

Exploring the economic impact of Power2's Teens and Toddlers programme

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Pro Bono Economics uses economics to empower the social sector and to increase wellbeing across the UK.

We combine project work for individual charities and social enterprises with policy research that can drive systemic change. We have helped over 500 charities and worked with over 400 volunteers since our inception in 2009.

Scope of the report

This report provides a economic breakeven analysis for Teens and Toddlers - an educational programme designed to help young people succeed at school through the experience of mentoring nursery children. It demonstrates the improvement in GCSE attainment required for the T&T programme to cover its costs.

We find that:

- The increase in lifetime earnings of a Teens and Toddlers (T&T) student obtaining a one grade improvement in a single GCSE subject as a result of the programme is around £8,500
- The equivalent for achieving two additional good GCSE grades (equivalent of Grade C or above) is likely to be around £53,000;
- Over the past 8 years, Power2's Teens and Toddlers programme has cost around £2,000 per pupil
- This means that 23% of students would have to obtain a one grade improvement in a single GCSE subject as a result of the programme for the benefits to outweigh the costs
- Alternatively, 4% of T&T students would have to achieve two additional good GCSE grades (equivalent of Grade C or above) as a result of the programme for the benefits of to outweigh its costs

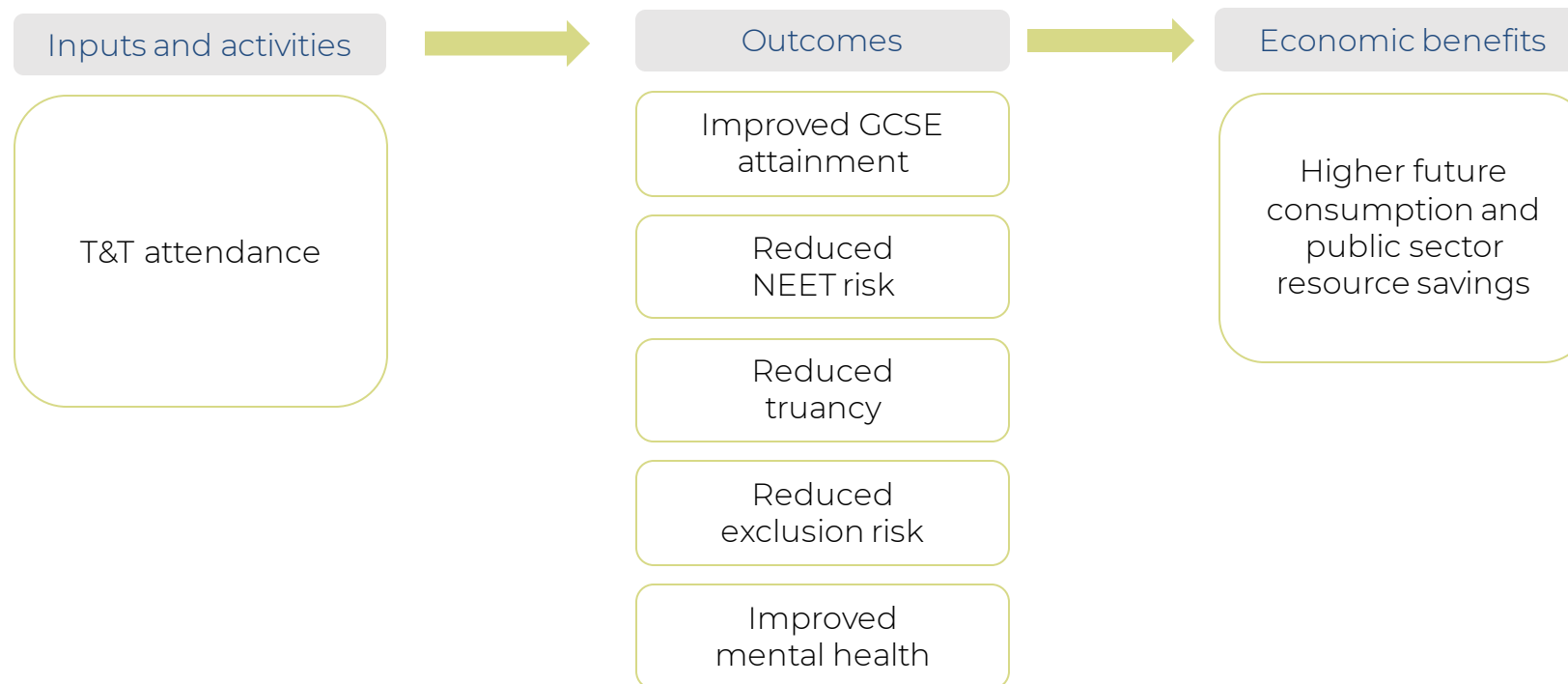
This analysis could be developed by improving the evidence on the expected academic attainment of T&T participants in the absence of the intervention.

Teens and Toddlers (T&T)

Teens and Toddlers is an educational programme designed to help young people succeed at school through the experience of mentoring nursery children.

The logic model sketched below highlights the possible outcomes and economic benefits linked to the participation of teenagers to the T&T programme.

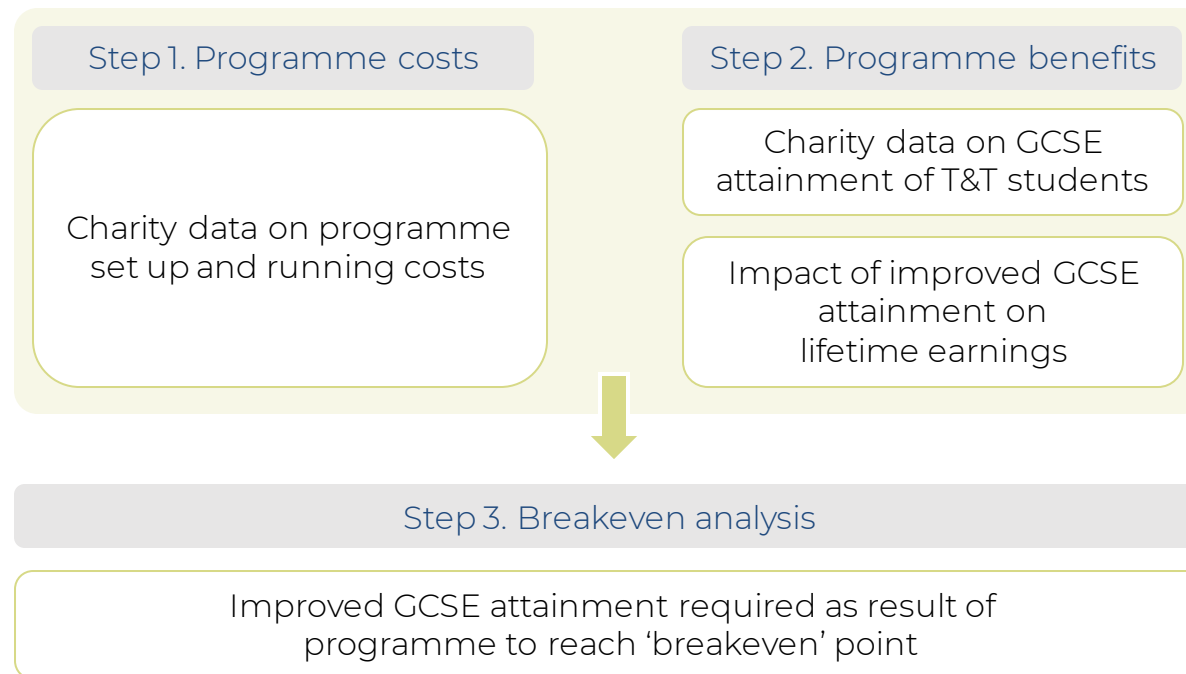
The focus of this project is one specific outcome - improved GCSE attainment - due to the strength of evidence available linking this outcome to wider economic benefits.



Approach

We have conducted a breakeven analysis; estimating the improvement in GCSE attainment required for T&T programme to cover its costs

We stop short of completing a full cost benefit analysis as we were unable to identify an appropriate evidence on what academic outcomes T&T participants would have achieved in the absence of the intervention (known as a counterfactual)¹



¹Although some data were available on predicted grades, it was not comprehensive enough to be used as to estimate counterfactual attainment and, in addition, there is not a consensus within the literature on how accurate predicted grades are, with some studies claiming that 40% of predicted grades would overpredict, see for example https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/32412/11-1043-investigating-accuracy-predicted-a-level-grades.pdf

Step 1: Programme costs

To estimate the programme costs we have incorporated the total direct costs of the programme as well as the total set-up and the annual ongoing development costs (see next slide).

The total direct costs, set-up costs and costs of ongoing development of the programme were all provided by Power2.

The cost of teacher's time was estimated by assuming that completion of two questionnaires of 12 and 15 questions (respectively at the start and at the end of the programme) would take up 1 hour of teachers' time per pupil. We took the average weekly earnings in education from ASHE² and then worked out the equivalent earnings per hour.

The cost per pupil was estimated to be just under £2,000 in 2020 prices.

This has been estimated by:

- Dividing the total direct cost by average group size (8 pupils): $£15,925 / 8 = £1,991$
- Dividing the set-up costs by the total number of pupils supported so far through the project (8,000 pupils): $£25,000 / 8,000 = £3$
- Divided the annual on-going development costs by average number of students supported per year (1,000 pupils): $£1,923 / 1000 = £2$
- Summing up the three to obtain the cost per pupil: £1,996

²<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/grossweeklyearningsbyindustryyearn07>

Itemised programme costs

Cost per group (8 pupils)	Amount
Direct programme costs	£15,786
Estimated teacher time	£139
Total direct costs	£15,925

Cost per programme (8000 pupils)	Amount
Set-up costs	£1,991

Cost per programme (1000 pupils)	Amount
Ongoing development costs	£1,923

Step 2: Programme benefits

Education improves individuals' labour market outcomes, such as likelihood of being employed and their wage.

These individual outcomes translate into economic benefits to society as higher qualifications translates into higher productivity (and, in turn, higher economic output).

We use two Department for Education (DfE) publications that estimate the lifetime productivity returns to improved GCSE results. All monetary figures have been adjusted to 2020 prices using the HMT GDP deflator series.

1. Improvement of a single GCSE grade: Hodge et al (2021) estimate that the average increase in discounted lifetime earnings from a one grade improvement at GCSE level across all subjects is £9,063

2. Improvement in number of GCSEs at Grade C (Grade 4) or above: To estimate the potential benefits using Hayward et al (2014):

- We have computed the grades distribution of the students in the sample provided by Power2 and matched it to the categories for which the Department for Education estimate lifetime productivity returns;
- We have estimated lifetime productivity returns for each category by averaging between male and female and average and marginal lifetime productivity returns.
- This gives an average weighted increase in lifetime earnings from attaining two additional Good GCSEs (equivalent of Grade C or above) of around £63,000⁵

Table 1. Matching Power2 GCSE attainment data with Hayward et al (2014) data

Category	Sample	Estimated lifetime productivity returns
No good GCSEs	26%	0
1-2 good GCSEs	26%	£165,744
3-4 good GCSEs	22%	£52,300
5-7 good GCSEs	10%	£55,681
7+ good GCSEs	17%	£48,105
Weighted average	-	£62,555

⁵83% of students achieve between 0 and 7 GCSEs meaning that the estimated improvement from moving up an attainment category is the equivalent of two good GCSEs or less for the majority of T&T participants.

Step 3: Break-even analysis

We explored what outcomes the T&T project would need to realise in order to justify the cost of the project, known as a breakeven analysis.

In this context, the outcome is the transition to a qualification category that is associated to higher lifetime productivity returns.

Using Hodge et al (2021), we estimate that 22% of students would need to obtain a one grade improvement in a single GCSE subject as a result of Teens and Toddlers for the programme to break even.

Using Hayward et al (2014), we estimate that 3% of students supported through the Teens and Toddlers would need to jump a qualification category as a result of taking part in the project for the programme to break even.

Final thoughts

In order to carry out a comprehensive cost benefit analysis additional work should be done to estimate the academic attainment of T&T participants in the absence of the intervention.

A randomised controlled trial is the gold standard in terms of evaluating the impact of an intervention but would have challenging cost, logistical and ethical issues to consider.

If this was not possible, an alternative would be to use the National Pupil Database to create a matched comparison group for students who were recommended to T&T but did not take part or dropped out, or based on other observable characteristics

Annex: illustrative “what-if” scenarios the benefit to cost ratio

- Whilst we lack the evidence base to estimate a benefit to cost ratio (BCR), we can conduct scenario analysis to establish the BCR under a range of potential improvements in GCSE performance
- The first shows the the benefit to cost ratio that would result from various scenarios reflecting the percentage of students achieving (i) a single grade improvement (based on DfE 2021); and (ii) a grade category improvement (based on DfE 2014)
- The second chart shows the same scenarios, but for the net annual benefit per student
- It is important to take these as purely illustrative, as we do not have evidence at this stage to come to a view on the improvement in GCSE that results from Teens and Toddlers
- It should also be noted that it would be feasible for a student to achieve an improvement in multiple GCSE subjects, whilst the scenarios based on DfE (2021) are examining the impact of improvement in a single subject

Figure A1 : BCR scenario analysis

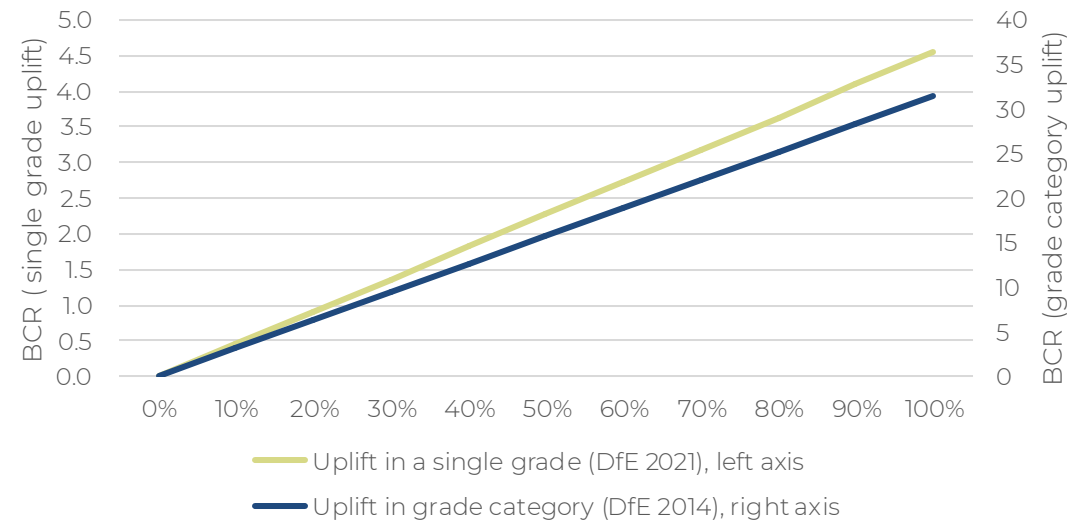
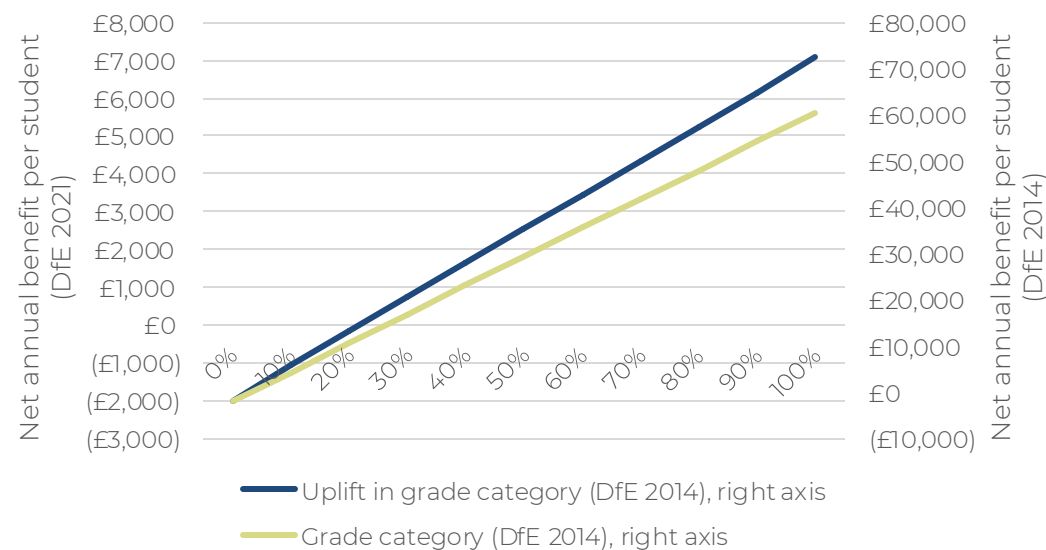


Figure A2 : net annual benefit scenario analysis



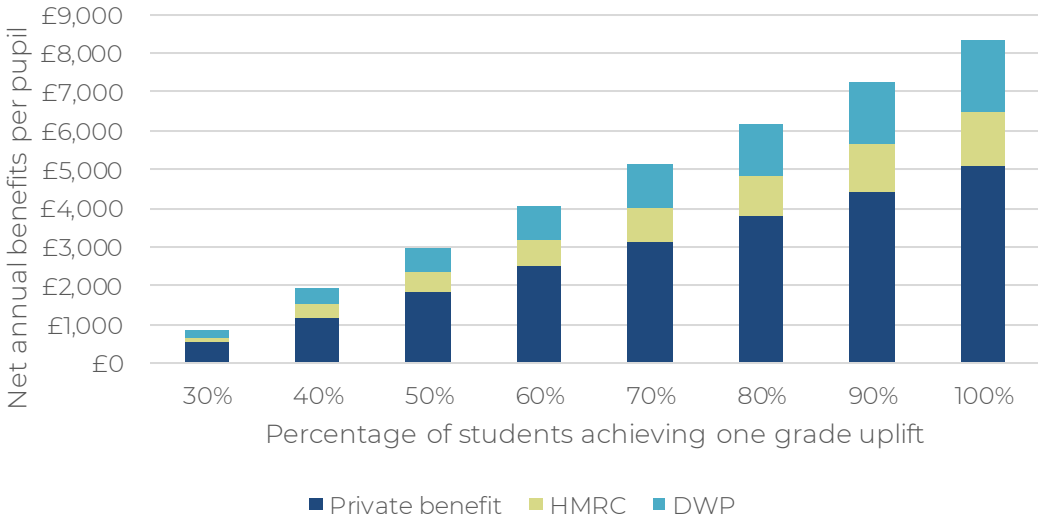
Distribution of benefits

- The benefits discussed in this report refer to increases in gross (i.e. pre tax) wages
- The benefits of these gross wages will accrue to both the individual and the Government (and therefore the wider public) as a result of increased tax revenue
- There will also potentially be additional benefits to society that could accrue in various forms: reductions in welfare payments, increases in company profitability or impacts on expenditure for health or justice services
- Whilst these latter set of benefits would be complicated to model, we can provide a crude breakdown of the distribution of benefits that flow from the taxation
- The table shows the benefits accruing to the employee, HMRC and DWP per £ of benefit
- The chart applies these breakdowns to the net annual benefit scenario analysis based on the benefits arising from a one grade improvement presented in DfE (2021)

Table A1 : Breakdown of gross wage benefits

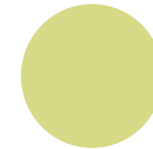
Category	Benefit per £ gross wages
Employee	£0.72
HMRC	£0.2
DWP	£0.258

Figure A3 : Breakdown of net annual benefits from scenario analysis based on DfE 2021





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