

---

## Technical Appendix

# Setting or streaming<sup>i</sup>

Negative impact for very low cost, based on moderate evidence.

---



-1

## Definition

Pupils with similar levels of current attainment are grouped together either for specific lessons on a regular basis (setting or regrouping) or as a whole class (streaming or tracking). The assumption is that it will be possible to teach more effectively or more efficiently with a narrower range of attainment in a class.

Search Terms: ability grouping, gifted and talented, within class ability grouping, setting, streaming, tracking

## Evidence Rating

There are six meta-analyses suggesting that setting or streaming appears to benefit higher attaining pupils and be detrimental to the learning of mid-range and lower attaining learners. Only one of these has been conducted in the last ten years. Most of the designs of the included studies have limited causal inference. On average, setting or streaming does not appear to be an effective strategy for raising the attainment of disadvantaged pupils, who are more likely to be assigned to lower groups. Low attaining learners fall behind by one or two months a year, on average, when compared with the progress of similar students in classes with mixed ability groups. It appears likely that routine setting or streaming arrangements undermine low attainers' confidence and discourage the belief that attainment can be improved through effort. Research also suggests that ability grouping can have a longer term negative effect on the attitudes and engagement of low attaining pupils. It should be noted that there are some exceptions to this average, where setting or streaming has benefitted all learners.

Overall the evidence is rated as moderate. However, the majority of the evidence comes from the USA.

## Cost Information

Ability grouping is an organisational strategy which has few, if any, financial costs associated with it. Additional resources may be needed to support different groups. Overall the costs are estimated as very low.

## References

1. *Attfield, R.*  
Developing a Gifted and Talented Strategy: Lessons from the UK experience Reading (2009)
2. *Boaler, J.*  
Promoting 'relational equity' and high mathematics achievement through an innovative mixed-ability approach.  
British Educational Research Journal 34.2 pp 167-194.  
(2008)
3. *Collins, C. A., & Gan, L.*  
Does Sorting Students Improve Scores? An Analysis of Class Composition.  
(No. w18848). Cambridge, MA: National Bureau of Economic Research.  
(2013)
4. *Dunne, M., Humphreys, S., Dyson, A., Sebba, J., Gallannaugh, F., & Muijs, D.*  
The teaching and learning of pupils in low-attainment sets.  
Curriculum Journal, 22(4), 485-513.  
(2011)
5. *Duflo, E., Dupas, P., Kremer, M.*  
Peer Effects, Teacher Incentives, and the Impact of Tracking: Evidence from a Randomized Evaluation in Kenya  
American Economic Review 101 (5): pp 1739-1774.  
(2011)
6. *Gutierrez, R., & Slavin, R. E.*  
Achievement Effects of the Nongraded Elementary School: A Retrospective Review.  
(1992)

- 
7. *Hallam, S., & Ireson, J.*

Secondary school pupils' satisfaction with their ability grouping placements.  
British Educational Research Journal, 33(1), 27-45.

(2007)

8. *Hanushek, E. A. & Woessmann, L.*

Does educational tracking affect performance and inequality? Differences-in-differences evidence across countries.

CESifo working papers, No. 1415.

(2005)

9. *Ireson, J., Hallam, S. & Plewis, I.*

Ability grouping in secondary schools: Effects on pupils' self-concepts.

British Journal of Educational Psychology 71. 2, pp 315-326.

(2001)

10. *Ireson, J., Hallam, S., Mortimore, P., Hack, S., Clark, H. & Plewis, I.*

Ability grouping in the secondary school: the effects on academic achievement and pupils' self-esteem.

Paper presented at the British Educational Research Association Annual Conference, University of Sussex at Brighton, September 2-5 1999.

(1999)

11. *Kulik C-L.C & Kulik J.A.*

Effects of Ability Grouping on Secondary School Students: A Meta-Analysis of Evaluation Findings

American Educational Research Journal, 19 (3), 415-428.

(1982)

12. *Kulik C-L.C & Kulik J.A.*

Effects of Ability Grouping on Elementary School Pupils: A Meta-Analysis.

Annual Meeting of the American Psychological Association.

(1984)

13. *Kulik, J.A., & Kulik, C.L.C.*

Effects of ability grouping on student achievement.

Equity and Excellence in Education, 23(1-2), 22-30.

(1987)

14. *Kulik, J.A.*

An Analysis of the Research on Ability Grouping: Historical and Contemporary Perspectives.  
The National Research Center On The Gifted And Talented.

(1992)

15. *Lou, Y., Abrami, P. C., Spence, J. C., Poulsen, C., Chambers, B., & d'Apollonia, S.*

Within-class grouping: A meta-analysis.  
Review of Educational Research, 66(4), 423-458.

(1996)

16. *Marks, R.*

'The Blue Table Means You Don't Have a Clue': the persistence of fixed-ability thinking and practices in primary mathematics in English schools  
FORUM, 55(1), 31-44.

(2013)

17. *Puzio, K., & Colby, G.*

The Effects of within Class Grouping on Reading Achievement: A Meta-Analytic Synthesis.  
Society for Research on Educational Effectiveness.

(2010)

18. *Slavin, R. E.*

Achievement effects of ability grouping in secondary schools: A best-evidence synthesis.  
Review of educational research, 60(3), 471-499.

(1990)

## Summary of effects

Meta-analyses	Effect size	FSM effect size	
Gutierrez, R., & Slavin, R. E. (1992)	0.34	-	(mixed age attainment vs non-graded classes)
Kulik C-L.C & Kulik J.A. (1982)	0.1	-	(on secondary pupils)
Kulik C-L.C & Kulik J.A. (1984)	0.1	-	(on elementary/primary pupils)
Lou, Y., Abrami, P. C., Spence, J. C., Poulsen, C., Chambers, B., & d'Apollonia, S. (1996)	-0.12	-	(on low attainers)
Puzio, K., & Colby, G. (2010)	0.22	-	
Slavin, R. E. (1990)	-0.06	-	(on low attainers)
Single Studies			
Indicative effect size (on low attainers)			

---

## Meta-analyses abstracts

### 6

Gutierrez, R., & Slavin, R. E. (1992)

A nongraded elementary program is one in which children are flexibly grouped according to performance level, not age, and proceed through the elementary school at their own rates. Popular in the 1950s, 1960s, and early 1970s, the nongraded plan is returning today. This article reviews research on the achievement effects of nongraded organization. Results indicated consistent positive achievement effects of simple forms of nongrading generally developed early: cross-grade grouping for one subject (median ES = + .46) and cross-grade grouping for many subjects (median ES = + .34). Forms of nongrading making extensive use of individualization were less consistently successful (median ES = +.02). Studies of Individually Guided Education (IGE), which used nongrading and individualization, also produced inconsistent effects (median ES = + .11). The article concludes that nongraded organization can have a positive impact on student achievement if cross-age grouping is used to allow teachers to provide more direct instruction to students but not if it is used as a framework for individualized instruction.

### 11

Kulik C-L.C & Kulik J.A. (1982)

This article reports results from a meta-analysis of findings from 52 studies of ability grouping carried out in secondary schools. In the typical study the benefits of ability grouping were small but significant on achievement examinations—an average increase of one tenth standard deviations on examination scores, or an increase from the 50th to the 54th percentile for the typical student in a grouped class. The size of achievement effect differed in different types of studies of grouping however. Studies in which high ability students received enriched instruction in honors classes produced especially clear effects, for example, while studies of average and below average students produced near-zero effects. The benefits of grouping were also clear in the area of student attitudes towards the subjects they were studying than did students in ungrouped classes.

### 12

Kulik C-L.C & Kulik J.A. (1984)

A meta-analysis of finding from 31 separate studies showed that ability grouping has significant positive effects on the academic performance of elementary school children. The benefits of grouping

---

tended to be small in the typical study of achievement—an increase from the 50th to the 58th percentile for the typical student in a grouped class. One subgroup of studies however produced especially clear effects. In this type of study students of high ability or gifted students were put into special classes in which they received enriched instruction. Studies of this type usually reported significant results and usually reported effects on achievement were moderate in size. Meta-analysis also showed that ability grouping has trivially small effects on the self-concepts of elementary school pupils.

## 15

Lou, Y., Abrami, P. C., Spence, J. C., Poulsen, C., Chambers, B., & d'Apollonia, S. (1996)

The effects of within-class grouping on student achievement and other outcomes were quantitatively integrated using two sets of study findings. The first set included 145 effect sizes and explored the effects of grouping versus no grouping on several outcomes. Overall, the average achievement effect size was +0.17, favoring small-group learning. The second set included 20 effect sizes which directly compared the achievement effects of homogeneous versus heterogeneous ability grouping. Overall, the results favored homogeneous grouping; the average effect size was +0.12. The variability in both sets of study findings was heterogeneous, and the effects were explored further. To be maximally effective, within-class grouping practices require the adaptation of instruction methods and materials for small-group learning.

## 17

Puzio, K., & Colby, G. (2010)

Although some literacy researchers consider grouping students for reading instruction to be a proven educational practice, the support for this belief is lacking from a research synthesis perspective. With this idea in mind, Slavin comments in the middle of his review on the effects of grouping: "there is not enough research on within-class ability grouping in reading to permit any conclusions" (Slavin, 1987, p. 320). Because of this, the question of whether "and" how to group students is often cast and answered ideologically rather than empirically. This review attempts to see if the empirical research available can answer either or both of these questions. It will contribute to the literacy field by focusing specifically on reading outcomes for classroom teachers, who instruct a wide variety of students. Informed by previous research on within-class grouping, the following three research questions guide the present study: (1) To what extent does within-class grouping impact student achievement in reading?; (2) For which grade(s) or which students is within-class grouping most or least beneficial?;

---

and (3) Do any moderators, especially those identified by previous research (measurement source, teacher development, and grouping type), help explain this effect?

## 18

Slavin, R. E. (1990)

This article reviews research on the effect of ability grouping on the achievement of secondary students. Six randomized experiments, 9 matched experiments and 14 correlational studies compared ability grouping to heterogeneous plans over periods of from one semester to 5 years. Overall, achievement effects were found to be essentially zero at all grade levels although there is much more evidence regarding Grades 7-9 and 10-12. Results were similar for all subjects except social studies, for which there was a trend favouring heterogeneous placement. Results were close to zero for students of all levels of prior performance. This finding contrasts with those of studies comparing the achievement of students in different tracks, which generally find positive effects of ability grouping for high achievers and negative effects for low achievers, and these contrasting findings are reconciled.