effects on educational outcomes is less clear. Moreover, there is a tendency for boys and students from lower socio-economic groups and some minority ethnic groups to be disproportionately allocated to low attainment groups (Gillborn and Youdell, 2000; Kutnick *et al.*, 2005; Dunne *et al.*, 2007). However, it is not known whether their experience within these groups, once allocated to them, tends to also have a disproportionate effect on their academic progress compared to their peers in these groups (Kutnick *et al.*, 2005).

OBJECTIVES

This systematic review will seek to answer the following key questions:

1. What are the effects of grouping by attainment (whether through streaming, setting or within-class grouping) and mixed-attainment teaching on educational outcomes among secondary/high school students?

2. Does attainment grouping and mixed-attainment teaching have differential effects on students' educational outcomes in relation to their: initial levels of achievement; gender; socio-economic background; and ethnicity?

3. Does attainment grouping and mixed-attainment teaching have effects on the students' self-confidence, relationships and engagement with school, attitudes to education and aspirations for the future?

4. Does attainment grouping and mixed-attainment teaching have differential effects on students' self-confidence, relationships and engagement with school, attitudes to education and aspirations for the future in relation to their: initial levels of achievement; gender; socio-economic background; and ethnicity?

5. Do the different approaches to attainment grouping and mixed-attainment teaching have differential effects on educational and social outcomes for different academic subjects?

EXISTING REVIEWS

There are no existing systematic reviews published on this topic by the Campbell Collaboration, Cochrane Collaboration or the EPPI-Centre, University College London. A recent review of reviews identified 13 meta-analyses of studies focusing on the effects of 'ability grouping', however these are all dated with the most recent being published in 1993 (Steenbergen-Hu *et al.*, 2016). The one exception is the meta-analysis by Puzio and Colby (2010). However, this limited its focus to the effects of within-class grouping.

Whilst there are some more recent narrative reviews published (Kutnick *et al.*, 2005; Higgins *et al.*, 2013), these were not based on systematic searching of the literature and have not included a meta-analysis of the effects found from available studies.

INTERVENTION

Any within-school intervention that includes an explicit element involving the organisation of students by academic attainment will be included in this review. This will include interventions based on streaming and setting and also within-class grouping by prior attainment. It will also include any interventions that have explicitly focused on organising students into mixed-attainment groups.

POPULATION

This systematic review will restrict its focus to interventions undertaken in schools addressing the 'secondary' years of compulsory schooling (usually 'secondary schools' or 'high schools'). The precise age range will differ slightly between countries but will fall within the range of students aged 11-18.

OUTCOMES

The primary outcomes for the review will be educational progress and achievement, typically measured through school-administered tests and examinations but also, possibly, through particular educational and cognitive tests administered by research teams.

Secondary outcomes will focus on those social outcomes that are believed to reflect adverse and unintended effects of attainment grouping. These will include: self-confidence, attitudes to education, relationships and engagement with school and aspirations for the future.

STUDY DESIGNS

Studies based upon experimental designs will be included. Given the nature of the intervention, these will typically be cluster randomised controlled trials but may possibly include some simple randomised controlled trials. In addition, quasi-experimental designs will be included if the intervention and control groups are shown to be sufficiently well-matched at pre-test. Studies without a matched control group will be excluded.

Given that the focus of the review is to estimate the effectiveness of different forms of attainment grouping and mixed-attainment teaching, qualitative studies will also be excluded. However, the findings of relevant qualitative studies will be summarised in the narrative background review of the key issues to be included and will also be referred to, as appropriate, in helping to contextualise and interpret the findings from the systematic review and meta-analysis.

For illustration, one such study that may be included in this review is a randomised controlled trial reported by Marascuilo and McSweeney (1972). This study, conducted with students in Grade 8 and 9 in schools in Berkeley, California, ran for two years and involved students being randomly assigned either to classes organised into three levels by prior attainment or to mixed-attainment classes. This was done for one subject – social studies – and students were tested prior to assignment and again at the end of the two-year period using teacher-made and standardised tests. The study found an overall effect on academic attainment in social studies in favour of those in mixed-attainment classes (d = -.22).

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REVIEW AUTHORS

Lead review author: The lead author is the person who develops and co-ordinates the review team, discusses and assigns roles for individual members of the review team, liaises with the editorial base and takes responsibility for the on-going updates of the review.

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ROLES AND RESPONSIBILITIES

Connolly will have overall responsibility for the design, conduct, analysis and write up of the systematic review. The team will have regular meetings to coordinate progress and ensure that all members contribute to all aspects of the review. However, and within this, the particular expertise and lead contributions of team members will be as follows:

- Content: Archer, Hodgen, Francis, Mazenod, Taylor, Tereshchenko.

- Systematic review methods: Connolly, Craig, Miller.
- Statistical analysis: Connolly, Miller.
- Information retrieval (searching, screening and data extraction): Connolly, Craig and Miller.

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POTENTIAL CONFLICTS OF INTEREST

The authors are members of a research team, led by Francis, that is developing and testing the effectiveness of two interventions involving the organisation of students by attainment in England, funded by the Education Endowment Foundation (2014 – 2017). The first involves the development of best practice in setting and is being evaluated through a cluster randomised trial with 120 secondary schools. The second focuses on developing and piloting a model of best practice in mixed-attainment teaching and is being evaluated through an efficacy test comprising a cluster randomised controlled trial with 15 secondary schools. Further details can be found at: http://www.ucl.ac.uk/ioe/departments-centres/centres/groupingstudents

PRELIMINARY TIMEFRAME

Note, if the protocol or review are not submitted within 6 months and 18 months of title registration, respectively, the review area is opened up for other authors.

- Submission date for draft protocol: 30 June 2017
- Submission date for draft review: 30 June 2018

AUTHOR DECLARATION

Authors' responsibilities

By completing this form, you accept responsibility for preparing, maintaining, and updating the review in accordance with Campbell Collaboration policy. The Coordinating Group will provide as much support as possible to assist with the preparation of the review.

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Form completed by: Paul Connolly **Date:** 10 March 2017