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## Technical Appendix

# Extending school time<sup>i</sup>

Low impact for moderate cost, based on moderate evidence.

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## Definition

Extending school time is defined in the Toolkit as increasing teaching time in school so as to improve learning outcomes. Research has focused on three main approaches:

- extending the length of the school year;
- extending the length of the school day; and,
- providing additional time for targeted groups of pupils either before or after school.

This summary focuses on extending core school time and the use of targeted before and after school programmes, particularly to support disadvantaged or low attaining pupils.

It does not therefore include extra-curricular activities for enrichment, sports, or other non-academic clubs (see 'Sports participation' and 'Arts participation'), extended hours where children are supervised but not taught (such as play schemes or child minding provided on school premises) or approaches which seek to improve outcomes through non-teaching means (such as breakfast clubs). It also does not include summer school provision as this is reviewed separately (see 'Summer schools').

Search terms: Instructional time; modified school calendars; extended/expanded school day/year; after-school programmes; longer school day; longer school year

## Evidence Rating

The evidence is moderately secure. There are eight meta-analyses reporting findings on the impact of extending school time or after-school programmes, with five conducted in the last ten years. However, decisions to lengthen the school year or school day are often one component of wider approaches to school reform. This makes attributing any learning gains to the additional time itself difficult. Gains are not consistent across studies, indicating that additional time alone is not enough —

it must be used effectively. Discrete or targeted programmes are more likely to have been evaluated robustly than other ways of extending learning time, and even here there is substantial variation in impact.

## Cost Information

Overall, costs are estimated as moderate. The average cost of teaching a pupil is about £2,500 a year (£13 per day) in primary school and about £3,500 a year (£18 per day) in secondary. Extending the school year by two weeks would therefore require about £260 per pupil per year for primary schools and about £360 per pupil per year for secondary. Estimates suggest after school clubs cost, on average, £7 per session per pupil. A weekly session would therefore cost £273 per pupil over the course of a 39-week school year. The use of well-qualified and trained staff may increase these cost estimates.

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## Summary of effects

Meta-analyses	Effect size	FSM effect size	
Cooper, H., Valentine, J. C., Charlton, K., & Melson, A. (2003)	0.06	0.21	(school year)
Durlak, J.A., Weissberg, R.P., Pachan, M. (2010)	0.17	-	
Kidron, Y., & Lindsay, J. (2014)	-0.04	0.02	Literacy
	0.03	0.04	Maths
Lauer P.A., Akiba M., Wilkerson S.B., Apthorp H.S., Snow D., & Martin-Glenn M.L. (2006)	0.07	-	
Shulruf, B. (2010)	0.37	-	English
	0.02	-	GPA
	0.36	-	Mathematics
	0.34	-	Science
Washington State Institute Public Policy (2014)	0.26	-	
Zief, S. G., Lauver, S., & Maynard, R. A. (2006)	0.08	-	GPA
	0.03	-	Reading
<b>Single Studies</b>			
Biggart, A., Kerr, K., O'Hare, L., & Connolly, P. (2013)	0.17	-	
Dorsett, R., Rienzo, C., Rolfe, H., Burns, H., Robertson, B., Thorpe, B. & Wall, K. (2014)	-0.14	-0.26	
Menzies, V., Kasim, A., Kokotsaki, D., Hewitt, C., Akhter, N., Collyer, C., Younger, K., Wiggins, A. & Torgerson, C. (2016)	0.1	0.01	
Meyer, E., & Van Klaveren, C. (2013)	0.22	-	Maths
	0	-	Literacy
Styles, B. Clarkson, & R. Fowler, K (2014)	-0.14	-0.3	
<b>Weighted mean</b>	<b>0.11</b>		

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## Meta-analyses abstracts

### 3

Cooper, H., Valentine, J. C., Charlton, K., & Melson, A. (2003)

This review synthesizes studies of the effects of modifying the academic calendar in Grades K-12 to do away with the long summer break while not increasing the length of the school year. The synthesis indicated that the quality of evidence on modified calendars is poor. Within this weak inferential framework, the average effect size for 39 school districts was quite small,  $d = .06$ , favoring modified calendars. Studies that used statistical or matching controls revealed an effect size of  $d = .11$ . Modified calendars were associated with higher achievement for economically disadvantaged students. Students, parents, and staffs who participated in modified calendar programs were positive about their experiences. Policymakers can improve acceptance of modified calendars by involving communities in the planning and by providing quality inter-session activities.

### 4

Crawford, S. T. (2011)

The purpose of this study employing meta-analysis was to assess the impact that after-school programs have on reading and mathematics outcomes. The participants in the primary studies were students in Grades K through 8; years 200 through 2009. The study utilized the theory of change as its theoretical basis. This meta-analysis used the effect size as the standard measure. It began with an overall Cohen's  $d$  of .40 for the impact that after-school programs have on reading and mathematics outcomes, and then proceeded to analyse three moderator variables: subject, time periods, and grade level. The findings of the meta-analysis, both overall and sub analyses, show that the independent variable, after-school programs, has an impact on the dependent variable, reading and mathematics. The overall results indicated that after-school programs are educationally significant in the areas of reading and mathematics combined. As for the moderator variable, the results for the areas of (a) subject (reading and mathematics), (b) time period (2000-2002, 2003- 2005 and 2006-2009), and (c) grade (middle, and middle plus elementary combined), all indicated educationally significant results. The notable exception was the grade moderator, elementary. This study provides more information for researchers, practitioners and policy makers upon which to make practical research based decisions about after-school programs for the purpose of determining the applicability of such in their educational setting.

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## 7

Durlak, J.A., Weissberg, R.P., Pachan, M. (2010)

A meta-analysis of after-school programs (ASPs) that seek to enhance the personal and social development of children and adolescents indicated that youth improved in three general areas: feelings and attitudes, indicators of behavioral adjustment, and school performance. More specifically, significant increases occurred in youths' self-perceptions and bonding to school, their positive social behaviors, and in their school grades and level of academic achievement. At the same time, significant reductions occurred in problem behaviors and drug use. Substantial differences emerged between programs that used evidence-based approaches for skill training and those that did not. The former programs consistently produced significant improvements among participants in all of the above outcome areas (mean effect sizes ranged from 0.24 to 0.35), whereas the latter programs did not produce significant results in any outcome category. Our findings have two important implications for future research, practice and policy. The first is that ASPs should contain components to foster the personal and social skills of youth, because participants can benefit in multiple ways if these components are offered. The second is that such components are effective only if they use evidence-based approaches. When it comes to enhancing personal and social skills, successful programs are SAFE (sequenced, active, focused and explicit).

## 10

Kidron, Y., & Lindsay, J. (2014)

Interest in increased learning time programs delivered beyond the regular school day has grown (Stonehill et al., 2011). These programs provide additional instruction in English language, arts, math, and other subjects and are meant to enhance students' academic interests and success (Redd et al., 2012). The most common approaches include out-of-school programs (before- and after-school weekend programs); summer school; schools with longer school days, weeks, or years; and year-round schools. Numerous evaluations have tested the effects of such programs on students' academic knowledge, study skills, social skills, and motivation to learn. This meta-analysis examined more than 7,000 studies, sorted them by scientific rigor, and identified 30 that used research designs capable of yielding strong evidence about the outcomes of increased learning time. In some cases the 30 studies found that increased learning time programs had a positive effect on student outcomes; in other cases the studies found no positive effect. This suggests that no single increased learning time program fits the needs of all students. The information in this report should help practitioners decide how best to select and implement an increased learning time approach. The programs were found, for example, to improve academic outcomes when instruction was led by certified teachers. Ten studies reported that literacy instruction was delivered by certified teachers and found a statistically significant positive effect on literacy achievement. Five studies reported that math instruction was conducted by certified teachers and found a statistically significant positive effect on math achievement. In both cases, however, the effects were small. Programs that used a traditional instruction style (with the teacher responsible for the progression of activities and students following directions to complete tasks) improved academic outcomes in literacy (nine studies) and math (four studies). The effects were small for both subjects. Programs that used an experiential learning instruction style (such as hands-on,

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inquiry-based instruction) improved student social-emotional skill development (for example, self-confidence and self-management; four studies). Again, the effects were small. The findings also show that increased learning time can benefit students at risk of academic failure. Increased learning time improved the literacy achievement of students performing below standards (three studies). Increased learning time also promoted the social-emotional skill development (for example, emotional well-being and externalizing behavior) of students with attention deficit/hyperactivity disorder (three studies). Programs that targeted specific student subgroups (such as struggling readers) and used explicit instruction to teach well specified skills tended to show a positive effect on student outcomes. Practitioners who wish to use increased learning time programs might therefore set goals and design activities based on a deep understanding of student needs and interests. Because this study examined the data one category at a time, it does not provide information on potential interactions among implementation features, such as how the effectiveness of experiential learning, might vary with teacher–student ratio or the frequency and duration of classes. As the evidence base grows, studies like this one will be able to assess the effects of increased learning time using multiple factors at the same time.

## 11

Lauer P.A., Akiba M., Wilkerson S.B., Apthorp H.S., Snow D., & Martin-Glenn M.L. (2006)

Schools and districts are adopting out-of-school-time (OST) programs such as afterschool programs and summer schools to supplement the education of low-achieving students. However, research has painted a mixed picture of their effectiveness. To clarify OST impacts, this synthesis examined research on OST programs for assisting at-risk students in reading and/or mathematics. Researchers analyzed 35 OST studies that employed control or comparison groups and met other inclusion criteria. Meta-analyses indicated small but statistically significant positive effects of OST on both reading and mathematics student achievement, and larger positive effect sizes for programs with specific characteristics such as tutoring in reading. Whether the OST program took place after school or during the summer did not make a difference in effectiveness.

## 15

Shulruf, B. (2010)

Secondary schools tend to sponsor a large number of extra-curricular activities (ECA) yet little is known about their contribution to students' educational outcomes. This meta-analysis aims to determine what it is about ECA participation that supports positive educational outcomes. Furthermore, this study challenges the theoretical assumptions about the benefits of participation in ECA. 29 studies (all except for one based on data collected in the United States) met the search criteria for inclusion in the analysis. Most effect sizes on academic achievements yielded from non-specific ECA, academic clubs and journalism were small, as were participation in performing arts, sports and leadership activities on a range of educational outcomes. Although the results show associations between participation in ECA and educational outcomes, causal effects could not be confirmed. It is concluded that the lack of evidence supporting the causal effects, and thus the common theoretical assumptions about the effects of ECA on educational outcomes, is due to methodology limitations in these studies.



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## 17

### Washington State Institute Public Policy (2014)

Out-of-school time tutoring programs included in this analysis provide one-on-one or small-group tutoring support to struggling students in English language arts and/or mathematics outside of the regular school day (usually after school). The evaluated tutoring programs provide, on average, about 40 hours of tutoring time to students each year. Tutors are typically specially trained adults (e.g. instructional aides and community volunteers) and receive approximately 10 hours of training.

## 18

### Zief, S. G., Lauver, S., & Maynard, R. A. (2006)

Campbell Collaboration review: An extensive search of the literature uncovered only five studies that met the inclusion criteria for this review. A logic model for understanding the mechanisms for changing outcomes as a result of participation in after-school programs suggests that higher grades might occur after changes in students' behaviors and social and emotional outcomes. However, our analysis shows stronger effects for improved grades than for the behaviors that could impact grades, like improved school attendance and decreased television viewing.