



## REL Appalachia Ask A REL Response

Educator Effectiveness

December 2018

### Question:

What does the research say about the impact of block schedules on student outcomes in secondary schools?

### Response:

Thank you for your request to our REL Reference Desk regarding evidence-based information about the impact of block scheduling. Ask A REL is a collaborative reference desk service provided by the 10 Regional Educational Laboratories (RELs) that, by design, functions much in the same way as a technical reference library. Ask A REL provides references, referrals, and brief responses in the form of citations in response to questions about available education research.

Following an established REL Appalachia research protocol, we searched for peer-reviewed articles and other research reports on block scheduling. We focused on identifying resources that specifically addressed the effects of block scheduling on academic and nonacademic student outcomes. The sources included ERIC and other federally funded databases and organizations, research institutions, academic research databases, and general Internet search engines. For more details, please see the methods section at the end of this document.

The research team did not evaluate the quality of the resources provided in this response; we offer them only for your reference. Also, the search included the most commonly used research databases and search engines to produce the references presented here, but the references are not necessarily comprehensive, and other relevant references and resources may exist. References are listed in alphabetical order, not necessarily in order of relevance.

### References

Beisinger, K., Crippen, K., & Muis, K. (2008). The impact of block scheduling on student motivation and classroom practice in mathematics. *NASSP Bulletin*, 92(3), 91–208. Abstract retrieved from <https://eric.ed.gov/?id=EJ809061>; full text available at [https://www.researchgate.net/publication/249794496\\_The\\_Impact\\_of\\_Block\\_Scheduling\\_on\\_Student\\_Motivation\\_and\\_Classroom\\_Practice\\_in\\_Mathematics/download](https://www.researchgate.net/publication/249794496_The_Impact_of_Block_Scheduling_on_Student_Motivation_and_Classroom_Practice_in_Mathematics/download)

*From the abstract:* “Results are presented from a mixed-method investigation into the effects of block schedule on student self-efficacy, attitude, and instructional practices within the context of mathematics. Students exposed to block schedule showed no change in attitude toward mathematics, whereas those on a traditional schedule demonstrated a significant decrease. Students on block schedule also made significantly greater gains in self-efficacy. If reformed teacher practice is a goal of transitioning to block schedule, results point to a critical need for professional development.”

Dickson, K., Bird, K., Newman, M., & Naira, K. (2010). *What is the effect of block scheduling on academic achievement? A systematic review*. London, England: Institute of Education, University of London. Retrieved from <https://eppi.ioe.ac.uk/cms/Default.aspx?tabid=2476>

*From the abstract:* “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.”

Gill, A., & Wallacia, W. (2011). Middle school A/B block and traditional scheduling: An analysis of math and reading performance by race. *NASSP Bulletin*, 95(4), 281–301. Abstract retrieved from <https://eric.ed.gov/?id=EJ954279>

*From the abstract:* “The purpose of this quantitative study was to examine whether a difference existed in the percentage performance of students earning a pass/advanced score on the Standards of Learning (SOL) Test in math and reading in Virginia’s Region IV for schools using an A/B block schedule and those using a traditional schedule. The research also examined if the percentage performance by race—Black, Hispanic, and White—differed on the math and reading SOL Test for Region IV in Virginia. Forty-three schools were included in the study—23 block and 20 traditional schools. The percentage performance in math and reading of each school and the percentage performance by race for each school were studied. Analyses of variance and ‘t’ tests were used to examine differences. The ‘t’-test results do not show significant differences in the percentage performance of students earning pass/advanced scores in reading and math in block and traditional schools. Significant differences were shown in the percentage of Black and Hispanic students earning pass/advanced scores on the math and reading SOL Test for Region IV in Virginia. A larger percentage of Black and Hispanic students earned pass/advanced scores in the A/B block-scheduled schools than in the traditional schools.”

Martinez, P., & Holland, G. (2011). Impact of a ninety minute math block schedule on math achievement of middle school students. *American International Journal of Contemporary Research*, 1(2), 44–53. Retrieved from [http://www.aijcrnet.com/journals/Vol\\_1\\_No\\_2\\_September\\_2011/7.pdf](http://www.aijcrnet.com/journals/Vol_1_No_2_September_2011/7.pdf)

*From the abstract:* “The purpose of this study was to examine the difference in the Texas Assessment of Knowledge and skill benchmark test scores between students in a 90-minute consecutive math block and the 90-minute split math block model. Significant differences were found in mean scores for TAKS Math benchmark scores between all students in a 90-minute consecutive math block schedule and a 90-minute split math block schedule. It also found significant differences in mean scores for TAKS Math benchmark scores between ELL students in a 90-minute consecutive math block schedule and a 90-minute split math block schedule. Conclusions were that schedule type had a significant effect on the scores for all students and ELL students. The results of the study provide school administrators with necessary data to determine the type of block model most beneficial for students.”

Murray, G., & Moyer-Packenham, P. (2017). Relationships between classroom schedule types and performance on the Algebra I criterion-referenced test. *Journal of Education*, 194(2), 35–43. Abstract retrieved from <http://eric.ed.gov/?id=EJ1054394>

*From the abstract:* “Public education has options with regard to educational settings and structures. States and school districts may select varying lengths for the school year, the school day, and individual class periods. For example, one option for the length of individual class periods is the schedule type selected to teach mathematics Algebra I classes. In Utah, one measure of students’ achievement is the score on the state’s end-of-level criterion-referenced test (CRT) for Algebra I. The purpose of this study was to examine the relationship between student achievement, as indicated by Algebra I CRT scores, and the schedule type used to deliver Algebra I classes. The schedule types compared in this study were: traditional, trimester 3/3, trimester 2/3, and block A/B. The research questions focused on relationships between the schedule types and student scores on Utah’s CRT for Algebra I. Data were obtained from the Utah State Office of Education and included the scores for over 40,000 students, from over 300 different schools, who took the identical Algebra I CRT at the end of the same school year. Data were also obtained from each school district to determine the schedule type of each participating student. A multinomial logistic regression analysis and a t-test analysis were conducted to determine relationships between Algebra I CRT scores and schedule types. The results indicated significant differences in student achievement based on the schedule type overall and for individual grade levels. Generally, the earlier the grade level, the higher the CRT score. Within individual grade levels, there were statistically significant and non-significant differences. The schedule types that were generally related to higher Algebra I CRT scores were those where students spent more time in the mathematics classroom and where students’ mathematics classes met daily. The results suggest the value of daily time spent in the mathematics classroom and may assist educators when considering options for school structures in mathematics that foster student achievement.”

Ratcliff, N., Pritchard, N., Knight, C., Costner, R., Jones, C., & Hunt, G. (2014). The interaction of school organization and classroom dynamics: Factors impacting student achievement. *Journal of Research in Education*, 24(2), 3–17. Retrieved from <https://eric.ed.gov/?id=EJ1098174>

*From the abstract:* “Research was conducted to determine what impact school organization and classroom dynamics had on student achievement. Results from standardized benchmark tests found no significant differences in scores across all schools and content areas; yet, end of course standardized measures indicated that students in sites employing block scheduling performed significantly lower in all content areas than did their counterparts in traditional settings. Findings suggested that the significant differences in student scores might be due to a dramatic loss of instructional time that was consistently observed in block classes during the last 18 minutes of the instructional period. This loss of instructional time was characterized by a dramatic increase in student behavior problems and student time-off-task.”

Reames, E., & Bradshaw, C. (2009). Block scheduling effectiveness: A 10-year longitudinal study of one Georgia school system’s test score indicators. *Georgia Educational Researcher*, 7(1), n.p. Retrieved from <https://digitalcommons.georgiasouthern.edu/gerjournal/vol7/iss1/2/>

*From the abstract:* “A case study of the effectiveness of high school block scheduling in an urban school system was examined by considering whether the changed schedule resulted in an increase in test scores on several measures such as the Scholastic Aptitude Test (SAT), Advanced Placement Tests (AP), and state mandated graduation examinations. Ten years of data were gathered from the public report card on the state website. In the school system under investigation, student scores on quantitative and verbal Scholastic Aptitude Test (SAT) showed a significant upward trend over 10 years. Over the same 10 years, Advanced Placement Test (AP) passing rates showed an upward development. An upward trend was also found for student scores on the state mandated graduation examinations in all four subject areas: mathematics, language arts, science, and social studies. The authors suggested school systems should consider the impact of block scheduling on student achievement measures.”

Zelkowski, J. (2010). Secondary mathematics: Four credits, block schedules, continuous enrollment? What maximizes college readiness. *Mathematics Educator*, 20(1), 8–21. Retrieved from <http://eric.ed.gov/?id=EJ892414>

*From the abstract:* “This paper posits the position that if higher education and secondary schools wish to increase students’ college readiness, specifically in mathematics and critical thinking skills, continuous enrollment in secondary mathematics is one avenue worth exploring as opposed to increasing mathematics graduation requirements only in terms of Carnegie credits. NAEP-HSTS 2005 and NELS:88 data indicate, respectively, non-continuous enrollment in secondary mathematics results in lower mathematics achievement and decreases the odds of completing a bachelor’s degree. Nationally, schools following 4x4 block schedules (90-minute classes that meet daily for only one semester) were found to have mathematics achievement scores two thirds of one grade-level lower than schools

following a 50-minute year-long mathematics courses. Typical college-bound students who do not take mathematics all four years of high school likely diminish their odds of bachelor degree completion by about 20%.”

### **Additional Ask A REL Responses to Consult**

Ask A REL Mid-Atlantic at Mathematica Policy Research. (2018). *Are 90-minute classes effective for students in alternative educational settings?* Retrieved from [https://ies.ed.gov/ncee/edlabs/regions/midatlantic/askarel\\_54.asp](https://ies.ed.gov/ncee/edlabs/regions/midatlantic/askarel_54.asp)

## **Methods**

### **Keywords and Search Strings**

The following keywords and search strings were used to search the reference databases and other sources:

- (“block schedul\*” OR blocking OR “schedule type”) AND student AND (outcome\* OR achievement)

### **Databases and Resources**

We searched ERIC, a free online library of more than 1.6 million citations of education research sponsored by the Institute of Education Sciences (IES), for relevant resources. Additionally, we searched the academic database ProQuest, Google Scholar, and the commercial search engine Google.

### **Reference Search and Selection Criteria**

In reviewing resources, Reference Desk researchers consider—among other things—these four factors:

- Date of the publication: Searches cover information available within the last ten years, except in the case of nationally known seminal resources.
- Reference sources: IES, nationally funded, and certain other vetted sources known for strict attention to research protocols receive highest priority. Applicable resources must be publicly available online and in English.
- Methodology: The following methodological priorities/considerations guide the review and selection of the references: (a) study types—randomized controlled trials, quasi experiments, surveys, descriptive data analyses, literature reviews, policy briefs, etc., generally in this order; (b) target population, samples (representativeness of the target population, sample size, volunteered or randomly selected), study duration, etc.; (c) limitations, generalizability of the findings and conclusions, etc.
- Existing knowledge base: Vetted resources (e.g., peer-reviewed research journals) are the primary focus, but the research base is occasionally slim or nonexistent. In those cases, the best resources available may include, for example, reports, white papers,

guides, reviews in non-peer-reviewed journals, newspaper articles, interviews with content specialists, and organization websites.

Resources included in this document were last accessed on October 31, 2018. URLs, descriptions, and content included here were current at that time.

This memorandum is one in a series of quick-turnaround responses to specific questions posed by education stakeholders in the Appalachia region (Kentucky, Tennessee, Virginia, and West Virginia), which is served by the Regional Educational Laboratory Appalachia (REL AP) at SRI International. This Ask A REL response was developed by REL AP under Contract ED-IES-17-C-0004 from the U.S. Department of Education, Institute of Education Sciences, administered by SRI International. The content does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.