

Technical Appendix

Definition

Block scheduling is one approach to school timetabling in secondary schools. It typically means that pupils have fewer classes (4-5) per day, for a longer period of time (70-90 minutes). The three main types of block schedules found in the research are:

- 4x4 block scheduling: 4 blocks of extended (80–90 minute) classes each day, covering the same 4 subjects each day. Students take 4 subjects over 1 term, and 4 different subjects in the following term.
- A/B block scheduling: 3 or 4 blocks of extended (70–90 minute) classes each day, covering the same 3 or 4 subjects on alternating days. Students take 6 or 8 subjects each term.
- Hybrid: a hybrid of traditional models and 3/4-class-per-day approaches. Students have 5 classes per day, of between 60 and 90 minutes.

Block scheduling and timetabling changes refer to alterations to lessons within the existing length of the school day, rather than approaches which seek to extend the school day or the school year (see the **'Extending School Time'** Toolkit strand for an overview of these other approaches).

Search terms: school timetabling; timetable alternation; block scheduling.

Evidence Rating

There are two meta-analyses published within the last 10 years drawing on a total of 46 studies, which have looked at the quantitative evidence of the impact of timetabling and scheduling changes on students' learning. There are some further correlational studies that investigate this topic. Effects overall tend to be small. Timetabling is mainly an issue for secondary schools, though the time spent on different areas of the curriculum is also relevant at primary level. The research has mainly looked at impact on mathematics, English and science. The small number of underlying studies, the variation in focus and the overall quality of the underlying studies meant that neither meta-analysis reported an overall pooled effect. Overall the evidence is therefore limited.

References

- 1 *Dexter, K. M., Tai, R. H., & Sadler, P. M.*
Traditional and block scheduling for college science preparation: A comparison of college science success of students who report different high school scheduling plans [↗](#)
The High School Journal, 89(4), 22-33
(2006)
- 2 *Dickson K., Bird K., Newman M. & Kalra N. (Abstract ↓)*
Effect of Block Scheduling on Academic Achievement in Secondary Schools: A Systematic Review of Evidence [↗](#)
The Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre), Institute of Education, University of London
(2010)
- 3 *Dostal, J. R.*
Alternative scheduling models and their effect on science achievement at the high school level [↗](#)
Doctoral dissertation, University of Nebraska
(2010)
- 4 *Gruber, C.D. & Onwuegbuzie, A.J.*
Effects of Block Scheduling on Academic Achievement among High School Students [↗](#)
The High School Journal, 84.4, 32-42
(2001)
- 5 *Lewis, C.W., Winokur, M.A., Cobb, R.B., Gliner, G.S. & Schmidt, J. (Abstract ↓)*
Block Scheduling in the High School Setting: A Synthesis of Evidence-Based Research [↗](#)
A report prepared for MPR Associates, Inc., Berkeley, CA
(2005)
- 6 *Trenta, L., & Newman, I.*
Effects of a high school block scheduling program on students: A four-year longitudinal study of the effects of block scheduling on student outcome variables [↗](#)
American Secondary Education, 54-71
(2002)
- 7 *Veal, W.R. & Flinders, D.J.*
How Block Scheduling Reform Effects Classroom Practice [↗](#)
The High School Journal, 84.4 pp 21-31
(2001)
- 8 *Zepeda, S.J. & Mayers, R.S.*
An Analysis of Research on Block Scheduling [↗](#)
Review of Educational Research, 76.1 pp 137-170
(2006)

Summary of effects

Meta-analyses	Effect size	FSM effect size	
Dickson K., Bird K., Newman M. & Kalra N., (2010)	0.11	-	Achievement
	-0.02	-	Mathematics
	0.20	-	Science
Lewis, C.W., Winokur, M.A., Cobb, R.B., Gliner, G.S. & Schmidt, J., (2005)	-0.10	-	Mathematics
	-0.17	-	English
	-0.12	-	Science
Weighted mean effect size	0.00		

The right hand column provides detail on the specific outcome measures or, if in brackets, details of the intervention or control group.

Meta-analyses abstracts

2 Dickson K., Bird K., Newman M. & Kalra N. (2010)

Block scheduling is one approach to school scheduling. It typically means that students have fewer classes (4-5) per day, for a longer period of time (70-90 minutes). There are three main types of block schedule investigated in this review, comprising the following:

- 4 x 4: four blocks of 80–90 minute classes in one day, with students taking four subjects in one term
- A/B: classes of 70-90 minutes each for 3/4 different subjects on every alternating day
- hybrid: five classes per day, between 55 and 90 minutes in length

The in-depth review asks the following: Does block scheduling result in higher levels of student attainment than traditional scheduling? Studies used different measures of academic achievement across different academic subjects. These included test results in Mathematics, English, Science, exam scores or average grade scores across different subjects. Sub-questions were also asked in the in-depth review and these investigated whether the effect of block scheduling varied by type of block schedule and type of subject(s) taught. Only 12 of the 14 studies included in the in-depth review provided the data necessary for statistical meta-analysis to assess the effectiveness of different types of block scheduling on academic achievement. The 12 studies were considered to be of medium weight of evidence and two were considered to be of low weight of evidence, overall, for this review. Where we were able to combine data to produce summary effect sizes, we found that 4 x 4 block scheduling resulted in higher cross-subject achievement than traditional schedules. However, the outcome average cross-subject achievement could conceal worsening performance in some subjects and better performance in others. For single subject outcomes: In Science, A/B block scheduling resulted in higher results than traditional schedules. In Mathematics and English, the evidence was unclear, with studies showing both better and worse results for block scheduling compared with traditional scheduling. There is not conclusive evidence in this review to support the introduction of policy guidance on the use of block scheduling in secondary schools. Findings do not indicate that participating in block schedules would produce negative outcomes for pupils across subjects, but the findings on positive effects are not strong enough to recommend their implementation.

5 Lewis, C.W., Winokur, M.A., Cobb, R.B., Gliner, G.S. & Schmidt, J. (2005)

The purpose of this study was to produce a systematic review and synthesis of evidence based research on the effect of block scheduling on student achievement in United States High-schools. This report provides a brief introduction to block scheduling, chronicles the search strategies used to locate the final literature set, and describes the processes employed to code the studies on outcome, intervention, and methodological criteria using the What Works Clearinghouse (WWC) framework. In addition, findings, conclusions, and recommendations are discussed for the studies that merited inclusion into the block scheduling evidence base.