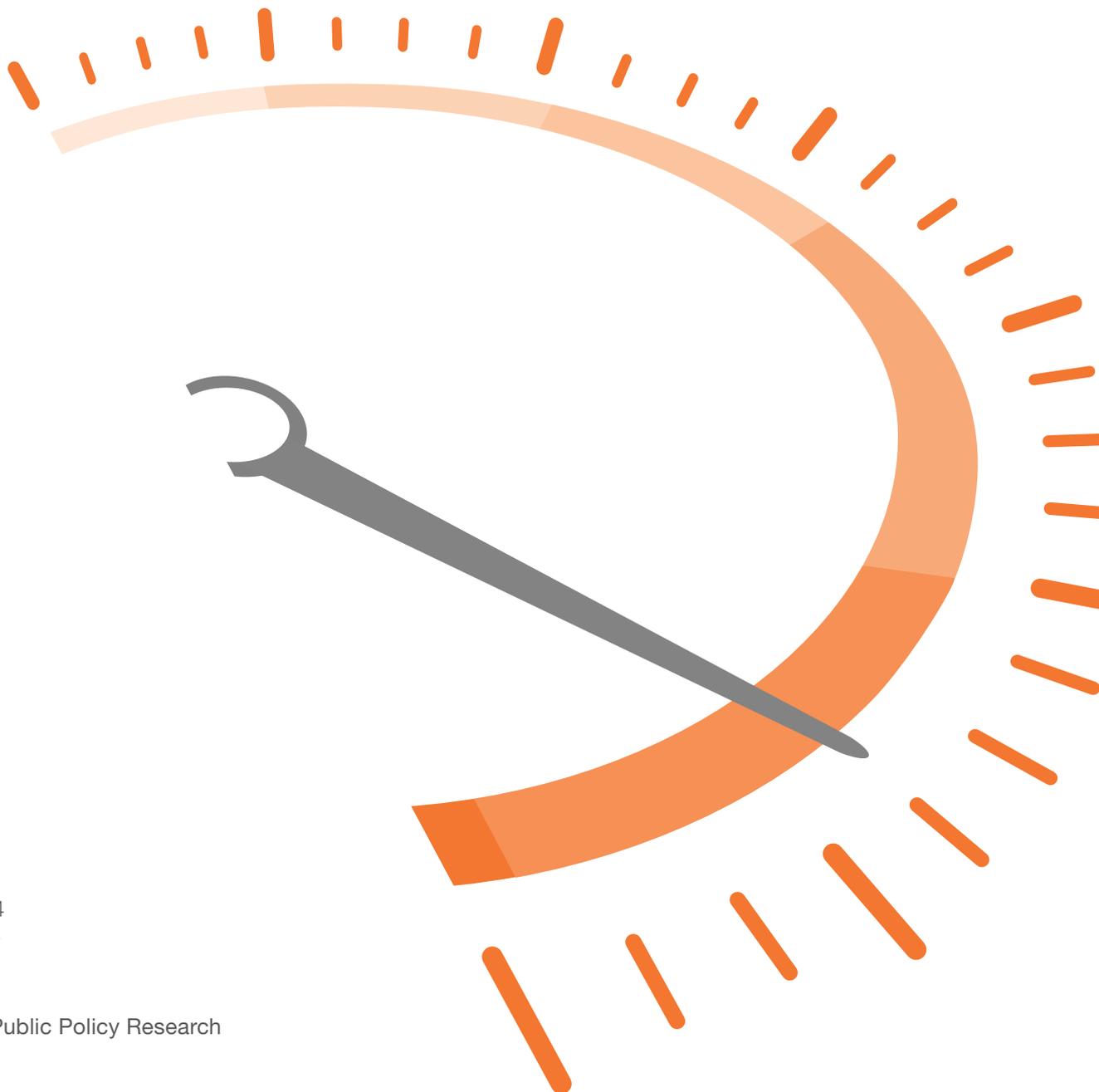


REPORT

DRIVING A GENERATION

IMPROVING THE INTERACTION
BETWEEN SCHOOLS AND BUSINESSES



Bill Davies
and Ed Cox

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ABOUT THE AUTHORS

Bill Davies is a researcher at IPPR North.

Ed Cox is director of IPPR North.

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ABOUT IPPR NORTH

IPPR North is IPPR's dedicated thinktank for the North of England. With bases in Newcastle and Manchester, IPPR North's research, together with our stimulating and varied events programme, seeks to produce innovative policy ideas for fair, democratic and sustainable communities across the North of England.

IPPR North specialises in regional economics, localism and community policy. Our approach is collaborative and we benefit from extensive sub-national networks, regional associates, and a strong track record of engaging with policymakers at regional, sub-regional and local levels.

IPPR North
3rd Floor, 20 Collingwood Street
Newcastle Upon Tyne NE1 1JF
T: +44 (0)191 233 9050
E: north@ippr.org
www.ippr.org/north
Registered charity no. 800065

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EXECUTIVE SUMMARY

Young people face increasingly difficult and protracted transitions from school to work. Youth unemployment remains high and, in many parts of the country, the routes into employment that young people could have counted on in the past have long since disappeared. Moreover, today's secondary school pupils are being let down by careers services that are not up to scratch. A review conducted by Ofsted this year reported that three-quarters of schools are not executing their statutory careers duties satisfactorily. In particular, the review highlighted the poor links that exist between schools and businesses (Ofsted 2013). We are making a difficult transition even harder than it should be for young people.

Links between schools and businesses are vital. In order to deliver a well-informed careers service with a broad range of job destinations, advisers located in schools need to be aware of the local employment opportunities around them. This means that they need to have some form of contact with local employers. At present, too few have any.

At the same time, businesses need to be prepared to take more responsibility for getting out into local schools. If they want to successfully recruit pupils from school, college or university, employers need to help shape the choices young people make about the qualifications they set out to achieve and the work experience that they gain.

This report sets out a number of steps by which this process can be facilitated. IPPR North arranged for four schools to receive talks from local employers in the automotive industry, and for pupils to visit local car assembly plants to learn more about the industry and the careers within it. We used this process, and a pupil-to-pupil survey, to explore pupils' perceptions of their future careers, with a particular focus on career options in science, engineering and technology.

Our research finds that that pupils as young as 12 are engaged in thinking seriously about their careers, but that they want more help, more work experience, and more information about local job opportunities, including visits from employers and visits to their sites. Pupils need this help: the lack of interest in post-GCSE STEM (science, technology, engineering and mathematics) courses and vocational education among girls, for example, is a cause for concern given that skills shortages in these sectors are looming. There was also evidence that pupils had insufficient knowledge about which careers did and did not have science qualifications as prerequisites. Our findings demonstrate the importance of educating young people early on about both careers and the educational choices they will need to make in order to realise their ambitions: it is an issue for pre-GCSE ages, not just after the age of 16.

Influencing young people's choices is challenging, but evidence shows that more visits to schools by firms, and more visits from schools to local industry, can change perceptions of 'skills-shortage careers'. Fundamentally, schools and businesses need to get better at using each other's resources for mutual gain.

If our objective is to open young people's minds to the array of job opportunities that exist both locally and further afield (including the fields of science, engineering and technology), then responsibility for achieving this needs to be shared between schools, careers services and private enterprise – but the lead should come from schools' careers services.

Recommendation 1

Under the Coalition government, funding for the Connexions careers advice and guidance service, which was worth around £200 million annually, has 'disappeared' (Watts 2012). Instead of this service being replaced, schools were handed an unfunded mandate to

provide careers guidance financed from within their own budgets. Naturally this has resulted in deterioration in the quantity and quality of support available to young people. Schools should be given more support to meet their statutory duty to provide independent careers advice and guidance. In line with the House of Commons education select committee report (Parliament 2013a), we recommend that the remit of the National Careers Service is expanded to enable it to perform a capacity-building and brokerage role for schools. This would have funding implications, so we further recommend that the Department for Education instructs the Skills Funding Agency to cost the options of the National Careers Service's remit being expanded in this way.

Recommendation 2

The careers advice process should be more properly embedded in the curriculum. In particular, the role of careers in education should be clearer and wider.

- Starting in year 7, teachers from each core subject module should devote at least one lesson per year to telling pupils about the different careers that are available in their specialist subject area, and the qualifications and education choices they would need to make to pursue those careers.
- For pupils in year 8, schools' careers services should be charged with co-ordinating visits from employers relevant to the majority of their subject classes each academic year.¹
- For pupils in year 9, the schools careers service should co-ordinate off-site visits to major employers in the area (like those carried out as part of this research project). This should be possible across most subject areas.
- For pupils in years 10 and 11, as the Browne review of higher education recommended, career advisors should provide more individualised careers support, tailored to pupils' needs, to ensure that they are able to make the best choices (Browne 2010). This provision must include work experience and placements, exemplary approaches to which are identified by the Ofsted review of careers guidance in schools (Ofsted 2013).

Recommendation 3

To improve interaction between schools and business, all secondary schools need to develop stronger relationships with major employers in their catchment areas.

- As described above, **school careers services** must take the lead in this matter. In order not to significantly add to teachers' workloads, careers services should identify local employers relevant to each of the core subject areas for years 7, 8 and 9, and co-ordinate with the teachers of each subject area to identify fruitful areas of overlap between the school curriculum and business activity.
- **Businesses**, especially those with skills-shortages, need to be proactive participants in this process. As a part of their corporate social responsibility strategies, large businesses (those with over 250 employees) should liaise with local careers services to offer year 8 pupils guest lessons and talks on how the subject curriculum relates to their business activities. As with the See Inside Manufacturing programme (see section 1.4), these businesses should open up their factories and offices at least one day every year to visits from year 9 pupils attending local maintained secondary schools.
- To promote efficient relationship-building, an intermediary may be necessary. The variable size of schools and businesses across different parts of the country will require a flexible approach to institutions. Nevertheless, one way of keeping this

¹ This would involve the statutory duty on schools to be extended, from year 8 down to year 7.

approach simple and efficient would be to enlist existing ‘**skills hubs**’² to play the role of intermediary; where these do not exist, local enterprise partnerships should be responsible for establishing them.³ Intermediary skills hubs are already in place in many areas, having been established by City Deal locations and local enterprise partnerships. These hubs, such as the Sheffield City Region Skills Hub, should act as destinations for both SMEs and large businesses that want to develop relationships with local secondary schools. The hub would then publish the key contact for each business online, alongside a series of term-time dates during which visits to and from their workplaces could be arranged, and details of what each business could offer the school in terms of relevance to specific subject areas. Making these resources easily accessible will ensure that careers services can devote more of their time to face-to-face careers advice with older pupils, and arranging the logistics of visits for younger pupils, rather than tracking down local employers.

Finally, in the next parliament, and starting with England’s ‘core cities’, responsibility and funding for apprenticeships, skills training and job-matching activities for young people should pass to upper-tier local authorities and social partners in their areas, as recommended in IPPR’s *No more NEETs* report (Cooke 2013).

With a little more co-ordination, effort, and money invested in the right places, the links between schools and businesses can be improved substantially – and they have the potential to open young people’s minds to a wider range of careers. To continue with the current approach, on the other hand, would be to let down the next generation of employees and employers alike.

2 Skills hubs are vehicles to align skills funding with local business needs, and sometimes to identify and support people who lack the right employment skills.

3 Ayrshire chamber of commerce, for instance, is contracted to act as an intermediary between local schools and employers to deliver work experience placements.

1. INTRODUCTION

All secondary schools are required to provide a careers service for their pupils. The objective of these services is to assist pupils in the process of considering and deciding what careers they might pursue after leaving formal education, and to align their educational choices accordingly. The services should also act as intermediaries between the educational establishment and local and national employers.

Interaction between schools and businesses is important. For schools, it offers their pupils greater insight into a wide array of local and national employment opportunities, helping to focus their minds on the world of work and improve their employment prospects. For businesses, it can offer opportunities to steer pupils towards obtaining the qualifications that are needed in their industry, and facilitate better skills-matching between future employees and employers.

A large-scale literature review conducted as part of research by AIR UK (2008) for the Department for Children, Schools and Families found that school–business interaction had a range of impacts. In particular, the literature showed that visits to schools by employers (and vice versa), work experience and mentoring programmes were important for raising pupils’ qualification levels, improving their attitudes to and preparedness for work, and reducing their likelihood of becoming NEET (not in education, employment or training) (AIR UK 2008).

Furthermore, research by the OECD has found that strong pathways between formal education and the workplace lead to improved employment outcomes, concluding that ‘strong links between schools and local employers are very important means of introducing young students to the world of work’ (OECD 2010).

Despite there being such clear evidence about the benefits of the functions that proactive careers services perform, research by Ofsted, the schools inspectorate, into the statutory provision of careers advice in the England found that the current provision in the majority of schools it surveyed is unsatisfactory (Ofsted 2013).

The report highlights the level of school–business interaction as a particular challenge, reflecting that:

‘Links with employers were the weakest aspect of career guidance in the 60 schools visited. About two thirds of the schools reported that they had cut down on their work experience provision for their students in years 10 and 11.’

Ofsted 2013

The research presented in this paper has sought to establish, from pupils’ perspectives, how well schools are doing at preparing young people for the world of work; whether schools could and should build bridges between education and employment in a different way; and whether better linkages between schools and local businesses would influence pupils’ career decisions.

1.1 Methodology

The aim of this project has been to investigate the links between schools and industry through the eyes of pupils.

In particular, we were interested in how engaged pupils were in thinking about their careers, how much support they were receiving to explore career options, and where

they were getting advice from. Using an unconventional methodology, IPPR North made pupils part of, as well as the subject of, the research process.

IPPR North selected the automotive industry as a representative target for better school-business interaction for the purposes of this research.

In collaboration with our project partners, BASF, we selected four local schools – two each in the areas of Sunderland and Birmingham – to participate in the project, because of their proximity to local automotive industry plants. IPPR North contacted staff in each school to request that they select six of their students, principally those in year 9. These participating students were to form action research teams which would deliver part of this research.

Having recruited these four schools, IPPR North held introductory sessions in one of the schools in each area. These sessions consisted of:

- An introduction to the automotive industry – its products, processes and markets.
- A discussion of the key scientific techniques and principles that underpin the industry, along with an explanation of the day-to-day work of a range of employees. This included workers from the plants discussing with the pupils what they do at work, and the science involved in doing so.
- IPPR North then equipped students with some basic research methodology skills, including conducting surveys.

Afterwards, IPPR North then arranged visits to the local automotive plants on agreed dates. In the course of these visits, pupils were given full tours of the plants, and opportunities to discuss and record the career choices, qualifications and motivations of a selection of automotive industry employees.

After the visits had taken place, IPPR North conducted exit surveys to establish whether learning more about the automotive industry as a local employer had changed pupils' attitudes. The results of these surveys are presented in section 2.4 of this report.

The third stage of our research involved each group of pupils gathering data on their peers' perceptions of careers. On the basis of the discussions in the introductory sessions, IPPR North prepared a questionnaire for each of the participating pupils to carry out. These students were asked to survey their peers – up to 10 of their fellow pupils from school years 8, 9 and 10. From this process, we gathered 212 unique survey responses.

IPPR North used the feedback that pupils gave in these surveys to both assess the scale and efficacy of current careers advice and support in their schools, and to reflect on how, from pupil's perspectives, career services – and connections between pupils and employers in particular – might be improved. Our findings are presented in the following sections.

1.2 Why the automotive sector?

In discussion with our project partners, it was decided that this project would focus on the automotive sector because it is a strategically important employer in areas such as Sunderland and Birmingham which have suffered from a decline in the manufacturing sector. Secondly, there was evidence to suggest that the automotive sector would continue to grow in the coming years (SMMT 2012), and was therefore likely to continue to provide significant numbers of jobs in these areas in the future. We then approached

schools located near major automotive manufacturing sites in Liverpool, Sunderland, and Birmingham. As a result we established relationships with four schools – two in Sunderland near the Nissan plant, and two in Birmingham near to Jaguar Land Rover's site in Castle Bromwich.

None of these four schools had a formal relationship with their respective local automotive company. This is unusual given that, first, the automotive sector is a large employer in both areas, and second, that the automotive sector may be facing a future skills shortage.

The automotive industry is an important one for the UK as a whole. Despite decades of turbulence, high-profile plant closures, job losses and disappearances of old brands in the face of intense competition, the UK still plays a major part in the world's automotive industry. The trade body, the Society for Motor Manufacturers and Traders (SMMT), reports that 'around 1.5 million cars and commercial vehicles and three million engines are produced annually in the UK' (SMMT 2013). In 2011/12, the UK was responsible for 1.8 per cent of global vehicle production (OICA 2013).

The production that was lost after the industry weakened in 2009 now appears to have been regained. While continued weak demand in Europe is expected to dampen demand for new car purchases, a 9 per cent per annum expansion in production is expected in the UK until 2016 due to growing export markets in the East – particularly for high-end models such as Jaguars, Aston Martins and Bentleys (KPMG 2012).

The vehicle manufacturing industry is a clear asset to the UK economy. More than 70 per cent of vehicles manufactured in the UK are exported, and vehicle exports constitute around 11 per cent of total UK exports; exports to China have increased more than five-fold between 2008 and 2012, from 1.4 per cent to 8.1 per cent (SMMT 2013). This high volume of vehicle production translates into a significant number of jobs: the automotive manufacturing industry workforce was 720,000 strong in 2011, including 18,000 apprentices (ibid).

Despite its scale, the geographical distribution of employment in the UK automotive industry is uneven. There are two main areas of the country in which the concentration of vehicle production and its supply chains is highest – and both are in regions which have suffered from relatively weak labour markets. Washington, Sunderland, in the North East, is Europe's most productive car manufacturing site. Owned by Nissan and built in the 1980s, as of 2011/12 the plant was responsible for one in three of all cars produced in the UK (OICA 2013a and 2013b)

The UK's second-largest manufacturing base is the West Midlands automotive hub. While a number of car brands are produced in the region, the leader is Jaguar Land Rover, who make around 238,000 units per annum. While Jaguar Land Rover's production is spread across the UK, Halewood near Liverpool is one of its important sites. Ellesmere Port on Merseyside turns out 137,000 units per year for Vauxhall, representing just over 10 per cent of total UK production in 2011.

Other major plants which are not situated in the North or West Midlands are Burnaston in Derbyshire, which produces for Toyota, a plant in Swindon that produces for Honda, and another in Cowley, Oxford, which produces Minis. The task of calculating how many units are made in each region is complicated by the fact that Jaguar Land Rover combines the output figures of their three main plants, but nevertheless it would appear that the North accounts for around half of vehicle production in the UK (SMMT 2013).

1.3 The long-term skills challenge

The UK workforce's existing skills set is said to be one of the four main attractions for car manufacturers looking to invest in Britain.

Furthermore, the industry is an increasingly popular destination for school-leavers – for instance, the number of degree-level engineering students graduating annually in the UK increased from 20,631 in 2007 to 23,907 in 2011 (KPMG 2012).

The number of engineering apprentices also increased by approximately one-third between 2010/11 and 2011/12, and a range of related policies have also been introduced to increase apprenticeship standards and participation – including minimum standards for apprenticeship quality and, from 2013, loans to participants over the age of 24 (KPMG 2012). A key example from within the automotive industry include the creation of 1,200 new apprenticeship places by Jaguar Land Rover, who received over 20,000 applications for those places (ibid). Also encouraging is the fact that Rolls-Royce, in partnership with the Skills Funding Agency, has developed a new Apprenticeship Academy in Derby which enables hundreds of apprentices to train for work in its manufacturing operations and supply chain, as well as in the wider engineering sector.⁴

In 2011, 64 per cent of UK automotive companies provided training, with 58 per cent recruiting 16-year-olds from school and 11 per cent directly from university and higher education (SMMT 2012).

Positive as this is, it may not be enough. A report by the New Automotive Innovation Growth Team included interviews with senior executives in the automotive industry in which they discussed which countries were the best in which to do business. Reflecting on the findings from those interviews, the report concluded that ‘the most salient weaknesses of the automotive industry in the UK are relative labour costs, availability of skilled labour and environmental regulation’ (NAIGT 2009).

The report's conclusions on skills, however, were more equivocal:

‘Though many did agree that there is a deficit of skilled labour in the UK, they had varying opinions as to the nature of unavailable skills: several interviewees claimed that the deficit was most pronounced in skilled mid-level management, while a few others stated that they had most difficulty in finding enough engineers. One interviewee even asserted that the deficit was most prevalent among skilled blue-collar workers.’

NAIGT 2009

However, given that the UK automotive manufacturing industry is expanding, there is a real concern that even if the supply of skilled labour is in a reasonable position now, it may not be in the near future.

The Royal Academy of Engineering concluded their review of the STEM skills in the UK by remarking that:

‘There is good econometric evidence that the demand for graduate engineers exceeds supply and the demand is pervasive across all sectors of the economy. The implication of this is that the economy needs more graduate engineers for both engineering

⁴ <http://theapprenticeshipacademy.com/>

and non-engineering jobs. The evidence can be seen... [in] wage premia offered for other (but not all) STEM graduates but the size of the premium varies.'

Fidler and Harrison 2012

As pay tends to be significantly higher for graduate engineers than for most other graduates, it is important to consider whether this fact is sufficiently well-known to influence people's career choices. Further action is needed to encourage long-term improvements in graduate numbers with Bachelor or Master of Engineering- (BEng or MEng) equivalent qualifications.

The science, engineering and technology sectors have a particular challenge in attracting female recruits. For instance, Engineering UK has reported that:

'Of Engineering and Manufacturing Technologies (EMT) apprentices, only 4% are women versus participation across all apprenticeship subjects, which is evenly split 50:50 between men and women.

There remains a large gender imbalance (only 22% female) in the take up of A-level Physics.

Applications for engineering degrees by women remain the lowest of all STEM disciplines at 12%.'

Kumar 2010

Engineering UK also highlight evidence that the UK has proportionally fewer female engineering professionals than any other EU country (Kumar 2010), although there are signs that this is slowly changing. Relatedly, the House of Commons science and technology committee has registered its concern that despite the fact that female pupils outperform male pupils in science and maths subjects at GCSE level, their interest in pursuing them beyond GCSE remains stubbornly low (Parliament 2013b). Given the importance of both good careers advice and business-school interaction in shaping the choices that young people make, it is essential that government, schools and businesses take action to plug future skills gaps and change the perceptions of those who might potentially to be attracted towards careers in the automotive industry, and in engineering more widely.

1.4 Addressing the challenge

Government policies and private interests are making inroads into delivering stronger business-school interaction. For instance, the government's See Inside Manufacturing initiative involves a co-ordinated programme of events across the UK's science and manufacturing industries. The initiative, which began in 2011, is aimed at boosting the image of UK manufacturing among young people in order to encourage greater take-up of science, engineering and technology subjects.

In its first year, the See Inside Manufacturing initiative was successful in recruiting a range of businesses to its cause, and claimed to have helped arrange for 4,500 pupils to visit local employers (BIS 2013). However, participation in the scheme has been volatile; some major employers have drifted in and out. The pupils who took part in this programme of visits were also surveyed by the organisers – the results are explored in the sections below.

The charity Business in the Community also run a programme called Business Class, which is designed to encourage employers to connect with schools in order to widen pupils' understanding of local employment opportunities. The programme is currently facilitating 200 school–business partnerships, with the aim of facilitating 500 by 2015 (BITC 2013). This is a worthwhile ambition, but even 500 partnerships will not provide the coverage necessary. If the Ofsted survey (2013) is reflective of all secondary school provision nationally, then three-quarters of the more than 3,000 state-funded secondary schools in England are not getting sufficient access to careers support and business interaction.

Some initiatives are employer-led. For instance, Jaguar Land Rover has participated fully in See Inside Manufacturing, as well as having its own school engagement programme. The firm has established five educational outreach centres, which are effectively training centres for schools to visit, in key sites around the country. According to their data, 85 per cent of visitors come from schools within 30 miles of these centres or factories (JLR 2012).⁵

However, as the Ofsted report (2013) made clear, levels of school–business interaction remain unsatisfactory. Given that these relationships are meant, first and foremost, to inform and support pupils in their career choices, it is important that we understand the perspectives and expectations that pupils themselves have of their careers support services.

5 In addition to this, Jaguar Land Rover encourages local teams at every UK site to interact with, and participate in, school affairs.

2. PUPIL-TO-PUPIL SURVEY

The research we conducted with the four schools involved in our project sought to understand pupils' perceptions about their career choices, how well they felt they were being prepared for the world of work by their schools, and how the careers education they received could be improved. We also invited pupils to reflect on a few questions relating specifically to their interest in science and technology subjects and their perceptions about careers in the automotive industry.

2.1 The sample

Overall, 212 surveys were returned from all four of the schools combined. The research teams within each individual school were encouraged to aim for gender balance when administering the survey. (This was particularly important given the challenges of encouraging female participation in careers such as engineering.) Each research team was successful in this regard: while in 11 cases the names and genders were omitted from the individual surveys, among those that had been correctly filled in the balance was 102 male pupils to 99 female pupils. The surveys were also representative of all three academic year groups, including that of the year 9 pupils who administered the survey and those above and below them. In only two cases was the year group of the respondent left blank.

Table 2.1
Breakdown of survey respondents by school year

School year	Number of survey respondents
Year 8	80
Year 9	58
Year 10	72
Grand total	210

2.2 Survey results

The first question the survey respondents were asked to reflect upon was what their preferences were about what they would do when they finished their GCSE year. Some offered a combination of responses (noted as 'combined' below) including both looking for a job and going on to do A-levels, but most pupils had a singular preference in mind. By far the most popular option was to continue with formal education with the intention of continuing on to university after completing A-levels.

Table 2.2
Proportions of respondents' responses to the question, 'What do you want to do after finishing GCSEs?', by gender and across the sample

	Female (%)	Male (%)	Grand total (%)
A-levels and a university degree	70	59	65
Apprenticeship/NVQs	1	8	5
AS/A2-levels	14	8	11
Find a job	6	10	8
Combined	2	10	6
Other	6	6	6

If we look at the breakdown of the post-GCSE preferences of the pupils interviewed for the survey, we can see that most students intend to continue their education through to A-levels, with a view to going on to university. Relatively few of the pupils were intending to complete only AS and A2-levels, and more notable still is the lack of pupils interested in vocational education – either apprenticeships or NVQs. Given the government's emphasis on the importance of vocational pathways as an element of skills provision, this pattern, if reflected nationally, should be cause for concern.

The breakdown by gender of these preferences is also interesting: more girls are looking to stay in formal education beyond GCSEs, while more boys are contemplating immediately looking for work. This is illustrative of the significant reversal in attitudes regarding female participation in higher education that is evident over the last four decades. However, as subsequent parts of this survey will illustrate, there remains a strong gender bias against particular career paths.

Moving on to a more work-focussed question, survey respondents were asked whether or not they had contemplated what job they would like to do.

Table 2.3
Proportion (%) of respondents' responses to the question, 'Are you thinking about what job you would like to do?'

Yes	89
No	11

At least in the schools we surveyed, the majority of pupils, even those as young as year 8, were considering what careers they would like to pursue. When invited to suggest what careers they were considering, four-fifths (81 per cent) of pupils mentioned at least one career option that they had in mind.

Of these, there was great variety in the careers that the pupils wanted to pursue, from paediatric nurse to zookeeper. Nevertheless, the top 10 careers ambitions among the participants were as follows:

Table 2.4
10 most popular career ambitions among respondents

Career	Number of expressions of preference
Teacher	23
Doctor	15
Lawyer	11
Engineer	10
Vet	10
Mechanic	8
Forensic (scientist)	7
Beautician	6
Psychologist	6
Artist	5

Furthermore, many of the pupils offered clear and often pragmatic reasons explaining their career aspirations, many which related to their perceived skills. Some of the best examples of pupil's career ambitions and their reasons for them were:

English teacher in France:

'Because I enjoy working with children and learning about other cultures.'

Dentist:

'I enjoy science, and it is a nice, clean environment.'

Engineer:

'Because I'm good at maths and love fixing things.'

RAF pilot:

'Because I enjoy it and I'm a member of the air cadets.'

Banker:

'For lots of money.'

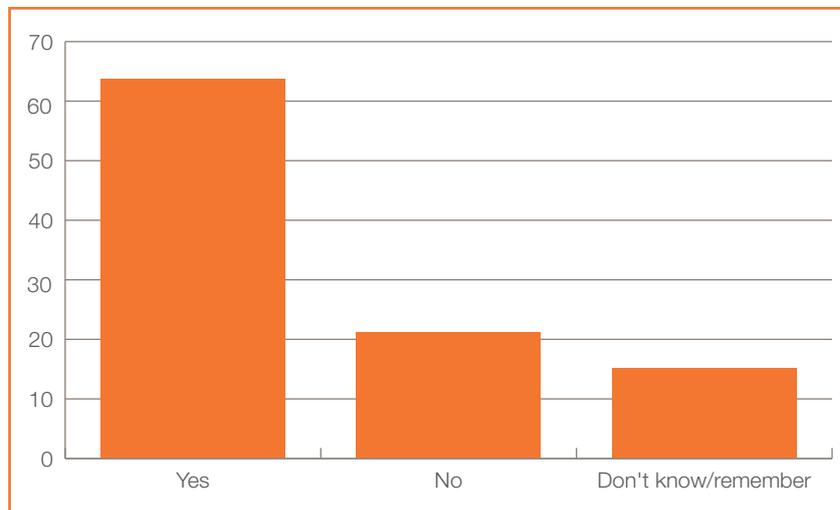
Childminder:

'My aunt has an amazing job as a childminder, so that is what I want to do.'

Some of the responses were more unusual. One respondent was interested in a range of careers, including the law and medicine, and when invited to share their motivations their response was that the job needs a 'good salary, to be next door, and to have food in the café'.

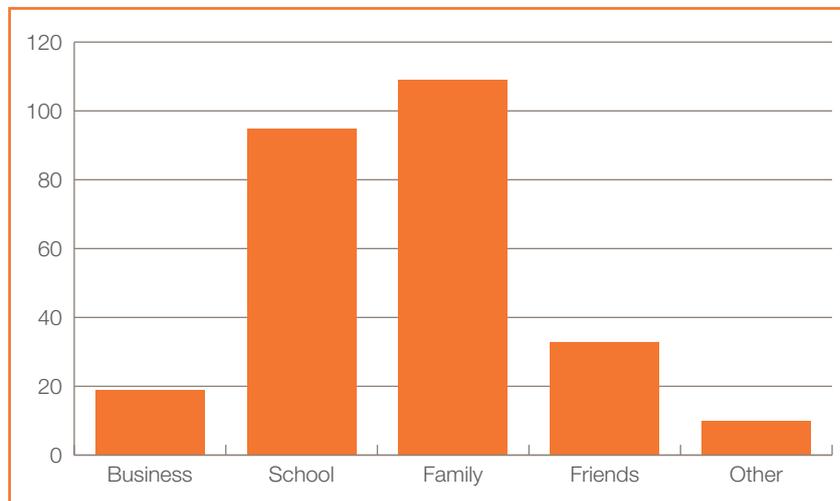
Given the numbers of pupils who were engaged in thinking about their future careers, we were interested to know what level of support they were receiving. We asked, 'Have you had any advice on careers yet?'

Figure 2.1
Proportions (%) of respondents' answers to the question, 'Have you had any advice on careers yet?'



We found that the vast majority of pupils had received some form of careers advice by the time they had reached year 10. The source of this careers advice is particularly important given that this can influence their educational choices and, ultimately, their future career paths. We asked pupils what sources this advice came from, allowing them freedom to select multiple options.

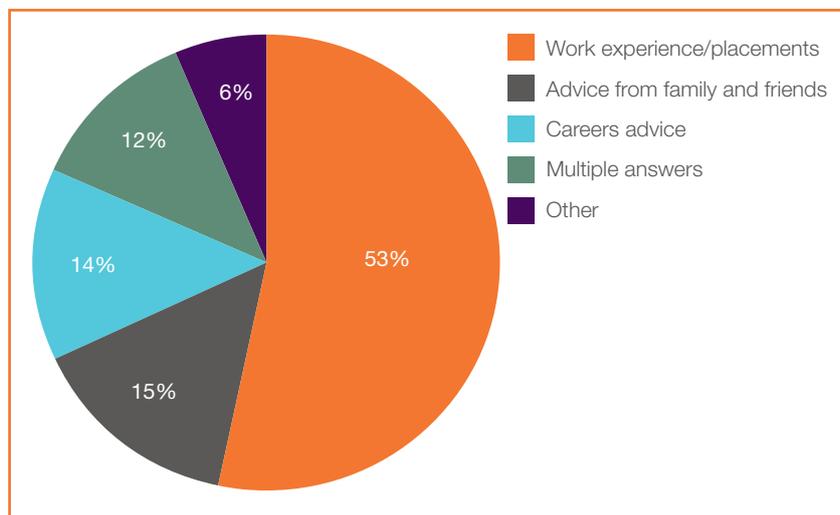
Figure 2.2
Pupil's source(s) of career advice, by number of pupils that selected each choice



Among all pupils, families were the most common source of advice, with schools not far behind. This finding concurs with the findings of focus group research undertaken by Ofsted (2013), which showed that the main source of careers advice for pupils was their family and friends. This is particularly significant given the finding, from our next survey question, that 15 per cent of the pupils we surveyed described advice from family and friends as being the most important factor in deciding on their future career.

Nevertheless, as figure 2.3 indicates, an overall majority stated that either work experience or work placements would be the strongest influence.

Figure 2.3
Most important factor in deciding careers among respondents (%)

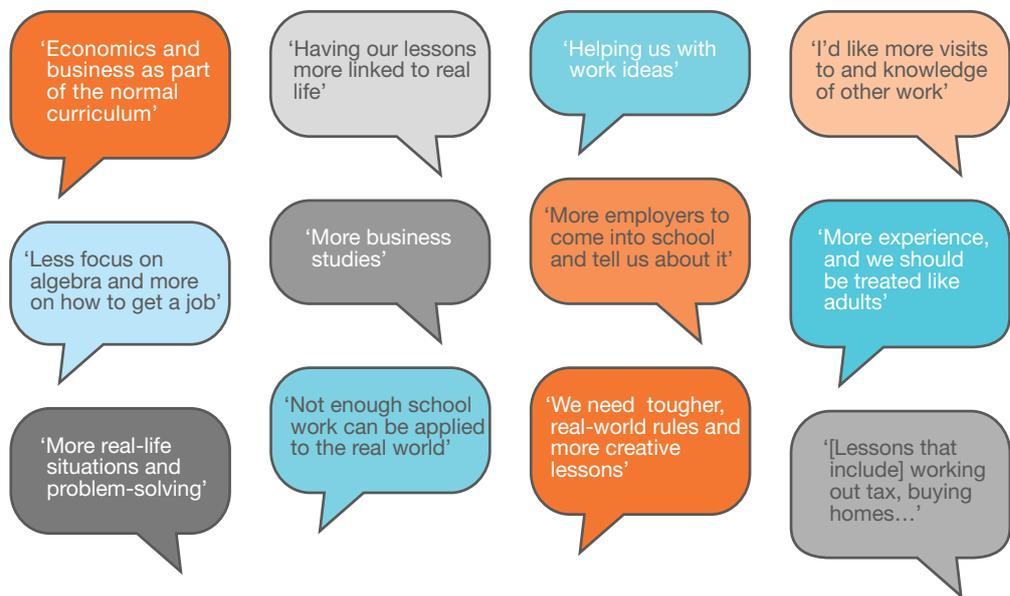


The government believes that work experience should be an essential part of the national curriculum, particularly for students studying beyond year 10 (DfE 2013). Indeed, despite the fact that pupils' chief source of information about careers is their families, pupils clearly value, and have a strong desire for, work experience to help them decide on their future job path. Research undertaken on behalf of the Department for Education in 2013 as part of its work experience placements trials found that pupils who had participated in these placements felt more job-ready than they had been before taking part, while employers found them useful for both recruiting junior staff and freeing up capacity at their workplaces (Sims et al 2013). Furthermore, despite some initial reluctance on the part of colleges, the result of the additional resources channelled towards work experience was to help foster stronger links between educational establishments and local employers (ibid). It is troubling therefore, Ofsted report also found that provision of work experience was in decline (Ofsted 2013).

Of the 6 per cent of pupils participating in our survey who responded 'other' to our question regarding important factor in future career-choice, several felt that visits to see other people doing their jobs – as opposed to 'purer' forms of work experience – would be important factors, while another participant suggested visits from university staff.

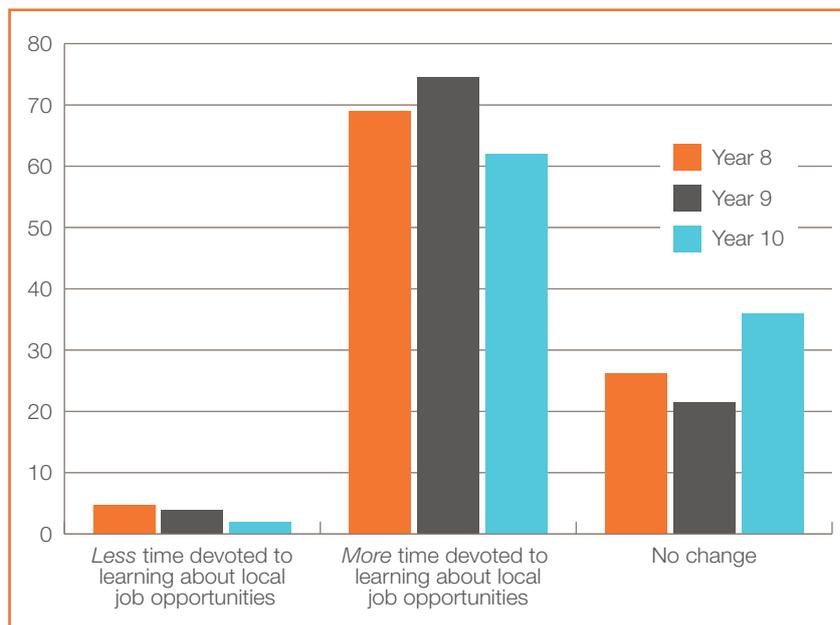
Our survey also invited pupils to reflect on whether their studies were preparing them for working in business and industry. The response was overwhelmingly (4:1) positive, and despite the fact that slight differences in career aspirations were evident between the two genders, there was no gender-based difference in pupils' attitudes towards the usefulness of their studies.

Those who responded negatively to the above question were invited to explain why they thought they were not being adequately prepared. The most common answers we received were that 'school lessons are not practical enough', and 'we have to learn pointless things like algebra that an employer would never need you to know'. A fuller sample of these answers are provided below.



Pupils were invited to further reflect on this question: did they want to learn less or more about local job opportunities, or no change? The illustration of the results in figure 2.4 below shows that very few wanted less, and the overwhelming majority wanted to know more.

Figure 2.4
Proportions (%) of respondents' answers to the question, 'Do you want less, more or no change to the amount of school time devoted to learning about local job opportunities?' among year 8, 9 and 10 pupils



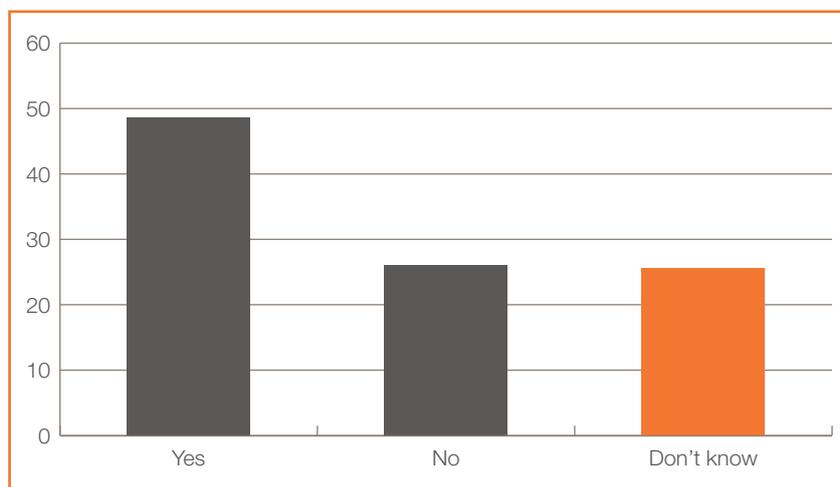
These results indicate that the year 10 pupils who took part in the survey – perhaps as a consequence of being closer to school-leaving age – were more likely to feel content with the amount of careers support available. Nevertheless, the majority of pupils in all three years wanted more time devoted to learning about local job opportunities – an issue which Ofsted’s research also highlighted as problematic (Ofsted 2013).

2.3 The STEM challenge

In terms of identifying what the perceived ‘right’ subjects were for their chosen careers, there are clearly no difficulties in persuading pupils that science, English and maths are important for getting a job. Two-thirds of the pupils who responded to our survey listed all three subjects as important to getting a job, and nearly all of the remaining 32 per cent mentioned at least one of those.

The challenge for both schools and business is to translate this recognition into continuing study through A-level and eventually on to career. In 2002 the Roberts review identified the trend of a long-term decline in the proportion of people continuing to study maths, physics, or engineering (Roberts 2002). There is a general concern among those observing the developing long-term national skills shortage about how to get more young people into the science and technology sectors. However, our survey results demonstrate that, broadly, a career in science and technology was of interest to our survey participants: of those who stated a ‘yes’ or ‘no’ answer, nearly twice as many said they were interested in a career in science and technology as those who said they were not.

Figure 2.5
Proportions (%) of respondents’ answers to the question, ‘Are you interested in a science and technology career?’ among year 8, 9 and 10 pupils



Those pupils who were interested in a career in science expressed an array of different career ambitions, including: ‘forensics’, brain surgeon, cardiologist, chemist, pharmacist, vet, doctor, a doctor in a babies’ intensive care unit, behavioural scientist, and surgeon.

What came as a surprise was the specificity of the careers outlines – from ‘cardiologist’ to a ‘doctor in a babies’ intensive care unit’.

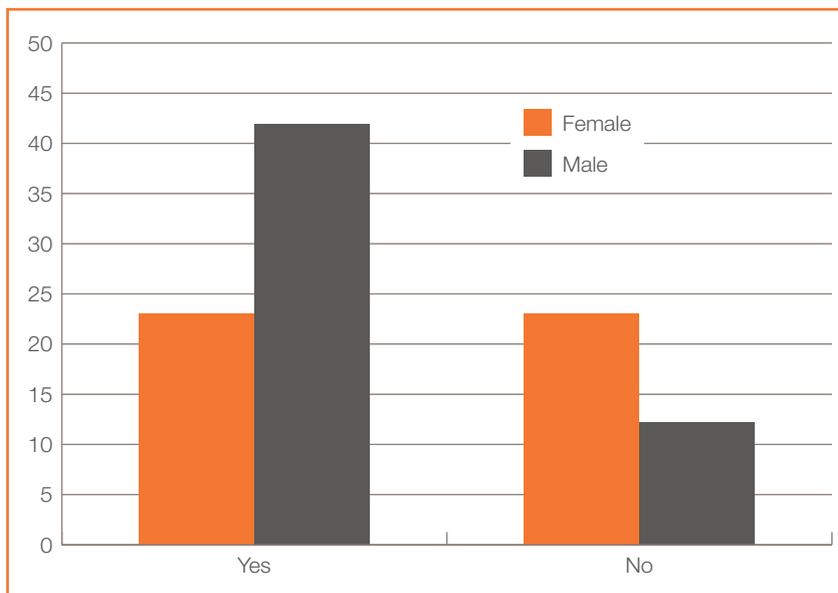
The amount of detail that some pupils went into asked about the careers they were considering was a positive finding. However, there were signs of confusion among many in the ‘don’t know’ category. For instance, 57 of the survey participants identified at least one science-based career that they were interested in pursuing; yet of those 57,

six responded with ‘don’t know’ to the question about whether they were interested in pursuing a career in science and technology.

There is scope for careers advice services to make an important impact here, particularly when pupils are at the stages of choosing both GCSE and A-level subjects. They should ensure that pupils are aware that careers such as forensic science and medicine will require advanced-level study of scientific subjects. This appears to present particular challenge among pupils who wanted to be vets, several of whom did said ‘no’ to a career in science in our survey.

The scale of ‘don’t knows’ among our survey respondents, if it were replicated on a national scale, also represents an opportunity for school–business interactions. Using a range of approaches, some of which are outlined below, such interactions have the potential to persuade many pupils in this group to pursue a career in science and technology. However, beneath the surface of these results are some predictable and concerning trends.

Figure 2.6
Proportions (%) of respondents who answered ‘yes’ or ‘no’ to the question, ‘Are you interested in a science and technology career?’ among male and female pupils in years 8–10



Specifically, among those surveyed who responded either ‘yes’ or ‘no’, only half as many female pupils were interested in a career in science and technology as male pupils, and twice as many females were not interested. These findings are borne out by national figures: a report by the Institute of Physics (IoP) examined figures from the National Pupil Database in 2011, and found that in 46 per cent of English secondary schools no girls went on to take A-level physics, while the figure for boys was 14 per cent (IoP 2012). The challenge that this represents is a complex one, which is unrelated to attainment. A literature review by the Centre for Science Education at the University of Warwick highlighted evidence that despite the number of females doing just as well as males at GCSE in science and maths subjects, a larger proportion dropped these subjects at A-level than their male colleagues – thereby largely closing off their many career options in the STEM sectors (CSE 2009). Distinctions can be drawn within the science subjects, however, which show that some subjects need action more urgently than others. The IoP’s research found that marginally more girls took A-level biology than boys, while the reverse was true of A-level chemistry (IoP 2012).

Given the association of physics and chemistry with the automotive industry, it may therefore be particularly challenging to attract more females into the industry. Despite the fact that all four schools participating in our research were located in close proximity to major, successful automotive employers, only 16 per cent of pupils of both genders expressed an interest in that line of work. Moreover, of the 99 female pupils who took part in the survey, only four were interested in working in the automotive industry.

Despite this disappointing showing from female pupils, the scale of ‘don’t knows’ in both categories illustrates that, in these schools at least, there is scope to persuade more pupils of both genders to consider careers in science, technology and engineering. Indeed, government policy is looking at this issue specifically: the latest iteration of See Inside Manufacturing initiative, for instance, has been considering ways of targeting underrepresented groups in a range of sectors, including automotive manufacturing (Gray 2013).

The pupils involved in the plant tours that we arranged posed many interesting questions about the industry as a whole, ranging from ‘Why do electric cars only travel small distances in certain weather?’ to ‘What is preventing companies from making flying cars?’ Yet, when they focussed on careers, the discussions moved on to more universal territory. The participating pupils had numerous questions and concerns about careers in the automotive industry that were also applicable to careers more generally. A few of these are outlined below.



Many of these questions have straightforward answers that would help pupils to decide whether careers in automotives specifically, or in science and technology careers generally, are worth pursuing.

A key question is whether some pupils need additional persuasion. Clearly, female pupils warrant particular attention given the widely recorded evidence that, despite their attainment in science, engineering and technology subjects, the proportion of them that drop these subjects at A-levels is a cause for concern. As part of our pupil-to-pupil survey, interviewees were allowed to select multiple choices from a range of options, including simply knowing more about careers in science, engineering and technology, to a range of incentives that might make them consider pursuing it.

The results indicate that there is scope for public policy to use incentives to influence pupils’ future behaviour; in particular, pupils were most attracted to the idea of a guaranteed job. This does not necessarily imply that the government should guarantee employment for those students – rather, it implies that students would be incentivised to pursue STEM subjects further if they knew that they would consequently be highly likely to secure a job in a related field. The fact that this option was so popular among students indicates a strong degree of pragmatism that is often overlooked in media and political discussions of pupil aspirations.

Figure 2.7
Responses to the question, ‘What, if anything, would persuade you to pursue a career in science, engineering or technology?’, by number of selections of each choice



The second most valued incentive – the prospect of a high starting salary – is not surprising, but it is important, not least because some science-related careers, engineering in particular, tend to offer relatively attractive starting salaries. The Royal Academy of Engineering has reported that engineers enjoy a wage premium of around 15 per cent relative to those without STEM qualifications (Harrison 2012). Getting this message across to people who are considering (or who might consider) future careers in engineering-related subjects, for example, is a vital element of any strategy to improve the long-term recruitment prospects of these sectors.

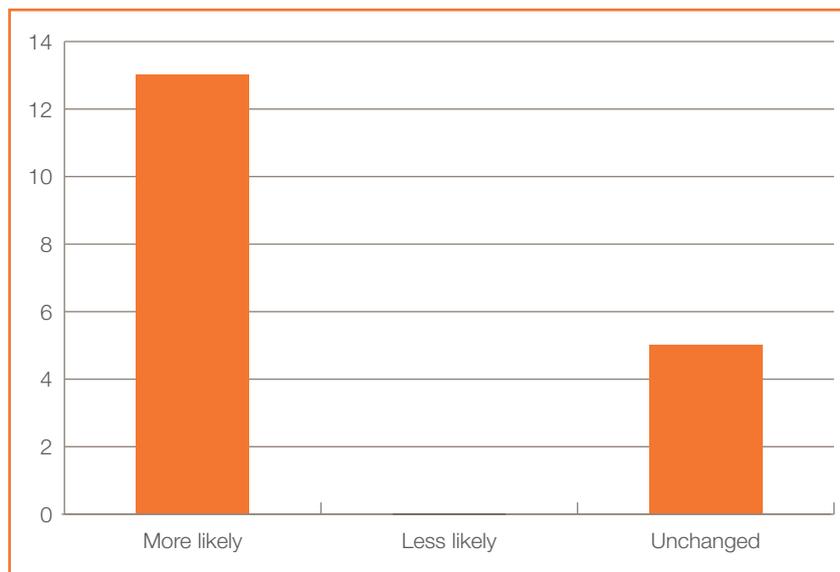
The third most popular preference – simply knowing more about careers in science, engineering and technology – presents a clear opportunity. The groups of young people that IPPR North took on visits to their local automotive plants as part of this project introduced them to the while range of different career paths that the industry offers. The following results of our exit survey, which echo those of a similar survey conducted by See Inside Manufacturing, show that better interaction between schools and local businesses may be able to turn young people’s attention towards career avenues that they had not considered, or reopen avenues that had been closed off (BIS 2013).

2.4 Exit survey

IPPR North gave introductory lectures to small groups of pupils from each of the four participating schools, and took all four groups around their local car plants – Nissan in Sunderland for the two schools in Washington schools, and Jaguar Land Rover in Castle Bromwich for the two schools in Birmingham. As with the See Inside Manufacturing programme, we wanted not only to give the pupils the opportunity to better understand the operations of large employers, but also to observe whether giving local school pupils this interaction with large local businesses would adjust their perspectives on pursuing a career in science and technology, and more specifically, in the automotive industry. The results of this exercise are illustrated in figure 2.8.

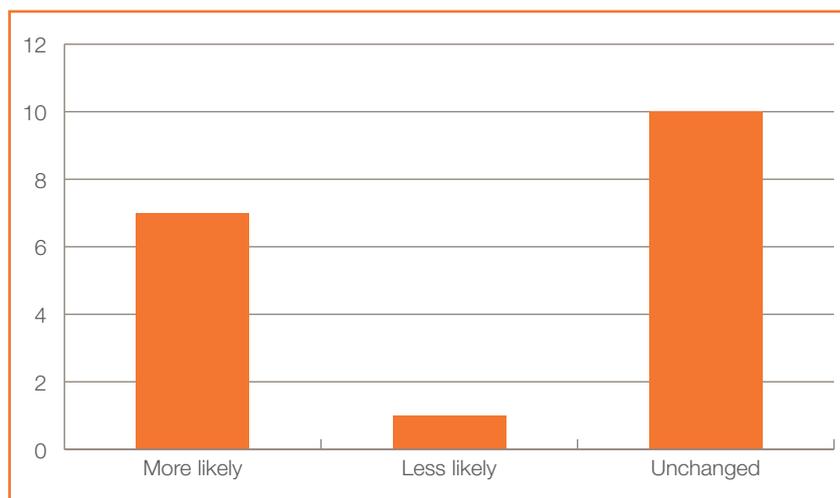
The programme of introductory lectures and car plant visits appeared to make most pupils more interested in continuing to study science and technology. These accord with the results of the exit survey conducted by See Inside Manufacturing, which found that of 4,500 school pupils who were given the opportunity to visit manufacturing plants across a range of sectors, including the food, aerospace and automotive industries, 90 per cent emerged with a more positive perception of manufacturing (BIS 2013).

Figure 2.8
 Number of respondents (of 18 in total) who, having learned more about the role of science and technology in industry, stated that this experience made them more or less likely (or unchanged) to continue to study science and/or technology subjects



However, our exit survey produced more equivocal results for the automotive sector. Of the 18 pupils who experienced the talk and plant tour, only seven emerged with the feeling that they were now more likely to consider a career path in the automotive industry, while one individual was actually put off by the experience.

Figure 2.9
 Number of respondents (of 18 in total) who responded that having learned more about the automotive industry had made them more or less likely (or unchanged) to consider it as a career path



The visits orchestrated by See Inside Manufacturing delivered a clearer set of results in this regard: 85 per cent of pupils who visited manufacturing plants as part of their scheme reported afterwards that it had made them more likely to pursue a career in manufacturing (BIS 2013). A further, equally important finding of this research was that ‘85 per cent of teachers and careers advisors will now [after the visits] explore [the] scope for more regular engagement between students and local manufacturers’ (ibid).

2.5 Conclusions of the pupil survey

This report has highlighted evidence from both our own research and that of others which demonstrates the scale of the challenge that attracting young people into science and technology careers represents. The report also demonstrates that there is plenty that schools, businesses, and policymakers can do to improve matters.

Two of our particularly notable findings were that, at least in the schools we selected to participate in this project, pupils in year 8 were already considering what they wanted to do when they left school, and that most pupils thought their school was broadly giving them enough support through careers advice and generally preparing them for the world of work.

What pupils did identify as a priority was more opportunities for gaining experience of the workplace in order to help them make decisions about what they did and did not want to do in future. Furthermore, most suggested that they would welcome more advice on local employment opportunities than they were receiving at present. Very few of the pupils who took part in our project felt saturated by careers advice – generally, in the case of these four schools, it was apparent that pupils wanted more help with and advice about their future careers; this was especially true of younger pupils.

While they were engaged in thinking about their careers, less than half of the pupils we interviewed were interested in a scientific or technology-based career. However, the fact that less than a quarter of participants appeared to have rejected a science or technology career outright suggests that there is some scope to encourage those in the ‘undecided’ category to change their minds. Moreover, our programme of school and factory visits appeared to change some pupils’ perceptions about pursuing a career in science, engineering and technology. While this might be more of an immediate response than a permanent change in mindset, it would be interesting to conduct research in the future to determine whether this change in perception actually leads to different attitudes towards science and technology subjects in the long term.

Our survey showed that pupils’ career options can be influenced by a range of factors. However, given the widespread desire for both more work experience and more information about careers, visits to business from schools, or to schools by business, are perhaps among the most effective means of persuading pupils to open their minds to different career opportunities. Equally, given the current university funding environment, the potential appeal of an above-average starting salary, and the prospect of reduced or no university fees, could also help to persuade pupils to pursue careers in subjects they might not have considered before. The latter approach would not be radical: fee waivers or reductions have been made available in the past to promote the recruitment of different demographics to courses which are perhaps unpopular but also strategically important, and scholarship programmes which use similar approaches remain active today. However, these issues aside, the desire among young people to know more about local employment opportunities, and for more opportunities to learn about career options, that our research has illustrated makes clear that there is much greater scope for improving business–school interactions.

Encouraging more people into the automotive industry specifically may present more of a challenge, particularly in terms of changing female attitudes towards vehicle production. The scale of the latter challenge is perhaps illustrated by the fact that in the course of our two plant visits, we encountered not a single female engineer or operative. It may prove difficult to encourage female participation in a very male workplace.

CONCLUSION

Employment avenues for young people are not being closed off so much as never being opened. A systemic lack of interaction between schools and businesses is restricting the career options of young people in Britain.

Our survey found that young people want more from their careers services: they want to know more about local job opportunities, more work experience to help them decide on their future career paths, and, for those careers that are strategically important, they may also need incentives to pursue them.

Pupils may also need help, and need it earlier than it is being provided at present. An known area of public concern is female participation in key sectors, including science. The lack of interest in post-GCSE STEM subjects and vocational education among girls is a cause for concern given that skills shortages in these sectors are looming. Our pupil-to-pupil survey also provided evidence of insufficient knowledge among pupils of both genders about which careers did and did not have science qualifications as prerequisite. Educating young people early about careers, and the educational choices they will need to make in order to achieve their ambitions, is therefore important for pre-GCSE ages, not just those aged 16 and upwards.

A substantial and complex range of policy initiatives are necessary to prevent young people leaving education without a clear plan about what they will do. Recent IPPR research (Cooke 2013) has proposed a range of sensible, substantial reforms to bridge the gaping holes in school-work transition policy. However, before pupils reach school-leaving age, it is important that they engage with the full range of possibilities that are open to them.

On the basis of this project's exit survey, and the similar one conducted by See Inside Manufacturing (BIS 2013), more business visits to and from schools should be encouraged as a means of widening pupils' horizons and equipping them more fully for joining the labour market (whenever they choose to do so). Such an approach would serve the interests of schools, their pupils, and local businesses. If the connections between schools and industry are generally not good, then this begs the question of who should be responsible for making them better. The current patchwork of provision, and the inadequate guidance that is on offer, both need to be improved.

In some areas, local government takes responsibility. For example, Telford and Wrekin Council have an Education Business Links service, whereby an agency of the local authority is charged with connecting local business and schools, and ensuring that placements meet certain standards (TWC 2013).

National government also plays a significant role in the provision of careers advice in terms of financing and institution-building. The Coalition government's most significant initiative was the establishment of the National Careers Service (a downscaling and merging of the Connexions and Next Steps services which came before it). The new service delivers advice for young people and adults on careers, skills and CV-writing, but it has little relationship with schools, which are now expected to provide and pay for careers services themselves.⁶ Had the government devolved to schools the money that was once spent on the abolished services, its approach may still have proven problematic (Watts 2012) – but, as it did not, the schools careers system is now underfunded and underperforming.

6 A similar but more sensible approach is taken by the national careers service in Scotland, Skills Development Scotland, which also acts as a hub to connect businesses with local educational establishments.

The patchwork nature of national provision is also illustrated by the uneven performances of individual schools in providing careers support and establishing links with businesses. The best-performing schools careers services place much of the onus for arranging work experience onto their pupils, but do so in a structured manner and as part of classes (Ofsted 2013). One successful approach, for instance, had pupils looking at supply and demand in their local labour markets and, on that basis, identifying potential avenues for work experience placements both for themselves and for other pupils. Yet despite the statutory guidance that requires schools to provide it, the delivery of careers support by successful services such as this is an exception rather than a rule.

Careers services at large lack a consistent model for delivering services that connect schools with local businesses, and that provide competent careers services and access to work experience.

Recommendations

If our objective is to open young people's minds to the array of job opportunities available to them both locally and further afield (including those in the science and technology sectors), then responsibility needs to be shared between schools, careers services and private enterprise – but the lead should come from schools' careers services.

Recommendation 1

Under the Coalition government, funding for the Connexions careers advice and guidance service, which was worth around £200 million annually, has 'disappeared' (Watts 2012). Instead of this service being replaced, schools were handed an unfunded mandate to provide careers guidance financed from within their own budgets. Naturally, this has resulted in a deterioration in both the quantity and quality of support available to young people.

In the current context of funding constraints and the transfer of careers service responsibilities, schools should be given more support with their statutory duty to provide independent careers advice and guidance. In order to prevent further disruption of careers education, the existing arrangements should be broadly retained. However, as recommended by the House of Commons education select committee report (Parliament 2013a), we recommend that the remit of the National Careers Service be expanded to enable it to perform a capacity-building and brokerage role for schools. As this would have funding implications, we further recommend that the Department for Education instructs the Skills Funding Agency to cost the options for expanding of the National Careers Service's remit into providing more direct support for schools.

Recommendation 2

The careers advice process should be more ingrained in the curriculum. In particular, the role of careers in education should be clearer and wider.

- Starting in year 7, teachers from each core subject module should devote at least one lesson per year to telling the pupils about the different careers that are available in their specialist subject area, and the qualifications and education choices they would need to make to pursue those careers.
- For pupils in year 8, schools' careers services should be charged with co-ordinating visits from employers relevant to the majority of their subject classes each academic year.
- For pupils in year 9, the schools careers service should co-ordinate off-site visits to major employers in the area (like those carried out as part of this research project). This should be possible across most subject areas.

- For pupils in years 10 and 11, as the Browne review of higher education recommended, career advisors should provide more individualised careers support, tailored to pupils' needs, to ensure that they are able to make the best choices (Browne 2010). This provision must include work experience and placements, exemplary approaches to which are identified by the Ofsted review of careers guidance in schools (Ofsted 2013).

Recommendation 3

To improve interaction between schools and business, all secondary schools need to develop stronger relationships with major employers in their catchment areas.

- As described above, **schools careers services** must take the lead in this matter. In order not to significantly add to teachers' workloads, the careers service should identify employers relevant to each of the core subject areas for years 7, 8 and 9, and co-ordinate with the teachers of each subject area to identify fruitful areas of overlap between the school curriculum and business activity.
- **Businesses**, especially those with skills shortages, need to be proactive participants in this process. As a part of their corporate social responsibility strategies, large businesses (those with over 250 employees) should liaise with the local careers services to offer year 8 pupils guest lessons and talks on how the subject curriculum relates to their business activities. As with the See Inside Manufacturing programme, these businesses should open up their factories and offices for at least one day every year to visits from year 9 pupils attending local maintained secondary schools.
- To promote efficient relationship-building, an intermediary may be necessary. The variable size of schools and businesses across different parts of the country will require a flexible approach to institutions. Nevertheless, one way of keeping this approach simple and efficient would be to harness existing '**skills hubs**'⁷ to play the role of intermediary; where these do not exist, local enterprise partnerships should be responsible for establishing them.⁸ Intermediary skills hubs are already in place in many areas, having been established by City Deal locations and local enterprise partnerships. These hubs, such as the Sheffield City Region Skills Hub, should act as destinations for businesses that want to develop relationships with local secondary schools. The hub would then publish the key contact for each business online, alongside a series of term-time dates during which visits to and from their workplaces could be arranged, and details of what each business could offer the school in terms of relevance to specific subject areas. Making these resources easily accessible will ensure that careers services can devote more of their time to face-to-face careers advice with older pupils – and arranging the logistics of visits for younger pupils – rather than tracking down local employers.
- While priority should be given to large organisations, because most pupils will end up working for **small and medium-sized enterprises** (SMEs) these businesses should also be invited to participate where they feel they have the resources to support the schools careers team.

7 Skills hubs are vehicles to align skills funding with local business needs, and sometimes to identify and support people who lack the right employment skills.

8 Ayrshire chamber of commerce, for instance, is contracted to act as an intermediary between local schools and employers to deliver work experience placements.

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