

## Research Briefing:

# Are out-of-school-time (OST) study programmes an effective way to improve the academic performance of socially disadvantaged children?

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### Summary

Many 15-year olds participate in study programmes out of the normal school time in England, 44% in teacher-led study groups and 32% in self-directed study clubs (2004-2006). These are activities in which students work together to prepare for examinations and to do/review homework. In teacher-led programmes, the role of the teacher involves a combination of supervision and instruction, while in self-directed study clubs (also called drop-in sessions) the students work together without the teacher.

**Our analysis of data from national records and the Next Steps longitudinal study of young people in England shows that teacher-led out of school time study programmes are moderately effective in improving overall GCSE performance. For children whose parents are unemployed or in a routine occupation, this improvement is the equivalent of two GCSE grades.**

Although OST programmes are available to children from all backgrounds and are offered in the vast majority of secondary schools, only 42% of children from disadvantaged families (where the parents are unemployed or from a routine occupation) participated in teacher-led study groups, compared with 46% of children from a professional background. The average cost of these programmes is estimated to be around £7 per session per student<sup>1</sup>.

The **implications** of the study are:

- 1) OST programmes should be available in all schools that take in any socially disadvantaged children.
- 2) If the aim of providing OST programmes is to increase attainment then they should be teacher-led.
- 3) Where steps can be taken to encourage greater participation among disadvantaged children, the benefits are worth having in relation to cost. Schools might consider directing at least some of the resources available to them from the Pupil Premium<sup>2</sup> to the provision of OST teacher-led programmes for disadvantaged students.

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<sup>1</sup> <https://educationendowmentfoundation.org.uk/evidence/teaching-learning-toolkit/extending-school-time/#costs>

<sup>2</sup> The pupil premium is additional funding for publicly funded schools in England to raise the attainment of disadvantaged pupils and close the gap between them and their peers. <https://www.gov.uk/guidance/pupil-premium-information-for-schools-and-alternative-provision-settings>

## About this study

The study, funded by the Nuffield Foundation, was the first substantive review of OST programmes among secondary-aged children in England since 2000. The implementation of some form of OST programme has been widespread (though not ubiquitous) among secondary schools in the UK since the beginning of the 2000s (MORI 2004), but surprisingly there has not yet been a large scale investigation of the effectiveness of these programmes in secondary schools. Only one UK study, conducted in 1997, has addressed effectiveness (MacBeath et al, 2001). It showed positive effects from OST programmes, but the study was focused on a small, unrepresentative sample, and did not examine issues surrounding the selection of students for the programmes. A fuller understanding of the programmes' effectiveness in enhancing children's achievements is important from a policy viewpoint, especially in relation to the goal of reducing the achievement gap between advantaged and disadvantaged children.

This study uses Next Steps to study the effectiveness of OST programmes in improving GCSE performance in England. Next Steps is a longitudinal survey of young people, comprising a total sample of 15,800 pupils, who were surveyed for the first time when they were aged 13/14 in 2004. The survey covers participation in OST programmes (we used information from the year preceding GCSE examinations), as well as very rich information on social and individual characteristics. We also use National Pupil Database (NPD) records which are linked to the survey data to provide cohort members' educational outcomes and prior academic achievement, as well as the characteristics of their schools. We have used appropriate methods to construct credible counterfactual estimates of programme participation. We examine the programme effectiveness among students with differing socio-economic class and prior academic achievements.

## Method

While it would be best to address the evaluation question through the use of a randomised controlled trial (RCT), this was not feasible for the current study. Therefore, we used observational data to estimate the impact using a number of different statistical techniques to produce credible estimates of the impact, exploiting the rich data available from the Next Steps survey.

We used three models to check how robust the findings are. In addition to standard Ordinary Least Squares (OLS) regression, our first model involves deriving a comparison group using Propensity Score Matching (PSM) to identify a group of students who are similar to those who attended the OST programmes, using information which previous studies have shown to be major predictors of both the propensity to participate in the programmes and academic achievement. The factors we included were student social origins (parental education, social class, family income, deprivation of area), and individual factors (expectations, school engagement, frequency of homework), prior to attending an OST programme. The richness of this set of covariates makes PSM an attractive approach for evaluation where no experimental data are available. Matching on the propensity score constructs a control group which is very similar to the treatment group. We then use this control group to represent the hypothetical outcome that would have been realized had the student not participated in the OST programme.

We were also able to take into account the possibility that there was something about the schools providing the OST programmes which might have had an impact on children's performance independently of the programmes. We included some observed school-level characteristics, drawn from the school census, in both the linear regression and the PSM analysis. As our third alternative model, aiming to remove bias arising from unobserved school-level characteristics, we also ran school-fixed effects regression models (SFE).

It should be noted that biases might arise, as in any evaluation study using observational rather than experimental data, as a consequence of the omission of relevant personal factors or of the failure to measure properly the relevant factors. In this study we have been able to use the rich data of Next Steps to cover known relevant personal, social origins and school-level factors. However, it remains possible that the used indicators capture those factors with some error, and that relevant factors have not been included.

Apart from the rich data on socio-economic background, children’s behaviour and school characteristics, Next Steps also contains specific information regarding the different kinds of curricular activities in which the child is involved outside lessons but within the school setting. We focused on programmes that are linked to the academic curriculum, since previous research has suggested these are the most beneficial for academic achievement. In particular, we looked at teacher-led study groups and self-directed study clubs (also called drop-in sessions).

### Findings: average and sub-group effectiveness

Results from all three models, presented in Table 1, consistently show that OST programmes, when they are teacher-led, are moderately effective in improving academic performance at the end of lower secondary education as measured by the overall performance on GCSEs at age 16 (the measure caps the total number of included courses at 8 full GCSEs or equivalent). The improvement is equivalent to half a grade in one subject out of the eight best GCSE results used in the computation of the total GCSE score. By contrast, when children attend self-directed OST programmes, there is no significant effect (Table 1).

**Table 1 – The effect of OST programmes at age 14/15 (year 10) on academic performance (GCSE scores, year 11)**

	Teacher-led study group	N	Self-directed study club	N
<b>OLS</b>	3.6**	6,019	-0.03	6,019
<b>PSM</b>	3.2*	6,004	-1.64	6,004
<b>SFE</b>	2.7**	6,019	-0.19	6,019

Notes

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1,

OLS: Ordinary least squares (controls: KS3, Sex, Educational plans, School engagement, Homework, SEN : Two-parent family, Social class, Parental education, FSM, Urban/ London/rural, Ethnic origins, multiple deprivation index, % FSM (school), % first language not English (school), % students saying programme is available (school), % Lev 2 (school))

PSM uses radius matching, caliper: 0.2 of SD of PS, Bootstrap.

SFE: school-fixed effects

The sub-group analysis (shown in Table 2) suggested that OST programme can compensate for previous disadvantage and reduce the achievement gap between children from differing socio-economic groups. The analysis showed that children from parents who are unemployed or in a routine occupation benefit the most, by the equivalent of 10.7 in GCSE scores amounting to two grades higher for one GCSE (e.g., going from a D to B) or two grade improvements for two GCSEs e.g. two As instead of two Bs – substantially greater than the average effect reported above. Indeed, we found no evidence that children from higher classes benefit significantly from participating in OST programmes (Table 2).

**Table 2 – The effect of teacher-led study groups at age 14/15 (year 10) on academic performance (GCSE scores, year 11) by social class: a PSM model for each group**

<b>Social class</b>		<b>N</b>
<b>Long term unemployed and Routine occupations</b>	10.7*	759
<b>Semi-routine and Lower supervisory occupations</b>	-2.8	1,311
<b>Small employers and intermediate occupations</b>	-0.1	1,004
<b>Lower managerial and lower managerial occupations</b>	2.3	2,937

Notes: See Table 1

## **Policy implications**

Our findings suggest that, among 14-16 year old students, it is possible, by investing moderate resources, to compensate partially for a disadvantaged home learning environment. With only 42% of students with parents who are unemployed or in routine socio-economic group currently participating in OST programmes, there would seem to be scope for improvement.

The Education Endowment Foundation estimates that OST programmes cost, on average, £7 per session per pupil. Given that most participants attend either “occasionally” or “once or twice a week”, one might envisage attendance at 25 sessions in the course of a 39-week school year, giving a roughly-estimated cost of £175 per pupil year. The return, as estimated in this study using PSM, is an improvement of 11 points on their GCSE score, equivalent to about two grade increases among eight GCSEs – assuredly worth having at that price.

These findings suggest that all schools which take in any disadvantaged children should consider introducing out-of-school academic programmes, as a cost-effective way of raising the educational achievement of these children. Directing at least some of the resources available from the Pupil Premium might be one way to enable this provision. Our research does not address how best to encourage participation: this will depend on schools’ own best judgement. However, the research strongly implies that the study groups should be led by teachers, since self-led groups appear to make little difference.

The full research paper can be requested by contacting Nicola Pensiero at [n.pensiero@ucl.ac.uk](mailto:n.pensiero@ucl.ac.uk).

## References

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MORI (2004) Study Support Survey 2004. DfES Research Report RR591

## The Nuffield Foundation

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