Institute for Fiscal Studies

The Costs and Benefits of Different Initial Teacher Training Routes

IFS Report R100

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Nuffield Foundation

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Published by

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London WC1E 7AE
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ISBN 978-1-909463-64-6

Preface

As collaborators for this project, the Institute of Education, the Institute for Fiscal Studies and the National Foundation for Educational Research would like to sincerely thank the Nuffield Foundation for funding and supporting this research (grant number EDU/41313). The Nuffield Foundation is an endowed charitable trust that aims to improve social well-being in the widest sense. It funds research and innovation in education and social policy and also works to build capacity in education, science and social science research. The Nuffield Foundation has funded this project, but the views expressed are those of the authors and not necessarily those of the Foundation. More information is available at http://www.nuffieldfoundation.org. We also appreciate the Economic and Social Research Council, whose support through the Centre for the Microeconomic Analysis of Public Policy (grant number ES/H021221/1) at the Institute for Fiscal Studies underpins much of IFS's research. This project would not have been possible without the time taken by schools to complete the survey, and to participate in case studies that informed our survey design, for which we are extremely grateful. We hope that schools find the findings informative and valuable. The advisory group for this project have been extremely valuable and have greatly informed our analysis. We would like to especially thank Sam Freedman for valuable discussion and Caroline Halls for assisting in contact with the Department for Education. We also thank Claire Crawford and Ian Crawford for comments helpful in developing the analysis presented here. Estimates of the central costs for government were informed by information provided by the National College for Teaching and Leadership, in particular Michelle Moore, to whom we are very grateful. We acknowledge the Department for Education for providing the data relating to pupil attainment and staff composition of schools in England.

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Executive Summary

- Improving the quality of the teacher workforce is a priority for the government, which in response has announced reforms to the provision of teacher training. These reforms have sought to increase the role schools take in training the profession, with the introduction of the School Direct (school-based) training routes – in which trainee teachers are based in a school and either receive a salary or are eligible for alternative funding – and the expansion of teaching schools, which have responsibility for some aspects of initial teacher training (ITT).
- Government trains around 30,000 new teachers every year, providing funding through a combination of student finance (tuition fee and maintenance loans and maintenance grants) and direct grant funding. The training is provided through an increasing variety of routes, following the expansion of school-based provision. The main routes are School Direct (salaried and unsalaried), Teach First, school-centred initial teacher training (SCITT), higher education institution (HEI)-led Postgraduate Certificate in Education (PGCE) and the Bachelor of Education (BEd). All routes lead to qualified teacher status (QTS),
- The majority of trainees for primary and secondary schools are trained through the HEI-led PGCE route (around 50% of trainees at primary and 60% of trainees at secondary level). BEd is the second most popular route for primary school trainees (30% training through this route), but trains a small percentage at secondary level (3%). Teach First trains around 10% of trainees at secondary level. School Direct salaried and unsalaried are the newest routes (training around 20% of trainees at secondary level in 2013–14) and there are plans for expansion.
- Schools also bear costs, such as the staff time required to supervise and support the trainee for all routes, and salary and other payroll costs for School Direct salaried and Teach First routes. On the other hand, schools may benefit from having the trainee in the school – for example, through contributions made to teaching, new teaching ideas and professional development opportunities for existing staff, and for future recruitment to the school.
- This report for the first time combines evidence about the costs to central government and net benefits (benefits relative to costs) for primary and secondary schools for different ITT routes. This provides the first evidence of the overall cost-effectiveness of different routes into teaching.
- Schools with higher ratings of effectiveness from Ofsted are more likely to participate in ITT, particularly with School Direct. This suggests that the costs and benefits observed for these schools may not apply to other schools with lower effectiveness.
- There are few differences in the characteristics of trainees across routes reported by the placement school. For example, there are no significant

differences in the percentage of trainees from each route who are rated by teachers to have high potential to be good teachers, which suggests that particular routes do not attract (and/or recruit) the most effective trainees.

- Central costs – i.e. those not borne by schools – for each route make the largest contribution to the total cost of provision for the majority of trainees. The amount and structure of central funding vary between routes and, for some routes, depend on school characteristics, region and the trainee's subject and degree class.
- Student finance is available for the cost of tuition fees and living costs for all non-salaried routes, and eligibility for maintenance grants is not affected by access to bursaries and scholarships. The average cost to government of providing this student finance is large (between £13,000 and £18,000 per trainee for postgraduate ITT and between £10,000 and £27,000 for undergraduate ITT), as a teacher with typical career progression would not pay back their loan before it is written off. In fact, a teacher with typical career progression would not even begin to pay off a postgraduate ITT loan, due to large outstanding undergraduate loans. The cost of providing student finance makes non-salaried routes more expensive than salaried routes when students are eligible for scholarships or bursaries.
- Teach First is the only route that receives a fixed level of funding per trainee (of £25,958), independent of region, school characteristics and trainee characteristics. This means that the central costs for Teach First are lower in circumstances where the trainee would otherwise receive a scholarship or tax-free bursary of more than £4,000, but higher in all other circumstances. The central costs for School Direct salaried (where schools receive a direct grant from the National College for Teaching and Leadership) are lower than those for School Direct unsalaried (where the cost to central government depends on the cost of providing student finance) in the majority of cases.
- The largest staff-time cost for schools involved with ITT for primary and secondary schools is for mentoring and classroom observations (including feedback) for trainees, at between £80 and £100 per trainee per week. There are no significant differences between routes in the total staff-time cost per trainee per week, with the exception that Teach First trainees have a lower cost per week than HEI-led PGCE trainees in secondary schools (£138 compared with £186 per week).
- Additional costs for schools include recruitment, payments to ITT providers, and salary and payroll costs. The costs to schools are offset to some extent by the contribution School Direct salaried and Teach First trainees make to teaching, by a direct grant from central government for School Direct and by payments from ITT providers for non-salaried routes. Net costs (not accounting for non-monetary benefits) to schools are largest for Teach First – at around £11,000 per placement – and lowest for university-based routes, at between £400 and £1,600 per placement.
- There are many benefits to schools involved with ITT, with some significant differences across routes. Schools using school-based routes are more likely

to cite the expectation of hiring the trainee as a benefit. HEI-led PGCE trainees are least likely to provide extra capacity for the school, and less likely to provide fresh teaching ideas for primary schools. The presence of a trainee in a school or department has no significant impact on pupil attainment assessed at the end of primary and compulsory secondary school.

- To calculate the monetary value of these benefits, respondents were asked to state whether the benefits were greater than, equal to or less than the costs for each route, and to what extent. Benefits are reported to be greater than costs most often for the Graduate Teacher Programme, which was replaced by School Direct salaried. School Direct salaried has the highest variance, with around half of respondents reporting that benefits are greater than costs and around one-third reporting that benefits are less than costs. Whether benefits are reported to be greater than costs is significantly related to the perceived quality of the trainee.
- School-based routes are typically thought to have a higher net benefit to the host school than university-based routes. The majority of respondents felt that the net benefits for HEI-led PGCE and BEd trainees were equal to one another. School Direct salaried was reported to have lower net benefits than Teach First.
- Computing a monetary value for the benefits relative to the costs implies that primary schools have a net cost for HEI-led PGCE (so benefits are less than costs), a small positive net benefit for BEd and larger positive net benefits for SCITT and School Direct routes. Secondary schools have a positive net benefit for all routes, largest for Teach First (around £10,000 per trainee – around five times larger than for School Direct salaried, which has the second-highest calculated net benefit). The net benefits calculated for all non-salaried routes are relatively small.
- For most routes, the net benefit to schools is small in comparison with the costs for central government. The notable exception to this is Teach First, where the largest net benefit to schools is reported. Teach First is therefore the most expensive route for a smaller proportion of trainees when considering the overall cost than when considering only the cost for central government.
- These conclusions are limited to the extent that our results incorporate the short-term costs and benefits of training only. Future analysis will consider longer-term costs and benefits, such as varying retention rates, subject to the necessary data becoming available. We are also unable to consider wider costs, such as lower economies of scale in advertising, recruitment and training or the possible shortfall in supply of newly qualified teachers that may result from less centralised (typically university-based) training. We also exclude the net cost/benefit to initial teacher training providers associated with different routes. Future research should also consider the contribution made to the supply and quality of trainees available through alternative routes of initial teacher training.

1. Introduction

Research has consistently demonstrated that teachers vary in their 'effectiveness' in improving their pupils' attainment in academic tests (for England, see Slater et al. (2012)), leading to a consensus that being taught by a good teacher can have a dramatic impact on academic attainment (Rockoff, 2004; Rivkin et al., 2005; Aaronson et al., 2007). For example, Hanushek (2011) calculates that replacing the least effective 5–8% of teachers with teachers of average effectiveness would move the US from a mid to upper position in international league tables of educational performance. In response to such evidence, the Department for Education (DfE) has made improving the quality of the teacher workforce a priority, announcing reforms to the provision of teacher training and financial incentives for applicants with high previous academic attainment.[1] These reforms have sought to increase the role schools themselves take in training the profession, with the introduction of the School Direct (school-based) training routes and the expansion of teaching schools.[2]

Despite the keen policy interest in this area, there is little existing evidence on the indirect costs and benefits of different teacher training routes and how they relate to teacher effectiveness: recent evidence submitted to the Education Select Committee details the direct monetary costs associated with different routes, but not the indirect costs incurred by the school or any offsetting benefits such as mentoring experience for existing staff or the impact on pupil attainment (which may be positive or negative).[3]

In a summary of research on teacher effectiveness, Hanushek and Rivkin (2006) state that existing research has been 'virtually silent' on the issue of cost: while there are some empirical estimates of average teacher quality by qualification route in the US (Decker et al., 2004; Boyd et al., 2005; Kane et al., 2008), there is no systematic evidence of the cost associated with each training type. Hanushek and Rivkin conclude that attention to cost issues is a 'neglected area that sorely needs further work'. This report will provide some evidence on this issue in England.

There are currently two types of routes leading to qualification as a teacher in England: school-based and university-based initial teacher training (ITT). University-based routes include the Postgraduate Certificate in Education (PGCE) and the Bachelor of Education (BEd). A BEd is a three- (or four-) year undergraduate course leading to qualified teacher status (QTS). A PGCE is a one-year course taken after an undergraduate degree, which is typically led by a

[1] http://www.education.gov.uk/schools/toolsandinitiatives/schoolswhitepaper/b0068570/the-importance-of-teaching.

[2] https://www.gov.uk/teaching-schools-a-guide-for-potential-applicants.

[3] For the full report from the Education Select Committee, see http://www.publications.parliament.uk/pa/cm201012/cmselect/cmeduc/1515/1515ii.pdf.

higher education institution (HEI). For both of these courses, students are placed in at least two schools for a minimum of 24 weeks in total.[4]

School-based routes include school-centred initial teacher training (SCITT), Teach First, School Direct salaried and School Direct unsalaried.[5] For each of these routes, a PGCE may be awarded in addition to QTS.

- Trainees following the SCITT route are based in a school, with some training occurring at an ITT provider. Trainees pay tuition fees and courses typically last for one year.

- Teach First trainees are recruited by Teach First and placed in deprived schools.[6] Teach First trainees need not be supernumerary and can teach up to 80% of a newly qualified teacher (NQT)'s timetable.

- The School Direct salaried route replaced the Graduate Training Programme (GTP) in September 2013. On this route, trainees with three or more years' work experience are paid a salary by the school according to point 1 of the unqualified teacher pay scale while they train.[7] These trainees need not be supernumerary.

- The School Direct unsalaried (or tuition fee) route is similar to SCITT. It is available to graduates with less than three years' work experience and trainees pay tuition fees for the course. School Direct unsalaried trainees must be supernumerary.

The main differences between employment- and university-based teacher training are: the hours of practical experience in schools; how costs are borne between trainees, school budgets and central government; and the type of schools that are available to train in. These differences are likely to attract different types of people to each route; previous research has shown that more mature potential teachers are more likely to choose employment-based routes and are less likely to choose a three- or four-year undergraduate degree programme, for example (Smithers and Robinson, 2012). The perceived suitability of each programme and financial considerations are also relevant to potential trainees (Hobson and Malderez, 2005). For example, Kyriacou and Coulthard (2000) find that undergraduates 'undecided' about becoming a teacher cited that 'a £5,000 payment for starting a PGCE' would encourage them to enter teaching. This means that any differences in the cost-effectiveness of different

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[4] http://media.education.gov.uk/assets/files/pdf/i/itt%20criteria%202012.pdf. Some BEd courses are four years in length. These courses are required to have a minimum of 32 weeks' placement in schools.

[5] We do not consider the Troops to Teachers and Researchers in Schools programmes in this report, as the numbers of teachers trained through these routes is currently very small.

[6] Defined by 50% of the school population coming from the bottom 30% of the Income Deprivation Affecting Children Index (IDACI).

[7] Academies are required to pay trainees according to an advertised rate.

routes could be due to the training itself or to the underlying characteristics of the trainees. However, there has been limited theoretical or empirical analysis of this issue to date, which limits the potential to analyse the costs and benefits of different training routes: without considering the potential selection of trainees into different routes, it is impossible to conclude whether one route or another is *more cost-effective* or whether it attracts *more cost-effective trainees*.

This report provides the first evidence of the relative cost-effectiveness of different routes into teaching, describing and empirically estimating the costs and benefits of different routes into teaching while accounting, as far as possible, for the selection of teachers with different characteristics into each route.

Our specific research questions are grouped into three strands: recruitment, training and retention. This report summarises our findings for the first two strands: the costs and benefits for central government and schools related to recruitment and training, which can be thought of as short-term costs and benefits, answering the following questions for each route:

Recruitment

- What are the characteristics of potential teachers who choose this route?
- What are the characteristics of schools that choose to take trainee teachers via this route?

Training

- What are the total costs of university-based components of training?
- What indirect costs are imposed on schools – for example, through supervision and mentoring?
- What are the benefits to schools – for example, through trainees' contribution to teaching and recruitment?
- What are the short-term differences in the effectiveness of departments receiving trainee teachers (in terms of pupils' academic attainment)?

Consideration of the longer-term costs and benefits – for example, the retention rate – of each route may substantially change the conclusions we draw here, however. These costs and benefits will be summarised in a later report (subject to access to data from the National College for Teaching and Leadership (NCTL)). Our aim is to link information from initial teacher training providers on training route and qualification status to consider the following questions:

- What are the historic retention rates of teachers trained via different routes?
- What types of schools are they likely to teach (and stay) in?
- What types of teachers are likely to stay in teaching, including at different types of schools?

This potential future research will build on the limited existing evidence on the mobility of teachers across schools, but will be the first to consider whether mobility and movement away from certain types of schools are related to teacher training route.

To answer the research questions for the current report, we designed a survey to capture costs and benefits associated with ITT that occur within schools. This survey was sent to both primary and secondary schools with and without experience of school-based ITT. The survey asked about the overall costs and benefits to the school of participating in a given teacher training route, as well as about the costs and benefits related to specific trainee teachers. Data from this survey are combined with information from administrative sources to investigate the characteristics of schools that take each type of trainee and the short-term impact of these trainees on pupil attainment.

Our survey is also among the first to collect subjective measures of initial trainee quality – for example, subject knowledge, confidence in the classroom and potential to be a good teacher – to inform our assessment of the selection of trainees into different routes.

This report comprehensively demonstrates the costs and benefits to central government and schools involved with different teacher training routes, calculating the marginal cost (the cost of an additional trainee) through each route, on average. This is timely and valuable information for policymakers and schools involved, or considering involvement, with initial teacher training.

We are unable to consider wider costs, however, such as lower economies of scale in advertising, recruitment and training or the possible shortfall in supply of newly qualified teachers that may result from less centralised (typically school-based) training. Net costs/benefits to initial teacher training providers are also unfortunately outside the scope of this report.

We are unable to conclude whether particular routes are more effective in attracting effective potential teachers or in raising the status of the teaching profession. We find little evidence that the characteristics of trainees at the start of their school placement vary significantly between routes, suggesting that particularly promising trainees are not disproportionately allocated to particular routes. It is nevertheless possible that particular training routes contribute more to the pool of effective teachers by increasing the diversity of trainees. For example, School Direct salaried is more likely to encourage professionals to enter training, while Teach First is commonly viewed as more likely to encourage graduates from high-status universities to consider teaching.

Analysis of the wider costs and benefits to teacher training routes of this kind would require information on applications made to each route, more detailed information on the prior attainment and potential quality of each applicant, and the ability to measure long-term retention and the effectiveness of successful applicants in raising pupil attainment.

2. Data

2.1 Survey of schools

Sampling

We designed a survey to capture the costs and benefits associated with initial teacher training (ITT) that occur within schools. This survey was sent to both primary and secondary schools with and without experience of school-based ITT. The survey collected information about the central costs and benefits to the school of participating in a given teacher training route (such as the cost of advertising and recruitment for school-based trainees), as well as about the costs and benefits related to specific trainee teachers (such as whether the trainee contributed fresh teaching ideas and provided extra capacity). For secondary schools, the survey was split: we asked questions about the central costs and benefits for the school to the person responsible for coordinating ITT activities (the 'ITT coordinator') and the questions relating to specific trainees to six subject leaders.[8] In primary schools, the entire survey was sent to the head teacher, whom we expected to have detailed knowledge of both central school costs and the costs and benefits associated with specific trainees.

To maximise the power of the survey, our aim was to achieve a similar number of responses regarding each route. To do this, we stratified the sample by ITT route as far as possible, using information about the presence of ITT routes available from administrative data. For School Direct (salaried and unsalaried), we used management information on the number of allocated places (rather than actual placement of trainees) for 2013–14.[9] For Teach First, we used information provided by Teach First about the presence of trainees in 2012–13. For SCITT, we used the DfE website for SCITT lead schools and subsequent internet searches to find partner schools.[10]

Each school included in the sample was asked to prioritise a particular route. If the school or department did not have a trainee from the route targeted, they were asked to answer about a trainee from a different route, prioritising school-based trainees if originally targeted for a school-based route or prioritising university-based routes if originally targeted for a university-based route.

Table 2.1 shows the number of primary and secondary school teachers trained by each route in a year. To achieve a similar number of responses per route, we

[8] The subjects specified for priority were English, mathematics, science, humanities, PE, languages and arts (or separate subjects in these areas, such as geography and history).

[9] http://media.education.gov.uk/assets/files/pdf/s/school%20direct%20management%20information%209%20september%202013.pdf.

[10] http://www.education.gov.uk/get-into-teaching/teacher-training-options/itt-routes/choose-a-course/universities-colleges, accessed 17 July 2013.

therefore sampled a disproportionately large number of schools known to be involved with school-based routes. Primary Teach First and secondary BEd routes were excluded from the final sampling frame because of the small number of trainees (and therefore schools) involved.

Table 2.1. Distribution of trainee teachers

Route	Primary		Secondary	
	Number on route	% of all trainees	Number on route	% of all trainees
BEd	6,368	30%	417	3%
HEI-led PGCE	10,642	49%	9,363	60%
SCITT	1,509	7%	1,017	6%
School Direct salaried	1,360	6%	1,150	7%
School Direct unsalaried	1,490	7%	2,370	15%
Teach First	149	1%	1,345	9%
Total	21,518	100%	15,662	100%

Note: BEd, HEI-led PGCE and SCITT based on ITT allocations for 2013–14 – https://www.gov.uk/government/publications/initial-teacher-training-allocations-for-academic-year-2013-to-2014-final. School Direct (salaried and unsalaried) based on management information on number of places (rather than allocation) for 2013–14 – http://media.education.gov.uk/assets/files/pdf/s/school%20direct%20management%20information%209%20september%202013.pdf. Teach First based on trainees in 2012–13 (provided by Teach First).

There were three complications in stratifying the sample. First, the administrative data did not distinguish between School Direct salaried and School Direct unsalaried routes. This meant that both School Direct routes had to be sampled together (with half of them asked to prioritise each route in their responses).

Second, the placement of HEI-led PGCE and BEd trainees in schools is not observed in centrally held administrative data. It was therefore not possible to stratify the sample according to the presence of these routes; schools were instead selected at random from the remaining sample to prioritise these routes.[11]

Finally, for primary schools, the number of schools observed to have School Direct and SCITT trainees in the administrative data was insufficient. To boost the number of schools in these strata, we sampled 600 additional schools that

[11] Some schools asked to prioritise BEd and HEI-led PGCE routes were observed to have school-based routes in the available administrative data. This was to ensure that inference about the costs and benefits of BEd / HEI-led PGCE routes did not only come from schools with no school-based trainees, which may give unrepresentative results if these schools are systematically different. We sampled twice as many schools without school-based as with school-based routes since it was thought that some of the schools identified as having school-based routes in the other strata would respond about BEd or HEI-led PGCE trainees, contributing to the overall response rate for these routes.

were not observed to have school-based ITT routes in the administrative data but which were asked to prioritise either SCITT or School Direct trainees if possible.

The survey was sent to all sampled schools in paper and online form. To maximise the response rate to the survey, schools that initially did not respond were contacted a number of times.[12]

Table 2.2 shows the achieved sample size for primary and secondary schools (the latter shown separately according to whether the ITT coordinator, at least one subject leader, or both the ITT coordinator and at least one subject leader responded to the survey). Response rates were lower than predicted at the beginning of the project, particularly for primary schools, primarily as a result of the burden of responding to the survey for head teachers and senior staff. The achieved samples are of similar sizes across routes, however,[13] and the next subsection shows that the responding schools are broadly representative of schools involved with each route.

Table 2.2. Stratified sample and response rates

Route	Sampled	Achieved sample	Response rate (%)	Sampled	Achieved sample	Response rate (%)
	Primary schools			**Secondary schools: subject leader and ITT coordinator**		
BEd	596	52	8.7%	0	N/A	N/A
HEI-led PGCE	597	49	8.2%	300	38	12.7%
SCITT	697	68	9.8%	300	42	14.0%
School Direct	1,099	122	11.1%	600	89	14.8%
Teach First	0	N/A	N/A	299	27	9.0%
	Secondary schools: subject leader			**Secondary schools: ITT coordinator**		
BEd	0	N/A	N/A	0	N/A	N/A
HEI-led PGCE	1,800	124	6.9%	300	63	21.0%
SCITT	1,800	122	6.8%	300	67	22.3%
School Direct	3,600	310	8.6%	600	133	22.2%
Teach First	1,794	106	5.9%	299	57	19.1%

Source: Survey of primary head teachers, secondary ITT coordinators and secondary subject leaders. Administrative data reported in note to Table 2.1.

[12] First, they were sent a second paper version of the questionnaire and an email reminder with a link to the online survey. Second, they were sent an email with a link to a shorter version of the survey. Third, routes with low response rates had a targeted phone reminder and further encouragement to complete the survey, before a final email reminder.

[13] Note that School Direct represents two routes (salaried and unsalaried) in this table.

Representativeness of sample

We assess the representativeness of our final sample of schools to inform whether the results from the survey are likely to be generalisable to the wider population of schools involved with each ITT route in England. The observable characteristics of schools we compare include indicators for staff composition, pupil composition, pupil attainment and progression, and an overall measure of effectiveness from the most recent Ofsted inspection. Although we have considered a broad range of indicators, it is possible that schools that respond to the survey are different in unobservable ways (for example, in attitude to ITT or staff capacity) from all schools that were sampled for the survey, which would limit the external validity of our results. Reassuringly, the balance of characteristics that are observable in administrative data suggests that the unobservable characteristics will also be balanced, and therefore that results from the survey are broadly generalisable to the sample of schools involved with ITT.

Table 2.3 shows a given set of characteristics for primary schools and Table 2.4 shows the equivalent information for secondary schools. For each route, the first column presents the average value of each school characteristic for all schools that were sampled for the survey. The second column presents the average value of the same school characteristic for all schools that responded to the survey. Standard deviations are presented in brackets in both columns to give an indication of the variation around the average value for the sampled and responding schools. The responses from the survey are more likely to be representative of the population of schools involved in each training route where average school characteristics of sampled and responding schools are closer together.

Table 2.3 shows that the characteristics of primary schools that were sampled and responded to the survey are generally similar, which suggests that the results from the survey will be externally valid. There are some exceptions where characteristics are statistically significantly different, although these are generally small in magnitude. Schools that responded to the survey for the HEI-led PGCE route are significantly less likely to be community schools (the most common type of maintained school in England) and significantly more likely to have a higher proportion of staff members on the upper pay scale (reflecting seniority) than those sampled for the survey. Measures of school quality from Ofsted are significantly better for schools that responded to the survey for School Direct (salaried and unsalaried routes combined) and SCITT. This could be due to a number of factors: more effective schools may have greater capacity to respond to the survey (although we would expect this to apply to schools sampled for each route), and more effective schools may be more successful at attracting school-based trainees and therefore responding to the survey regarding these routes. These results alone therefore do not provide evidence that our sample of schools is unrepresentative of the sample of schools actually involved with school-based training, as the sample selection was based on information about schools registered with the route rather than schools known to have successfully

Table 2.3. Representativeness statistics for primary school sample

	BEd		HEI-led PGCE		GTP		School Direct		SCITT	
	Sampled[a]	Response	Sampled	Response	Sampled	Response	Sampled	Response	Sampled	Response
Ofsted: overall effectiveness	1.95 [0.68]	1.98 [0.61]	1.95 [0.68]	1.90 [0.60]	1.66 [0.57]	1.50 [0.67]	1.80 [0.66]	1.68* [0.64]	1.81 [0.66]	1.56* [0.69]
Ofsted: quality of teaching	1.99 [0.64]	2.02 [0.57]	1.99 [0.64]	1.92 [0.59]	1.71 [0.56]	1.59 [0.67]	1.85 [0.63]	1.73* [0.62]	1.85 [0.62]	1.66* [0.67]
Ofsted: effectiveness of leadership	1.89 [0.66]	1.98 [0.65]	1.89 [0.66]	1.80 [0.57]	1.63 [0.54]	1.45 [0.60]	1.73 [0.64]	1.61* [0.58]	1.76 [0.65]	1.58* [0.71]
Average point score at KS2	28.71 [1.55]	28.79 [1.37]	28.71 [1.55]	28.97 [1.55]	29.62 [1.80]	29.73 [1.89]	28.88 [1.60]	29.03 [1.42]	28.89 [1.39]	29.44* [1.63]
Overall value added measure	100.13 [1.13]	100.09 [1.10]	100.13 [1.13]	100.20 [1.02]	100.16 [1.03]	100.29 [1.06]	100.32 [1.17]	100.35 [1.06]	100.06 [1.08]	100.46* [0.98]
Proportion EAL	0.17 [0.25]	0.13 [0.23]	0.17 [0.25]	0.18 [0.27]	0.16 [0.21]	0.17 [0.25]	0.20 [0.26]	0.17 [0.24]	0.17 [0.26]	0.16 [0.27]
Proportion SEN	0.10 [0.08]	0.10 [0.11]	0.10 [0.08]	0.09 [0.07]	0.10 [0.08]	0.08 [0.06]	0.10 [0.07]	0.09 [0.07]	0.10 [0.07]	0.09 [0.07]
Proportion FSM	0.18 [0.14]	0.17 [0.14]	0.18 [0.14]	0.17 [0.15]	0.11 [0.11]	0.12 [0.13]	0.19 [0.14]	0.16* [0.12]	0.15 [0.13]	0.12* [0.11]
Proportion community school	0.53 [0.50]	0.59 [0.50]	0.53 [0.50]	0.42* [0.50]	0.51 [0.51]	0.36 [0.49]	0.52 [0.50]	0.48 [0.50]	0.55 [0.50]	0.48 [0.50]
Proportion tenure less than 1 year	0.12 [0.14]	0.21* [0.28]	0.12 [0.14]	0.12 [0.15]	0.10 [0.09]	0.10 [0.12]	0.10 [0.09]	0.10 [0.12]	0.11 [0.11]	0.12 [0.15]
Proportion tenure between 1 and 2 years	0.15 [0.12]	0.13 [0.10]	0.15 [0.12]	0.11* [0.09]	0.15 [0.09]	0.16 [0.10]	0.15 [0.09]	0.16 [0.10]	0.14 [0.11]	0.11* [0.08]
Proportion upper pay scale	0.31 [0.19]	0.29 [0.16]	0.31 [0.19]	0.38* [0.23]	0.24 [0.16]	0.28 [0.18]	0.24 [0.16]	0.28 [0.18]	0.32 [0.18]	0.37* [0.15]

[a] The sample for BEd and HEI-led PGCE routes were the same as placements for these routes were not distinguishable in the administrative data.

Note: Standard deviations are shown in brackets. 'Sampled' refers to all schools that were sampled to give priority for this training route. 'Response' refers to all schools that responded after being sampled to give priority for this training route or that responded about a specific trainee from this route. * denotes that the average characteristic for the responding schools is significantly different (at the 5% level) from the average characteristic for the relevant sampled schools. Ofsted ratings are between 1 and 4, where 1 represents 'outstanding' and 4 represents 'unsatisfactory'; a lower mean score is therefore better. 'KS2' represents Key Stage 2. 'EAL' represents English as an additional language. 'SEN' represents special educational needs. 'FSM' represents eligibility for free school meals. 'Overall value added measure' is a measure of pupil progress during primary school, calculated so that schools where pupils make the expected level of progress, on average, have a score of 100.

Source: Survey of primary schools, School Workforce Census, Edubase, School Performance Tables and Ofsted ratings.

Table 2.4. Representative statistics for secondary school sample

Characteristic	HEI-led PGCE		School Direct		GTP		SCITT		Teach First	
	Sampled	Response	Sampled	Response	Sampled	Response	Sampled	Response	Sampled	Response
Ofsted: overall effectiveness	1.99 [0.81]	1.81* [0.75]	1.83 [0.77]	1.67* [0.74]	1.73 [0.79]	1.70 [0.78]	1.98 [0.81]	1.88 [0.76]	2.28 [0.83]	2.13 [0.77]
Ofsted: quality of teaching	2.09 [0.70]	1.97* [0.65]	1.97 [0.67]	1.89 [0.66]	1.92 [0.67]	1.93 [0.63]	2.07 [0.72]	1.95 [0.65]	2.31 [0.72]	2.15 [0.67]
Ofsted: effectiveness of leadership	1.82 [0.74]	1.68* [0.68]	1.69 [0.70]	1.58* [0.66]	1.66 [0.74]	1.63 [0.70]	1.82 [0.74]	1.74 [0.70]	2.02 [0.77]	1.90 [0.68]
Average point score at KS4	480.85 [74.43]	483.94 [73.29]	490.70 [73.78]	494.41 [74.34]	502.88 [83.68]	504.50 [84.82]	483.62 [74.76]	486.51 [72.23]	465.79 [73.74]	471.05 [76.61]
Overall value added measure	1002.1 [20.53]	1003.1 [18.01]	1004.4 [19.53]	1005.9 [17.54]	1006.2 [18.46]	1005.1 [19.00]	1000.9 [19.96]	1001.7 [18.29]	1004.6 [23.14]	1003.5 [21.41]
Proportion EAL	0.14 [0.20]	0.14 [0.20]	0.12 [0.18]	0.12 [0.19]	0.13 [0.18]	0.10 [0.15]	0.09 [0.16]	0.09 [0.15]	0.32 [0.28]	0.29 [0.26]
Proportion SEN	0.09 [0.06]	0.08 [0.05]	0.08 [0.06]	0.08 [0.05]	0.08 [0.05]	0.07 [0.05]	0.08 [0.05]	0.07 [0.04]	0.11 [0.07]	0.10 [0.06]
Proportion FSM	0.17 [0.13]	0.15* [0.12]	0.15 [0.11]	0.13* [0.11]	0.13 [0.12]	0.12 [0.11]	0.13 [0.10]	0.11 [0.09]	0.33 [0.12]	0.31 [0.12]
Proportion community school	0.21 [0.40]	0.20 [0.40]	0.18 [0.38]	0.19 [0.39]	0.15 [0.36]	0.13 [0.33]	0.15 [0.36]	0.14 [0.35]	0.20 [0.40]	0.10 [0.30]
Proportion tenure less than 1 year	0.10 [0.11]	0.10 [0.11]	0.10 [0.09]	0.09 [0.08]	0.08 [0.05]	0.08 [0.04]	0.09 [0.07]	0.08 [0.06]	0.11 [0.09]	0.09 [0.08]
Proportion tenure between 1 and 2 years	0.14 [0.09]	0.13 [0.08]	0.14 [0.08]	0.13 [0.10]	0.12 [0.05]	0.12 [0.05]	0.14 [0.10]	0.15 [0.14]	0.17 [0.09]	0.15 [0.07]
Proportion upper pay scale	0.35 [0.21]	0.39* [0.21]	0.34 [0.21]	0.36 [0.22]	0.31 [0.23]	0.33 [0.22]	0.37 [0.20]	0.36 [0.22]	0.23 [0.18]	0.28 [0.19]

Note: Standard deviations are shown in brackets. 'Sampled' refers to all schools that were sampled to give priority for this training route. 'Response' refers to all schools (or individual departments within schools) that responded after being sampled to give priority for this training route or that responded about a specific trainee from this route. * denotes that the average characteristic for the responding schools is significantly different (at the 5% level) from the average characteristic for the relevant sampled schools. Ofsted ratings are between 1 and 4, where 1 represents 'outstanding' and 4 represents 'unsatisfactory'; a lower mean score is therefore better. 'KS4' represents Key Stage 4. 'EAL' represents English as an additional language. 'SEN' represents special educational needs. 'FSM' represents eligibility for free school meals. 'Overall value added measure' is a measure of pupil progress during secondary school, calculated so that schools where pupils make the expected level of progress, on average, have a score of 1,000.
Source: Survey of secondary schools, School Workforce Census, Edubase, School Performance Tables and Ofsted ratings.

recruited trainees.[14] Schools responding to the survey for School Direct and SCITT routes have a significantly lower proportion of pupils eligible for free school meals than all schools sampled for these respective routes, suggesting a more affluent intake of pupils. Responding SCITT schools also have significantly higher pupil attainment and progress and some differences in the composition of staff.

Table 2.4 shows a similar picture for the characteristics of secondary schools that were sampled and responded to the survey: schools that respond to the survey are generally similar in observable characteristics to those sampled, which suggests that the results from the survey will be externally valid. There are no statistically significant differences for SCITT schools, in contrast with the results for primary schools, although the schools that responded regarding School Direct are similarly more likely to have better Ofsted ratings and a lower proportion of pupils eligible for free school meals. This is also true for secondary schools sampled and responding regarding the HEI-led PGCE route, and these schools also have a slightly higher proportion of staff on the upper pay scale. Again, this could be due to differences in the probability of responding to the survey or to differences in the probability of having a trainee from these routes, which we are not able to observe perfectly through administrative data (or at all for university-based routes).

In summary, the comparison of school characteristics for those sampled and responding to the primary and secondary survey provides evidence that the schools in the survey are reasonably representative of the schools sampled (and therefore results are likely to be externally valid). There are some exceptions for school-based routes, however, which may be due to non-random response to the survey or to non-random participation in the ITT route. To ensure the results presented in subsequent analyses are robust, we control for school characteristics such as Ofsted ratings of overall effectiveness and pupil attainment and composition, although they make little difference to the estimated relationships, suggesting that observable school characteristics do not accurately predict the costs and benefits associated with particular ITT routes.

2.2 Sources and use of administrative data

To answer the specific research questions outlined in Chapter 1, we combine the results of the survey with administrative data from the following sources:

- The **School Workforce Census**: a record of all teachers and support staff in regular employment in local authorities, maintained schools, academies, free schools, studio schools, university technical colleges and pupil referral units in England. This includes information about the employees' contracts,

[14] For example, see http://www.universitiesuk.ac.uk/highereducation/Documents/2013/InitialTeacherTraining-Nov2013.pdf.

qualifications and curriculum taught. We use this information to construct school- and department-level characteristics for use in the analysis, such as the proportion of teachers with short tenure at the school, and to calculate the average pay of staff members at different pay grades to inform the overall costs of training for schools. We also calculate typical career and wage progression to inform the likely repayment of student loans for ITT.

- **EduBase**: the Department for Education's register of educational establishments in England and Wales. This includes information on school type and pupil composition. We use this information to construct school characteristics for use in the analysis.

- **School Performance Tables**: school-level data on Key Stage 2 (KS2) and Key Stage 4 (KS4) national assessment results, taken at the end of primary and compulsory secondary school respectively. These include both average point scores (measures of absolute attainment) and value added measures (measures of pupil progress). We use this information to control for prior school attainment in the analysis.

- **Ofsted** school-level data: Ofsted is the Office for Standards in Education, Children's Services and Skills. We use information from the regular inspections of all state maintained schools in England that are conducted by Ofsted, using the grade from the most recent inspection in a number of domains. We use this information to control for measures of school effectiveness in the analysis.

- **National Pupil Database (NPD)**: contains information about the characteristics and attainment of all pupils in all state maintained schools and colleges in England. Combining multiple years of the NPD with information on the presence of trainees from each route derived from the surveys, we use the NPD to estimate the impact of the presence of a trainee in a primary school or secondary department on pupil attainment.

3. Recruitment

The costs and benefits of each training route vary for different types of schools and potential trainees. For trainees, the choice of route depends primarily on a comparison of funding available (which for postgraduates in turn depends on their subject and degree class) and idiosyncratic preferences for the method of training. For schools, the choice depends primarily on a comparison of funding available, specific needs of the school and the decision-maker's idiosyncratic preferences for training route. These factors that inform selection into different routes imply that conclusions drawn about one route may not be applicable to schools in different circumstances.

Section 3.1 documents the differences in characteristics of trainee teachers who choose and are accepted for each route. For example, those who choose and are selected for Teach First are likely to be younger and have achieved better results at degree level than the average trainee teacher. Hobson and Malderez (2005) show that trainees from different routes differ in basic demographic characteristics (such as age and gender) and other ways such as financial circumstances and the perceived quality of each training route. This means that any difference in the cost-effectiveness of different routes could be due to the training itself or to the underlying characteristics of the trainees.[15] We find that there is more variation in the perceived quality of trainees within routes than is evident between routes, which suggests that selection of trainees into particular routes is unlikely to bias our later estimates of cost-effectiveness for each route, although there may be differences in characteristics not captured in the survey.

We also document, in Section 3.2, the differences in characteristics of schools that choose (or are able) to train teachers from certain routes. We find that schools involved with school-based routes have better capacity to recruit trainees and deliver ITT in partnership with ITT providers, which implies that the costs and benefits observed at these schools may not apply to other schools in different circumstances.

3.1 Characteristics of trainees who choose each ITT route

Table 3.1 shows the perceived characteristics of trainees in primary schools, by ITT route, reported by primary school head teachers. These characteristics relate to the initial perception of a specific trainee at the start of the placement, in order

[15] We account for the possible selection of trainees into different routes as far as possible by adjusting our subsequent estimates by observable characteristics of the trainees: the initial 'quality' of trainees (as perceived by their mentor, head of department or head teacher in our bespoke survey). Throughout, to the extent that characteristics of trainees that affect the costs and benefits associated with their training are not observable to us (such as motivation), our analysis provides informed descriptive rather than causal estimates.

to distinguish the characteristics of trainees who choose each route from any influence of training at the school. For each attribute of the trainee (given in the rows of Table 3.1), respondents could rate the trainee as 'very good', 'good', 'adequate', 'poor' or 'very poor'. Table 3.1 reports the percentage of respondents who rate the specific trainee in their recent experience as 'very good' or 'good' from each route.[16]

Table 3.1. Reported characteristics of trainees (primary)

Route	Percentage of trainees rated 'very good' or 'good'					
	BEd	HEI-led PGCE	GTP	SD(S)	SD(US)	SCITT
Resilience	76	75	89	81	83	81
Social skills	93	84	100	95	90	88
Subject knowledge	54	67	53	62	62	71
Behaviour management	56	56	63	59	48	76
Confidence in the classroom	73	54	72	64	62	73
Commitment to teaching	90	85	84	90	90	88
Potential to be a good teacher	93	82	89	86	90	88

Note: Respondents were asked about their initial perception of a specific trainee recently placed at their school.
Source: Survey of primary schools.

Overall, a high percentage of respondents believe the trainee has 'very good' or 'good' potential to be a good teacher – at least 82% for each route. Although there are small differences in this percentage between routes, there are no statistically significant differences, suggesting that trainees from each route are perceived as equally capable in their future careers.

There is a similar pattern for perceptions of commitment to teaching and resilience, where the overall perception of quality is high and there is some variation (although not significant) between routes. The percentage perceived to have 'very good' or 'good' subject knowledge is lower than for other characteristics, between 53% and 71% across routes. This relatively large difference (between GTP and SCITT trainees) is not statistically significant, however, due to the smaller sample size for these routes.

Trainees on the HEI-led PGCE route are less likely to be perceived as having high confidence in the classroom than BEd trainees, which is the only statistically significant difference for this perceived teacher characteristic. Trainees on the HEI-led PGCE route are also less likely to have a high rating of social skills than

[16] Results for the percentage rated as 'very good' only are reported in Appendix A.

GTP trainees. GTP trainees score particularly highly in this domain, with all respondents rating the trainee highly, which is a significantly higher proportion than for School Direct salaried and SCITT trainees as well as for HEI-led PGCE trainees. Finally, SCITT trainees have the highest perceived quality related to behaviour management, with 76% rated highly, significantly more than School Direct unsalaried trainees.

The relationships presented in Table 3.1 and discussed above continue to hold once school characteristics are accounted for,[17] which suggests that any variation in the characteristics of schools that are involved with each route does not affect the perceived quality of these trainees.

Table 3.2 presents the equivalent perceptions of trainee characteristics at secondary school, reported by the subject leader in the relevant subject.

Table 3.2. Reported characteristics of trainees (secondary)

Route	Percentage of trainees rated 'very good' or 'good'					
	HEI-led PGCE	Teach First	GTP	SD(S)	SD(US)	SCITT
Resilience	73	75	82	68	74	77
Social skills	78	89	85	84	80	79
Subject knowledge	75	89	77	66	79	69
Behaviour management	46	44	66	53	51	49
Confidence in the classroom	62	64	69	67	63	64
Commitment to teaching	81	78	83	81	89	90
Potential to be a good teacher	79	83	83	81	83	79

Note: Respondents were asked about their initial perception of a specific trainee recently placed at their school.
Source: Survey of secondary schools.

As with primary schools, the overall percentage of trainees perceived to have 'very good' or 'good' potential to be a good teacher is high (at least 79% across all routes), and there are no significant differences between routes. This is also true for ratings of the trainee's commitment to teaching, resilience, social skills and confidence in the classroom.

Behaviour management is perceived to be highest for GTP trainees (rather than SCITT trainees as in primary schools), significantly more so than HEI-led PGCE trainees, of whom only 46% were rated highly. Perceptions of trainees' aptitude

[17] Ofsted grade for overall effectiveness, quintiles for the proportion of teachers with tenure below one year, and between one and two years, and quintiles for average pupil attainment are accounted for.

are lower in this area than in other areas across all ITT routes, which was less evident in the responses from primary school head teachers. This suggests that behaviour management skills must be developed more at secondary level to be adequate.

Subject knowledge is reported to vary most between routes at secondary school: Teach First trainees have the highest rating, where 89% are perceived to have 'very good' or 'good' subject knowledge, significantly higher than HEI-led PGCE, School Direct salaried and SCITT trainees.

As in primary schools, the significant relationships between some routes and perceptions of trainee characteristics hold conditional on school characteristics.

Overall, the characteristics of trainees in primary and secondary schools seem to be largely similar across routes, which indicates that there is not a significant degree of sorting across routes according to trainee 'quality', as captured subjectively through the responses to our survey. The limitations of this conclusion are the relatively small sample size of our survey and the potentially non-representative sample for some routes (documented in Table 2.3 and Table 2.4), although the results are robust to the inclusion of school characteristics.

3.2 Characteristics of schools that participate in each ITT route

Schools may become involved with ITT in a number of ways. For university-based routes, ITT providers may approach schools to host trainees, or have established relationships with schools. Involvement with a school-based route is likely to be a more pro-active decision – for example, joining or leading a school partnership (as for SCITT), registering with the National College for Teaching and Leadership (NCTL) to be part of School Direct or participating in Teach First. Eligibility criteria also determine involvement with some routes: for the academic year 2013–14, schools were eligible for Teach First if more than half of pupils were from the poorest 30% of families in England, according to the Income Deprivation Affecting Children Index (IDACI);[18,19] for the academic year 2013–14, the lead school in a School Direct partnership could not be in special measures, classified by Ofsted.[20] A school's participation in university-based or school-based ITT therefore depends in part on proximity to an ITT provider (either for placement of a university-based trainee or for partnership under School Direct)

[18] Note that the eligibility criteria for Teach First will change for the academic year 2015–16, so that the income deprivation threshold will be lower for schools in local authorities with poor performance.

[19] http://webarchive.nationalarchives.gov.uk/20120601152500/http://www.communities.gov.uk/communities/research/indicesdeprivation/deprivation10/; http://www.teachfirst.org.uk/about/our-history.

[20] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237266/School_Direct_Manual_V6_0.pdf.

Table 3.3. Characteristics of schools (primary)

Characteristic	All schools	BEd	HEI-led PGCE	GTP	SD(S)	SD(US)	SCITT
Ofsted: overall effectiveness	2.04 [0.68]	1.83 [0.63]	1.83 [0.63]	1.71 [0.62]	1.58 [0.71]	1.50 [0.51]	1.64 [0.70]
Ofsted: quality of teaching	2.07 [0.64]	1.90 [0.59]	1.88 [0.60]	1.78 [0.59]	1.65 [0.70]	1.57 [0.50]	1.73 [0.68]
Ofsted: effectiveness of leadership	1.98 [0.66]	1.77 [0.63]	1.75 [0.62]	1.63 [0.58]	1.52 [0.65]	1.45 [0.50]	1.62 [0.71]
Average point score at KS2	28.63 [1.61]	29.02 [1.38]	29.04 [1.39]	28.99 [1.45]	29.00 [1.52]	29.20 [1.22]	29.49 [1.58]
Overall value added measure	100.03 [1.08]	100.25 [1.04]	100.27 [1.07]	100.29 [1.10]	100.48 [1.12]	100.66 [0.96]	100.53 [0.85]
Proportion EAL	0.13 [0.22]	0.16 [0.25]	0.17 [0.27]	0.18 [0.26]	0.20 [0.26]	0.16 [0.27]	0.13 [0.25]
Proportion SEN	0.10 [0.08]	0.09 [0.08]	0.10 [0.08]	0.10 [0.07]	0.10 [0.08]	0.10 [0.07]	0.10 [0.07]
Proportion FSM	0.17 [0.14]	0.16 [0.13]	0.16 [0.13]	0.16 [0.13]	0.18 [0.14]	0.16 [0.12]	0.12 [0.12]
Proportion community school	0.52 [0.50]	0.43 [0.50]	0.44 [0.50]	0.47 [0.50]	0.48 [0.50]	0.42 [0.50]	0.40 [0.49]
Proportion tenure less than 1 year	0.13 [0.17]	0.13 [0.16]	0.13 [0.16]	0.13 [0.14]	0.16 [0.10]	0.09 [0.07]	0.11 [0.15]
Proportion tenure between 1 and 2 years	0.15 [0.13]	0.11 [0.08]	0.12 [0.09]	0.14 [0.12]	0.16 [0.13]	0.15 [0.13]	0.11 [0.08]
Proportion upper pay scale	0.32 [0.19]	0.34 [0.19]	0.33 [0.20]	0.29 [0.17]	0.24 [0.15]	0.31 [0.17]	0.39 [0.15]

Note: Standard deviations are shown in brackets. Ofsted ratings are between 1 and 4, where 1 represents 'outstanding' and 4 represents 'unsatisfactory'; a lower mean score is therefore better. 'KS2' represents Key Stage 2. 'EAL' represents English as an additional language. 'SEN' represents special educational needs. 'FSM' represents eligibility for free school meals. 'Overall value added measure' is a measure of pupil progress during primary school, calculated so that schools where pupils make the expected level of progress, on average, have a score of 100.
Source: Survey of primary schools, School Workforce Census, Edubase, School Performance Tables and Ofsted ratings.

and school characteristics and in part on the perceived costs and benefits associated with each ITT route.

Table 3.3 shows the characteristics of primary schools involved with each ITT route, observed through our survey, in comparison with all primary schools observed in administrative data.

Schools involved with any ITT route have significantly better Ofsted grades, on average, than the population of primary schools. Schools involved with School Direct (salaried and unsalaried routes) and GTP also have significantly better Ofsted grades, on average, than schools involved with BEd and HEI-led PGCE. This suggests that schools involved with these new school-based routes have

better capacity to recruit trainees and deliver ITT in partnership with ITT providers. In contrast, there are few differences in measures of pupil performance and progress between schools involved with different routes,[21] although all routes (except School Direct salaried) have significantly higher pupil performance and progress, on average, than the population of primary schools.

There are few differences in the staff composition across schools involved with different routes, which is perhaps surprising given that one motivation for involvement with school-based ITT is to provide extra capacity. One exception is that schools involved with School Direct salaried do have a significantly higher percentage of teachers with tenure between one and two years and a significantly lower proportion of teachers on the upper pay scale (indicating seniority) than schools involved with BEd and HEI-led PGCE routes. This may be because School Direct salaried trainees need not be supernumerary, and have the expectation of future employment in the school,[22] and therefore in principle provide extra capacity for the school in current and future academic years.

Table 3.4 shows that, in contrast, secondary schools involved with School Direct routes are similar in staff composition. There is no significant difference in staff tenure or seniority between schools involved with Teach First and other routes, which may have been expected if schools are more likely to be involved with this ITT route to offset high teacher turnover and vacancy rates in the school.

Schools involved with Teach First have a higher proportion of pupils eligible for free school meals, on average, than schools involved with all other routes. This is because the correlation between Teach First's eligibility criteria and the percentage of pupils eligible for free school meals is high.[23]

Pupil attainment and Ofsted grades are significantly lower for schools involved with Teach First, on average, than for schools in the general population. This is again unsurprising as there is an established relationship between pupil deprivation and school attainment, on average, in England.[24]

As in primary schools, pupil attainment and Ofsted ratings are significantly better in schools involved with GTP and School Direct routes than in the population of schools in England, and schools involved with HEI-led PGCE have significantly better Ofsted ratings.

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[21] The exception is that schools involved with School Direct unsalaried have higher measures of pupil progress, on average, than schools involved with BEd and HEI-led PGCE routes.

[22] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237266/School_Direct_Manual_V6_0.pdf.

[23] http://www.ifs.org.uk/publications/6640.

[24] http://eprints.lse.ac.uk/6321/1/Schools_in_Disadvantaged_Areas_Recognising_context_and_raising_quality.pdf.

Table 3.4. Characteristics of schools (secondary)

Characteristic	All schools	HEI-led PGCE	Teach First	GTP	SD(S)	SD(US)	SCITT
Ofsted: overall effectiveness	2.06 [0.81]	1.81 [0.72]	2.17 [0.67]	1.78 [0.73]	1.68 [0.67]	1.73 [0.69]	1.86 [0.69]
Ofsted: quality of teaching	2.15 [0.70]	1.97 [0.62]	2.23 [0.56]	1.94 [0.63]	1.87 [0.62]	1.93 [0.61]	1.99 [0.58]
Ofsted: effectiveness of leadership	1.90 [0.75]	1.68 [0.66]	1.96 [0.69]	1.66 [0.67]	1.60 [0.65]	1.64 [0.67]	1.78 [0.67]
Average point score at KS4	348.00 [29.17]	351.58 [28.79]	335.66 [22.98]	352.99 [26.93]	356.02 [26.93]	352.85 [22.03]	347.00 [18.87]
Overall value added measure	1000.6 [20.58]	1001.8 [18.47]	998.3 [21.44]	1004.5 [17.14]	1006.8 [17.38]	1003.8 [17.15]	1001.4 [18.52]
Proportion EAL	0.13 [0.20]	0.12 [0.19]	0.26 [0.25]	0.15 [0.21]	0.16 [0.22]	0.13 [0.21]	0.09 [0.18]
Proportion SEN	0.08 [0.06]	0.08 [0.06]	0.09 [0.05]	0.08 [0.05]	0.08 [0.06]	0.08 [0.05]	0.08 [0.05]
Proportion FSM	0.16 [0.12]	0.15 [0.12]	0.27 [0.12]	0.16 [0.13]	0.15 [0.12]	0.14 [0.12]	0.14 [0.11]
Proportion community school	0.23 [0.42]	0.18 [0.39]	0.16 [0.37]	0.18 [0.39]	0.17 [0.38]	0.18 [0.39]	0.21 [0.41]
Proportion tenure less than 1 year	0.12 [0.15]	0.09 [0.09]	0.10 [0.08]	0.10 [0.11]	0.10 [0.05]	0.08 [0.04]	0.10 [0.12]
Proportion tenure between 1 and 2 years	0.14 [0.11]	0.13 [0.09]	0.17 [0.14]	0.14 [0.11]	0.14 [0.10]	0.13 [0.11]	0.13 [0.11]
Proportion upper pay scale	0.36 [0.21]	0.38 [0.21]	0.37 [0.18]	0.35 [0.21]	0.34 [0.20]	0.37 [0.21]	0.38 [0.22]

Note: Standard deviations are shown in brackets. Ofsted ratings are between 1 and 4, where 1 represents 'outstanding' and 4 represents 'unsatisfactory'; a lower mean score is therefore better. 'KS4' represents Key Stage 4. 'EAL' represents English as an additional language. 'SEN' represents special educational needs. 'FSM' represents eligibility for free school meals. 'Overall value added measure' is a measure of pupil progress during secondary school, calculated so that schools where pupils make the expected level of progress, on average, have a score of 1,000.
Source: Survey of secondary schools, School Workforce Census, Edubase, School Performance Tables and Ofsted ratings.

Overall, these tables suggest that schools become involved with ITT if they have the capacity and ability to support trainees. This is consistent with evidence from the survey that the most commonly cited barrier to involvement with ITT is a lack of staff capacity, for both primary and secondary schools (presented in Table 3.5). Schools are also concerned about the potential negative impact of the presence of trainees on pupil attainment, which may be a greater risk in schools that have worse Ofsted grades and poorer existing pupil attainment and progress, on average. Involvement with ITT is therefore unlikely to be randomly chosen by schools, but likely to be clearly related to the schools' circumstances, as suggested in Section 2.1.

Table 3.5. Stated barriers to participation in initial teacher training

	Primary		Secondary	
Stated barrier	**N**	**%**	**N**	**%**
Not having the necessary staff capacity to support one or more trainees	63	66%	103	50%
Concerns about a potentially negative impact on pupil progress	45	47%	70	34%
Poor experience of supporting trainee(s) in the past	20	21%	25	12%
Budgetary issues / inadequate payment to host a trainee	19	20%	25	12%
Poor experience with ITT provider(s) in the past	19	20%	12	6%
A lack of suitable candidates	11	11%	49	24%
Not having had an opportunity to host trainees	4	4%	28	14%

Note: The total sample that responded to at least one barrier is 96 for primary schools and 206 for secondary subject leaders. Respondents could state more than one barrier in the survey.
Source: Survey of primary and secondary schools.

In summary, although Chapter 2 demonstrated that the results from this research are likely to be generalisable to all schools involved with particular ITT routes, the calculated decision that schools make to become involved with particular ITT routes means that the costs and benefits of each ITT route explored in later chapters cannot be extrapolated to schools with different characteristics (or those not currently involved with this route). For example, the benefits to School Direct for an effective school with high pre-existing pupil attainment may not be realised in a school with lower effectiveness and management, and the costs of recruitment and training may be higher. This limits the potential for the research to conclude whether particular routes should be expanded or contracted, as the benefits and costs may be different for a less select group of schools or for schools with different characteristics. Such a recommendation would also depend on the wider system costs and benefits of different ITT routes, such as economies of scale in recruitment, which, as discussed in Chapter 1, it is not possible to consider in this report.

4. Costs and Benefits of Each ITT Route

Central costs are likely to form the largest contribution to the short-term costs and benefits of different routes. This chapter therefore first presents the costs for central government associated with different routes, looking at the variation by trainee and school characteristics. We find that the average cost to government of providing student finance is large, as a teacher with typical career progression would not pay back their loan before it is written off. This implies that routes where particular trainees are eligible for significant bursary or scholarship funding in addition to student finance are the most expensive. This discussion informs the subsequent calculation of total net costs for central government and schools in Chapter 5.

Section 4.2 provides descriptive evidence on the costs imposed on schools primarily through staff time – for example, the time dedicated to mentoring trainee teachers and lesson observations, including feedback. We explore the relationship between these total costs and trainee and school characteristics to account for selection onto each route. We find that these indirect costs do not vary significantly between routes (with one exception) and that accounting for trainee characteristics does not affect this result.

It may be that a particularly expensive route is also most beneficial for teacher effectiveness or for easing detrimental recruitment problems for the school. Hobson et al. (2009) also document the possible benefits for existing teachers from taking a mentoring role. Section 4.3 therefore considers the benefits to schools of involvement with each route and whether these benefits are related to trainee and school characteristics. We find that particular routes are significantly more likely to be reported as having benefits greater than costs, which depends in part on the characteristics of trainees.

Section 4.4 compares schools' perceptions of benefits in relation to costs, presenting the ranking of routes by schools (where the school has knowledge of more than one route) and also monetising the benefit–cost ratio to provide an overall measure of the net cost (or benefit) to schools for each route, on average. This estimate is later combined with information on the central costs discussed in Section 4.1 in order to summarise the overall costs and benefits for each route.

A critical component of the cost-effectiveness of different teacher training routes is the impact on pupil attainment: a particular training route may be relatively expensive but have an immediate positive impact on pupils' learning, for example.[25] Section 4.5 therefore investigates the short-run impact of trainee teachers on the overall effectiveness (in raising pupil attainment) at the school/department level. This analysis is the first of its kind in the UK, providing

[25] Unfortunately, it will not be possible to assess the long-term impact of teachers trained through different routes on pupil attainment, as a link between teachers and pupil attainment is not available in administrative data in England.

information on the impact of a change in the department workforce in response to the presence of a trainee, which may be positive (for example, if the trainee is supernumerary and requires minimal supervision, or is highly effective) or negative (if the trainee requires significant supervision which distracts other members of staff, or has low effectiveness).

Finally, we summarise the overall costs and benefits for each route in Section 5.

4.1 Central costs

This section presents and discusses the central costs for each route, as context for the following discussion of costs and benefits for schools. The total short-term costs and benefits are summarised in Chapter 5.

Table 4.1 summarises the funding that is available to each route, and whether this funding varies according to characteristics of trainees or schools involved in training. Types of central costs are summarised more fully in Table 4.2. Some central costs are incurred directly, such as grant funding, while other costs are indirect, such as the opportunity cost of providing student loans.

Teach First is the only route that receives a fixed amount of funding per trainee, independent of the trainee's subject, degree class and region of training.

Table 4.1. Central costs relevant to each route

Central cost	BEd	HEI-led PGCE	SCITT	School Direct unsalaried	School Direct salaried	Teach First
Scholarship		✓†	✓†	✓†*		
Bursary		✓†	✓†	✓†*		
Tuition fee and maintenance loan	✓*†	✓*†	✓*†	✓*†		
Maintenance grant	✓†	✓†	✓†	✓†		
NCTL grant					✓†*	✓

† denotes that whether funding is received and, if so, its amount vary with one or more trainee characteristics (degree class, subject or household income).
* denotes that whether funding is received and, if so, its amount vary with one or more school characteristics (region and pupil composition). Scholarship and bursary awards depend on school characteristics for School Direct unsalaried only by whether the FSM uplift is applied, if the award is granted.
Source: See footnotes to Table 4.2.

Table 4.2. Central costs of initial teacher training

Source of central cost	Description (academic year 2013–14)
Scholarship[a]	Scholarships are awarded through a competitive process by the Institute of Physics (IOP), the Royal Society of Chemistry (RSC), BCS (the Chartered Institute for IT) and the Institute of Mathematics and Its Application (IMA), primarily for trainees with at least a 2:1 degree class. The scholarship funding is £20,000 (tax free) per trainee, independent of region,[b] with a 25% uplift for School Direct unsalaried trainees whose training is based in a school (more than 60 days) where more than 35% of pupils are eligible for free school meals.[c] Trainees are not eligible for both scholarships and bursaries. Trainees on salaried routes are not eligible for scholarships or bursaries.
Bursary[a]	Bursaries are awarded by NCTL and are tax free. The amount depends on subject and degree class, in general with higher amounts for high-priority subjects and higher degree classes. The lowest bursary amount is £4,000 for trainees for primary school (non-maths specialists) with a 2:1 and for trainees for secondary school in an other-priority subject. The highest bursary amount is £20,000 for trainees for secondary school in a high-priority subject with a first-class degree.[d] Bursaries are not available for: non-graduates; secondary school trainees with a 3rd or lower in any subject; secondary school trainees with a 2:2 or lower in an other-priority subject or non-priority subject; and primary school trainees with a 2:2 or lower. There is a 25% uplift for School Direct unsalaried trainees whose training is based in a school (more than 60 days) where more than 35% of pupils are eligible for free school meals.[c] Initial teacher training providers will be able to award higher bursary awards than a trainee's degree class would allow if they have outstanding potential, where trainees are not currently eligible for the highest bursary award.[e] Trainees are not eligible for both scholarships and bursaries. Trainees on salaried routes are not eligible for scholarships or bursaries.
Tuition fee and maintenance loan[f]	Tuition fee and maintenance loans are available to all trainees on non-salaried routes (including those eligible for a bursary or scholarship). The maximum tuition fee loan is £9,000 per annum. The maximum maintenance fee loan is £7,675 for those living away from home and training in London. Entitlement for the maintenance loan declines as the amount of maintenance grant increases (£0.50 for every pound). The cost of providing these tuition fee and maintenance loans to central government includes the long-term cost of non-repayment and the opportunity cost of the provision of loans.
Maintenance grant[†]	£3,354 per year for trainees on non-salaried ITT routes with household income less than £25,000; declining at a rate of £0.1876 per pound of household income to £50 at £42,611 and zero above this. Each pound of maintenance grant leads to a decline in entitlement to maintenance loan of £0.50.
NCTL grant to schools[g]	No direct grant for university-based routes and School Direct unsalaried, which are funded through trainee's tuition fees.
	Range between £14,000 and £26,000 for School Direct salaried depending on subject and area (zero for non-priority subjects at secondary level) and whether the school is eligible for a 10% uplift (where more than 35% of pupils are eligible for free school meals and the trainee is based in the school (more than 60 days)).
NCTL contract	£25,958 for Teach First (£17,652 per trainee for ITT; £8,306 per trainee for expansion grant).

Notes to Table 4.2
[a] http://webarchive.nationalarchives.gov.uk/20130423140808/http://education.gov.uk/get-into-teaching/funding/postgraduate-funding.
[b] The value of a scholarship has increased since 2013–14, to £25,000.
[c] The FSM uplift has been removed for the academic year 2015–16.
[d] This maximum value has increased since 2013–14, to £25,000.
[e] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/193849/130430_Training_Bursary_Guide_AY_2013-14_V2.1.pdf.
[f] http://webarchive.nationalarchives.gov.uk/20130423140808/https://www.gov.uk/student-finance/loans-and-grants.
[g] Annex D of https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237266/School_Direct_Manual_V6_0.pdf. Email correspondence with NCTL.
Note: All figures refer to the 2013–14 academic year (for trainees beginning training in September 2013).

School Direct salaried funding depends on region,[26] subject (with higher funding for high-priority subjects)[27] and school characteristics (with higher funding for trainees in schools where more than 35% of pupils are eligible for free school meals).

Funding for postgraduate tuition fee routes (School Direct unsalaried, HEI-led PGCE and SCITT) depends on eligibility for maintenance grants (and therefore the maximum available maintenance loan), degree class and subject (and consequently eligibility for a tax-free bursary), and award of a tax-free scholarship through a competitive process in high-priority subjects (excluding modern languages and including one other-priority subject – computer science). For School Direct unsalaried, there is also an uplift for trainees in schools where more than 35% of pupils are eligible for free school meals. Note that trainees on these routes cannot be awarded both a scholarship and a bursary, although all other aspects of student finance (tuition fee loans to cover the cost of tuition fees, maintenance grants and maintenance loans) are unaffected by these sources of funding. Funding for the undergraduate tuition fee route (BEd) is solely through tuition fees paid to the ITT provider. The central cost of these routes per trainee therefore vary according to the timing and total repayment of the loan, and eligibility for a maintenance grant (the size of which determines the maximum possible maintenance loan).

For Teach First and School Direct salaried, the trainee is paid a salary, a proportion of which is then paid in tax. To calculate the overall net cost to central government, this tax revenue must be deducted from the central costs. However, this requires contemplation of the counterfactual: another teacher would have been teaching, earning and paying tax in the place of the trainee. Consideration of

[26] Wherever funding varies by region, there is higher funding for schools in Inner London, followed by Outer London, followed by Fringe London, followed by outside London.

[27] High-priority subjects are defined by the Department for Education as physics, mathematics, chemistry and modern languages. Other-priority subjects are English, geography, history, computer science, classics, Greek, Latin, music, biology, physical education and primary.

this offset in costs is postponed until Chapter 5, where the total net costs for schools and central government are presented.[28]

To estimate the central cost of providing student finance for ITT, we model the timing and total repayment of tuition fee and maintenance loans, under the assumption that each trainee borrows the maximum possible amount. We present two scenarios: in the first, the trainee is eligible for the full maintenance grant (and therefore a lower maintenance loan); in the second, the trainee is not eligible for any maintenance grant and therefore borrows the maximum possible maintenance loan. We model the new system of student finance, although our academic year of interest (2013–14) was a period of transition between the old and new systems of university finance, where the direct source of funding for universities shifted from central government to tuition fees from students.[29]

We assume that the trainee's future salary (and therefore repayment of the loan to cover ITT) follows the average wage profile of all teachers and senior leaders currently in the profession (observed in the School Workforce Census). A number of simplifying assumptions are necessary: first, that recent trainees will have a similar pattern of wage growth to existing teachers and senior leaders[30] (but this may change given recent reforms to teacher pay progression[31]); second, we ignore the variation between subjects and between ITT routes (which is not observed in the School Workforce Census), and indeed between individual trainees; and third, we assume that the trainee remains in teaching throughout their career. The second assumption implies that the central cost we report is for the average qualifying teacher, which is a meaningful example. The third assumption implies that our estimate of the central cost is likely to be an upper bound, as teachers who leave the profession are likely to go on to have higher salaries and therefore repay their loans more quickly. Full details of this model are provided in Appendix B.

We also model the old system of student finance to examine how the changes to higher education funding have affected the central costs of ITT. A direct comparison cannot be made because, under the old system of loans, the government provided grants directly to ITT providers to cover the cost of tuition; however, a stark result does emerge for the repayment of loans for postgraduate tuition fee routes (HEI-led PGCE, SCITT and School Direct unsalaried). The loan to cover the tuition fees of a postgraduate is added to any existing student loans from undergraduate courses. Under the old system, students could borrow up to £10,462 in loans per year, including the HEI-led PGCE year, which rose to

[28] Including this result here would not change the results dramatically as the net tax revenue is less than £700 per trainee.

[29] These 'old' and 'new' systems are summarised at http://www.ifs.org.uk/comms/r93.pdf.

[30] Teachers' pay is also assumed to grow in line with forecasts of the real average weekly earnings index; these project long-term growth of 1.1% per year.

[31] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/341951/School_teachers__pay_and_conditions_2014.pdf.

£16,675 under the new system. This implies that the maximum outstanding loan when starting a HEI-led PGCE rose from £31,497 under the old system to £51,614 under the new system. Under the old system, a teacher with an average salary had paid off their undergraduate and HEI-led PGCE loan by their mid-40s. Under the new system, the average teacher has not finished paying off their undergraduate loan by the time it is written off after 30 years.[32] This means that under the new system, for a typical teacher, the government receives no repayment of the loan provided for the HEI-led PGCE. This has profound policy implications for the funding structure of student loans for ITT qualifications. It is conceivable that the presence of the tuition fee deters some graduates from applying for these ITT routes; this deterrence effect could be avoided at a relatively small cost to central government.

Given the variation in funding by route, it is not possible to present the overall central cost for trainees with every combination of characteristics. Unfortunately, it is also not possible to estimate the average cost of a trainee from each route, as aggregate information on the average characteristics of trainees that determine funding by route is not available. Instead, we present the variation in funding by route and trainee characteristics graphically, first for secondary and then for primary trainees.[33] Full central costs for trainees in each possible circumstance are presented in the online appendix.[34] Note that the maintenance grant assumption for BEd assumes that eligibility remains the same throughout the three-year undergraduate degree.[35]

Comparing Figure 4.1 with Figure 4.2 shows that the maximum central cost for secondary-level ITT is highest for trainees in high-priority subjects: modern languages, physics, chemistry, maths, and computer science (which is not a high-priority subject but where scholarships are awarded).[36] The central cost is highest for School Direct unsalaried in cases where the trainee has a first-class degree, is eligible for an uplift in bursary (or scholarship) funding,[37] is eligible for maintenance grant and receives the maximum possible tuition fee and

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[32] This finding is true for teachers with higher-than-average wage progression (for example, those in the 75th percentile of earnings).

[33] It is worth noting that potential trainees with a 2:2 or third-class degree are unlikely to be accepted to Teach First (trainees with these degree classes were around 4% of the cohort in 2013–14), but we have retained the figures throughout for comparison with other routes.

[34] http://www.ifs.org.uk/docs/rsitt_allenetal_appendix.xlsx.

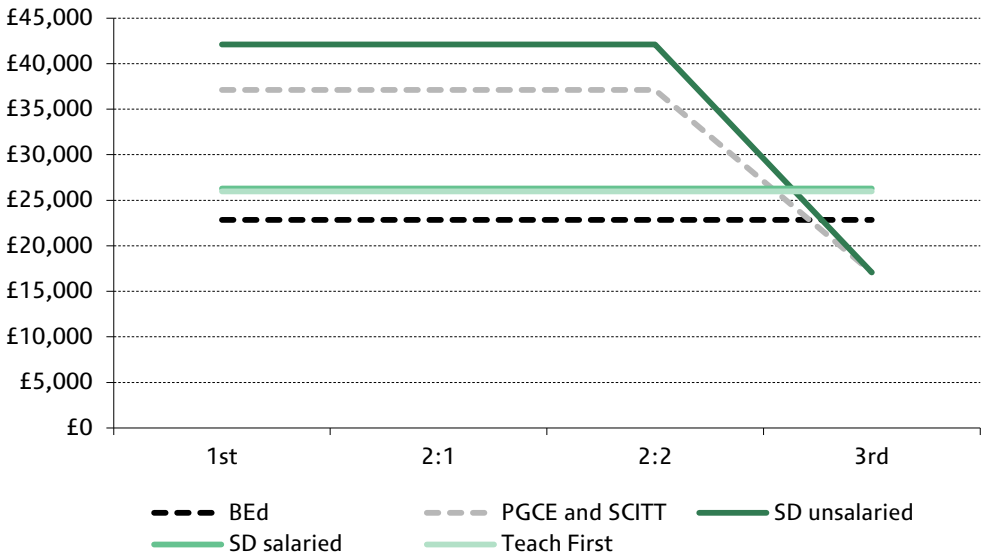
[35] In Figures 4.1–4.5, all costs for the BEd route are constant across degree class, as these trainees are undergraduates.

[36] Figures 4.1–4.5 are for Inner London; however, the picture does not change when looking at Outer London. The maximum central cost includes the possible 10% uplift for School Direct salaried NCTL grant and the possible 25% uplift in School Direct unsalaried bursary and scholarship. The maximum and minimum costs of providing tuition fee and maintenance loans depend on the amount of maintenance grant awarded: the cost of providing loans is lower with higher maintenance grants as the possible maintenance loan declines by £0.50 for every pound.

[37] Has more than 60 days of their training at a school with more than 35% of pupils eligible for free school meals.

maintenance loan. The cost is £42,098 per trainee, compared to a maximum cost of £37,098 for HEI-led PGCE and SCITT trainees, £26,290 for School Direct salaried trainees, £25,958 for Teach First trainees and (the cheapest) £22,845 for BEd trainees. This distribution of costs is the same for trainees with a 2:1 or 2:2 degree as the postgraduate trainees on tuition fee funded routes (School Direct unsalaried, HEI-led PGCE and SCITT) are eligible to apply for a £20,000 scholarship when training for a high-priority subject.[38] The lowest cost to train a teacher with a third-class degree is for postgraduate trainees on tuition fee funded routes as these trainees are not eligible for a bursary or scholarship.

Figure 4.1. Maximum central cost of a secondary trainee in a high-priority subject by degree class and training route (Inner London)



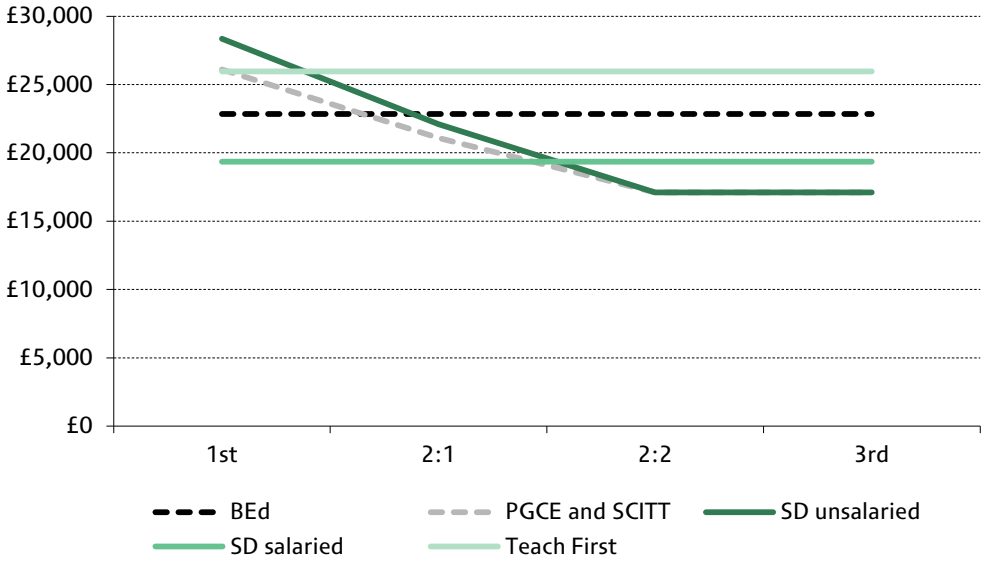
Note: These results are qualitatively similar when looking at the minimum cost for each route.
Source: See footnotes to Table 4.2 and Appendix B (student loans model). PGCE refers to HEI-led PGCE.

The picture is slightly different when we consider the central costs of training a trainee for an other-priority subject. Figure 4.2 shows that the School Direct unsalaried route is still the most expensive when considering a trainee with a first-class degree. The difference in costs across ITT routes is substantially reduced, however: the School Direct unsalaried cost is only £8,988 more than the cheapest route, School Direct salaried, with a first-class degree. This is because other-priority trainees are not eligible for scholarships and the maximum bursary is substantially reduced (from £25,000 to £11,250).[39] Teach First has the highest central costs for a trainee with a 2:1 degree or lower.

[38] It is worth noting, however, that a trainee with a 2:2 degree is less likely to receive a scholarship. Not having a scholarship would reduce the maximum cost of HEI-led PGCE and SCITT to £29,024 and of School Direct unsalaried to £32,094.

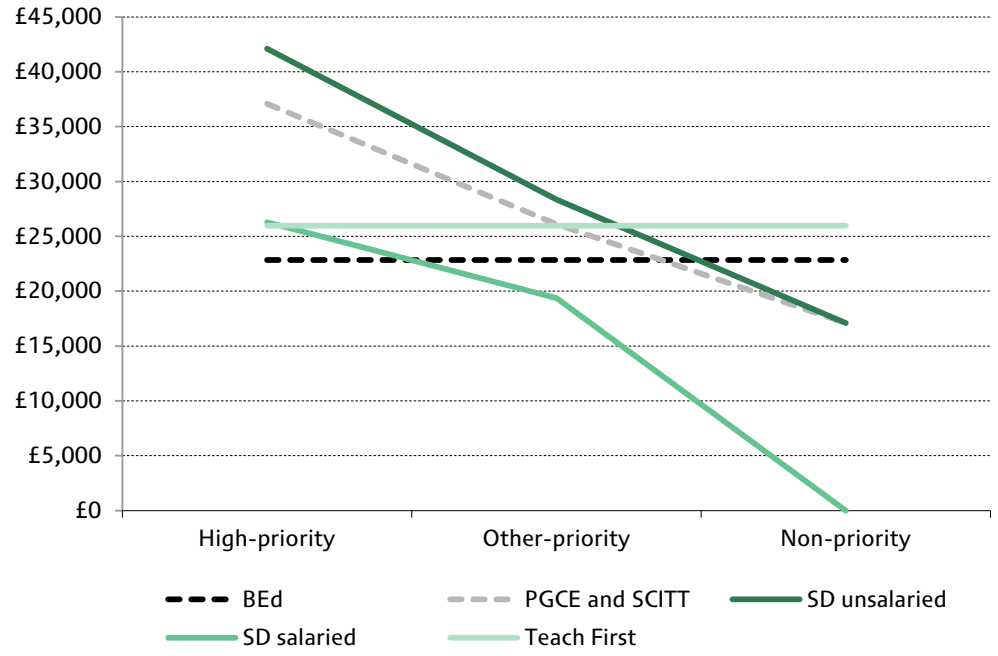
[39] This excludes computer science from 'other-priority' as trainees in this subject are eligible for scholarships according to similar criteria to maths, physics and chemistry.

Figure 4.2. Maximum central cost of a secondary trainee in an other-priority subject by degree class and training route (Inner London)



Note: These results are qualitatively similar when looking at the minimum cost for each route.
Source: See footnotes to Table 4.2 and Appendix B (student loans model). PGCE refers to HEI-led PGCE.

Figure 4.3. Maximum central cost of a secondary trainee with a first-class degree by subject priority and training route (Inner London)

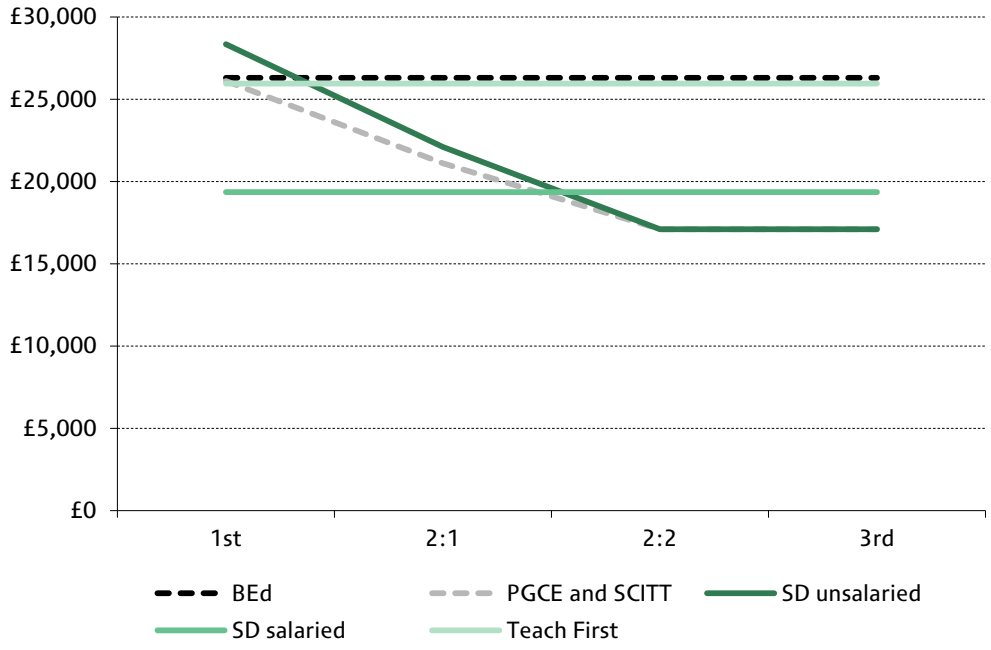


Note: These results are qualitatively similar when looking at the minimum cost for each route and for trainees with a 2:1 or 2:2. PGCE refers to HEI-led PGCE.
Source: See footnotes to Table 4.2 and Appendix B (student loans model).

Figure 4.3 presents an alternative comparison across routes, where the degree class of the trainee is held constant (as a first) across subjects with different priority to government. School Direct unsalaried has the highest central costs for high- and other-priority subjects, but Teach First has the highest central cost for non-priority subjects at £25,958, followed by BEd at £22,845. This is a result of the tapering of bursaries and scholarships with the priority ranking of the subject. School Direct salaried has no central cost for non-priority subjects as no direct grants to schools are available.

For primary schools, only trainees with a maths specialism are given priority funding. This priority results in an increase in the maximum bursary of £2,000 for trainees with a 2:1 degree or better on postgraduate tuition fee funded routes (£2,500 for School Direct unsalaried when the 25% uplift is applicable). There is also a £2,000 increase in the NCTL grant available to schools on School Direct salaried (£2,200 when the 10% uplift is applicable). For this reason, the picture of central costs looks very similar across all subjects at primary schools.

Figure 4.4. Maximum central cost of a non-maths specialist primary trainee by degree class and training route (Inner London)



Note: These results are qualitatively similar when looking at the minimum cost for each route. PGCE refers to HEI-led PGCE.
Source: See footnotes to Table 4.2 and Appendix B (student loans model).

Figure 4.4 considers the central costs for primary school trainees by the trainee's degree class across different routes. School Direct unsalaried has the highest central costs for trainees with a first-class degree, at £28,348, although this is only marginally higher than for HEI-led PGCE, SCITT, Teach First and BEd routes. Only School Direct salaried has central costs substantially lower than this for trainees with a first, at £19,360. For trainees with a degree class of 2.1 or lower, Teach First and BEd have the highest central costs, as the bursary awards for the

postgraduate tuition fee funded routes are reduced with the degree class of the trainee. There are no bursaries available for trainees with a 2:2 or lower, causing these three routes to have the lowest central costs of any route.

Figure 4.5 compares the central costs of a trainee with a first-class degree for a non-priority subject across routes for primary and secondary schools. With the exception of Teach First, where the central costs are fixed per trainee, the central costs of training this type of teacher are uniformly higher for primary schools than for secondary schools. This difference is largest for School Direct salaried, where there is no central funding available for trainees on non-priority subjects in secondary schools. The difference for HEI-led PGCE, SCITT and School Direct salaried is explained by the amount of bursary that is available – there is no bursary available for non-priority subjects in secondary schools. This difference is smaller for lower degree classes as the bursary available for primary trainees is reduced. Finally, the difference for BEd trainees is a result of the differing earnings profile of primary and secondary school teachers, which affects the repayment of student loans.

Figure 4.5. Maximum central cost of a non-priority subject trainee with a first-class degree by training route and school type (Inner London)

Note: PGCE refers to HEI-led PGCE.
Source: See footnotes to Table 4.2 and Appendix B (student loans model).

Throughout this discussion, we have presented the maximum central cost per trainee for each route, for Inner London. We note that the marginal cost per trainee is lower for School Direct (salaried and unsalaried) where the FSM uplift is not applicable and lower for School Direct (salaried) outside Inner London.

4.2 Indirect costs for schools

We now turn to the costs associated with ITT for schools involved with each route. As discussed earlier, these costs are likely to be representative of the costs

for all schools involved with each route, but not for the population of schools more generally, given the apparent selection of schools into routes according to their capacity to support trainees and pre-existing pupil attainment.

Survey respondents were asked to report the time involved with the indirect costs associated with a specific trainee. These costs are: mentoring; observations by a qualified teacher, including feedback; lesson planning support; written assessment of the trainee; liaising with the ITT provider; liaising with schools; arranging training and observations; administration and paperwork (other than that involved with recruitment, which was asked about elsewhere in the survey); and 'other'. For each cost reported, the respondent was asked to provide the pay category of the lead staff member. The total cost per trainee per school is calculated by combining information on the time taken for each activity with information on average staff costs at the appropriate pay category from the School Workforce Census.[40] We note that the costs calculated in this section do not necessarily imply that the staff involved in training are accordingly paid more by the school. Our aim is to provide estimates of the opportunity cost of training: the cost of the time taken that would otherwise be spent on alternative activities within the school, such as lesson planning, marking or extracurricular activities.

Table 4.3 shows the costs associated with ITT for primary schools. For reference, the mode pay scale refers to the pay category that is most often associated with each activity across schools in the survey, although costs for individual schools are calculated with reference to their own report of pay category. For example, staff on the upper pay scale are most likely to have responsibility for observations and lesson planning support, while leadership staff are most likely to have responsibility for all other activities. This is in contrast to secondary schools (shown in Table 4.4), where staff on the upper pay scale are most likely to have responsibility for all activities. This could reflect greater flexibility in the organisation of ITT in larger schools or a greater use of ITT for development of existing staff in secondary schools.

The largest cost associated with ITT for primary schools is mentoring, with an average cost of around £48 per week. There is some variation across terms: the cost of mentoring associated with School Direct salaried trainees, on average, falls from £39 per week in term 1 to £27 per week in term 3, consistent with development of the trainee throughout their training. Also, as expected, the average cost of liaising with the ITT provider is higher for School Direct salaried than for HEI-led PGCE (£17 per week compared with £11 per week).

[40] Pay categories are 'main', 'upper' and 'leadership' scales. Where available, information on average pay at the appropriate pay category at the school level (for primary schools) and department level (for secondary schools) is used. Where this information is not available, the average pay at the appropriate pay category at the school level (for secondary schools) and local authority level is used. Full details are provided in Appendix C.

Table 4.3. Total costs associated with trainee (pounds per week): primary

Indirect cost for schools	Mode pay scale	Term 1	Term 2	Term 3	Average for year
Mentoring	Leadership	49	41	44	48
Observations by qualified teacher, including feedback	Upper	37	39	43	40
Lesson planning support	Upper	36	34	32	36
Written assessment of trainee	Leadership	13	11	14	12
Liaising with ITT provider	Leadership	20	19	20	21
Admin/paperwork (other than recruitment)	Leadership	18	16	18	17
Arranging training/observations	Leadership	7	8	6	6
Liaising with other schools	Leadership	13	12	14	13
Other	Leadership	5	4	5	4

Note: The total sample that responded to at least one indirect cost is 212. Where a cost is not reported by a school, we assume the value to be missing if the school has reported a cost of zero elsewhere in the question and to be zero if at least one cost was reported to be positive and no other costs were as zero. 'Mode pay scale' refers to the most common answer from survey respondents. Note that each trainee may not be present in each term. The 'average for year' is therefore the mean of each trainee's average costs per term for any terms in which they were present. For this reason, the 'average for year' need not lie between the minimum and maximum values for terms 1–3.
Source: Survey of primary schools.

Table 4.4. Total costs associated with trainee (pounds per week): secondary

Indirect cost for schools	Mode pay scale	Term 1	Term 2	Term 3	Average for year
Mentoring	Upper	35	36	33	34
Observations by qualified teacher, including feedback	Upper	64	64	57	67
Lesson planning support	Upper	26	24	19	24
Written assessment of trainee	Upper	11	12	9	11
Liaising with ITT provider	Upper	16	16	15	16
Admin/paperwork (other than recruitment)	Upper	9	8	9	8
Arranging training/observations	Upper	3	3	3	3
Liaising with other schools	Upper	12	12	12	12
Other	Upper	3	2	2	3

Note: The total sample that responded to at least one indirect cost is 566. Where a cost is not reported by a school, we assume the value to be missing if the school has reported a cost of zero elsewhere in the question and to be zero if at least one cost was reported to be positive and no other costs were reported as zero. 'Mode pay scale' refers to the most common answer from survey respondents. Note that each trainee may not be present in each term. The 'average for year' is therefore the mean of each trainee's average costs per term for any terms in which they were present. For this reason, the 'average for year' need not lie between the minimum and maximum values for terms 1–3.
Source: Survey of secondary schools.

Unfortunately, it is not possible to separate the cost of 'observations' and 'feedback' from the activity 'observations by a qualified teacher, including feedback'. This is problematic if providing 'feedback' takes place outside teaching hours while 'observations' take place during normal teaching hours (so an additional opportunity cost is not incurred). The time taken for 'observations by a qualified teacher, including feedback' appears to be distinct from time for timetabled teaching with direct supervision, which implies that the observation is a dedicated activity for the qualified teacher and may be outside their scheduled teaching hours. This is especially likely for Teach First trainees and School Direct salaried trainees, who need not be employed as supernumerary and therefore may have their own timetabled classes. We therefore include this cost reported by respondents in our final calculation of total cost.[41]

The cost of observations is the largest cost for secondary schools, on average, and higher than the average cost reported in primary schools, although the cost of other activities is generally lower, perhaps due to the allocation of less senior staff to the activity. The cost of observations varies between routes, and is significantly lower for Teach First trainees (on average £29 per week) than for HEI-led PGCE trainees (on average £81 per week).

Table 4.5 presents the total cost per route for primary schools and Table 4.6 presents the equivalent figures for secondary schools. In both primary and secondary schools, the total indirect cost associated with specific trainees varies more within route than between routes: the mean and median values are similar across routes, while the variation within route is large – the 25th and 75th percentiles are around £100 and £250 per week for HEI-led PGCE trainees, for example.[42] The exception is Teach First trainees, who have significantly lower indirect costs, on average, than HEI-led PGCE trainees in secondary schools. This difference is driven by the difference in the cost of observations between these routes.

What factors influence the large variation in cost per week associated with trainees? The findings discussed above remain true once we account for any differences in the characteristics of schools responding about each route, suggesting that observable school characteristics such as Ofsted rating and prior pupil attainment and progress do not in general affect the costs associated with hosting trainees.[43] One exception is that costs are higher for secondary schools

[41] It is also possible that the 'observations by qualified teacher, including feedback' includes time from ITT providers. This is unlikely though, as the respondent was asked to give the pay category of the lead staff member involved with the activity.

[42] The 25th percentile is the point where one-quarter of respondents have a value below this level. The 75th percentile is the point where one-quarter of respondents have a value above this level.

[43] We account for the following school characteristics: Ofsted grade for overall effectiveness, quintiles for the proportions of teachers with tenure below one year and between one and two years, quintiles for average pupil attainment, and type of school (academy converter, academy sponsor led, community, foundation, and voluntary aided/controlled).

with lower prior pupil attainment, conditional on everything else, but this does not change the overall conclusions given above.

Costs also seem to be independent of the characteristics of the trainee: we account for degree class (where observed) and the perception of trainee quality as discussed in Section 3.1.

Table 4.5. Total cost per route (pounds per week): primary

Route	N	Mean	Min	25th	50th	75th	Max
BEd	23	195.9	38.3	75.2	117.1	162.3	1,225.0
HEI-led PGCE	40	194.1	47.4	102.7	154.1	254.3	484.5
GTP	16	184.3	44.6	108.6	151.3	271.1	365.9
School Direct salaried	34	190.9	72.2	108.3	152.4	203.2	845.0
School Direct unsalaried	18	213.6	33.5	109.2	176.1	287.5	617.2
SCITT	28	191.7	51.4	117.3	184.0	231.2	444.0

Note: Very large costs reported are driven by high time reported for a few activities in each case, most commonly for mentoring and observations, rather than high wages. It is unlikely that the same activity has been recorded under multiple activities for these schools, as the times reported vary. Hours are presented in Appendix Table C.2.
Source: Survey of primary schools.

Table 4.6. Total cost per route (pounds per week): secondary

Route	N	Mean	Min	25th	50th	75th	Max
HEI-led PGCE	198	185.6	5.5	96.8	144.0	227.9	877.2
Teach First	27	138.0	27.4	54.4	94.8	198.2	559.0
GTP	52	147.9	32.0	77.8	120.0	184.5	504.7
School Direct salaried	54	187.6	10.5	73.4	114.5	228.1	975.5
School Direct unsalaried	58	178.0	25.9	96.4	143.0	233.7	569.3
SCITT	26	161.8	60.5	90.7	147.5	209.6	379.3

Note: Very large costs reported are driven by high time reported for a few activities in each case, most commonly for mentoring and observations, rather than high wages. It is unlikely that the same activity has been recorded under multiple activities for these schools, as the times reported vary. Hours are presented in Appendix Table C.3.
Source: Survey of secondary schools.

4.3 Benefits for schools

Respondents to the primary and secondary subject leader questionnaires were asked to report the extent to which the specific trainee in their recent experience brought a number of benefits to their school/department. These benefits are: provision of fresh teaching ideas; continuing professional development (CPD) opportunities; extra capacity; financial benefit; recruitment (whether the school expects to hire the trainee on qualification); and any other benefit. The specific trainee was the same throughout the questions relating to perceived

characteristics of the trainee and costs associated with their training in the school/department (excluding central costs for the school reported by the ITT co-ordinator). We can therefore explore the relationship between the benefits reported and these factors.

Table 4.7 shows the percentage of respondents to the primary school survey who reported that they 'agree' or 'strongly agree' that the specific trainee brought each benefit to the school.

Table 4.7. Summary of benefits to the school (percentage reporting 'strongly agree' or 'agree'): primary

Route	BEd	HEI-led PGCE	GTP	School Direct salaried	School Direct unsalaried	SCITT
Provided fresh teaching ideas	74	63	94	70	78	80
Provided CPD opportunities	64	62	83	66	74	76
Gave the school extra capacity	62	48	78	71	74	60
Expect to hire	18	23	71	71	63	62
Financial benefit for the school	31	23	39	32	44	27
Other	56	61	89	90	69	62

Note: 'CPD' refers to continuing professional development.
Source: Survey of primary schools.

There are noticeable and significant differences between university-based and school-based routes in the percentage of respondents who agree that they expect to hire the trainee after qualification. This suggests that these routes are, to some extent, being used as extended job interviews, and perhaps to help future recruitment or offset the school's cost of recruitment (although Table 3.3 showed that primary schools involved with school-based routes were not likely to have significantly different staff composition indicative of high teacher turnover or vacancy rates). Given the guidance from NCTL that it expects 'the school or partnership of schools to have a clear capacity to employ the trainees when they successfully complete their training programme',[44] it is perhaps surprising that the percentage of schools that expect to hire their specific School Direct salaried trainees is around 70% (rather than higher). Schools are significantly less likely to expect to hire trainees with lower than 'very good' potential to be a good teacher. These relationships hold conditional on school characteristics, suggesting that school characteristics do not influence the expectation to hire over and above the ITT route the school has chosen. (These relationships also hold conditional on trainee characteristics, although there is a significant

[44] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237266/School_Direct_Manual_V6_0.pdf.

relationship between the trainee's perceived potential and the expectation to hire.)

GTP trainees are significantly more likely to provide fresh teaching ideas to the school than HEI-led PGCE and School Direct salaried trainees. This is surprising, as HEI-led PGCE trainees may be expected to bring teaching ideas from their university-based elements of training, while School Direct salaried is the most similar route to the GTP route and so the benefits of these trainees would be hypothesised to be the most similar. Unfortunately, it is not possible to repeat this analysis for HEI-led PGCE and BEd trainees with more experience (on their second or third school placement) to determine whether the contribution of ideas varies with the experience of multiple schools. The relationships hold conditional on trainee characteristics (with trainees with 'very poor' potential to be a good teacher significantly less likely to provide fresh teaching ideas than those with 'very good' potential) but are no longer statistically significant once we account for school characteristics.

GTP trainees are significantly more likely to provide CPD opportunities to existing members of staff than HEI-led PGCE and School Direct salaried trainees (with 83% of respondents agreeing compared with 62% and 66% respectively), but these significant differences do not remain once we account for trainee and school characteristics, suggesting that the type of GTP trainee, rather than the route itself, leads to additional CPD opportunities. GTP trainees are also significantly more likely to provide the school with extra capacity than HEI-led PGCE and School Direct salaried and unsalaried trainees – HEI-led PGCE trainees are the least likely to provide extra capacity in the school during their placement, with under half of respondents agreeing that this is a benefit. These significant differences hold conditional on trainee and school characteristics, suggesting that the structure of the GTP route, rather than the characteristics of the trainees and schools associated with it, explain the additional school capacity.

Specific trainees are less likely to bring financial benefit to the school if they have poor potential to be a good teacher, relative to 'very good' potential. This suggests that perceived costs and benefits vary with trainee characteristics, in contrast to the total indirect costs calculated in Section 4.2, which showed no significant variation with trainee characteristics. Conditional on trainee and school characteristics, School Direct unsalaried trainees are significantly more likely to bring a financial benefit to the school than BEd, HEI-led PGCE and School Direct salaried trainees, while School Direct salaried trainees are significantly more likely to bring a financial benefit than HEI-led PGCE trainees (of whom just over one-fifth are felt to bring a financial benefit to the school). The differences between the School Direct salaried and unsalaried routes are interesting: primary schools receive funding directly from NCTL almost equivalent to the required salary for the School Direct salaried trainee (slightly less for non-maths specialist trainees), and later analysis shows that the contribution to teaching (without direct supervision) is slightly higher for School Direct salaried trainees. Differences in the percentage of respondents who agree that trainees bring a financial benefit to the school may therefore relate to the proportion of the grant

from NCTL that must be paid to the ITT partner for School Direct salaried trainees, or to differences between respondents in the understanding of funding.

Table 4.8 shows the percentage of respondents to the secondary subject leader questionnaire who report 'agree' or 'strongly agree' to each benefit associated with the specific trainee in their department.

Table 4.8. Summary of benefits to the school (percentage reporting 'strongly agree' or 'agree'): secondary

Route	HEI-led PGCE	Teach First	GTP	School Direct salaried	School Direct unsalaried	SCITT
Provided fresh teaching ideas	77	69	80	56	70	69
Provided CPD opportunities	59	51	75	59	65	66
Gave the school extra capacity	43	43	58	56	47	49
Expect to hire	28	59	56	52	35	34
Financial benefit for the school	30	35	27	18	26	26
Other	62	63	68	62	68	65

Note: 'CPD' refers to continuing professional development.
Source: Survey of secondary schools.

As for primary schools, for secondary schools there is a clear significant difference in the percentage of respondents who expect to hire the trainee between university-based routes (in this case HEI-led PGCE only) and school-based routes (excluding School Direct unsalaried trainees, where the percentage is not significantly different from that for HEI-led PGCE trainees). Teach First trainees are the most likely to have a strong expectation of being hired, significantly more even than for School Direct salaried trainees, who NCTL expects to be employed by the school or partnership following qualification, as noted earlier. In fact, Teach First trainees are expected to remain in the school for at least one year following qualification, so it is perhaps surprising that the percentage of respondents who expect to hire the trainee is not higher than 59%.[45] As in primary schools, these differences hold conditional on trainee and school characteristics, suggesting that characteristics of the route rather than trainee and/or school characteristics of those that choose school-based routes account for the largest proportion of the difference in the expectation to hire. Those with 'very good' potential to be a good teacher are significantly more likely to be expected to be hired, however, suggesting that hosting a trainee from any route can aid recruitment if a trainee has good potential.

[45] Respondents may interpret the question as referring to after the two-year placement, which should have been (but was not) stated clearly in the survey question. Alternatively, the 59% could reflect expectations about whether the trainee will complete their two-year placement at the school.

As with primary schools, GTP trainees are the most likely to be reported to provide fresh teaching ideas, significantly more than School Direct salaried trainees, which is again surprising given the similarity of the routes. In contrast to primary schools, HEI-led PGCE trainees are statistically significantly more likely to provide fresh teaching ideas than School Direct salaried trainees. These differences hold conditional on trainee characteristics.

Trainees with 'very good' potential as a teacher are also significantly more likely to provide CPD opportunities for existing staff in secondary school departments. GTP trainees are significantly more likely to provide CPD opportunities than HEI-led PGCE and Teach First trainees. For HEI-led PGCE trainees, this significant difference is accounted for by variation in the potential to be a good teacher across routes (as HEI-led PGCE trainees are reported to have lower potential, on average) and by school characteristics for Teach First suggesting that the type of school that hosts Teach First trainees (typically more disadvantaged, as shown in Section 3.2) is less likely to have the capacity or ability for existing staff to gain from the presence of the trainee.

Similarly, GTP trainees are the most likely to provide the department with extra capacity, significantly more so than HEI-led PGCE trainees even conditional on trainee and school characteristics. This pattern was also evident for primary schools, although the contribution to capacity was more common, on average, for all routes, suggesting that this benefit (or motivation for taking trainees) is higher for primary schools in general. Again, trainees with better potential to be good teachers are significantly more likely to provide extra capacity for the department.

Subject leaders are most likely to report that Teach First trainees bring a financial benefit, significantly more so than School Direct salaried trainees. It would be interesting to explore whether this finding varies between subjects, where the amount of funding for the School Direct salaried trainee provided by NCTL varies: funding provided is sufficient to cover the salary and the majority of funding required by the ITT provider for high-priority subjects, and around £2,000 lower than the salary required in other-priority subjects. Unfortunately, the sample size of the survey prohibits this analysis, but accounting for whether the subject is high-priority, other-priority or non-priority does not affect the results. One may also expect variation between maintained and academy schools, as academy schools are not bound by the same salary requirement, but the significant difference holds conditional on school characteristics including school type.

4.4 Comparison of costs and benefits for schools

As discussed in Section 4.2, the survey for primary and secondary schools collected detailed information on the costs associated with ITT for schools and/or departments. In addition, information on the extent and variation in benefits for schools and/or departments was collected; this provides some information on schools' motivations for participating in ITT (discussed in Section 4.3). However, the benefits associated with ITT routes are difficult to convert into

a monetary value, which is necessary to provide an overall assessment of the net benefit for schools and/or departments associated with ITT through different routes.

The survey therefore asked respondents to consider whether the benefit for their school or department was greater than, equal to or less than the cost associated with the route, and whether this was to a 'large', 'some' or 'small' extent. In contrast to previous questions, respondents were asked to respond to this question for each ITT route in their experience, rather than the route of the specific trainee only. This enables a comparison of costs and benefits between routes within schools, which will be discussed shortly.

We first concentrate on the percentage of respondents who reported that benefits were greater than the costs, for the route associated with the specific trainee.[46]

Table 4.9. Net benefit for school: the perceived costs and benefits to schools (primary)

Route	Benefit > Cost (%)	Benefit = Cost (%)	Benefit < Cost (%)	N
BEd	58	19	22	38
HEI-led PGCE	40	31	29	58
GTP	72	22	6	18
School Direct salaried	54	17	29	41
School Direct unsalaried	63	22	15	27
SCITT	68	16	16	39

Source: Survey of primary schools.

Table 4.9 shows that the HEI-led PGCE route is least likely to be rated as having benefits greater than costs: 40% of respondents reported that benefits were greater than costs, while 29% reported that benefits were less than costs. The largest variance is for the School Direct salaried route, where 54% reported that benefits were greater than costs, while 29% (the same as for the HEI-led PGCE route) reported that benefits were less than costs. The GTP route is most likely to be stated to have benefits greater than costs, but only significantly more so than the HEI-led PGCE route. BEd, School Direct unsalaried and SCITT routes are also significantly more likely to have this positive rating than the HEI-led PGCE route.

The estimated differences between these routes and the HEI-led PGCE routes decline in magnitude once trainee characteristics are accounted for, suggesting that at least some of the difference in whether benefits are greater than costs

[46] This is so we can relate the probability that benefits are reported to be greater than costs to characteristics of the trainee and school, in order to separate the net benefit of the route from other factors.

between HEI-led PGCE and other routes is due to the characteristics of these trainees.

Whether benefits are greater than costs for each route is significantly related to the specific benefits that are reported – in particular, whether the school expects to hire the trainee – conditional on trainee characteristics.[47] The differences between routes are no longer significant conditional on trainee characteristics and the benefits reported for the specific trainee. The cost per week associated with the trainee, and other school characteristics, do not appear to influence whether benefits are thought to outweigh costs, confirming that the variation between (and within) routes is primarily due to the benefits associated with the route and the specific trainee.

Table 4.10. Net benefit for departments: the perceived costs and benefits to departments (secondary subject leaders)

Route	Benefit > Cost (%)	Benefit = Cost (%)	Benefit < Cost (%)	N
HEI-led PGCE	50	30	20	283
Teach First	61	19	19	34
GTP	65	22	13	63
School Direct salaried	48	22	29	60
School Direct unsalaried	52	21	27	76
SCITT	46	32	22	39

Source: Survey of secondary schools (subject leaders in up to six departments per school).

Table 4.10 presents the equivalent information for secondary school subject leaders, who also responded regarding a specific trainee in other parts of the survey. As for primary school respondents, GTP has the highest percentage of respondents reporting that benefits are greater than costs (significantly more so than for HEI-led PGCE, which again has one of the lowest percentages). The variation for School Direct salaried is again high, with around half of respondents reporting that benefits are greater than costs and almost 30% reporting that benefits are less than costs. Unlike primary schools, this high variation is also present for the School Direct unsalaried route. Just over 60% of secondary subject leaders report that the benefit of Teach First outweighs the cost, compared with around 20% reporting that the benefit is lower than the cost.

As with primary schools, the rating of the specific trainee's potential to be a good teacher is significantly related to whether benefits are reported to be greater than costs for this route. The difference between GTP and HEI-led PGCE routes remains significant and similar in magnitude once trainee characteristics are

[47] Although the potential to be a good teacher is significantly related to whether benefits are reported to be greater than costs, this no longer holds once the specific benefits are accounted for. This suggests that the benefits of a trainee come through the benefits they bring to the school rather than through their characteristics alone.

accounted for, suggesting that features of the ITT routes contribute to this difference. Accounting for the specific benefits reported (in particular, the contribution made to teaching ideas) reduces the magnitude of the difference further, suggesting that specific benefits, rather than general characteristics of the training routes, influence the net benefit to schools.

Again as for primary schools, the calculated cost per week and school characteristics are largely unrelated to whether benefits are reported to be greater than costs.

Secondary subject leaders were asked to focus on the benefits relative to costs for their department. Secondary ITT coordinators were instead asked to focus on the central benefits relative to costs for the school. These are reported in Table 4.11. The ranking of routes between subject leaders and ITT coordinators is broadly similar, with the highest percentage of respondents reporting that benefits were greater than costs for GTP, and a high proportion for Teach First, although there are some differences: the HEI-led PGCE route is rated relatively highly, which may reflect differences in the allocation of funding and staff time between central and department levels at the school. This is supported by the observation that benefits are more likely to outweigh costs for all routes when reported by the ITT coordinator than when reported by the subject leader, with the exception of School Direct salaried.

Table 4.11. Net benefit for school: the perceived central costs and benefits to schools (secondary ITT coordinators)

Route	Benefit > Cost (%)	Benefit = Cost (%)	Benefit < Cost (%)	N
HEI-led PGCE	65	27	9	82
Teach First	62	26	12	34
GTP	75	13	13	8
School Direct salaried	51	16	33	44
School Direct unsalaried	66	11	23	36
SCITT	68	27	5	22

Source: Survey of secondary schools (ITT coordinators).

For respondents able to comment on multiple routes, we can explore whether particular routes are more likely to have favourable net benefits than others. We use the full variation captured in the survey – that is, whether benefits are greater than, equal to or less than costs, and to what extent ('large', 'some' or 'small'). For example, are schools more likely to say that the benefits are greater than the costs for School Direct unsalaried than for School Direct salaried where the respondent has experience of both of these routes?

Table 4.12. Benefits relative to costs: overall comparisons of routes within primary school responses

Route	BEd	HEI-led PGCE	GTP	School Direct (salaried)	School Direct (unsalaried)	SCITT
BEd	-					
HEI-led PGCE	Equal 60.7 (117)	-				
GTP	Better 60.3 (58)	Better 53.4 (73)	-			
School Direct (salaried)	Better 43.6 (39)	Better 40.0 (50)	Equal 57.9 (38)	-		
School Direct (unsalaried)	Better 62.2 (45)	Better 56.4 (55)	Equal 65.0 (40)	Better 42.4 (33)	-	
SCITT	Better 50.0 (30)	Better 42.4 (33)	Equal[a] 36.7 (30)	Better 40.0 (15)	Equal 60.9 (23)	-

[a] SCITT was equal to GTP in 37% of responses and better than GTP in another 37% of responses.

Note: The table reports whether the majority of primary respondents reported each route given in the row was better than, worse than or equal to each other route given in the column. The numbers not in parentheses represent the percentage of respondents who reported the majority view for each pair of routes. The numbers in parentheses represent the total sample for which the comparison between routes is possible within schools.

Source: Survey of primary schools.

Table 4.13. Benefits relative to costs: overall comparisons of routes within secondary school responses – ITT coordinators

Route	HEI-led PGCE	GTP	School Direct (salaried)	School Direct (unsalaried)	SCITT	Teach First
HEI-led PGCE	-					
GTP	Better 39.2 (143)	-				
School Direct (salaried)	Worse 43.9 (123)	Equal 57.5 (87)	-			
School Direct (unsalaried)	Equal[a] 35.4 (144)	Equal 46.6 (88)	Better 40.2 (87)	-		
SCITT	Equal 47.6 (84)	Equal 40.0 (55)	Equal 39.1 (46)	Equal 50.0 (58)	-	
Teach First	Better 46.6 (58)	Equal 52.8 (36)	Better 44.0 (25)	Equal 37.9 (29)	Better 41.7 (12)	-

[a] School Direct unsalaried was equal to HEI-led PGCE in 35% of responses and better than HEI-led PGCE in another 35% of responses.

Note: The table reports whether the majority of ITT coordinator respondents reported each route given in the row was better than, worse than or equal to each other route given in the column. The numbers not in parentheses represent the percentage of respondents who reported the majority view for each pair of routes. The numbers in parentheses represent the total sample for which the comparison between routes is possible within schools.

Source: Survey of secondary schools.

Table 4.14. Benefits relative to costs: overall comparisons of routes within secondary school responses – subject leaders

Route	HEI-led PGCE	GTP	School Direct (salaried)	School Direct (unsalaried)	SCITT	Teach First
HEI-led PGCE	-					
GTP	Better 40.2 (127)	-				
School Direct (salaried)	Worse 41.1 (95)	Equal 53.5 (71)	-			
School Direct (unsalaried)	Equal 45.7 (92)	Equal 58.8 (51)	Equal 57.1 (49)	-		
SCITT	Equal 41.7 (48)	Equal 62.9 (35)	Equal 53.8 (26)	Equal 78.3 (23)	-	
Teach First	Equal[a] 38.3 (60)	Equal 61.0 (41)	Equal 51.7 (29)	Equal 57.7 (26)	Equal 72.2 (18)	-

[a] Teach First was equal to HEI-led PGCE in 38% of responses and better than HEI-led PGCE in another 38% of responses.

Note: The table reports whether the majority of subject leader respondents reported each route given in the row was better than, worse than or equal to each other route given in the column. The numbers not in parentheses represent the percentage of respondents who reported the majority view for each pair of routes. The numbers in parentheses represent the total sample for which the comparison between routes is possible within schools.

Source: Survey of secondary schools.

Table 4.12 shows the modal (or majority) view of survey respondents in primary schools for each comparison. For example, 'better' is recorded in the School Direct unsalaried row and School Direct salaried column as most respondents who were able to comment on both routes reported that School Direct unsalaried had a higher net benefit than School Direct salaried. The exact percentage of respondents who contributed to the modal view is given beneath it (in this case 42%) and the number of respondents is given in parentheses (in this case 33).

Table 4.12 shows that when comparing school-based and university-based routes, primary school respondents are in general more likely to give a higher report of net benefit for school-based than for university-based routes. This is most true for School Direct unsalaried, which received a higher report of net benefit than BEd and HEI-led PGCE in 62% and 56% of cases, respectively.

The net benefits of BEd and HEI-led PGCE trainees are perceived to be similar: the majority of respondents (61%) give the same net benefit for both routes. This is also true for School Direct salaried and GTP routes, where 58% give the same level of benefit in relation to cost for both routes. This is perhaps expected given the similarity of the two routes, but contrasts to evidence presented in Section 4.3 that showed that the benefits reported for GTP were often significantly higher than those for School Direct salaried. This suggests that there is variation within net benefit category reported in the survey – for example, respondents may report that benefits are equal to costs for each route with some margin of approximation.

Table 4.13 repeats the exercise for comparisons made by ITT coordinators in secondary schools, where possible. Here, there is a less clear ranking between university- and school-based routes: only GTP and Teach First are reported to have higher net benefit than HEI-led PGCE by the majority of respondents who make the comparison. The modal responses for School Direct unsalaried and for SCITT were that the net benefit compared with HEI-led PGCE was equal. The modal response for School Direct salaried was that the net benefit was lower than for HEI-led PGCE.

School Direct salaried was also reported to have a lower net benefit by the majority of respondents making comparisons with School Direct unsalaried and Teach First, and an equal benefit for respondents making comparisons with GTP and SCITT. Teach First was reported by ITT coordinators to have greater or equal net benefits compared with all other routes.

Do the comparisons made by secondary subject leaders, shown in Table 4.14, correspond to those made by ITT coordinators? As for ITT coordinators, Teach First is judged by the majority of subject leader respondents to have an equal net benefit to that of other routes (although not better for any route). In fact, Table 4.14 shows that clear rankings emerge only for School Direct salaried compared with HEI-led PGCE, where the majority of respondents report that the net benefit is lower for the school-based route, and for GTP compared with HEI-led PGCE,

where the majority of respondents report that the old school-based route brings a greater net benefit than HEI-led PGCE.[48]

We also use schools' reports of whether benefits are greater than, equal to or less than costs, and to what extent, to calculate a monetary value of the net benefit of involvement with each ITT route. We provide a brief description of the method and our assumptions here; full details are given in Appendix D.

Our starting point is that the variation in whether benefits are reported to be greater than, equal to or less than costs, and to what extent, reflects an underlying distribution of net benefits. That is, the possible value of net benefits is continuous and can vary within and between routes.

We assume that the distribution of the benefit–cost ratio can be approximated by the gamma distribution. This is reasonable as the gamma distribution is flexible, in that it can approximate a large range of distributions depending on the parameters.[49]

We assume that to a 'large', 'some', and 'small' extent have a common interpretation across respondents and that the value for each is the same above and below the point where benefits are equal to costs (where the benefit–cost ratio is equal to 1). For example, if the meaning of to a 'large' extent where benefits are less than costs is estimated to give a benefit–cost ratio of 0.5 (so benefits are half costs), the equivalent value where benefits are greater than costs must be 2 (benefits are twice costs). Our final assumption is that there is some margin of approximation around the point where benefits are reported to be equal to costs, to smooth the spike at this point. We believe this assumption is reasonable as, given the large variation in benefits reported in Section 4.3, a relatively large proportion of respondents state that the benefits are equal to the costs compared with the proportion stating that they are different 'to a small extent' either side.

To find the average net benefit for each route, we first find the gamma distribution that best fits the information from the survey. This process involves matching as closely as possible the proportion of respondents who report each net benefit category in the survey with the inferred proportion from the gamma distribution, iterating over the two parameters of the gamma distribution. This process works well: Table 4.15 gives the actual and inferred cumulative percentage for each net benefit category for primary head teachers, secondary school subject leaders and secondary school ITT coordinators.

[48] The majority of respondents report that the net benefits for GTP and School Direct salaried routes are the same. This may reflect differences between the type of schools that are able to compare these two school-based routes – perhaps more experienced in school-based training – and the type of schools that are able to compare university- and school-based routes.

[49] http://mathworld.wolfram.com/GammaDistribution.html.

Table 4.15. Comparison of actual and inferred percentages of respondents in each net benefit category resulting from the optimal gamma distribution

Net benefit	Primary		Subject leader		ITT coordinator	
	Survey (%)	Implied (%)	Survey (%)	Implied (%)	Survey (%)	Implied (%)
Benefit < cost: large extent	8.26	8.33	5.31	5.50	4.02	4.07
Benefit < cost: some extent	19.72	17.74	17.84	17.81	13.84	13.15
Benefit < cost: small extent	22.02	22.02	21.25	20.59	15.63	15.77
Benefit = cost	44.04	44.11	47.63	47.64	37.50	37.56
Benefit > cost: small extent	50.92	50.94	51.99	52.03	42.41	42.43
Benefit > cost: some extent	72.02	72.07	79.89	79.90	70.98	71.01
Benefit > cost: large extent	100	100	100	100	100	100

Note: 'Survey' refers to the cumulative percentage observed in the relevant survey. 'Implied' refers to the cumulative percentage implied by the optimal gamma distribution.
Source: Survey of primary and secondary schools.

To calculate the mean net benefit for each route, we then take draws from the optimal gamma distribution from within the specified net benefit category for each individual in the survey, and average across routes. The results are presented in Table 4.16 for primary school respondents, Table 4.17 for secondary school subject leaders and Table 4.18 for secondary school ITT coordinators. In each case, the average value of the calculated benefit–cost ratio and the average value of net monetary cost per route are reported for information. The final average net benefit for each route is not calculated from these two values, but from the average of each respondent's individual implied net benefit.

The net benefits for ITT routes in primary schools range between a net cost of £137 for HEI-led PGCE to a net benefit of £2,237 for SCITT. The net benefits for School Direct routes are similar, due to the higher benefit–cost ratio calculated for School Direct unsalaried but higher monetary costs for School Direct salaried. The net benefits for subject leaders in secondary schools are in general smaller than those for primary schools. This is in part due to the lower estimated benefit–

Table 4.16. Total monetised net benefit of each ITT route: primary

Route	Average benefit–cost ratio	Average cost	Average net benefit
BEd	1.16	£1,471	£771
HEI-led PGCE	1.10	£1,620	–£137
SCITT	1.41	£6,846	£2,237
School Direct unsalaried	1.46	£4,510	£1,942
School Direct salaried	1.28	£14,208	£1,839

Note: Calculated from respondents' reports of benefits compared with costs, using the optimal gamma distribution. For full details, see Appendix D.
Source: Survey of primary schools.

Table 4.17. Total monetised net benefit of each ITT route: secondary subject leaders

Route	Average benefit–cost ratio	Average cost	Average net benefit
HEI-led PGCE	1.13	£1,866	£247
SCITT	1.16	£5,549	£784
School Direct unsalaried	1.17	£7,235	£511
School Direct salaried	1.09	£6,393	£76
Teach First	1.23	£5,072	£866

Note: Calculated from respondents' reports of benefits compared with costs, using the optimal gamma distribution. For full details, see Appendix D.
Source: Survey of secondary schools.

Table 4.18. Total monetised net benefit of each ITT route: secondary ITT coordinators

Route	Average benefit–cost ratio	Average cost	Average net benefit
HEI-led PGCE	1.28	–£261	£83
SCITT	1.40	–£64	–£385
School Direct unsalaried	1.25	£1,191	–£253
School Direct salaried	1.19	£10,110	£2,038
Teach First	1.40	£26,272	£9,621

Note: Calculated from respondents' reports of benefits compared with costs, using the optimal gamma distribution. For full details, see Appendix D.
Source: Survey of secondary schools.

cost ratios. The comparison with responses from ITT coordinators is striking, particularly for Teach First, where the implied net benefit is over 10 times larger. This is in part due to the much higher monetary costs reported by ITT coordinators, but also in part due to the higher estimated benefit–cost ratio. This suggests that the perceptions of people responsible for training day-to-day are different from those of people with more central responsibilities.

These figures for the net benefit to schools will be combined with central costs to provide an overall assessment of cost-effectiveness for each route in Chapter 5.

4.5 Short-term impact on pupil progress

One of the main barriers to participation in ITT training for schools is the potential negative impact on pupils' progress, cited by almost one-half of primary school head teachers and around one-third of secondary school subject leaders (Table 3.5). We therefore now explore whether the presence of a trainee in a school or department is associated with a negative (or indeed positive) influence on pupil attainment as recorded in national tests taken at the end of primary school (KS2) and end of compulsory secondary school (KS4). We also discuss

evidence that the presence of trainees from different routes has a differential impact on pupil attainment.

There are two limitations to our analysis. First, we are restricted to estimating the short-term impact of the presence of a trainee (and of trainees from different routes) in the school/department. Estimating the long-term impact of trainees from different ITT routes to explore whether teacher effectiveness is related to method of training would be a more valuable exercise, but unfortunately this is not possible in England for a number of reasons.[50] Second, we are unable to explore whether the impact of the trainee on pupil attainment in national assessments at the end of primary and secondary school varies with the degree of contact between the pupils relevant for the assessment and the trainee, as this information was not collected during the survey. We believe that the school or department is the appropriate level for analysis, however, as the presence of a trainee may have an indirect influence on pupil attainment (through redirection of existing teachers' attention and time) as well as a direct influence (through contact with the pupils).

Unfortunately, it is not possible to explore whether the impact of the trainee on pupil attainment varies with the characteristics of the trainee, as this information is observed for only one trainee, in one academic year. It would therefore be impossible to account for the characteristics of the trainee in previous years or where there is more than one trainee per route per school.

Our analysis relies on observing multiple years of national assessment data from schools that participated in the survey. This information is available through the National Pupil Database (NPD), which contains an annual record of pupil attainment and pupil characteristics for each state maintained school in England. We combine these data with information collected during the survey regarding the presence of trainees from each route in three academic years: 2011–12, 2012–13 and 2013–14. Our analysis is at the pupil level and relates each pupil's attainment at the end of primary/secondary school to their prior attainment (at the end of KS1 or KS2, respectively), a subset of their characteristics (for example, broad ethnic group and eligibility for free school meals), school characteristics (such as type of school and decile of average deprivation) and the presence of a trainee teacher (and/or trainee teachers from different routes).[51] The assumption underlying this analysis is that the presence of a trainee (and/or

[50] Such an analysis would require information on pupil progress linked to individual teachers, which is not available in administrative data in England, and information on the training route for each teacher, which is also not commonly available.

[51] Specification 1 in Tables 4.19 and 4.20 accounts for year of assessment only. Specification 2 additionally accounts for pupil's month of birth, gender, eligibility for free school meals, special educational needs status, ethnic group, whether English is an additional language in the household, decile of neighbourhood deprivation and prior attainment. Specification 3 additionally accounts for Ofsted grade for overall effectiveness, the proportions of teachers with tenure below one year, and between one and two years, and the proportion of teachers on the upper pay scale. Specification 4 uses school fixed effects rather than accounting for observable school characteristics.

trainees from different routes), conditional on observable characteristics of the pupils and school, is unrelated to any unobservable influence on pupil attainment (such as a change in leadership at the school/department or unexpected staff shortages).

Estimating the impact of the presence of a trainee (and/or trainees from different routes) relies on variation in presence within schools over time. Appendix Tables E.1–E.3 show that this condition is satisfied: for example, across the three academic years, between 10% and 35% of primary schools have variation in the presence of a training route (with the lowest variation for SCITT and the highest variation for GTP and HEI-led PGCE routes). Note that over three-quarters of primary schools have never had a School Direct trainee, which may be due in part to the timing of our survey in the first academic year since the route's national expansion. The same explanation cannot be used for the similarly narrow distribution of SCITT, which has a degree of persistence within schools (14% have a SCITT trainee in each of the three academic years and 77% never have a SCITT trainee) but is an established route, suggesting that participation in a SCITT partnership is relatively fixed over time.

Table 4.19 shows the estimated relationship between the presence of a trainee in the school and pupil attainment at KS2. The first column shows the estimated relationship controlling only for the year of assessment to account for any national variation in the test over time. The coefficient is negative, which could be interpreted as indicating that the presence of a trainee at the school lowers pupil

Table 4.19. Impact of presence of primary school trainee in the school on pupil attainment at KS2 (standardised average points score)

Presence of trainee	**(1)**	**(2)**	**(3)**	**(4)**
Presence of any trainee	–0.061 [0.078]	0.055 [0.046]	0.008 [0.038]	0.011 [0.042]
Year	Yes	Yes	Yes	Yes
Pupil characteristics	No	Yes	Yes	Yes
School characteristics	No	No	Yes	No
School fixed effects	No	No	No	Yes
Number of pupils	22,401	22,401	22,401	22,401
Number of schools	191	191	191	191
Number in 2012	148	148	148	148
Number in 2013	168	168	168	168
Number in 2014	174	174	174	174

Note: The number in the first row represents the overall impact of the presence of a trainee on pupil attainment, as measured by test scores at the end of primary school. The dependent variable is standardised to have a mean of 0 and standard deviation of 1 in the population. The number in the first row is therefore interpreted as the standard deviation change in attainment, on average, with the presence of a trainee in the school. Standard errors are presented in brackets and are clustered at the school level.
Source: National Pupil Database (NPD) pupil-level data on attainment at KS2 and pupil characteristics from academic years 2011–12, 2012–13 and 2013–14. Survey of primary schools.

attainment, on average. The coefficient is relatively small in magnitude, however, and is not significantly different from zero.

Accounting for pupil characteristics, this coefficient becomes positive, but again is relatively small in magnitude and not significantly different from zero. Accounting for school characteristics – either those observable in administrative data or school fixed effects – reduces the magnitude of the coefficient further and closer to zero.[52]

Looking at school-based and university-based trainees separately, we find that, conditional on pupil characteristics, the impact of the presence of a school-based trainee on pupil attainment at primary school is positive (around 0.07 standard deviations) and significantly different from zero, whereas the impact of the presence of a university-based trainee is negative (but not significantly different from zero). This provides some indication that the presence of trainees from alternative routes has a differential impact on pupil attainment. However, this relationship is no longer evident when accounting for school characteristics, which suggests that the characteristics of schools involved with school-based

Table 4.20. Impact of presence of secondary school trainee in the maths and/or English department on pupil attainment at KS4 (standardised average points scores)

Presence of trainee	**(1)**	**(2)**	**(3)**	**(4)**
Presence of any trainee	0.046	0.070	0.033	–0.025
	[0.075]	[0.044]	[0.040]	[0.024]
Year	Yes	Yes	Yes	Yes
Pupil characteristics	No	Yes	Yes	Yes
School characteristics	No	No	Yes	No
School fixed effects	No	No	No	Yes
Number of pupils	88,630	88,630	88,630	88,630
Number of schools	139	139	139	139
Number in 2012	113	113	113	113
Number in 2013	113	113	113	113
Number in 2014	112	112	112	112

Note: The number in the first row represents the overall impact of the presence of a trainee on pupil attainment, as measured by test scores at the end of compulsory secondary school. The dependent variable is standardised to have a mean of 0 and standard deviation of 1 in the population. The number in the first row is therefore interpreted as the standard deviation change in attainment, on average, with the presence of a trainee in the school. Standard errors are presented in brackets and are clustered at the school level.
Source: National Pupil Database (NPD) pupil-level data on attainment at KS4 and pupil characteristics from academic years 2011–12, 2012–13 and 2013–14. Survey of secondary schools.

[52] Using school fixed effects controls for school characteristics that are fixed over time. The advantage of this approach is that characteristics that are observable or unobservable in administrative data are accounted for.

routes, rather than the characteristics of the school-based trainees, lead to improvements in pupil attainment. This is consistent with evidence from Section 3.2, where primary schools involved with school-based routes were more likely to have better Ofsted ratings and existing pupil attainment.

These conclusions are similar when considering the number of trainees present in the school, rather than a binary indicator for whether a trainee is present or not.

Table 4.20 presents the equivalent analysis for secondary schools. We consider attainment in English and maths, as including non-compulsory subjects would estimate the relationship between attainment and the presence of a trainee for a select group of pupils. The table presents results for English and maths combined, but separate results for these subjects are discussed.

The presence of a trainee in the department is not significantly different from zero for any specification, whether accounting for the year of assessment only or the full set of pupil and school characteristics. This is also the case for the presence of university-based routes and school-based routes separately, conditional on pupil and school characteristics.

The relationship between pupil attainment and the presence of trainees for English and maths is largely positive for university-based routes and negative for school-based routes, but not significantly different from zero conditional on pupil and school characteristics.[53]

In summary, pupil attainment is significantly related to multiple characteristics of pupils (for example, ethnic group and eligibility for free school meals) and schools (for example, average levels of deprivation of the student body and pre-existing indicators of quality such as Ofsted grades), but is largely unaffected by the presence of trainee teachers. This may be because the indirect impact of trainees on pupil attainment in national assessments is small or because the direct impact is limited through the allocation of trainees to pupils of other ages.

Do these results suggest that schools' concerns about the impact of taking a trainee on pupil attainment are misplaced? Perhaps not. First, pupil attainment may be negatively affected at ages not captured by national assessments at the end of each phase of education. Second, the schools may act according to whether they believe pupil attainment will be affected in their school. That is, trainees are not allocated to schools at random, and we may observe the presence of a trainee only where the school has decided that pupil attainment would not be at risk. We would therefore not expect to observe a relationship between pupil attainment and the presence of a trainee in these schools, but may expect that pupil attainment would be affected were trainees to be imposed without choice on other schools.

[53] This finding holds whether the regression is run separately by subject or including both English and maths in the same regression.

5. Overall Costs and Benefits

Chapter 4 outlined the costs and benefits for schools associated with trainees, in the context of the central costs for government presented in Section 4.1. We now combine these central and school costs (and benefits) to assess the short-term net costs involved with initial teacher training. We also include voluntary contributions made to Teach First that are spent on the teacher training programme, which were £1,200 per trainee in the 2013–14 academic year. We include these voluntary contributions as they contribute to the overall cost of this training route, although they are not incurred as a cost to central government or schools.[54]

We present two alternative estimates of schools' net costs. First, we use information on average total costs reported in the survey and wider information such as salary, National Insurance and pension contribution requirements, abstracting from any benefits. Second, we use information on the net costs for schools (the total costs reported relative to the monetary value of benefits reported) calculated in Section 4.4, which incorporate wider costs such as salary, National Insurance and pension contributions, as well as other factors not captured in the survey.

The following analysis assumes that teachers on salaried ITT routes are paid at least the statutory minimum, which is the case for the majority of primary and secondary schools participating in the survey.[55] Payroll costs (National Insurance contributions and pension contributions) are incurred in addition to the salary paid.[56]

The cost of trainees on salaried ITT routes is offset through their contribution to teaching: Teach First trainees and School Direct salaried trainees need not be supernumerary. We therefore assume that the net employment cost is the statutory salary paid (and associated National Insurance and pension contributions) minus the contribution made to teaching that would otherwise have been taught by a newly qualified teacher.[57]

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[54] Source: Teach First. It is possible that other ITT routes also receive voluntary contributions, but this is unlikely for the majority of trainees.

[55] See Appendix F for full details.

[56] Pension contributions are 14.1% of salary: https://www.teacherspensions.co.uk/members/faqs/new-and-active-teachers/scheme-reforms.aspx. Employer National Insurance contributions are 13.8% on earnings above the secondary threshold, £148 weekly: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297727/CA41-2013-2014.pdf.

[57] We assume that the alternative teacher would be a newly qualified teacher on the first point of the main pay scale, with associated payroll costs. We assume the contribution made to teaching is 34% of the contribution of this newly qualified teacher for School Direct salaried trainees and 68% for Teach First trainees (based on Appendix F).

We also assume that the costs reported by schools relating to specific trainees are independent of the trainee's degree class and subject and of the school's pupil composition and region, as it was not possible to separately estimate these costs. This is a reasonable assumption as there was no evidence that costs reported during the survey varied by the characteristics of the trainee.

Other monetary costs for the school are:

- School recruitment fee per Teach First trainee: STEM subject[58] inside London: £4,100; STEM subject outside London: £3,900; non-STEM subject in London: £4,000; non-STEM subject outside London: £3,800.[59]
- Payment to ITT providers for School Direct salaried, which was on average £4,033 for primary schools that reported this cost (£3,280 per primary school including those that reported zero payments to ITT providers). The equivalent figures for secondary schools are £4,688 and £4,245.
- Recruitment cost for School Direct salaried, which was on average £224 per primary school that reported this cost (£84 per primary school including those that reported zero recruitment cost). The equivalent figures for secondary schools are £1,278 and £673.
- Recruitment cost for School Direct unsalaried, which was on average £907 per primary school that reported this cost (£403 per primary school including those that reported zero recruitment cost). The equivalent figures for secondary schools are £639 and £295.

Other monetary benefits for the school are:

- Direct grant funding from NCTL for School Direct salaried (outlined in Section 4.1).
- Payment from ITT providers, which was on average £187 for primary BEd, £138 (£1,367) for primary (secondary) HEI-led PGCE, £972 (£1,808) for primary (secondary) SCITT and £2,286 (£2,615) for primary (secondary) School Direct unsalaried.
- Mentoring grant of £2,500 per trainee from Teach First.

Table 5.1 shows the final monetary costs and benefits for schools for each route, for schools in Inner London. There is variation by subject only for Teach First (where the recruitment fee is marginally lower for non-STEM subjects) and for School Direct salaried (where direct funding from NCTL depends on subject).

[58] STEM subjects are science, technology, engineering and mathematics.

[59] Email correspondence with Teach First.

Table 5.1. Total monetary net cost of each ITT route: Inner London

Route	High-priority		Other-priority	
	Primary	Secondary	Primary	Secondary
BEd	£1,322		£1,322	
HEI-led PGCE	£1,570	£489	£1,570	£489
SCITT	£5,355	£3,531	£5,355	£3,531
SD unsalaried	£5,166	£3,554	£5,166	£3,554
SD salaried (with uplift)	–£180 (–£2,140)	£347 (–£2,043)	£1,820 (£60)	£6,647 (£4,887)
Teach First		£10,998		£10,898

Note: Figures in parentheses refer to the net cost for schools where a 10% uplift in grant funding from NCTL is applicable. 'High-priority' for primary schools refers to trainees with a maths specialism, while 'other-priority' refers to trainees without.
Source: Survey of primary and secondary schools and sources for payroll costs and direct grants reported above.

For primary schools, BEd trainees have the lowest net cost for schools, followed by HEI-led PGCE trainees, due to the shorter length of the placement. The net school costs for SCITT and School Direct unsalaried are similar, but those for School Direct salaried are lower in both high- and other-priority subjects due to the grant funding from NCTL. Note that the net cost is negative for School Direct salaried in high-priority subjects due to the higher grant funding from NCTL.

For secondary schools, the pattern is similar, although the net cost for HEI-led PGCE and SCITT trainees is lower due to larger payments from ITT providers, and the net cost for School Direct unsalaried is lower due to smaller indirect net costs for schools, on average. School Direct salaried trainees in high-priority subjects who are eligible for a bursary uplift have a net benefit for schools (so the monetary costs are less than the monetary benefits). School net costs are substantially larger for Teach First than for other routes for both high- and other-priority subjects, including School Direct salaried where, for other-priority subjects, the net cost for schools is higher than that for SCITT, HEI-led PGCE and School Direct unsalaried routes.

This pattern changes only marginally for schools in different areas – for example, the cost of Teach First varies by £100 due to small changes in the recruitment fee within region across subjects. Outside London, net costs for School Direct salaried trainees are around £2,000 lower in primary schools and around £2,000 higher in secondary schools in high-priority subjects and similar in other-priority subjects.

Table 5.1 excludes the consideration of benefits reported by schools that it is not possible to monetise, such as the contribution to teaching ideas, increase in capacity and expectation to hire. Combination of these values with central costs would therefore ignore any of these benefits that accrue to schools.

We now use information on the net costs for schools (the total costs reported relative to the monetary value of benefits reported) calculated in Section 4.4,

which incorporate wider costs such as salary, National Insurance and pension contributions, as well as other factors not captured in the survey.

Table 5.2 shows that the secondary postgraduate tuition fee routes (HEI-led PGCE, SCITT and School Direct unsalaried) report small net benefits from hosting a trainee at the school, on average. The salaried routes, on the other hand, report larger net benefits. We now discuss how these differences affect the total ITT costs when combined with the central costs for different types of trainees in Section 4.1. Trainees on Teach First and School Direct salaried routes are paid a salary by the school, and a proportion of this is paid back to central government in tax revenue. This has been accounted for in Figures 5.1–5.4. We take the difference between the tax revenue paid by the trainee and the tax revenue that would have been paid by the proportion of an NQT that would have been required to replace them (this proportion is the proportion of an NQT timetable that the average trainee teaches unsupervised). We then deduct this revenue difference from total costs.[60]

Table 5.2. Total monetised net cost of each ITT route

Route	Primary	Secondary
BEd	–£771	
HEI-led PGCE	£137	–£330
SCITT	–£2,237	–£399
School Direct unsalaried	–£1,942	–£258
School Direct salaried	–£1,839	–£2,115
Teach First		–£10,486

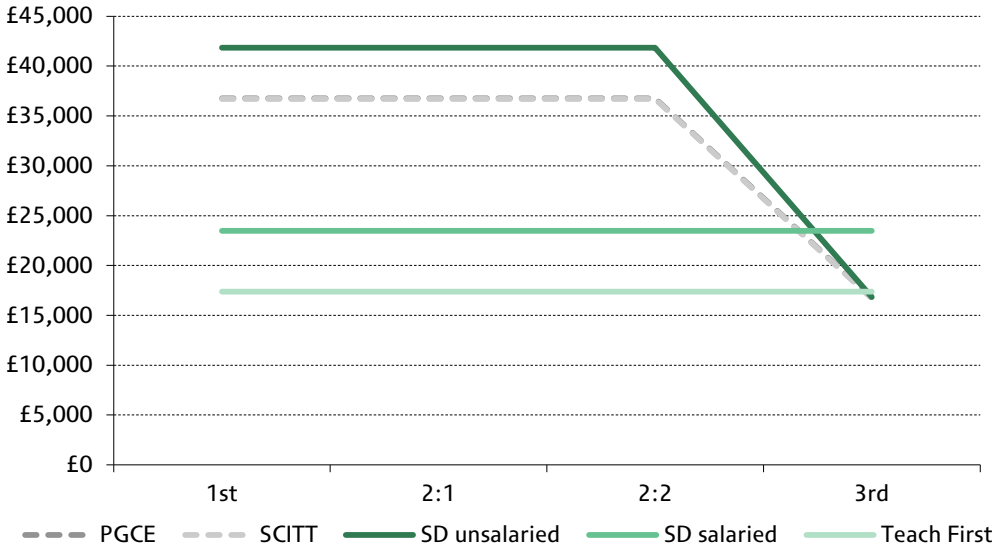
Note: Calculated from respondents' report of benefits compared with costs, using the optimal gamma distribution. For full details, see Appendix D. (Net benefits reported by subject leaders and by ITT coordinators are summed.)
Source: Survey of primary and secondary schools.

Section 4.1 showed that, for high-priority subjects, School Direct unsalaried has the highest level of central cost per trainee with a 2:2 degree or better, followed by SCITT and HEI-led PGCE, Teach First and then School Direct salaried. Comparing Figure 5.1 with Figure 4.1 shows that accounting for net school benefit increases the difference between the most and least expensive routes. Teach First becomes the cheapest route for all trainees with a 2:2 degree or better, with a total cost of £17,362 (and HEI-led PGCE, SCITT and School Direct unsalaried are only marginally cheaper for trainees with a third, at around £16,800). School Direct salaried has a total cost of £23,487, now more per trainee than Teach First due to the higher reported net benefit for Teach First schools.

Incorporating the net school benefit into the overall cost has bigger implications for the marginal cost of trainees in other-priority subjects. As discussed in Section 4.1, the central costs of School Direct unsalaried, SCITT and HEI-led PGCE

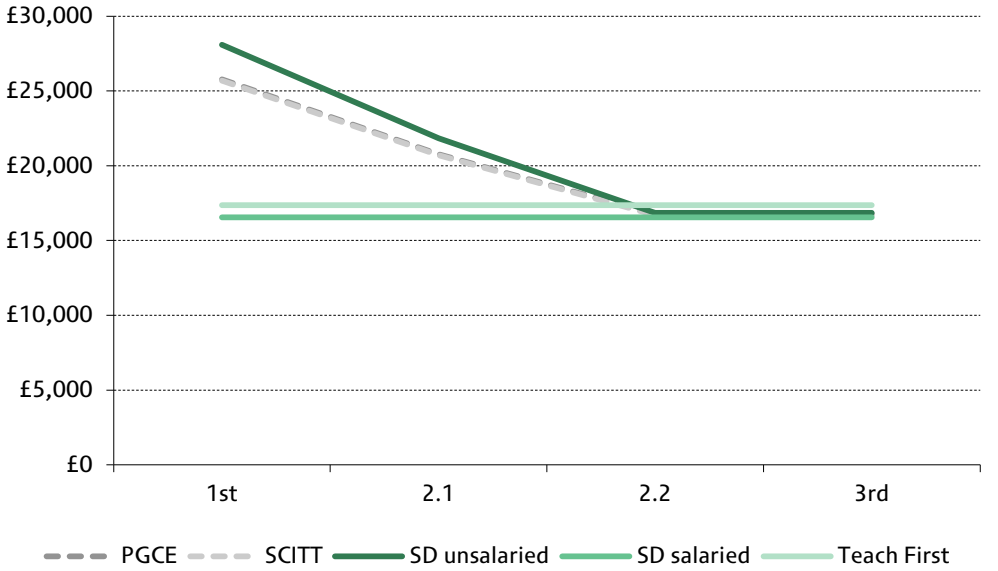
[60] This amount reduces the total cost of School Direct salaried trainees by £689 and increases the total cost for Teach First trainees by £690 in Inner London. In the rest of England and Wales, the costs decrease by £347 for School Direct salaried and increase by £565 for Teach First.

Figure 5.1. Maximum total cost of a secondary trainee in a high-priority subject by degree class and training route (Inner London)



Note: Values for PGCE and SCITT differ slightly from each other. The results in this figure are qualitatively similar when looking at the minimum cost for each route. PGCE refers to HEI-led PGCE.
Source: See footnotes to Table 4.2, Appendix B (student loans model) and Tables 4.17 and 4.18 (derived from survey of secondary schools).

Figure 5.2. Maximum total cost of a secondary trainee in an other-priority subject by degree class and training route (Inner London)

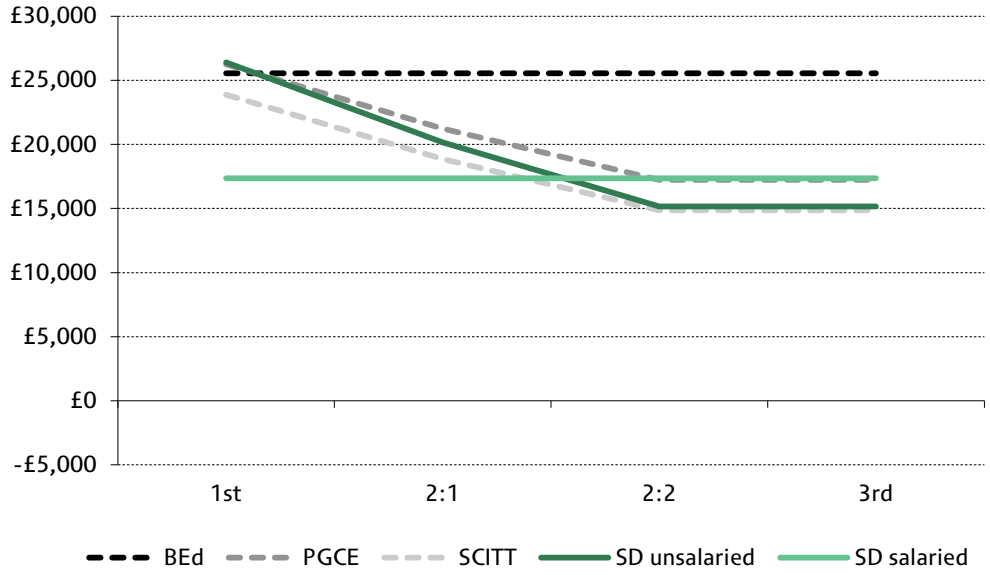


Note: Values for PGCE and SCITT differ slightly from each other. The results in this figure are qualitatively similar when looking at the minimum cost for each route. PGCE refers to HEI-led PGCE.
Source: See footnotes to Table 4.2, Appendix B (student loans model) and Tables 4.17 and 4.18 (derived from survey of secondary schools).

Figure 5.3. Maximum total cost of a secondary trainee with a first-class degree by subject priority and training route (Inner London)

Note: Values for PGCE and SCITT differ slightly from each other. The results in this figure are qualitatively similar when looking at the minimum cost for each route and for trainees with a 2:1 or 2:2. PGCE refers to HEI-led PGCE.
Source: See footnotes to Table 4.2, Appendix B (student loans model) and Tables 4.17 and 4.18 (derived from survey of secondary schools).

Figure 5.4. Maximum total cost of a non-maths specialist primary trainee by degree class and training route (Inner London)



Note: These results are qualitatively similar when looking at the minimum cost for each route. PGCE refers to HEI-led PGCE.
Source: See footnotes to Table 4.2, Appendix B (student loans model) and Table 4.16 (derived from survey of primary schools).

are similar to those of Teach First for trainees with a first-class degree and these routes were cheaper for all candidates with a degree lower than a first. Figure 5.2 shows that once net school benefit has been included, School Direct unsalaried, SCITT and HEI-led PGCE are substantially more expensive than Teach First or School Direct salaried for training a candidate with a first, and are also more expensive for training a candidate with a 2:1. For trainees with a 2:2 or lower in other-priority subjects, the costs per trainee are very similar for the different routes.

Figure 5.3 compares the total cost of a trainee with a first-class degree across the different levels of subject priority. As already noted, Teach First is the cheapest for high-priority subjects and School Direct unsalaried is the most expensive. For non-priority subjects, the lack of bursary funding available for the graduate tuition fee routes means that, with the exception of School Direct salaried, the costs of all routes are very similar. School Direct salaried has a negative total cost in this case, as no direct funding is provided by central government. We do not consider this a reliable estimate of the total cost of School Direct salaried for a non-priority subject trainee because the average net school benefit was not calculated at subject level. It is unlikely that schools would use School Direct unsalaried for a subject where no funding is available and, if they did, it seems unlikely the net benefit would be the same as for schools that do receive a grant.

For primary schools (see Figure 5.4), there is less variation in the net school benefit per route. Therefore the picture for the total costs of each route is similar to that discussed for central costs in Section 4.1. BEd, HEI-led PGCE, SCITT and School Direct unsalaried routes all have similar total costs per trainee with a first-class degree, whereas School Direct salaried is substantially cheaper. The BEd route is then the most expensive route for training teachers with lower-class degrees, as the costs of this route are not dependent on degree class. The postgraduate tuition fee routes (SCITT, HEI-led PGCE and School Direct unsalaried) have costs more similar to School Direct salaried for the lower degree classes, as a result of smaller or no bursary funding.

6. Conclusion and Future Work

In response to significant changes to the delivery of initial teacher training in England, this report has explored the short-term costs and benefits associated with each alternative route.

The central costs for each route are most important to the overall short-term total cost. For salaried routes, the contribution made directly by the National College for Teaching and Leadership is larger than any direct or indirect costs incurred by schools for hosting a trainee teacher. For non-salaried routes, the cost of providing student finance is larger than any direct or indirect costs incurred by schools, as the typical career and progression of a teacher implies that postgraduate loans taken out under the new system of student finance will not begin to be repaid.

In addition, the provision of tax-free bursaries for postgraduate trainees with particular degree classes and subjects, or the award of a tax-free scholarship in a high-priority subject, adds to the total central cost for non-salaried routes. School Direct unsalaried has the highest potential central cost, in the case where the trainee receives an uplift in funding of 25% (when predominantly based in a school where more than 35% of pupils are eligible for free school meals).

Teach First is the only route that has a fixed central cost per trainee. This central cost is roughly similar to the maximum for a School Direct salaried trainee for a high-priority subject, is greater than the maximum cost for a BEd trainee, but is lower than the maximum cost for postgraduate tuition fee funded routes where the trainee is eligible for a scholarship or a bursary of more than £4,000. This implies that the central cost for non-priority trainees is highest for Teach First, but for other-priority subjects the central costs of Teach First are roughly similar to those of other routes.

On the school side, the majority of schools report that the benefits of participating in initial teacher training outweigh the costs. Calculating the monetary value of the ratio of benefits to costs implies that the benefits outweigh the costs for all routes at primary and secondary level, with the exception of HEI-led PGCE at primary level, where the costs slightly outweigh the benefits. The calculated benefits are much larger than the costs for Teach First, with a difference equivalent to around a third of the central grant funding for this route. This suggests that while Teach First may be relatively expensive for schools involved, the benefits perceived by schools are also proportionately larger than for other routes.

The results of our survey of schools give representative evidence for the population of schools that currently participate in each route. Different types of schools choose to participate in different routes, however, which limits our ability to conclude that the findings from one route would apply to other schools not currently involved. For example, the large benefits reported by schools

involved with Teach First may not accrue to schools in different circumstances – for example, with different staff composition and teacher turnover.

Schools perceive different benefits to be associated with different training routes. Most notably, school-based routes are most likely to have the advantage that schools expect to hire the trainee after qualification, lowering the future cost of recruitment. This suggests that schools in different circumstances (for example, with higher or lower teacher turnover) will have different motivations for involvement with different ITT routes, although this was not clear from analysis of school characteristics in administrative data.

The characteristics of the trainee are significantly related to the reports of benefits for the school and to the probability that benefits outweigh costs. This suggests that a school's experience of initial teacher training depends on the attributes of the trainee in question, and that all schools would benefit (and perhaps be more likely to host trainee teachers) if the quality of the pool of trainees increased.

Each individual's choice of initial teacher training route will depend on factors we are not able to explore – for example, the trainee's taste for university- and school-based components of training and geographical mobility. The provision of scholarships and bursaries may attract a wider pool of applicants and provide more incentive to those with high degree classes. Consideration of these factors implies that a broad range of routes and funding provisions should be maintained to ensure a wide variety of potential trainees consider and train for the career. It is clear that there are costs to doing so, however. Non-salaried postgraduate routes have high central costs for particular trainees (up to a maximum of around £40,000 per trainee) that are not outweighed by high perceived benefits for schools.

An overall assessment of the system of initial teacher training in England requires further information: first, the retention rate of teachers from different routes, which may dramatically affect the overall short-term costs and benefits reported here; second, the impact of the availability of scholarships and bursaries on the supply of potential trainees and, crucially, the supply of potential trainees judged as having high potential to be a good teacher. More generally, the effectiveness in raising pupil attainment of teachers trained through different routes should be considered. This information could provide justification for the current provision of routes funded by tuition fees (which imply high central costs for central government), particularly for 'high-quality' trainees defined by their degree class. Finally, we are unable to consider wider costs and benefits, such as lower economies of scale in advertising, recruitment and training or the possible shortfall in supply of newly qualified teachers that may result from less centralised (typically school-based) training.

What can we conclude regarding the government's transition towards prioritising school-based training? Our survey showed that schools are more likely to state that benefits are higher than costs for school-based routes than for

university-based routes. This gives some support to the government's emphasis on the benefits of school-based training, although there was significant variation for the School Direct salaried route, suggesting that schools' experiences are not universally positive. We must also caution that the benefits perceived by schools currently involved in school-based training may not accrue to all schools.

More generally, our analysis of the central costs and of benefits relative to costs for schools suggests that the key determinant of total costs is the system of central funding. School Direct unsalaried and School Direct salaried therefore impose starkly different costs for equivalent trainees. For example, for trainees in high-priority subjects with first-class degrees, the maximum total cost is almost double for School Direct unsalaried. This is primarily due to the availability of tax-free bursary or scholarship funding for School Direct unsalaried, in addition to the high central cost of providing student finance for this route.

Further changes to the system of initial teacher training should take these considerations into account, in addition to further research required to analyse the system as a whole. While the benefits of school-based provision are clear for some schools, this would not necessarily be the case for all schools. Further expansion of school-based training therefore depends on the supply and quality of school placements, and must be weighed against the potential negative consequences of a possible shortfall in the national supply of newly qualified teachers.

Appendix A. Additional Tables for Chapter 3

Table A.1. Reported characteristics of trainees (primary)

Route	Percentage of trainees rated 'very good'					
	BEd	HEI-led PGCE	GTP	SD(S)	SD(US)	SCITT
Resilience	29	22	47	40	31	29
Social skills	39	36	58	50	48	50
Subject knowledge	17	10	26	31	14	19
Behaviour management	15	13	26	20	10	15
Confidence in the classroom	24	16	28	26	17	15
Commitment to teaching	54	41	58	55	59	60
Potential to be a good teacher	46	46	58	52	55	52

Note: Respondents were asked about their initial perception of a specific trainee recently placed at their school.
Source: Survey of primary schools.

Table A.2. Reported characteristics of trainees (secondary)

Route	Percentage of trainees rated 'very good'					
	HEI-led PGCE	Teach First	GTP	SD(S)	SD(US)	SCITT
Resilience	25	42	34	30	30	10
Social skills	40	44	46	43	36	28
Subject knowledge	30	42	34	26	39	31
Behaviour management	10	11	23	13	15	5
Confidence in the classroom	19	14	22	25	17	18
Commitment to teaching	45	47	48	44	45	28
Potential to be a good teacher	43	53	52	51	46	41

Note: Respondents were asked about their initial perception of a specific trainee recently placed at their school.
Source: Survey of secondary schools.

Appendix B. Calculating the Cost of Student Loans

All the numbers used in our calculations are in real terms, 2012–13 prices (as deflated by the retail price index, RPI), and in net present value (NPV) terms based to the final year of training (2015–16). The timing of the qualifications is such that all students become an NQT at the same point, in the year 2016–17. This year is chosen so that all the graduates are under the new higher education (HE) funding system. We then report these costs in 2013–14 prices (uprated by the RPI at the end of the calculations) as the cost of student loans, in comparable terms to the other central costs we consider (but using the new HE finance system). As the BEd course typically takes three years, as opposed to four years for an undergraduate plus a HEI-led PGCE (or other graduate tuition fee training route), the BEd students start their courses a year later.

We create projections of a 'typical teacher' earnings profile by taking the cross-sectional earnings–age profile observed in the School Workforce Census (November 2012). We do this separately for primary and secondary school teachers. This gives us average earnings at each age in 2012–13 prices. We then uprate these using the OBR forecasts of real average weekly earnings (in the long run, these are assumed to grow by 1.1% in real terms). We then apply this earnings profile to the different student loan systems.

For BEd students, the cost of their loan is calculated as the difference between the NPV cost of providing the loan and the NPV of the repayments, for the entire undergraduate loan. For HEI-led PGCE students, who would already have an undergraduate student loan, the cost is calculated as the difference between the NPV cost of the undergraduate loan without a HEI-led PGCE loan and the NPV cost of an undergraduate loan with a HEI-led PGCE loan.

We model four scenarios, shown in Table B.1. These are: trainees who receive the maximum maintenance grant (in which case they are entitled to a lower maintenance loan) and trainees who receive no maintenance grant and borrow the maximum loan, living away from home inside and outside London (which determines the maximum level of maintenance loan). We assume that the amount borrowed in each year is constant in real terms.

In 2016–17, the repayment schedule is set at 9% of all earnings over the threshold £21,000, which is due to rise in line with average earnings. As the

Table B.1. Maximum annual loans

Region	No maintenance grant	Maintenance grant
London	£16,675	£14,998
Outside London	£14,500	£12,823

Source: http://webarchive.nationalarchives.gov.uk/20130423140808/https://www.gov.uk/student-finance/loans-and-grants.

earnings data we have are in 2012–13 prices and the threshold is fixed in 2016–17 prices, we deflate using the RPI. The threshold is then projected forwards using the same OBR forecast of average earnings used to uprate expected earnings.

The interest rate on Plan 2 loans varies in real terms between 0% and 3% depending on the relationship between earnings and the lower and upper thresholds (£21,000 and £41,000 in 2016–17 prices – both increasing with average earnings). We calculate the real interest rate for each year based on projected earnings.

We then calculate annual repayments, which stop after 30 years or when the loan is fully paid off. The outstanding loan is the loan in the previous year minus the repayment plus the interest. These repayments are still in 2012–13 prices. We then discount the value of these repayments (at a rate of 2.2%) to get the value in NPV terms. The loan, which is paid out over three or four years, is also discounted to 2015–16 terms. The difference between these values gives the cost of the loan to the government.

We also model the 'old' student loan system for comparison. The same methodology is used. The differences are that, under the old system, the maximum amount that can be borrowed is lower, the real interest rate is zero,[61] the loan is written off after 25 years and repayments are made at 9% of all income over £15,795 in 2012–13 prices (set to rise with the RPI).

[61] The nominal interest rate is actually fixed to be whichever is lower of the base rate plus 1% and the RPI. Here we assume the latter is lower (as it has been historically, although not recently) and therefore the real interest rate is zero.

Appendix C. Creating School- and/or Department-Level Hourly Wage

Table C.1 presents the information derived from the School Workforce Census (SWC) to impute the costs associated with the time involved with ITT. The average pay for teachers on the main pay scale is around £17 per hour in primary and secondary schools, with similar variation around this average. As expected, the average pay per hour increases with seniority, to around £22 per hour for teachers on the upper pay scale in primary and secondary schools, and around £32 and £36 per hour for school leaders in primary and secondary schools respectively. Note that the variation in secondary schools is higher, perhaps due to greater opportunities for progression in larger schools.

Table C.1. Hourly pay for staff members leading mentoring of trainees

Pay scale	N	Mean	Min	25th	50th	75th	Max
Primary							
Main	37	17.1	10.7	15.7	16.3	17.6	29.4
Upper	89	22.3	16.2	20.8	21.6	24.3	27.6
Leadership	89	31.7	20.2	28.5	30.8	34.7	46.7
Secondary							
Main	160	17.5	11.7	15.8	17.0	18.8	23.3
Upper	257	22.5	14.1	20.5	21.8	25.1	27.6
Leadership	68	36.2	14.7	31.8	35.6	40.1	58.3

Note: Hourly pay derived from the School Workforce Census. Hourly pay for primary schools is calculated at the school and pay scale level. Where this information is not observed, pay is calculated at the local authority and pay scale level.
Source: Bespoke survey of primary schools and secondary schools.

This information was derived from the SWC in the following way:

- Use base pay reported in the SWC for all teaching and leadership staff
- Drop some duplicate observations:
    - Drop exact duplicates in the following variables: staff member identifier, school identifier, gender, age, qualification status, higher-level teaching assistant status, QTS route (where applicable) and contract agreement, post, pay scale, spine point, base pay, weeks worked per year, role, hours worked, additional payment receipt, tenure
    - Drop exact duplicates as above, excluding base pay (keeping the highest base pay recorded)
    - Drop fixed-term contract if all other variables are duplicated (except pay where not defined for some non-permanent staff)
    - Drop those with missing information if total hours worked > 52

    - Drop lowest hours when duplicate and total hours worked > 52
- Calculate total base pay, main role and main subject for each individual
- Calculate hourly wage as total base pay divided by contracted hours per year
- Replace hourly wage by the maximum possible according to spine point if above this level
- Calculate average pay for each pay grade for each primary school
- Calculate average pay for each pay grade for each secondary department
- Calculate average pay for each pay grade for each secondary school
- Calculate average pay for each pay grade for primary schools for each local authority
- Calculate average pay for each pay grade for secondary schools for each local authority
- Merge information from SWC into our survey:
    - For primary schools:
        - Merge to primary school / pay grade average where possible
        - Merge to local authority / pay grade average where possible
        - Merge to school average where pay grade information is missing; use the percentile of the school pay distribution that matches the mean of the observed distribution of pay where information is available for each route
        - Merge to school average pay created using median number of hours (32.5) where hours information is missing for the whole school (this is a small number of cases), again using the percentile that matches the mean of the observed distribution of pay for each route
    - For secondary departments:
        - Merge to secondary school / department / pay grade average where possible
        - Merge to secondary school / pay grade average where possible
        - Merge to local authority / pay grade average where possible
        - Merge to school average where pay grade information is missing; use the percentile of the school pay distribution that matches the mean of the observed distribution of pay where information is available for each route
        - Merge to school average pay created using median number of hours (32.5) where hours information is missing for the whole school (this is a small number of cases), again using the percentile that matches the mean of the observed distribution of pay for each route

Tables C.2 and C.3 present the staff time in terms of hours for each route, rather than the total cost as in Tables 4.5 and 4.6.

Table C.2. Total hours of staff time per route (primary)

Route	N	Mean	25th	50th	75th
BEd	24	7.7	3.4	4.4	8.2
HEI-led PGCE	40	7.7	5.1	6.2	9.7
GTP	17	6.9	4.6	6.5	9.9
School Direct salaried	34	7.2	4.7	6.5	8.3
School Direct unsalaried	21	7.5	4.7	5.5	8.7
SCITT	32	8.8	6.0	8.8	9.8

Source: Survey of primary schools.

Table C.3. Total hours of staff time per route (secondary)

Route	N	Mean	25th	50th	75th
HEI-led PGCE	202	8.0	4.7	6.5	10.5
Teach First	28	5.6	2.3	4.0	7.5
GTP	53	6.6	3.6	4.9	8.2
School Direct salaried	55	7.9	3.7	5.2	9.8
School Direct unsalaried	62	8.0	4.3	6.3	9.7
SCITT	31	8.2	4.2	6.5	9.5

Source: Survey of secondary schools.

Appendix D. Monetising the Net Benefit to Schools

- Use information from the following question: 'Please tell us whether you think the benefits associated with hosting trainee teachers in your department outweigh the costs (including investment of staff time) for each route in your department, and if possible tell us to what extent'.[62]

  Part one:

  - 'Benefit greater than cost'
  - 'Benefit equal to cost'
  - 'Benefit smaller than cost'
  - 'Don't know / n/a'

  Part two:

  - 'To a small extent'
  - 'To some extent'
  - 'To a large extent'

- Define the net benefit such that 'Benefit smaller than cost: to a large extent' has the lowest net benefit and 'Benefit greater than cost: to a large extent' has the largest net benefit. (The ranking is shown in Table D.1.)

- Assume that the distribution of the benefit–cost ratio follows the gamma distribution, which has two parameters (the scale and shape parameters).

- Assume that respondents make some approximation around where benefits are equal to costs (where the benefit–cost ratio equals 1) which smoothes the spike in the distribution at this point.

- Assume that respondents all have the same interpretation of to a 'small', 'some' and 'large' extent and that the interpretation is the same either side of where the benefit–cost ratio equals 1. For example, if the meaning of to a 'large' extent where benefits are less than costs gives a benefit–cost ratio of 0.5 (benefits are half costs), the equivalent value where benefits are greater than costs is 2 (benefits are double costs).

- Find the optimal gamma distribution:

  - Iterate over the two parameters of the gamma distribution such that the observed distribution of net benefits in the survey is as close as possible

[62] This wording was used for the subject leader questionnaire. Secondary school ITT coordinators and primary school head teachers were asked the same question with in your department replaced by in your school.

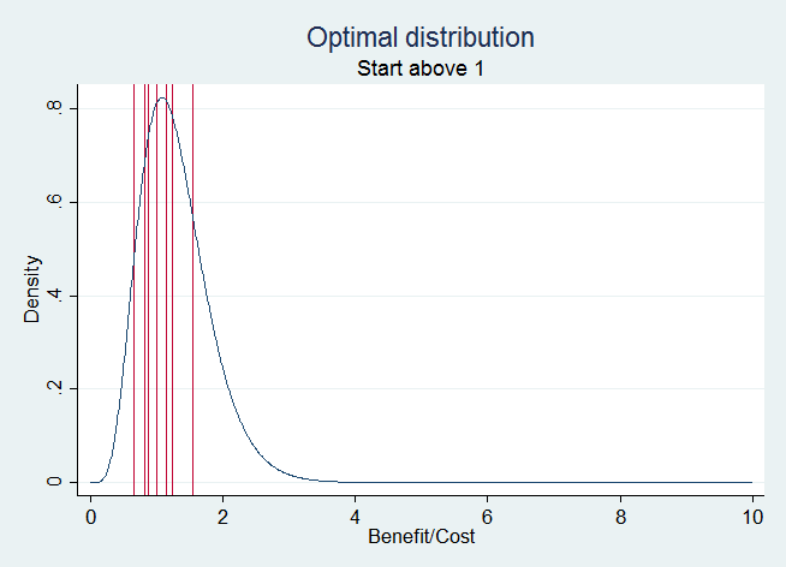
to the observed distribution of net benefits implied by the gamma distribution. The results of this exercise are presented in Table D.1 and Figures D.1–D.3.

Table D.1. Comparison of actual and inferred percentages of respondents in each net benefit category resulting from the optimal gamma distribution

Net benefit	Primary		Subject leader		ITT coordinator	
	Survey (%)	Implied (%)	Survey (%)	Implied (%)	Survey (%)	Implied (%)
Benefit < cost: large extent	8.26	8.33	5.31	5.50	4.02	4.07
Benefit < cost: some extent	19.72	17.74	17.84	17.81	13.84	13.15
Benefit < cost: small extent	22.02	22.02	21.25	20.59	15.63	15.77
Benefit = cost	44.04	44.11	47.63	47.64	37.50	37.56
Benefit > cost: small extent	50.92	50.94	51.99	52.03	42.41	42.43
Benefit > cost: some extent	72.02	72.07	79.89	79.90	70.98	71.01
Benefit > cost: large extent	100	100	100	100	100	100

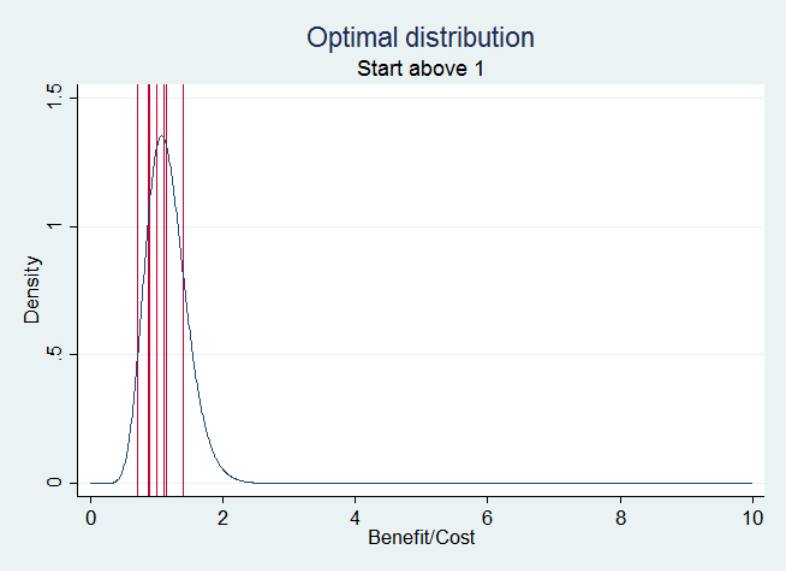
Note: 'Survey' refers to the cumulative percentage observed in the relevant survey. 'Implied' refers to the cumulative percentage implied by the optimal gamma distribution.
Source: Survey of primary and secondary schools.

Figure D.1. Optimal gamma distribution of benefit–cost ratio: primary school head teachers



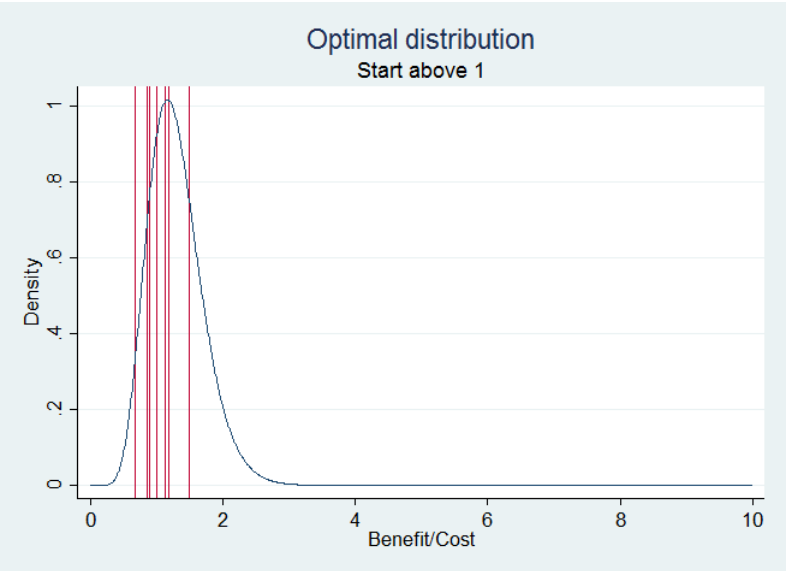
Note: Vertical lines correspond to the dividing lines between categories, with an additional line where 'benefit = cost' (B/C = 1): 'benefit < cost: large extent' and 'benefit < cost: some extent'; 'benefit < cost: some extent' and 'benefit < cost: small extent'; 'benefit < cost: small extent' and 'benefit = cost'; 'benefit = cost'; 'benefit = cost' and 'benefit > cost: small extent'; 'benefit > cost: small extent' and 'benefit > cost: some extent'; 'benefit > cost: some extent' and 'benefit > cost: large extent'.
Source: Survey of primary schools.

Figure D.2. Optimal gamma distribution of benefit–cost ratio: secondary school subject leaders



Note: Vertical lines correspond to the dividing lines between categories, with an additional line where 'benefit = cost' (B/C = 1): 'benefit < cost: large extent' and 'benefit < cost: some extent'; 'benefit < cost: some extent' and 'benefit < cost: small extent'; 'benefit < cost: small extent' and 'benefit = cost'; 'benefit = cost'; 'benefit = cost' and 'benefit > cost: small extent'; 'benefit > cost: small extent' and 'benefit > cost: some extent'; 'benefit > cost: some extent' and 'benefit > cost: large extent'.
Source: Survey of secondary schools.

Figure D.3. Optimal gamma distribution of benefit–cost ratio: secondary school ITT coordinators



Note: Vertical lines correspond to the dividing lines between categories, with an additional line where 'benefit = cost' (B/C = 1): 'benefit < cost: large extent' and 'benefit < cost: some extent'; 'benefit < cost: some extent' and 'benefit < cost: small extent'; 'benefit < cost: small extent' and 'benefit = cost'; 'benefit = cost'; 'benefit = cost' and 'benefit > cost: small extent'; 'benefit > cost: small extent' and 'benefit > cost: some extent'; 'benefit > cost: some extent' and 'benefit > cost: large extent'.
Source: Survey of secondary schools.

- For each respondent:
    - Draw a value of the benefit–cost ratio from the appropriate section of the optimal gamma distribution. For example, where a primary school respondent states 'Benefit < cost: large extent', draw a value of the benefit–cost ratio in the first section (to the left of the first vertical line in Figure D.1).
    - Calculate the monetary value of benefits using information on costs reported in the survey and the drawn benefit–cost ratio. For example, if costs reported are equal to £1,000 and the drawn benefit/cost ratio is 0.6, then benefits must be equal to £600 (£600/£1,000 = 0.6).
    - Calculate the net benefit to the school using information on costs reported in the survey and the estimated monetary value of benefits. To continue the example, net benefit would be –£400 (£600 – £1,000).
    - Calculate average values of net benefit per ITT route to inform total costs and benefits for each route (combining central and school costs).

Appendix E. Variation in the Presence of Trainees

Table E.1. Variation in the presence of trainees (primary)

Type of trainee	Always present	Never present	Sometimes present
Any	84.0	1.9	14.2
University-based	64.1	13.8	22.1
School-based	35.3	36.8	27.9
BEd	36.7	34.7	28.7
HEI-led PGCE	40.3	25.5	34.2
GTP	5.7	59.6	34.8
School Direct salaried	0.7	76.4	22.9
School Direct unsalaried	0.7	77.6	21.7
SCITT	13.8	76.6	9.7

Source: Survey of primary schools.

Table E.2. Variation in the presence of trainees (secondary – English)

Type of trainee	Always present	Never present	Sometimes present
Any	77.8	1.9	20.4
University-based	30.2	17.0	52.8
School-based	25.0	18.2	56.8
BEd	30.2	17.0	52.8
HEI-led PGCE	4.3	78.3	17.4
GTP	0.0	66.0	34.0
School Direct salaried	0.0	67.4	32.6
School Direct unsalaried	0.0	70.2	29.8
SCITT	0.0	82.6	17.4

Source: Survey of secondary schools.

Table E.3. Variation in the presence of trainees (secondary – maths)

Type of trainee	Always present	Never present	Sometimes present
Any	75.6	0.0	24.4
University-based	51.3	6.6	42.1
School-based	11.9	32.2	55.9
BEd	51.3	6.6	42.1
HEI-led PGCE	6.3	89.1	4.7
GTP	0.0	64.1	35.9
School Direct salaried	0.0	76.2	23.8
School Direct unsalaried	0.0	77.8	22.2
SCITT	0.0	93.7	6.3

Source: Survey of secondary schools.

Appendix F. Trainees' Salaries and Contributions to Teaching

School Direct salaried trainees in local authority maintained schools must receive a salary of at least point 1 on the unqualified teacher (UQT) pay scale. This minimum varies between regions: it is highest in Inner London (£20,092), slightly lower in Outer London (£18,977) and the fringe area around London (£17,025), and lowest in the rest of England and Wales (£15,976).[63] In contrast, trainees in academies and free schools must be paid at an advertised rate.[64] Table F.1 shows the distribution of trainee teacher salaries for all salaried routes. For secondary schools, 14 of the 18 schools that pay School Direct salaried trainees less than the statutory minimum are academy schools, and the remaining four maintained schools report salaries very close to the statutory minimum. In contrast, only three of the 13 primary schools that pay School Direct salaried trainees less than the statutory minimum are academy schools, and the variance in teacher salaries in maintained schools below the statutory minimum is high.

Teach First trainees in their first year must receive a salary at least point 2 on the UQT pay scale in their first year of the placement, which ranges between £17,834 outside London to £21,949 in Inner London.[65] Only two schools in the survey report paying Teach First trainees below this level.

Table F.2 shows the distribution of the contribution to teaching made by trainees on salaried routes.

Table F.1. Distribution of salaries paid to trainee teachers on school-based salaried routes

Route	N	Mean	25th	50th	75th
Primary schools					
GTP	12	14,259	10,000	16,250	19,580
School Direct salaried	31	15,628	13,326	16,000	19,000
Secondary schools					
GTP	5	10,614	5,000	13,500	15,200
School Direct salaried	35	15,433	10,300	15,975	20,000
Teach First	17	18,384	17,834	21,000	22,000

Source: Survey of primary and secondary schools.

[63] http://www.naht.org.uk/EasysiteWeb/getresource.axd?AssetID=36206.

[64] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/326575/school-direct-operations-manual-academic-year-2014-to-2015--2.pdf.

[65] Sources: http://www.publications.parliament.uk/pa/cm201012/cmselect/cmeduc/1515/1515we25.htm; http://www.naht.org.uk/EasysiteWeb/getresource.axd?AssetID=36206.

Table F.2. Distribution: contribution to teaching ('without direct supervision') in hours

Route	N	Mean	25th	50th	75th
Primary schools					
BEd	32	8.11	2.00	7.08	12.44
HEI-led PGCE	41	8.60	5.00	7.50	12.50
GTP	14	7.19	2.00	5.58	8.17
School Direct (salaried)	30	8.97	5.00	7.25	14.44
School Direct (unsalaried)	19	6.56	2.00	6.67	10.00
SCITT	27	7.51	1.33	7.67	10.00
Primary school NQT		*17.1*			
Secondary schools					
HEI-led PGCE	244	4.61	0.00	3.00	8.33
Teach First	25	11.99	2.00	15.00	17.00
GTP	52	6.30	2.76	5.00	9.86
School Direct (salaried)	55	5.97	2.50	5.11	8.96
School Direct (unsalaried)	69	4.78	0.50	3.33	8.00
SCITT	33	4.25	0.00	2.00	5.00
Secondary school NQT		*17.6*			

Note: The table is based on survey responses to the question: 'How much time does/did the trainee have timetabled for teaching with and without direct supervision?'. There is some ambiguity about the meaning of 'direct supervision' as some respondents may interpret 'without direct supervision' as being present in the classroom while others may interpret it as having some knowledge of the lesson. For Teach First and School Direct trainees (who are most likely to teach without a qualified teacher present), we have therefore excluded observations where the total number of timetabled hours of teaching (with indirect and direct supervision) is less than 50% of that for the average NQT.
Source: Survey of primary and secondary schools. Average working hours: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/285941/DFE-RR316.pdf. NQT working hours: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/269288/induction_for_newly_qualified_teachers.pdf.

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