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Discussion Paper

Can and how might Traineeships work for Science, Technology, Engineering and Mathematics (STEM) within the context of a Local Enterprise Partnership (LEP) area?

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Working for more and different adult learners

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Foreword

NIACE is pleased to be able to present this discussion paper, written as part of our ongoing partnership with the Gatsby Charitable Foundation. We work together to research and develop effective approaches to securing impact in the field of STEM learning and employment. This discussion paper considers the value of Traineeships for Local Enterprise Partnerships, in the providing access to STEM job roles for young people, through an in depth study in one area of England. NIACE supports the concept of Traineeships as a potentially valuable way of engaging young people and enabling them to develop skills and experience that can provide a bridge to employment. Looking at STEM Traineeships through the lens of one discrete LEP area enables us to present findings which will resonate with many employers, employer organisations, learning providers and local policymakers throughout the country.

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Section 1: Introduction

The National Institute of Adult Continuing Education (NIACE) is an independent charity which promotes adult learning across England and Wales. Through its research, development, publications, events, outreach and advocacy activity, NIACE works to improve the quality and breadth of opportunities available for all adults so they can benefit from learning throughout their lives.

This discussion paper presents the findings of a situational appraisal undertaken by NIACE for the Gatsby Charitable Foundation and explores whether and how Traineeships can work for Science, Technology, Engineering and Mathematics (STEM) within the context of a Local Enterprise Partnership (LEP) area. It draws on desk research and interviews undertaken within the Dorset LEP area and aims to identify the potential and the barriers associated with Traineeships within STEM based roles.

This discussion paper is the output of phase one of a wider piece of work that NIACE has been commissioned to undertake on behalf of the Gatsby Charitable Foundation.

1.1 Background

The situational appraisal upon which this paper is based was undertaken in the Dorset LEP[1] area, which is comprised of Dorset County Council (West Dorset, North Dorset, East Dorset, Christchurch, Purbeck and Weymouth and Portland) and the unitary authorities of Bournemouth and Poole.

1.1.1 Dorset's economy

The Dorset economy includes a wide range of industry sectors including financial services, aerospace, tourism, food & drink, creative industries and marine industries, amongst many others.

The provisional Business Register and Employment Survey 2012 (BRES)[2] dataset indicates that about 80% of employees in the Dorset LEP area work in small and medium sized units (SMEs) of fewer than 250 employees. This compares with 72% in Great Britain as a whole.

About 20% of employees work in the public sector and 80% in the private sector – following the national pattern. The percentage of part-time employees is above the national average in the Dorset LEP area - 38% compared with 33% in Great Britain as a whole.

The employment rate in Dorset exceeds that of the South West region and England as a whole. Unemployment is also lower.

[1] LEP - partnerships between local authorities and businesses. They decide what the priorities should be for investment in roads, buildings and facilities in the area.
[2] BRES is a sample survey subject to sample variation.

Labour market structure July 2012 - June 2013								
	Residents aged 16-64	Economic activity rate - aged 16-64	Employment rate - aged 16-64	Percentage aged 16-64 who are employees	Percentage aged 16-64 who are self employed	Unemp rate - aged 16-64	Unemp rate - aged 16+	Percentage who are economically inactive - aged 16-64
Great Britain	39,059,900	77.3	71.1	61	9.5	8	7.8	22.7
South East	5,430,300	79.7	74.7	63.4	10.9	6.4	6.2	20.3
South West	3,280,900	79	74.3	62.8	11	6	5.8	21
Dorset LEP area	420,400	81.1	77	64.5	12.2	5	4.9	18.9
Bournemouth	109,600	76.6	72.2	60.4	11.5	5.8	5.7	23.4
Poole	86,900	81.6	78.6	67.6	10.6	3.7	3.6	18.4
DCC Dorset	223,900	83.1	78.8	65.2	13.2	5.2	5	16.9
Christchurch	25,600	77.4	71	60.3	9.4	8.2	7.5	22.6
East Dorset	50,000	82	79.4	63.6	15.4	3.2	2.9	18
North Dorset	33,800	86	83.6	72.9	10.7	2.7	2.6	14
Purbeck	26,700	79.2	74	62.5	11.5	6.6	6.4	20.8
West Dorset	52,200	87.1	84	64.8	18.7	3.6	3.6	12.9
Weymouth and Portland	35,600	83.4	75.1	66.5	8.6	10	9.6	16.6
Source: Source: Annual Population Survey July 2012 - June 2013, ONS								
Accessed at http://www.dorsetforyou.com/407110								

The occupational profile of the Dorset workforce is closely aligned with the South West and national profile. The proportion of the workforce in highly skilled occupations is slightly lower than across England and the number in skilled trades slightly higher, but not significantly different.

1.1.2 Dorset's Youth Labour Market

The government has raised the participation age for education and training, and from September 2013 young people are required to stay in education and training until the end of the academic year in which they turn 17. Young people can be employed and trained alongside their employment to meet the requirements of the legislation.

Data from 2012 estimated that 5.3% of Dorset's 16–18 year olds (1,190 young people) were not in education, employment or training (NEET)[3].

Dorset has a high proportion of young people in an Apprenticeship. In June 2013, 10% of young people were engaged in an Apprenticeship: twice the England average and higher than the average for the South West (6%). The three most popular Apprenticeships started by 16-18 year olds were Engineering, Hairdressing and IT.

[3] There was some variation by local authority with DCC Dorset having the lowest at 4.9%, Bournemouth at 5.4% and Poole at 6.4%. Updated figures for August 2013 were available for DCC Dorset at 3.8% and Poole at 8.3%. (No updated data was available for Bournemouth).

1.1.3 The Dorset LEP – an overview

The Dorset LEP[4] area is comprised of three geographical areas:

- The conurbation (Bournemouth, Poole, Christchurch and parts of East Dorset and Purbeck) contains the majority of Dorset's population and employment.
- The coastline, which extends between Lyme Regis and Swanage.
- Rural Dorset is characterised by diverse small and micro businesses.

'Remarkable Dorset', the LEP's draft Strategic Economic Plan (published and out for consultation at the time this report was written), highlights that the LEP's overall aim is to deliver growth through business enterprise while safeguarding the environment. Dorset LEP has four Economic Development themes, one being '*Talented Dorset - Enhancing the skills of our current and future work force*[5]', the goals of which are achieved via its Employment and Skills Board (ESB) which consists of the Board and three sub-groups. The ESB includes representatives from further education, higher education, government agencies and from local business.

Four priority areas have been identified as critical for the economic development of Dorset, the relevant one for this project being '*Up-skilling Dorset's current and future workforce to meet the needs of employers and contribute to economic growth'*. A core function for the LEP is to act as the bridge between employers and the educational system to ensure that the skills being developed align with local employment opportunities.

The Dorset Skills Plan 2014 – 2016[6] has been developed to provide a clear framework for achieving the aims of *Talented Dorset,* which also maps educational output, against current and projected employment needs. The development of the Skills Plan involved an analysis[7] of the existing evidence base with regards to labour market and skills issues in Dorset.

In common with the national and regional picture, most businesses in the Dorset LEP area have fewer than ten employees (84%). East Dorset and North Dorset in particular have above average proportions of businesses with fewer than five employees. Only around 45 companies in the Dorset LEP area are large employers, employing more than 250 employees.

In Dorset between 8-10% of companies employ apprentices. In the last two years, overall Apprenticeship numbers have increased, however the rate of growth is considerably less than the national average (33.7% in Dorset compared with 86% nationally); in the 16-18 age bracket there has been a decrease in the number of Apprenticeship starts, in line with the national pattern. Dorset LEP plans to

[4] LEP - partnerships between local authorities and businesses. They decide what the priorities should be for investment in roads, buildings and facilities in the area.
[5] Talented Dorset - **Enhancing the skills of our current and future work force** -The Dorset LEP aims to increase skills levels of the workforce and to raise the aspirations, employability and entrepreneurial opportunities of the county's population. The Dorset LEP will also address the issues of unemployment, welfare and poverty with business support and incubation space for start-ups.
[6] http://www.dorsetlep.co.uk/assets/Talented/Skills-Plan/Dorset-Skills-Plan-Final-edit.pdf
[7] http://www.dorsetlep.co.uk/assets/Business-Support/Local-Authority-support-and-Partner-agencies/Dorset-Employment--Skills-Board/Reports/Dorset-Skills-Plan-Summary-FINAL.pdf

implement a number of actions to improve Apprenticeship take up and penetration within the local economy. This includes introducing the Traineeship programme to help unemployed young people gain the necessary experience, qualifications and work readiness to secure an Apprenticeship place or a job.

1.1.4 Traineeships

The Traineeship Programme[8] is a joint initiative of the Department for Business, Innovation and Skills (BIS) and the Department for Education (DfE). The programme was launched in August 2013 and is part of the Apprenticeships family. Traineeships are designed for young people who are not in employment, aged[9] 16 to 23, and have a reasonable chance of securing employment or an Apprenticeship place within six months of engaging with the programme.

The programme is designed to run for a maximum of six months and consists of three core elements – work preparation training, work experience and English/maths support (where required). In developing the Traineeship programme, the Government has consistently emphasised the importance of provider freedom and flexibility in designing learning programmes that address the needs of both businesses and individual trainees. The intention is for employers to have a clear line of sight over the design and delivery of the programme, to ensure that it provides the right skills for the workplace.[10]

The recent change in funding, announced in the Chancellor's Autumn Statement (December 2013), confirmed that young people participating in a Traineeship will be exempt from having to comply with the 16-hour (benefit) rule, that is often a barrier to participation in learning.

1.1.5 STEM skills and job roles – national and Dorset overview

STEM skills and job roles are considered critical by government and other key stakeholders to future national growth and employment, however, it is also recognised that there is a shortage of STEM skills in the UK workforce[11]. In 2013 the Confederation of British Industry (CBI) reported that 39% of employers currently experience difficulties in recruiting STEM-proficient staff at all levels of expertise. In the same year a UKCES report highlighted that certain sectors and regions suffer from skills 'potholes' which hold back growth[12]. There is also a recognised future replacement demand issue linked to skilled people leaving the labour market through retirement. In addition, there are key areas (for example the Green economy) where demand for employees with STEM skills is driven by expansion. Having a sufficient supply of skilled workers trained in STEM subjects is seen as a pressing policy

[8] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223591/Traineeships-framework-July2013.pdf
[9] 16 – 19 and qualified below Level 3, or 19 to 23 years of age and have not yet achieved a Level 2, and for young people with Learning Difficulty Assessments up to an academic age of 25.
[10] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/186830/13-960-rigour-and-responsiveness-in-skills-amended.pdf
[11] CBI, 2011; UKCES, 2010
[12] The Supply of and Demand for High-Level STEM Skills, UKCES, 2013

priority for the UK, furthermore it is also recognised that employers commonly demand STEM skills even for jobs that are not explicitly STEM roles (CBI, 2011).

The FE STEM Data Project (2012)[13] highlighted the dominance of non-STEM Apprenticeships at Intermediate Level (Level 2) and that it was therefore highly unlikely that Intermediate Apprenticeships would to yield technicians in sufficient numbers to impact upon current or future STEM skills shortages. The project concluded that Intermediate Apprenticeships are insufficiently focused on STEM subjects.

Employers in a number of Dorset's priority sectors report that their industries are not well perceived and that more needs to be done to attract young people to consider careers in STEM sectors and job roles. The Dorset Skills Plan identifies a number of actions to provide Information, Advice and Guidance (IAG) to support the future STEM workforce. This includes the need to encourage employers and schools to come together in curriculum development projects, linking science teaching to local industry needs and encouraging schools to access support from initiatives such as the national network of Science Learning Centres and the Stimulating Physics Network.

In Dorset, the new Bournemouth and Poole College STEM Centre opened in March 2013. It is a purpose-built centre and is committed to building a strong STEM capability for the region by providing new curriculum areas within Science, Technology, Engineering and Maths. The Centre has a focus upon meeting the developing needs of local companies and contributing to local strategic priority setting, planning and implementation. An example of this is the Centre's management of an active Engineering and Manufacturing Employers Forum, which has over 200 members from across Dorset.

[13] http://www.thedataservice.org.uk/NR/rdonlyres/499A04E5-7FF6-448E-941B-4165ED0BD078/0/FESTEMreport_nov12_final.pdf

1.2 Methodology

This discussion paper draws on semi-structured interviews and desk research carried out as part of a situational appraisal focussed on the Dorset LEP area.

Desk research was undertaken to provide a concise analysis of the key features of the Dorset LEP area in the context of this project. This included the role of STEM and Dorset LEP's strategies and priorities.

Semi-structured interviews were completed with:

- Senior staff from 14 Dorset-based companies who currently employ staff in STEM job roles.
- 12 wider stakeholders, including learning providers, LEP representatives and board members, local Chambers of Commerce staff.

Interviews were conducted either by telephone or face-to -face. An interview schedule along with a briefing about the Traineeship programme was emailed to interviewees in advance, to enable them to prepare for the interview.

Section 2: Summary of Key Findings and Discussion

This section provides a summary of the key findings emerging from the research, along with a discussion of the implications for Traineeship policy in the context of STEM, within a local area. Also included are potential solutions for addressing the key issues that are currently limiting the effectiveness of the Traineeship programme in providing a pathway to STEM job roles for young people and addressing STEM workforce skills needs.

2.1 Lack of knowledge and awareness of Traineeships, particularly amongst employers, will limit the effectiveness of the policy

Prior to receiving the NIACE pre-interview briefing about Traineeships, knowledge of the programme amongst interviewees was limited. Whilst all of the learning providers were aware of the programme and had some understanding of it, most of the wider stakeholders (LEP representatives and Chambers of Commerce staff) either had not heard of Traineeships or had very limited understanding of the programme. None of the employers who were interviewed had heard of Traineeships prior to their participation in this project. Conversely, all interview respondents were familiar with Apprenticeships.

Whilst the implementation of the Traineeship programme is still in the early stages, lack of knowledge about the initiative, particularly amongst employers and key local strategic stakeholders, will, undoubtedly, limit its effectiveness.

The key policy driver underpinning Traineeships is the reduction of youth unemployment through enabling young people to make effective transitions into work. Traineeships also have the potential to play a key role in contributing to the social inclusion agenda, and, in this respect should be closely aligned with individual LEP's European Structural and Investment Fund Strategies, whereby each LEP is required to provide information about how they will promote social inclusion and combat poverty in their area (thematic objective 9). It is widely documented that demand for STEM Apprenticeships outstrips the supply of places available. Traineeships can offer young people who are not yet ready, or have been unsuccessful in securing an Apprenticeship place, an opportunity to gain experience of STEM. This experience, and the successful completion of a Traineeship, is likely to improve their chances of gaining an Apprenticeship place or of entering the STEM labour force through a difference progression pathway. This point was clearly made by a number of Dorset employers – many Dorset STEM Apprenticeship employers receive more applications than there are places available. Within the Dorset LEP there has been a substantial increase in Apprenticeship numbers, with Poole having the highest Apprenticeship growth across all ages[14]. As the Apprenticeship take-up rate has increased so substantially during the last year, respondents suggested that the Traineeship programme could work particularly well as an option for taking on

[14] according to unpublished data from June 2013

Trainees who are not quite ready to be apprentices and who may have been unsuccessful in an Apprenticeship application.

As implementation of the Traineeship programme progresses, it is likely that local learning providers (as the organisations funded to deliver Traineeships) will become proactive in engaging local employers. Whilst acknowledging that learning providers will, and should, develop individual approaches to engaging employers, based on the needs of the young people recruited onto the programme, there is arguably a requirement for local bodies, such as LEPs, to lead local planning and coordination.

Traineeships provide a unique opportunity to enable young people to progress into jobs where there is a local skills shortage. However, without local co-ordination of the Traineeship programme, it is difficult to see how it will meet local strategic needs. For example, in local areas where there is an identified shortage of STEM skills in the current and projected future workforce, there is arguably a need for co-ordinated local planning of Traineeship policy and implementation to address this skills gap.

On this basis, one option would be for individual LEPs to develop focussed 'STEM skills strategies.' In the case of Dorset for example, through a local 'STEM Skills Strategy' the LEP could take a lead role in working with learning providers, local employers and local STEM initiatives (such as Bournemouth and Poole College STEM Centre, and the Engineering and Manufacturing Employers Forum) to develop STEM-focussed Traineeships that have the potential to provide tangible progression routes to local STEM job roles for young people, in industries where there is an identified projected skills gap, such as advanced manufacturing. A local approach such as this would provide the added benefit of enabling a LEP to maximise the impact of a joined up approach to addressing a range of local priorities, such as youth unemployment, social inclusion and labour market shortages. For example, based on local intelligence, a LEP could plan and deliver targeted outreach activity to engage specific non-traditional cohorts of young people in STEM Traineeships, such as young people who are at risk becoming Not in Education, Employment or Training (NEET), who would be unlikely to enter a STEM career without access to a programme such as Traineeships. This approach could enable LEPs to secure progress in contributing to priorities outlined in their Strategic Economic Plans and European Structural and Investment Fund Strategies.

2.2 Poor quality Information, Advice and Guidance (IAG) around STEM will restrict young peoples' participation in STEM Traineeships

Most interviewees acknowledged the potential of the Traineeship programme in providing a pathway to STEM job roles for young people in Dorset, addressing STEM skills gaps experienced by local employers, widening access to STEM job roles for young people and contributing to the social inclusion agenda. However, all interview respondents expressed a concern about the effectiveness of current IAG provision in informing and preparing young people for STEM job roles. A number of specific issues were highlighted, including:

- Lack of knowledge amongst IAG professionals in Dorset about both STEM job roles that are available to young people and local industry requirements.
- The quality and impartiality of IAG provided in schools. There was a perception amongst interviewees that advice in schools is often not impartial, but most importantly, is ineffective, particularly in relation to STEM.
- Removal of 'work-related learning' requirement for schools[15] (at year 10) means that young people are likely to have less opportunity to experience work environments and to engage with industry, therefore have reduced opportunities to experience STEM job roles and what they actually entail.

These issues are acknowledged in the Dorset Skills Plan, which suggests that action should be taken to attract young people to consider careers in sectors which currently suffer from poor image. Nationally, this point is reinforced in the publication 'STEM education for 14-19 year olds[16]' which noted '*that children and parents often perceive science as a difficult subject suitable for only the most able, leading young people to think it was not for them. STEM related careers are also narrowly perceived, with students unaware of the transferability of the skills and the range of careers available. This is particularly prevalent for families with a low level of qualifications or knowledge of science*'.

Inaccurate and often negative perceptions of STEM job roles amongst young people, reinforced by IAG which is often considered to be low quality and ineffective, creates a barrier to entry routes to STEM jobs for young people. There is a strong need to provide IAG professionals and other key intermediaries (such as teachers and Job Centre Plus Advisors) with professional development opportunities to improve their local knowledge of STEM. Arguably this would be most effective if delivered through local training sessions that offer tangible opportunities for professionals to engage with local STEM employers and STEM-focussed initiatives. Creating direct local links between IAG professionals and STEM employers and initiatives (such as the STEM Ambassadors scheme in Dorset) would improve IAG professionals' knowledge and awareness of STEM job roles and would break down barriers to future engagement with local STEM employers. Planning and delivering professional development opportunities for IAG staff within the broader context of a LEP 'STEM Skills Strategy' would maximise the potential impact of effective STEM focussed IAG in preparing and supporting young people to enter STEM job roles and address the skills needs of the local economy.

A LEP level strategic approach to STEM would also ensure that IAG professionals and other key intermediaries have good knowledge not only of Traineeships, but of the range of options available to individual young people on their pathway to a STEM career. Whilst interviewees in Dorset reported good knowledge of Apprenticeships, lack of knowledge about Traineeships, means that young peoples' entry routes towards STEM jobs and careers is effectively being blocked. This represents a wasted pool of talent and labour that, through good local strategic oversight and IAG,

[15] http://www.education.gov.uk/schools/teachingandlearning/curriculum/b00200366/abt-schl-curric/work-related-learning---key-stage-4
[16] Houses of Parliament Post Note 403 March 2013

could potentially be a valuable resource in enabling local businesses to recruit and train young people and therefore meet their current and future STEM skills needs.

2.3 STEM Traineeships should include STEM contextualised maths provision

All young people undertaking a Traineeship are required to study English and maths unless they have achieved a level 2 qualification in these subjects. All of the Dorset interview respondents support this requirement; on the basis that maths is an important skill that is essential for Trainees on the pathway to STEM jobs roles. However, whilst the employer interviewees emphasised the importance of good maths skills, they also strongly emphasised the need for Trainees to learn contextualised maths skills that match industry requirements.

Research indicates that contextualised approaches to the delivery of maths enables young people to develop skills that are meaningful and relevant to them and their career aspirations. Effective STEM contextualised maths provision, delivered through Traineeships, would support young people to be more aware of how mathematical thinking underpins their developing vocational competence, adopt a more positive and active approach to learning mathematics, and develop mathematical skills and confidence to undertake initial STEM job roles effectively.

To support and enable learning providers to move beyond generic Functional Skills and GCSE maths provision for Trainees, there is a need for learning providers to be able to access guidance and resources around contextualising maths to meet the needs of Trainees on the pathway to STEM job roles. The development of such guidance and resources would involve consulting STEM employers and developing a framework and model of contextualised maths for young people undertaking STEM-focussed Traineeships.

2.4 Financial and practical support would encourage and enable STEM employers to offer meaningful and high quality Traineeship work placements for young people

All young people participating in a Traineeship are required to undertake a work placement. The duration of the work placement is expected to be at least six weeks and no longer than five months. The placement does not have to be undertaken consecutively. In some cases, such as where young people are undertaking their work placement in small or medium businesses, it may be appropriate for them to undertake a number of separate work placements in different organisations totalling at least six weeks. In the context of STEM, all Dorset interview respondents supported the requirement for Traineeships to include a work placement, providing it is relevant, meaningful and provides real opportunity for young people to gain insight into STEM job roles.

Whilst supporting the principle of STEM Traineeship work placements, a number of employer interviewees expressed concerns about the associated costs, for them, in offering such placements. The increased insurance costs arising from health and

safety risks as a result of having young people in a STEM work place was perceived as problematic. Many employers were also concerned about the levels of staff time that would need to be dedicated to planning and supporting a placement, and the impact on resources within a business. Increased insurance costs and staff time is perceived as a particular barrier for small STEM companies. In an area such as Dorset, which has a high concentration of SMEs (the majority of whom employ less than 10 people) the perceived cost to employers is likely to limit the availability of STEM work placements and therefore the extent to which the programme can provide a route to STEM job roles for young people.

Under current arrangements, employers do not receive direct funding for offering a work placement. Funding is drawn down by eligible learning providers, based on the age of the young person they recruit to participate in a Traineeship. A solution to the identified cost barrier of offering STEM Traineeship work placements would be to offer funding to STEM employers as an incentive. There are a number of options that could be considered to stimulate STEM-Traineeship work placement availability:

- Government provides direct funding to all employers who offer STEM focussed work placements. The amount could be defined, per young person, based on the duration of the work placement.
- Government provides direct funding to small employers who offer STEM work placements.
- Learning providers pass a proportion of their funding onto STEM employers who offer a work placement.
- Learning providers pass a proportion of their funding onto small STEM employers who offer a work placement.
- Government allocates a pot of funding to local bodies, such as LEPs, who are responsible for identifying local labour market needs and skills shortages and incentivising employers in key STEM sectors to offer Traineeship work placements. (Whilst individual LEPs and some city regions currently have the ability to use devolved to address their strategic priorities, at this relatively early stage in the delivery of the Traineeship programme, there is no evidence of such funding being used to support STEM Traineeships.)

In addition to funding employers to offer STEM work placements, development and marketing activity could be undertaken to highlight the local and national labour market need for STEM work placements, and the benefits for STEM employers. Because of their lack of knowledge about Traineeships, it is likely than many STEM employers, particularly small employers, do not have a clear understanding of how they, through offering work placements, can contribute to the development of STEM skills within the workforce. Similarly, they may not be aware of the potential benefits to their business, such as skills development of existing staff and raising their profile within the local community.

The notion of individual LEPs developing a ‘STEM Skills Strategy’ has been suggested earlier in this paper, as part of their wider Strategic Economic Plans, European Structural and Investment Fund Strategies and Skills Plans. If this

proposal was adopted, LEPs would have a key role to play in working with learning providers to proactively engage employers in discussions about offering STEM work placements, and ensuring that they have a clear understanding of the benefits for them (as businesses), for young people and for their local economy. If planned at a local level it would also be easier to co-ordinate Traineeship work placements in a flexible manner. For example, small STEM employers might only be willing to commit to a two-week work placement; through integrated local planning a series of short term STEM work placements could potentially be arranged, to enable a young person to meet the duration requirements of the Traineeship programme and to gain insight into a range of STEM job roles. High quality STEM Traineeship work placements will be fundamental to the success of the programme in providing a pathway to STEM job roles for young people. They will motivate and enable young people to realise that STEM jobs are rewarding, achievable and realistic options for them; in addition, employers will benefit from access to a wider pool of talented and motivated young people who have the potential to make a significant contribution to their businesses.

2.5 Traineeships have significant potential to reduce youth unemployment and contribute to social inclusion

As part of its European and wider strategic economic planning, one of the priorities identified by Dorset LEP is the reduction of youth unemployment/social inclusion. Targets have been set and progress is being tracked. All interview respondents expressed the view that Traineeships have the potential to make a significant impact in reducing youth unemployment, particularly through creating pathways to STEM job roles for young people where skills shortages have been identified. However, this view was expressed with the caveat that work is required at local level between learning providers, the LEP, STEM employers and other key stakeholders to develop an effective joined-up approach that is well planned and implemented. This would form part of a local 'STEM Skills Strategy' which is outlined as a key action at various points in this paper.

In implementing Traineeship policy, government has consistently emphasised that the programme has been designed to enable learning providers to develop flexible delivery models that meet the needs of individual young people and employers. The flexible nature of the programme has recently been strengthened by the Chancellor's announcement in the Autumn Statement that young people participating in a Traineeship will no longer be subject to the 16-hour benefit rule, which previously restricted learners' engagement in the programme.

Research consistently shows that young people from particular backgrounds or who experience specific forms of disadvantage are less likely to engage in education, training and employment than their peers. Since the onset of the recession the most disadvantaged young people have been pushed further into the margins, finding themselves increasingly excluded from opportunities, such as learning and work, which can enable them to play a full and active role in society. In the context of STEM, the gender gap is particularly well documented – lower numbers of women

entering STEM job roles compared to male counterparts and the 'leaky pipeline' – a term that is sometimes used to describe the loss of women at consecutive career stages. Interview respondents in Dorset agreed that the flexible nature of the Traineeship programme has the potential to engage non-traditional cohorts of young people in STEM job roles, however, they reiterated that success in this area will be heavily dependent on effective Information, Advice and Guidance that is targeted at young people with specific support needs or from particular backgrounds.

Whilst effective and targeted Information, Advice and Guidance will be an important factor in enabling Traineeships to contribute to local social inclusion agendas, wider research undertaken by NIACE and others indicates that, once engaged in a programme such as Traineeships, young people from disadvantaged groups often require high levels of tailored and individual support if they are to sustain their engagement and achieve positive outcomes. Whilst acknowledging that Traineeships are fundamentally targeted at young people who have a realistic chance of securing employment within six months, the flexible nature of the programme means that providers can offer individualised approaches to address the barriers to learning that many young people experience. If planned and delivered effectively, Traineeships have the potential to enable a range of young people, with different backgrounds, experiences and support needs to maximise their chances of gaining a job or Apprenticeship place.

Outcomes payments are an inherent feature of a range of government policy around employment and skills. Whilst acknowledging that the direction of this policy approach is unlikely to change in the immediate future, it is important to recognise that, within a programme such as Traineeships, the release of a proportion of funding based on the achievement of successful outcomes is unlikely to incentivise providers to actively recruit young people who may require higher levels of support than others. Prioritising the engagement of young people who are considered to have higher support needs is therefore a financial risk for Traineeship learning providers, and may limit the potential of the programme in widening participation.

A number of actions could be taken to maximise the potential of the Traineeship programme in contributing to social inclusion agendas. As stated previously, whilst acknowledging that policy is unlikely to move in this direction, the removal of the outcomes payment approach would reduce the financial risk that learning providers encounter in engaging learners who require higher levels of support than others, to successfully make the transition to employment. Alternatively, a proportion of uplift funding could be claimed by providers who engage particular groups of young people in Traineeships; a further option would be to enhance this payment if these young people engage in a STEM-focussed Traineeship. In addition to funding incentives, learning providers would arguably benefit from support materials and resources around effective approaches to engaging young people from disadvantaged groups in Traineeships.

As discussed in section 2.4, good quality work placements are a central component of Traineeships. Their purpose is to provide young people with direct experience of

the workplace and the formal and informal skills and attributes that can contribute to them becoming valued employees. Whilst effective planning and support for all Trainees engaged in STEM-focussed work placements is important, there is arguably a need for employers (in particular work placement supervisors and mentors) to understand the particular and often complex needs of young people from disadvantaged groups or backgrounds. There is a risk that poor quality work placements may result in young people with high support needs disengaging from Traineeships, thus reinforcing negative experiences of learning and the cycle of worklessness. Tailored information and resources for employers, around the specific support needs of disadvantaged young people and how to offer effective support would enable employers to support young people with some of the highest needs to benefit from a STEM-focussed work placement.

Under current guidance issued by government, Traineeships should be completed within a six month period. The majority of interview respondents expressed a concern about this, particularly in relation to young people from disadvantaged backgrounds, who are likely to have higher support needs than others. Through effective screening of needs and the application of what are often relatively small measures that can make a significant difference, providers will be able to enable many young people who may not traditionally have considered a STEM career path to access employment through a STEM Traineeship. To address employers' concerns about the limitations of the programme in potentially engaging some disadvantaged young people, consideration should be given to the concept of an 'intensive Traineeship' which would require scoping and analysis to explore different models and their potential impact in enabling young people who are often considered 'hardest to reach' to enter the pathway to STEM job roles.

Section 3: Conclusions

This section draws together the analysis and discussion provided throughout this paper to answer the research question around which the project is focussed.

3.1 Conclusions

So, can and how might traineeships work for Science, Technology, Engineering and Mathematics (STEM) within the context of a Local Enterprise Partnership (LEP) area? The analysis and discussion provided in this paper indicates that Traineeships have the potential to be highly effective in creating pathways to STEM jobs for young people. In addition, if planned, co-ordinated and implemented effectively at local level (such as through existing LEP mechanisms and their associated Strategic Economic Plans and European Structural and Investment Fund Strategies), Traineeships can play a central role in addressing local labour market needs and current and projected STEM skills shortages in the workforce. However, at present Traineeships are not being delivered in a way that is likely to maximise positive outcomes in meeting national and local STEM skills needs.

Interviewees in Dorset were enthusiastic about Traineeships and many expressed a view that the Traineeship Programme has significant potential to counter unemployment, underemployment and to widen participation in STEM jobs.
The research also highlighted that within the Dorset LEP area the current demand for Apprenticeships in STEM roles outstrips the supply. As Traineeships become embedded within the Apprenticeship family, opportunities for STEM Traineeships to provide a good entry point for young people into STEM roles within the Dorset LEP area, are likely to increase.

Whilst Traineeship policy has been designed to give learning providers flexibility in meeting the needs of individuals and employers, in practice, this flexibility means that there is a lack of strategic oversight in ensuring that the policy responds to identified skills shortages. The overarching recommendation of this paper is that Traineeships will be most effective if LEPs develop 'STEM Skills Strategies', as part of their wider Economic and Skills Planning. Integration of Traineeships (and other programmes, such as Apprenticeships) into local 'STEM Skills Strategies' would enable targeted and co-ordinated local implementation, which avoids duplication of activity by different learning providers and develops a systematic approach to engaging STEM employers and ensuring that the content and delivery of Traineeships, at a local level, meets their skills needs. For example, by adopting such an approach, learning providers would be able to directly engage local STEM employers in discussions about the contextualised maths provision that they would like to see delivered through Traineeships. They would also be able to work with employers to plan and arrange work placements in a way that provide young people with meaningful and worthwhile experiences of STEM workplaces, whilst also addressing employers' concerns about the costs and support required in offering such placements.

A joined up local approach to STEM skills could mitigate against many of the key barriers and would provide detailed local labour market intelligence to drive the implementation of Traineeships. However, many of the barriers identified in this paper are rooted in national Traineeship policy and wider national arrangements that directly impact upon Traineeships in the context of STEM.

For example, issues around the accessibility, impartiality and effectiveness of Information, Advice and Guidance for young people is located within a national framework of responsibilities, that, many argue, requires radical review and restructuring. Whilst localities could put mechanisms in place to maximise the quality and effectiveness of the STEM-focussed Information, Advice and Guidance that young people receive, this will invariably be delivered within a national structure that is widely considered to be ineffective.

Similarly, within national Traineeship policy there are a number of modifications or actions that government could take, that could stimulate demand for STEM Traineeships. For example, financial incentives for STEM employers offering a Traineeship work placement, and the development and dissemination of resources to provide STEM employers with the information they need to offer effective work placements to young people with high support needs.

In conclusion, STEM-focussed Traineeships have the unique potential to benefit not only young people but also employers, local economies and the national economy. If planned and delivered effectively, they can provide clear progression pathways to STEM jobs, meet employers' STEM skills needs, contribute to local and national growth and the social inclusion agenda. Whilst the evidence from this research indicates that the implementation of Traineeships is not yet meeting this potential, there are clear and defined actions that could be implemented, at a range of levels, to improve the effectiveness of the programme in addressing STEM skills shortages. LEPs, as key strategic bodies with responsibility for local growth, have a potentially unique and fundamental role to play in driving Traineeships at a local level, thus ensuring that the programme delivers outcomes that meet the individual and often specialist needs of the local STEM labour market.

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