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Careers education: International literature review

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EXECUTIVE SUMMARY

Background to the report

This report, commissioned by the Education Endowment Foundation (EEF), supported by the Bank of America Merrill Lynch, is designed to provide an overview of the evidence-base underpinning careers education and its impact on pupils' skills and outcomes. We define careers education as:

> *'Careers-focused school- or college-mediated provision designed to improve students' education, employment and/or social outcomes.'*

The main questions addressed by this report include:

- What intervention research has been carried out since the year 1996 measuring the impact of careers education on improving young people's outcomes?
- What is the strength of evidence of this research?
- Where are the research gaps that need to be addressed?

Furthermore, this review aims to identify which interventions might be most appropriate to implement in the UK context to better support careers education, and in turn improve educational, economic, or social outcomes for young people.

Methods used in the review

Our literature review highlighted 73 studies focused on careers education as defined above. All studies included were required to adhere to quasi-experimental or experimental approaches undertaken within Organization for Economic Cooperation and Development (OECD) countries since 1996. The findings focus on evidence from studies where outcomes could be compared with a control group, though the robustness of the methodologies used inevitably varies. We also identified 23 studies exploring the impact of part-time employment.

The types of interventions included in the examined studies included careers provision, career guidance, enterprise, ICT and careers, job shadowing, mentoring, transformational leadership, volunteering, work experience, and work-related learning. These were defined as:

> **Careers provision:**[1] a process of learning, individually or in groups, designed to help young people to develop the knowledge, confidence, and skills they need to make

[1] This may also include: **career dialogue**—a conversation in which a professional helps an individual discover and articulate meaning regarding life or work experiences, and **career guidance**—a process, delivered individually or in groups, that helps individuals to gain a clearer understanding of their career development needs and potential through the successful understanding and application of their career management skills. It includes the use of techniques and tools that focus on personal challenge and growth and **career information**—the provision and use of a range of resources to enable users to develop a better understanding of occupations, employment types, sectors and employing/learning organisations, current and future employment, and training and educational opportunities.

well-informed, relevant choices and plans for their future so they can progress smoothly into further learning and work.

Enterprise: an activity wherein pupils work together to create an economic enterprise of either a short or long duration, commonly with support from volunteers from the world of work. Also known as 'Entrepreneurial Education' or 'Enterprise Competitions'.

ICT and careers education: a means to offer access to information or to provide an automated interaction, or to provide a channel for communication.

Job Shadowing: a short period of career exploration (typically no more than three days) within a workplace wherein a pupil observes a number of staff members at work, reflecting on their occupational experiences. Also known as 'Work Shadowing'.

Mentoring: a sustained relationship between a pupil and a largely untrained volunteer (selected on the basis of their occupational experience) managed by a school to support and encourage the young person through a period of transition.

Transformative Leadership: a programme of careers-focused activity requiring substantive changes in staff action and behaviour, commonly requiring some element of staff training.

Volunteering: volunteering within a workplace while in full-time education.

Work experience: a time-limited placement undertaken by a young person (while still in full-time education) in a workplace designed to give the young person insights into the experience of being employed in such a workplace.

Work-related learning: a programme of learning that uses the context of work to develop knowledge, skills and understanding useful in work, including learning through the experience of work, learning about work and working practices, and learning the skills for work.

These were considered in the context of their impact on:

- **Educational outcomes** such as attainment level, participation in education and/or training, and sustainable progression.
- **Economic and employment outcomes** such as earnings, employee retention, likelihood of finding work and/or congruence with the work environment, transition from education to work, social mobility, and reductions in those 'not engaged in education, employment or training' (NEET).
- **Social outcomes** such as cultural capital, community engagement, confidence, resilience, self-esteem, improved non-cognitive skills and/or mental health well-being, and not engaging in criminal activity.

Key findings

Context

1. The research literature over the last 20 years on the impact of careers education on student outcomes is largely considered weak and fragmented, due mainly to the complexity of differing elements being identified and reported in differing ways. Overall, there are significant shortages in quasi-experimental and experimental studies in the career development field.

2. While the experimental literature on careers education is weak, it can be seen in the context of stronger related literature. Longitudinal studies suggest that the way in which teenagers think about their futures in education and employment has a significant impact on what becomes of them as working adults. Teenagers who have effectively underestimated the education required for their desired profession, for example, are statistically more likely to end up NEET. In addition, young people from poorer backgrounds are more likely to have career aspirations that are misaligned with their educational ambitions.

3. Teenage experience of work—in particular part-time employment—has also been associated with improved economic outcomes for young adults, and this longitudinal literature is systematically assessed within this review. Overwhelmingly, studies identify positive economic outcomes for adults who worked part-time as teenagers while in full-time education, however there is evidence of a negative impact on immediate attainment outcomes, though impacts are modest when hours worked are low. It should be noted that teenage part-time employment is rapidly in decline: the proportion of British 16- to 17-year-olds combining full-time education with part-time employment has fallen from 42% in 1997 to 18% in 2014.[2] With such decline, the requirement grows on schools, colleges, and employers—through the realm of careers education—to help young people gain insights, exposure, and experiences that traditionally they would have accessed through direct, paid experience of the labour market.

4. The literature suggests that careers education is optimally facilitated when interventions are personalised and targeted to individuals' needs from an early age. There is compelling evidence that career learning should begin in primary school[3] and continue through adulthood, however very few high-quality intervention studies focused on primary pupils were identified.

5. This literature review shows a shortage of impact studies in all areas, particularly (both in the UK and further afield) on the development of young people's career management skills within careers education in schools and colleges. Also, empirical

[2] UKCES (2015) *The Death of the Saturday Job* (London: UK Commission for Employment and Skills).

[3] Watson, M. and McMahon, M. (2005) 'Children's Career Development: A research review from a learning perspective', *Journal of Vocational Behavior*, 67, 119–132.

studies pertaining to career guidance (sometimes described in the literature as 'career counselling' or 'career development') and its direct impact on education outcomes—particularly in relation to online provision and tracking career trajectories—are largely absent. However, beyond this research there is strong evidence (from the OECD (2010) among others) that the provision of high quality, independent and impartial career guidance for young people (and adults) is key to supporting transitions into education, training and employment. Career guidance is separate but complementary to the effective planning and delivery of careers education in schools and colleges.

6. The literature is overwhelmingly US in character: 46 (63%) of the 73 studies identified as providing reliable insight into careers education related to interventions undertaken in the US; 18 (25%) of studies were UK specific.

Careers education—What is its impact on educational outcomes?

7. The review identified 45 research studies providing reliable assessments of the impact of careers education on the educational achievement of young people. Of these, which looked in total at the impact of 67 different interventions, 60% provided largely positive findings evidencing improvements in educational outcomes. Only one study suggested negative impacts. The remainder provided either mixed results or no clear patterns of achievement. The literature is strongly focused on secondary education with 44 studies providing comment on careers-focused mediated provision received by pupils between the ages of 12 and 19. Looking at specific interventions, four areas have been investigated by five or more studies: leadership, mentoring, careers provision, and work-related learning.

8. A majority of studies provided evidence of improvements in academic achievement. However, a review of the studies highlights a considerable variation in how academic outcomes were measured. Drilling down into the results of five comparable studies looking at the impact of different careers education interventions on achievement at GCSE, the literature suggests, on average, relatively modest attainment boosts.

9. The lack of evidence associating career education activities with poorer academic attainment is a significant finding given the potential for such time-consuming activities to detract from valuable teaching and learning time.

10. The literature reviewed here has relatively little to say about why interventions related to careers-focused education have, on average, positive impacts on the attainment of young people. It does, however, broadly support the hypothesis that careers education helps young people to better understand the relationship between educational goals and occupational outcomes, increasing pupil motivation and application. Studies suggest that higher levels of attainment can be expected when specific groups of young people engage in interventions, or when interventions are delivered in specific ways.

Careers education—What is its impact on economic outcomes?

11. The review identified 27 studies which explored the links between school-age careers education and later economic outcomes for those individuals. A robust literature does exist—linked mainly to wage premiums using national longitudinal

databases. Two-thirds of the studies reviewed (67%) provided evidence of positive economic outcomes; one-third found evidence to be mixed with no distinct patterns in terms of outcomes. No study found evidence that participation in a careers education intervention can be linked to poorer adult economic outcomes. The scale of the wage premiums detected is routinely considerable.

12. The review identified five interventions where five or more robust studies had looked for evidence of long-term economic outcomes linked to careers education: Job Shadowing, Work Experience, Careers Provision, Mentoring, and Work-related Learning. It is notable that more than three-quarters of both the Job Shadowing and Work Experiences studies (two comparable interventions) were judged to produce largely positive economic outcomes for participating young people. There were no UK studies identified focusing on volunteering, transformational leadership, or ICT within careers education testing for improvements in economic outcomes. The literature on ICT and careers education is negligible, particularly in relation to young people or the use by schools and colleges of labour market information or intelligence (LMI).

13. In seeking to make sense of the positive economic outcomes detected, the literature often references social capital theory, noting that the lack of both personal and professional network connections, and of exposure to the world of work, is thought to hinder the labour market progress of young people from low-income backgrounds in particular. Young people are commonly understood to make use of their episodes of careers education, and especially first-hand experiences of the labour market, to gain improved insights into the operation of the labour market, its breadth and demands. In turn, it is argued, new insights enable more informed decision-making, smoothing the transition into sustained employment.

Careers education—What is its impact on social outcomes?

14. The review identified 25 research studies providing evidence of the impact of careers education on the social outcomes of young people. The evidence base is broadly positive (62%). However, most literature on careers education and its effectiveness is focused on influencing students' knowledge, attitudes, and decision-making skills; students' behaviours and actions often remain unexamined.

15. The majority of studies provided some evidence of improvements in self-efficacy, self-confidence, career maturity, decision-making skills, career competencies, or career identity.

Efficacy of interventions by outcome area

16. A limitation of the literature is the breadth of activities examined across the different studies. Activities varied from career talks, which might last less than one hour, to programmes of study lasting many years. As set out below, classifying activities as interventions (where five or more studies exist), patterns do emerge suggesting levels of relative efficacy. It should be borne in mind, however, that often interventions cover a wide range of activities themselves, including numerous distinct elements. What unites them is a focus, in differing ways, on careers education and further research is required to disaggregate the elements of provision to understand the drivers (and they are likely to be distinct) of educational, economic, and social outcomes.

		Evidence of positive impact on:			
Type of intervention	**Description**	**Educational outcome**	**Economic outcome**	**Social outcome**	**Example intervention, impact, and strength of evidence**
Transformational leadership	A programme of careers-focused activity requiring substantive changes in staff action and behaviour, commonly requiring some element of staff training.	67% of 6 assessments			Woolley *et al.* (2013) examine the US Career Start programme wherein teaching staff (grades 6 to 8) follow an interactive professional development process to revise methods of teaching the core academic curriculum by using specific career examples. The study reviews results across 14 randomly assigned schools and finds statistically significant increases in pupil achievement in mathematics, but not in reading. **Evidence strength: medium**
Mentoring	A sustained relationship between a pupil and a largely untrained volunteer (selected on the basis of their occupational experience) managed by a school to support and encourage the young person through a period of transition.	62% of 13 assessments	67% of 6 assessments	50% of 6 assessments	Miller (1999) examines the impact of business and community mentoring in seven schools in England. A value-added analysis found a small but positive impact on GCSE results compared with a similar group of non-mentored students. **Evidence strength: medium**

Careers provision	A process of learning, individually or in groups, designed to help young people to develop the knowledge, confidence, and skills they need to make well-informed, relevant choices and plans for their future, so they can progress smoothly into further learning and work.	60% of 10 assessments	67% of 15 assessments	62% of 13 assessments	Kashefpakdel and Percy (2016) examine the impact of school-mediated careers talks with speakers from outside of school at ages 14–16 on earnings (in full-time employment) at age 26. The study finds that young adults experience wage premiums of up to 1.6% per careers talk with premiums greatest when participants agreed, as teenagers, that the talks were 'very helpful'. **Evidence strength: high**
Work-related learning	A programme of learning that uses the context of work to develop knowledge, skills, and understanding useful in work, including learning through the experience of work, learning about work and working practices, and learning the skills for work.	58% of 24 assessments	55% of 11 assessments	40% of 5 assessments	Kemple and Wilner (2008) examine the impact of teenage participation in a three-year (one day a week), occupationally-focused US study programme rich in employer engagement. Using randomised assignment, they followed 1,764 young people to age 26 and find the intervention group to earn, on average, 11% more than the control group. **Evidence strength: high**
Job shadowing	A short period of career exploration (typically no more than three days) within a workplace wherein a pupil observes a number of staff members at work, reflecting on their		80% of 5 assessments		Neumark and Rothstein examine the impact of teenage participation in US school-mediated job shadowing programmes on education and employment outcomes. Using longitudinal data, they find job shadowing boosts post-secondary education participation rates and reduces incidence of young adult

	occupational experiences.				idleness. **Evidence strength: high**
Work experience	A time-limited placement undertaken by a young person (while still in full-time education) in a workplace designed to give the young person insights into the experience of being employed in such a workplace.		75% of 8 assessments		Linnehan (2001) examines the experiences of 202 African American high school students who engaged in extended periods of work experience (one day a week) alongside mentoring with employee volunteers. Young people whose experience lasted more than six months achieved higher examination results than control group peers. **Evidence strength: medium**
Enterprise	An activity wherein pupils work together to create an economic enterprise over either a short or long duration, commonly with support from volunteers from the world of work.			60% of 5 assessments	Huber *et al.* (2014) examine the impact of a five-day entrepreneurship education programme on primary school age Dutch participants. A total of 2,751 pupils were randomly allocated to control and intervention groups by class. The study found significant positive impact on the non-cognitive entrepreneurial skills of pupils (e.g. risk-taking, creativity, self-efficacy). **Evidence strength: high**

Features of effective careers education practice

17. Some emerging findings about the features of particularly effective careers education practice have been identified. Given the relative weakness of the evidence and the variability of the interventions identified, these findings should not be treated as definitive. However, we believe that features of effective practice include:

- career reflection—making concrete the thinking about one's own motivation and aptitudes, self-regulation, self-determination, and resilience to cope with unforeseen setbacks;
- career exploration—giving shape to one's own career path by exploring the options for study or work;
- career action—opportunities to make sense of, and act upon, the learning gained from differing types of interventions;
- networking—building and maintaining a network of key contacts;
- learning environment—stimulating real-life experiences with work and a dialogue about these experiences;
- career dialogue—young people having meaningful conversations with teachers, parents or carers, employers and employees, alumni, and trained and qualified career development professionals; and
- career conversations in the workplace—giving students exposure to, and experience of work in real-life situations.

Gaps in the literature

18. The literature on quasi-experimental and experimental studies is weak. There are several types of intervention the outcomes of which have not been evaluated at all to any meaningful extent. Key gaps in the literature include:

- how careers education can support the greatest boosts to academic achievement of the largest numbers of young people, including understanding how identifiable groups of young people can be expected to respond to different interventions; this would require combining quantitative and qualitative approaches to further unlock the 'black box' of causality;
- personalised and targeted careers education (and career guidance) for young people (and parents), particularly those in lower socio-economic groups, young immigrants and those from other disadvantaged ethic groupings, or for those who are disabled or have special educational needs;
- careers education and systems for tracking students' enrolment and progression in learning and work over time (using data available from learning information and HM Revenue and Customs) to learn more about career trajectories and thus about ways of identifying cycles of intergenerational poverty and evidence of what helps to break cyclical trends;
- the effectiveness of ICT in careers education (and career guidance) online, and the use of ICT and labour market information and intelligence (LMI) in the classroom;
- understanding the career guidance process and the 'meaning-making' this provides for young people in receipt of learning and labour market information; and
- the importance of social and cultural capital as a resource for schools, for example opportunities for young people to broaden their networks and expand their horizons.

19. Finally, the authors recognise that the literature in this field is, in the words of one international contact, as ‘slippery as a fish covered in oil’. It is characterised by no consistency in terminology, is spread across many different disciplines, is found in academic as well as public literature, and reviews activities and interventions which are commonly complex. Consequently, the authors welcome comments from readers in building a public library of key sources to inform future research, policy, and practice.

1. INTRODUCTION

The University of Warwick's Institute for Employment Research (IER) in partnership with Education and Employers Research (EER) has undertaken an in-depth review of research into the most promising types of careers education and the evidence of its impact on improved education, economic and social outcomes. The study was undertaken from early February 2016 to late May 2016. The following definition of careers education was applied:

> *'Careers-focused school- and/or college-mediated provision designed to improve students' education, employment, and/or social outcomes.'*

We carried out an in-depth review of the research literature that reports on intervention studies on careers education and their impact. The review uses formal and explicit methods to describe and synthesise evidence from research. The main focus of this review was to ensure a systematic approach to the selection of relevant studies. We aimed to eliminate, as much as possible, bias in determining which research is included for overall review, and to carefully examine the quality of the research that is included in the more detailed in-depth review. As a codicil to the review, we have additionally briefly reviewed the considerably rich literature surrounding teenage part-time employment with a view to identifying implications for educational or economic success linked to workplace exposure.

1.1. AIMS OF THE REVIEW

- To systematically review the evidence-base on how careers education makes a difference to young people's outcomes from their schooling, drawing on the most up-to-date and reliable literature findings relevant to the UK and other OECD countries.
- To examine robust causal evidence on careers education impact assessment from a wide range of studies using experimental and quasi-experimental designs.

The main questions addressed in the study included:

- What intervention research has been carried out since the year 1996 measuring the impact of careers education on improving young people's outcomes?
- What is the strength of evidence of this research?
- Where are the research gaps that need to be addressed?

With respect to the impact of careers education interventions on attainment, participation, or progression in either learning or work, this literature review was designed to identify: (1) those interventions that are likely (according to current findings) to have a positive impact and are therefore worth testing at a large scale, (2) those that need further testing to determine their likely impact, and (3) those that do not seem to show promise.

The review identifies areas of careers education that have successfully supported young people's **education, economic, or social outcomes**, as well as areas of careers education that could inform activities in the future if further work were undertaken to translate them into classroom-based approaches or other interventions.

2. CAREERS EDUCATION: IMPACT ASSESSMENT IN CONTEXT

Over recent years, governments across the world have devoted new attention to the subject of careers education enriched by work-related interventions. As the OECD (2010) observed,[4] such interest responds to change in the operation of the labour market:

> '*More complex careers, with more options in both work and learning, are opening up new opportunities for many people. But they are also making decisions harder as young people face a sequence of complex choices over a lifetime of learning and work. Helping young people to make these decisions is the task of career guidance… [Career professionals] need to be able to call on a wide range of information and web-based resources. Strong links between schools and local employers are very important means of introducing young people to the world of work… Individual career guidance should be part of a comprehensive career guidance framework, including a systematic career education programme to inform students about the world of work and career opportunities. This means that schools should encourage an understanding of the world of work from the earliest years, backed by visits to workplaces and workplace experience.*'

In the UK, the last decade has seen significant policy reforms—in careers education, information, advice and guidance (CEIAG), in employer engagement, and in curriculum reform enriched by work-related learning—all aimed at helping young people to better prepare for their working lives. Since 2004, in England alone, schools and colleges have responded to:

- curriculum reform—Diplomas, Young Apprenticeships, the statutory requirement to work-related learning at Key Stage 4 (the Wolf Report);
- infrastructural change—the replacement of Connexions and nationally-funded Education Business Partnerships with new school responsibilities to provide careers education and employer engagement, the creation of the National Careers Service (including the government's inspirational agenda), the Careers and Enterprise Company with Enterprise Co-ordinators, and volunteer Enterprise Advisers working with schools); and
- new statutory requirements—to provide independent and impartial guidance to pupils in Years 8 to 13 combined with extensive employer engagement.

Regarding this latter point, the Department for Education has recently introduced important changes in post-16 education to coincide with the raising of the participation age to 17 and 18 in England. Work experience now forms an integral part of 16–19 study programmes and as such schools and colleges are expected to offer their students high quality and meaningful work experience as part of each study programme. The intention is for students to gain valuable experience of the work environment and to develop career adaptability and

[4] OECD (2010). Learning for Jobs. Paris: Organisation for Economic Co-operation and Development.

resilience on a lifelong basis (sometimes referred to in the literature as 'career management skills').[5]

Careers education, as consistently described within policy statements, aims to enable students to acquire the knowledge, skills, and attitudes that will allow them to understand and succeed within and beyond their schooling and so underpin individual as well as national economic performance. Effective careers education programmes in schools and colleges rely heavily on a range of collaborative and partnership activities. The research literature over the last 20 years on the impact of careers education on student outcomes is often considered weak and fragmented, due mainly to the complexity of differing elements being identified and reported in differing ways. Whiston and Brecheisen (2002)[6] described the lack of outcome studies as 'disturbing' (p.141). Concerns about a lack of outcome studies for career intervention effectiveness was also raised by Creager (2011).[7] The 2008 review of the impact of business engagement on pupils commissioned by the (then) Department for Children, Schools and Families stated:

> '*There is no shortage of literature on employers and/or business involvement in education. Much of this literature, however, was excluded from the scope of this review, mainly because it is largely anecdotal, […] or not evaluated to even modest scientific standards. There is a particular shortage of studies of employers' links with education that have used robust research designs […] that can provide robust evidence of an impact. Many studies are descriptive and/or are based on single group before and after designs without a true comparator. […] Another weakness of the studies in this area is that they have small sample sizes with low statistical power. This can lead to either inconclusive findings or to erroneous conclusions.*'

As will be seen in this review, while significant additions to the literature have been made since 2008, the research remains both relatively diffuse and weak. Literature is found across a wide range of disciplines: career guidance, education policy, sociology, economics, vocational guidance, human resource management, and many other academic fields. Studies of merit have also been commissioned, and published, by many government bodies, creating a literature which is unusually fragmented. It is for the determined reader to identify and make sense of the connections across all the areas of study.

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[5] European Lifelong Guidance Policy Network (2010) define this as 'a range of competences which provide structured ways for individuals (and groups) to gather, analyse, synthesise and organise self, educational and occupational information, as well as the skills to make and implement decisions and transitions;. See: http://www.elgpn.eu/publications/browse-by-language/english/Gravina_and_Lovsin_cms_concept_note_web.pdf/.

[6] Whiston, S. C. and Brecheisen, B. K. (2002) 'Practice and Research in Career Counseling and Development – 2001', *The Career Development Quarterly*, 51, 98–154.

[7] Creager, M. (2011) 'Practice and research in career counseling and development-2010', *The Career Development Quarterly,* 59, 482–527.

2.1. WHAT YOUNG PEOPLE THINK ABOUT THEIR FUTURE CAREERS MATTERS

While outside the scope of this review of the impact of careers education, one significant advance in the literature since 2008 provides a frame for the discussion which follows.

Over recent years, a series of US and UK studies have used longitudinal data to explore the significance of teenage thinking about careers to their later educational, economic, or social outcomes. While the studies do not focus on the impact of careers-focused education, they do make a compelling point: after controlling for social background and academic achievement, it is clear that the way that teenagers think about their futures in education and employment has a significant impact on what actually becomes of them as working adults.

In the UK, Schoon and Polk (2011) have used two longitudinal databases—the National Child Development Study 1958 and British Cohort Study (BCS) 1970—to explore the long-term impacts of teenage career aspirations, finding that the character of teenage aspirations can be directly linked to adult social status (using a variable combining occupational status and net weekly income) at age 33/34. Longitudinal studies following the experiences of young people are rare. One ongoing study which demands close attention is the ESRC Aspires2 project led by Professor Louise Archer at King's College, London.[8]

2.2. CAREER UNCERTAINTY

Further analysis of the BCS by Yates and colleagues (2010) has shown that teenagers who were uncertain in their career aspirations at age 16 were—after controlling for academic achievement, social background' and family circumstances—three times more likely to experience a significant period of being NEET by the age of 19 than comparable peers. Such detrimental outcomes were also found by Morrison and colleagues (2014) for the BCS group who were all born in 1970. Morrison and colleagues, however, find no such long-term negative consequences for young people born in 1990 and who were uncertain at age 14. Staff and colleagues (2010) look, moreover, at the implications of career uncertainty at age 16, finding it related to significantly lower levels of educational attainment than comparable peers with professional aspirations. From a US perspective, using data from the National Educational Longitudinal Study, Staff and colleagues (2010) have found significantly lower earnings accruing to young adults at age 26 linked to teenage uncertainty in career aspirations.

2.3. CAREER MISALIGNMENT

Yates and colleagues (2010) also examine the question of ambition misalignment. They identify a large group of teenagers who, at age 16, professed career aspirations requiring higher levels of qualification than they expected to achieve, or put another way, young people who had effectively underestimated the education required for their desired profession. These misaligned are statistically more likely to become NEET by the age of 19

[8] ASPIRES2 is the second phase of a ten-year long longitudinal research project exploring the science and careers aspirations of young people.

than comparable peers: with a 3 times greater risk for males and 1.7 times for females. Such detrimental outcomes are also found by Morrison and colleagues (2014) for the 1970 BCS group, but they find no such long-term negative consequences for young people born in 1990 and who were misaligned at age 14.

Still using the BCS, Sabates and colleagues (2011) have tracked individuals through to the age of 34 and found statically significant higher levels of unemployment experienced and lower levels of earnings (approximately 7% of wage variations identified) linked to teenage misalignment. These insights are especially relevant to the work of the Education Endowment Foundation because it is disproportionately young people from poorer backgrounds who are significantly more likely to be uncertain or misaligned (Yates *et al.*, 2010).

2.4. EXPERIENCE OF THE WORLD OF WORK

Recent research has also provided considerable insight into the impacts of young people combining their full-time studies with experience of work (or lack of it), specifically paid part-time employment. A brief review of that literature is included within this review. This literature builds on many studies of high quality, and commonly reports on long-term economic benefits to young people. As the UK Commission for Employment and Skills (UKCES) unambiguously stated, the 'benefits of "earning and learning" for young people are clear and well documented'. The literature provides evidence that something meaningful often happens to young people, for good (and at times for ill) as a result of their teenage, school-age part-time employment. This matters because it allows us to add fresh insight to a literature which, while strengthening, will be found still to be weak, and because, as the UKCES has shown, teenage experience of work, in particular part-time employment, is rapidly in decline. The proportion of 16- to 17-year-olds combining full-time education with part-time employment has fallen from 42% in 1997 to 18% in 2014.[9] With such decline, the requirement grows on schools, through the realm of careers education, to help young people gain the types of insights, exposure, and experiences which they might traditionally have accessed through direct paid experience of the labour market.

2.5. INDEPENDENT AND IMPARTIAL CAREER GUIDANCE

There is evidence that the provision of high quality, independent and impartial career guidance for young people (and adults) is key to supporting transitions into education, training and employment. For example, Bimrose, Barnes and Hughes (2008),[10] Hearne (2005),[11] Hooley and colleagues (2012),[12] and Perdrix and colleagues (2012)[13] highlight key

[9] UKCES (2015) *The Death of the Saturday Job*, London: UK Commission for Employment and Skills.

[10] Bimrose, J., Barnes, S-A. and Hughes, D. (2008) 'Adult career progression and advancement: A five year study of the effectiveness of guidance', Coventry: Institute for Employment Research, University of Warwick.

[11] Hearne, L. (2005) 'Opening a Door', Evaluating the Benefits of Guidance for the Adult Client: A Report', Waterford: REGSA, WIT.

findings in this regard. These studies are outside the scope of this literature review, mainly because of their focus on adults or guidance in the workplace, nonetheless, they are highly relevant in the context of individuals' prior experience of schooling. There are a number of important educational, economic or social outcomes likely to be generated by high quality careers education. This may involve a cost-benefit analysis approach. For example, in the context of career guidance, Mayston (2002)[14] identifies wider benefits such as increased tax yields to the Exchequer, reductions in unemployment and other social security costs to the Exchequer, reductions in health care costs on the National Health Service, reductions in the frequency and costs of crime, and macro-economic benefits.

Career guidance can play a central role in learning systems by increasing individuals' engagement with learning, making clear the pathways through learning and work, and by supporting the acquisition of career management skills for managing life, learning, and work (ELGPN, 2014).[15] This literature review shows a shortage of quasi-experimental and experimental studies in the UK and further afield on the development of career management skills within careers education.

2.6. TERMINOLOGY

A note on terminology is warranted. Terms such as 'careers education', 'career guidance', 'career counselling' and 'career development' are often used interchangeably in the literature. Phrases like 'mentoring' and 'enterprise education' are also commonly used to describe some very different educational experiences. Terms such as 'experience of work' or 'work experiences' are sometimes used interchangeably. In an effort to standardise the career education language, our focus is primarily on curriculum-based interventions, pastoral interventions, and those activities designed to provide direction and support to improve individual outcomes, including episodes of employer engagement. Definitions of key terms are outlined below in section 3.

Careers education varies depending on the individual's circumstances, but the literature shows that career development is optimally facilitated when interventions begin in primary school[16] and continue through adulthood. Research shows children begin to eliminate their least favoured career options between the ages of 9 and 13. By this time, it is argued, they

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[12] Hooley, T., Devins, D., Watts, A.G., Hutchinson, J., Marriott, J. and Walton, F. (2012) 'Tackling unemployment, supporting business and developing careers', London: UK Commission for Employment and Skills.

[13] Perdrix, S., Stauffer, S., Masdonati, J., Massoudi, K. and Rossier, J. (2012) 'Effectiveness of career counseling: A one-year follow-up', *Journal of Vocational Behavior* 80(2), 565–578.

[14] Mayston, D. (2002) 'Assessing the Benefits of Careers Guidance' (CeGS Occasional Paper), Derby: Centre for Guidance Studies, University of Derby.

[15] See http://www.elgpn.eu/publications/browse-by-language/english/elgpn-tools-no-3.-the-evidence-base-on-lifelong-guidance/

[16] Watson, M. and McMahon, M. (2005) 'Children's Career Development: A research review from a learning perspective', *Journal of Vocational Behavior* 67 (2005) 119–132.

will have abandoned the ‘fantasy’ careers associated with the very young and have started to become more aware of potential constraints on their occupational choice.[17]

In many studies, there is a dominant focus in the literature on US-centric findings on careers and technical education courses.

[17] Gottfredson, L. S. (2002) ‘Gottfredson’s theory of circumscription, compromise, and self creation’ in D. Brown (ed.), *Career Choice and Development* (4th edn., pp. 85–148), San Francisco: Jossey-Bass.

3. METHODOLOGY

3.1. SEARCH STRATEGY

We applied a systematic review methodology to source literature from relevant studies. This included:

- **setting review parameters**—refining the review question, defining keywords, and developing the search strategy;
- **searching**—the systematic identification of potentially relevant evidence using a keyword strategy;
- **screening**—the application of pre-determined criteria to report titles, abstracts, and full texts derived from the review question and related sub-questions;
- **data-extraction**—an in-depth examination, quality assessment, and extraction of evidence; and
- **synthesis and reporting**—the analysis and identification of key findings.

In order to optimise chances of identifying relevant and reliable research within a literature characterised by the use of varying terminology and diffused across a very wide range of disciplines and academic and public reports, the research team used wide-ranging evidence databases via the University of Warwick Library (such as EBSCO and Scopus which allow sophisticated searching across a wide range of thematic databases) plus rare personal resource libraries. In addition, key informants were contacted across OECD countries (see Appendix 1) to invite submission of copies of studies considered as robust causal evidence on careers education impact assessment. Finally, the review team considered literature previously identified by the Department for Education and in works commissioned by the EEF and the Careers and Enterprise Company in England.

Appendix 2 identifies the keyword search terms that were used as a result of this search strategy. Note that each row represents an 'OR' function where, for example, the terms 'young people' OR 'adolescent' OR 'pupil' OR 'education' OR 'school' were used in conjunction with the other terms. We also used the 'NOT' facility in searching databases to exclude the terms 'opinion studies' OR 'no counterfactuals' OR 'weak counterfactuals'.

3.2. INCLUSION AND EXCLUSION CRITERIA

Once the initial search strategy had been carried out, we identified from abstracts (and, for some papers, from reading the full articles) the studies to be included in the keyword map, according to the following criteria:

- research that has been published in the English language since 1996;
- only studies from OECD countries;[18]

[18] Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico,

- adheres to an experimental or quasi-experimental design;
- research that examines some aspect(s) of careers education directly linked to school and college provision (that is, all types of schools and colleges ranging from primary education to upper secondary education or equivalent); and
- research that focuses on young people of all types and ages—Key Stage 2 (7–11-year-olds), KS 3 (11–14), KS 4 (14–16), and KS 5 (16–19).

Studies were excluded if they:

- focused on higher education, training, apprenticeships, or the UK Department for Work and Pensions 'Work Programme';
- focused on opinion studies with no (or weak) counterfactuals;
- did not adhere to either an experimental or quasi-experimental design;
- did not include a control or comparison group;
- did not include outcome measures linked directly to careers education interventions in schools or colleges;
- did not focus on children aged 7 or above; and
- were doctoral or post-graduate student studies.

We only included studies from the year 1996 because it was felt that 20 years' worth of research would uncover the main themes in terms of which interventions have been developed and implemented across the member states of the Organisation for Economic Co-operation and Development (OECD). We were also mindful of an extensive body of evidence highlighting rapid changes within the youth labour market and in the educational expectations of young people.[19] Technological change and the forces of globalisation have changed the nature of jobs available and the skills required by employers. The numbers of people working part-time or for themselves has increased rapidly since the 1980s.[20] The era of the job for life for many people is well and truly gone—the typical twenty-first century Briton can expect to work in a dozen or more different jobs across a number of different career areas.[21] Twelve years ago, Facebook, Twitter and LinkedIn did not exist. Seventeen years before that, we did not have the worldwide-web. Technology, moreover, has irreversibly changed the way that young people are schooled both within and outside of the classroom. The last generation has seen, moreover, a clear shift in expectations in that young people are overwhelmingly expected to stay in education after the age of 16 with high proportions going on to higher education.

Netherlands, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Sweden, Turkey, United Kingdom, and the United States of America.

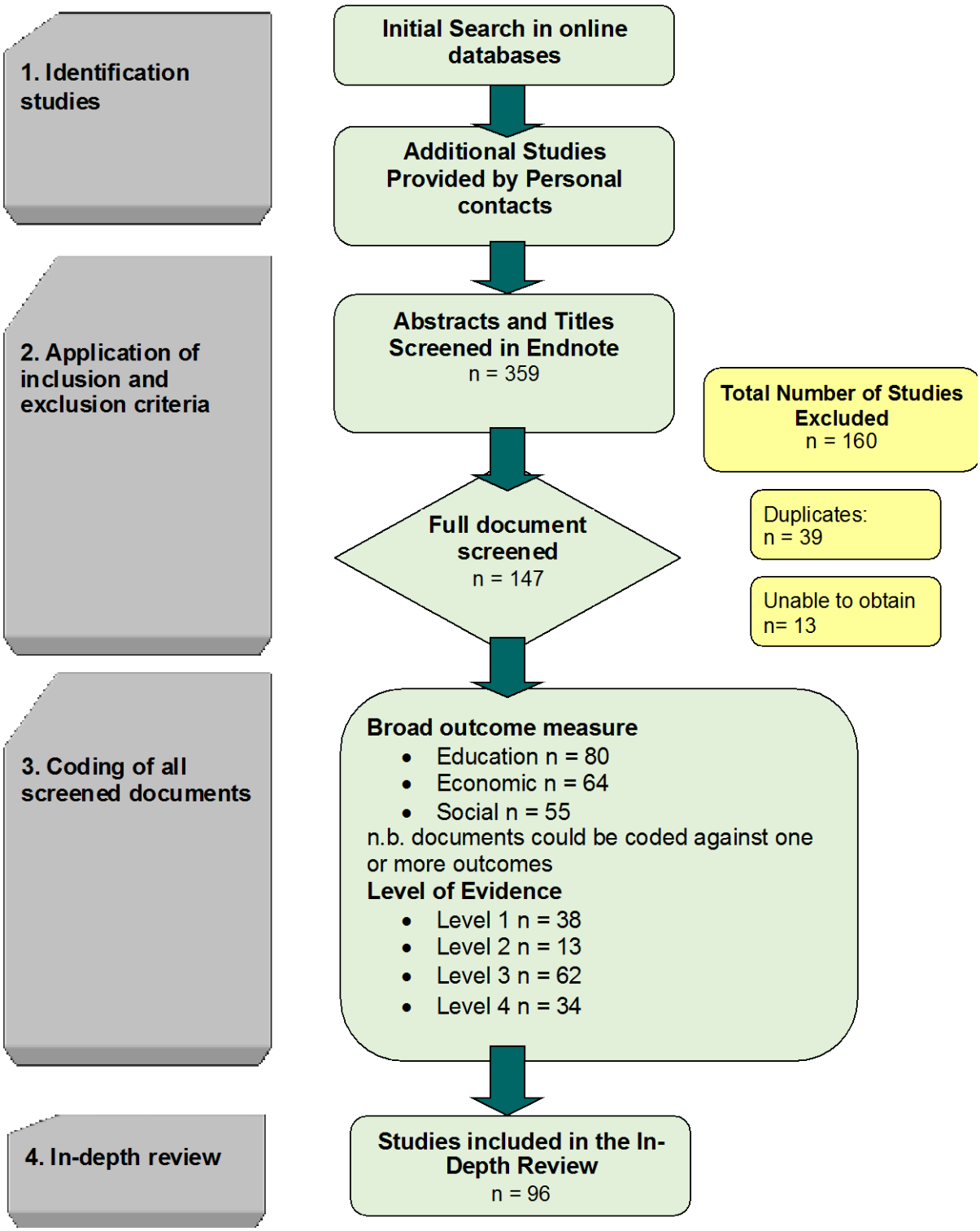
[19] Mann, A. and Huddleston, P. eds. (2015) 'How should our schools respond to the demands of the twenty first century labour market. Eight perspectives', London: Education and Employers.

[20] International Labour Organisation (2010) 'KILM Part-Time Workers', Paris: ILO. Retrieved from: http://kilm.ilo.org/manuscript/kilm06.asp.

[21] Today, the average person changes jobs ten to fifteen times (with an average of 11 job changes) during his or her career, which means a good amount of time is spent changing employment. Retrieved from: http://jobsearch.about.com/od/employmentinformation/f/change-jobs.htm.

Applying the above-mentioned criteria yielded 147 studies for inclusion in the keyword map (Figure 1). This was then reduced after further in-depth review and analysis to 96 studies.

Figure 1: Flow of literature through searching and screening process



As illustrated in Figure 1 above, many of the original 359 studies identified from our search were excluded once the abstracts (or titles) were cross-referenced against the inclusion and

exclusion criteria. Specifically, the significant majority (n = 118) were eliminated due to the lack of appropriate control or comparison group. Some studies (n = 15) were excluded because they were not targeted at school or college students. These studies predominantly had active labour market policies (ALMPs), apprenticeships, training programmes or higher education students as their focus, and while these are important and interesting topics, this type of provision is not the focus of this review. Other studies (n = 12) were not exclusively targeted on an aspect of careers education, as defined within this review, and ten studies were focused exclusively on opinion studies with no, or weak, counterfactuals (that is, they had some form of evidence which may be perceived as important but not the focus of this review). Finally, five studies were excluded because the outcome measures did not include English language, ten were duplicates, and 13 were unobtainable.

Applying the inclusion and exclusion criteria in this way left 147 studies which, based on their abstracts, appeared to be appropriate for the review. We then accessed the full text of each article to carry out a more detailed application of the inclusion and exclusion criteria. This process led us to exclude further papers. The majority of these (n = 39) were excluded because they were judged to be insufficiently reliable and transparent in use of appropriate research methodologies or not peer reviewed; a further six were excluded because they were targeted on adults, and another six were excluded due to a more general focus on education. Applying this screening process yielded a final 96 studies in the systematic keyword map (the process of applying the keywords presented in Appendix 2 to the databases and hand searching). Appendix 3 presents the details of each of these 96 studies. It should be noted that the 96 studies included 23 exploring the impact of part-time employment on the educational, economic, and social outcomes of young people in full-time education, leaving 73 studies focused primarily on careers education.

A four-level impact assessment model was used to describe impact studies in terms of the robustness of the research design and the reliability of the causal evidence provided (Hughes, 2004, see Appendix 4). From this, we agreed with the EEF to focus, and include in the review, level 3 ‘outcome measurement studies with control by calculation’ (typically longitudinal studies) and level 4 ‘outcome measurement studies with a control group’ (typically randomised control studies). Some further data was captured on level 1 and level 2 studies, often qualitative pieces providing insights of genuine value to researchers, however these are not presented in this report.

Table 1, below, provides an overview of the level of evidence found by broad outcome measure. The majority of studies were assessed to have level 3 impact (55%, n = 40) and the remainder to have level 4 impact (45%, n = 33).

Table 1: Broad outcome measure by level of evidence

Broad outcome measure	Level of evidence 3		Level of evidence 4	
	No.	%	No.	%
Education	**9**	**12%**	**14**	**19%**
Economic	**12**	**16%**	**2**	**3%**
Social	**3**	**4%**	**9**	**12%**
Combination of outcomes	**16**	**22%**	**8**	**11%**
Total	**40**	**55%**	**33**	**45%**

4. An overview of the literature

This section describes the basic characteristics of the 96 in-depth review studies. There is a marked contrast between the number of studies carried out in the US and other English-speaking nations.

4.1. Characteristics of the studies for the in-depth review

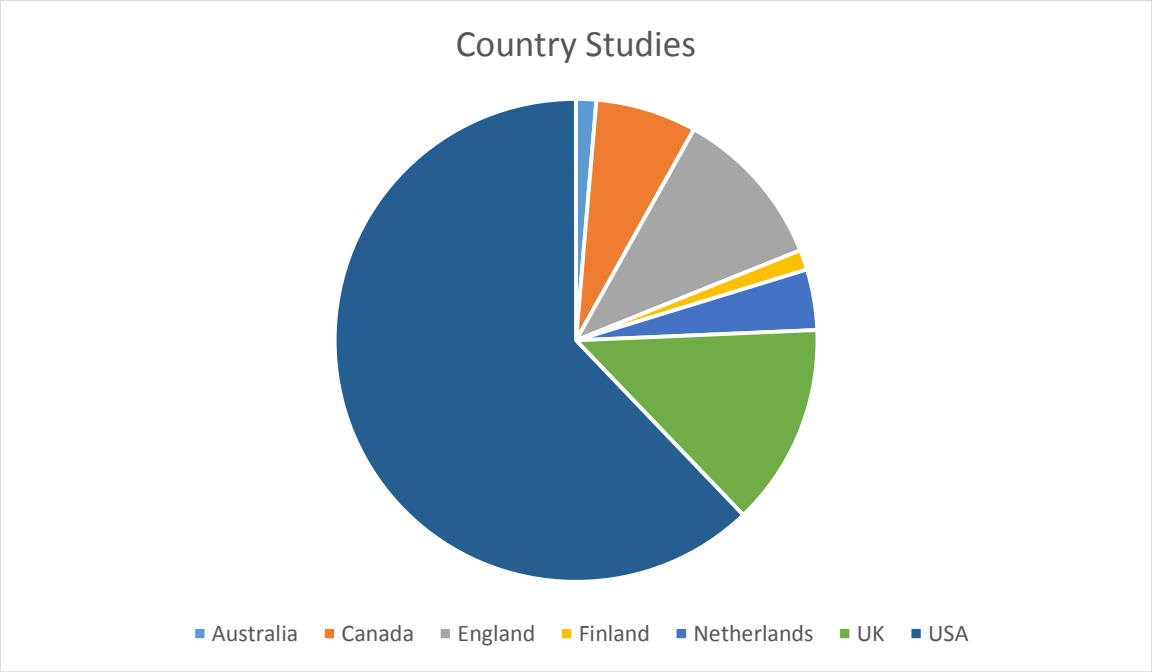
This section describes the basic characteristics of the 73 in-depth review studies, after separating out those that consider part-time employment. Forty-six of the 73 studies were carried out within the US as illustrated in Table 2 below.

Table 2: Broad outcome measures by country of study

Country	Documents reviewed		Broad outcome measure			
	No.	%	Education	Economic	Social	Combination of measures
Australia	1	1%			**1**	
Canada	5	7%	**3**		**1**	**1**
England	8	11%	**2**	**1**	**4**	**1**
Finland	1	1%		**1**		
Netherlands	3	4%	**1**		**1**	**1**
UK	10	14%	**3**	**4**	**1**	**2**
USA	46	63%	**14**	**9**	**4**	**19**

Note: The total number of documents reviewed is 73, but this table totals to 74. This reflects that one study was undertaken in both the UK and USA.

Figure 2: Representation of broad outcome measures by country of study



The studies in the in-depth review reflect research on different age groups (and consequently levels of education). Table 3, below, illustrates that the majority of studies (n = 59) were carried out in secondary schools, with only three studies specifically related to research into special education needs (SEN) within mainstream schooling.[22] Only two studies solely considered primary education. A few studies focused on interventions in primary and secondary school education, typically relating to US Middle School provision (n = 9).

[22] Upon completion of the literature review, the researchers identified two additional references highly relevant in this regard. These are not included in the overall analysis but have potential to be included: Phelps. I. A. and Hanley-Maxwell, C. (1997) 'School-to-work transitions for youth with disabilities: a review of outcomes and practices', *Review of Educational Research* 67(2), 197–222, and Wagner, M. W. and Blackorby, J. (1996) 'Transitions from High School to Work or College: How Special Education Students Fare', *The Future of Children* 6(1), 103–120.

Table 3: Documents reviewed by population and broad outcome measure

	Documents reviewed		Broad outcome measures			
	No.	%	Education	Economic	Social	Combination of measures
Primary	2	3%	1		1	
Secondary	59	81%	**17**	**13**	**10**	**19**
Primary / Secondary	9	12%	4			5
SEN / Secondary	3	4%	1	1	1	
Total	**73**		**24**	**14**	**12**	**24**

Table 4: Documents reviewed with specialist focus and broad outcome measure

Specialist focus	Number of documents	Broad outcome measure			
		Education	Economic	Social	Combination of measures
Gender	15	4	3	3	4
Class	26	9	6	6	5
Ethnicity	14	3	4	3	5
SEN (disability)	3	**1**	**1**	**1**	

Table 4, above, illustrates the number of studies in the in-depth review pertaining specifically to:

- gender (n = 15);
- disability/special educational needs (SEN) (n = 3);
- ethnicity (n = 14); and
- class/disadvantage/poverty (n = 26).

Within each of the educational, economic and social outcomes, relevant studies are considered from the above-mentioned keyword searches. The dominant research discourse in this field of careers education study focuses on class/disadvantage/poverty. Studies that focus on gender tend to highlight the disparity between male and female participation in education and, in particular, actual and perceived wage earnings and employment opportunities linked to economic outcomes. Much of the literature reflects on ethnicity from a US perspective. In the UK literature, emphasis is placed on enterprise activities for young people from ethnic minority backgrounds. As mentioned above, the literature on careers education for those with disabilities or SEN is underdeveloped in the identified literature. Given the opaque quality of this literature, it is recommended that a further narrowly focused review is undertaken.

4.2. Brief overview of the outcome areas

Having identified the studies for the in-depth review, we then assessed the quality of the evidence of these interventions to help identify whether there may be particular insights or applications from this research relevant to the UK context. Appendix 5 provides definitions of types of interventions emerging from the analysis. These cover the following dimensions: careers provision, enterprise, ICT and careers, job shadowing, mentoring, transformational leadership, volunteering, work experience, and work-related learning. We defined these as follows:

> **Careers provision**[23] is a process of learning—individually or in groups—designed to help young people to develop the knowledge, confidence and skills they need to make well-informed, relevant choices and plans for their future so they can progress smoothly into further learning and work.
>
> **Enterprise** is an activity wherein pupils work together to create an economic enterprise of either a short or long duration, commonly with support from volunteers from the world of work. Also known as 'Entrepreneurial Education' or 'Enterprise Competitions'.
>
> **ICT and careers education** is a means to offer access to information, to provide an automated interaction, or to provide a channel for communication.
>
> **Job Shadowing**: a short period of career exploration (typically no more than three days) within a workplace wherein a pupil observes a number of staff members at work, reflecting on their occupational experiences. Also known as Work Shadowing.
>
> **Mentoring**: a sustained relationship between a pupil and a largely untrained volunteer (selected on the basis of their occupational experience) managed by a school to support and encourage the young person through a period of transition.
>
> **Transformative Leadership**: a programme of careers-focused activity requiring substantive changes in staff action and behaviour, commonly requiring some element of staff training.
>
> **Volunteering**: volunteering within a workplace whilst in full-time education
>
> **Work experience**: a time-limited placement undertaken by a young person (whilst still in full-time education) in a workplace designed to give the young person insights into the experience of being employed in such a workplace.
>
> **Work-related learning** is a programme of learning that uses the context of work to develop knowledge, skills, and understanding useful in work, including learning through the experience of work, learning about work and working practices, and learning the skills for work.

We then organised the interventions according to:

[23] See note 1, page 1.

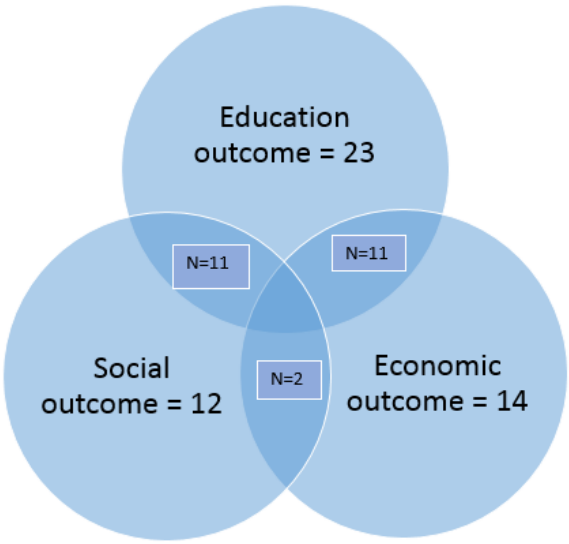
- **educational outcomes**—attainment level, participation in education and/or training, and sustainable progression;
- **economic and employment outcomes**—earnings, employee retention, likelihood of finding work and/or congruence with the work environment, transition from education to work, and social mobility; and
- **social outcomes**—cultural capital, community engagement, confidence, resilience, self-esteem, improved non-cognitive skills and/or mental health well-being, reductions in those not engaged in education, employment or training (NEET), and reduction in engagement in criminal activity.

These outcomes were considered to determine whether there were any specific discernible patterns corresponding to the aspects of careers education investigated. It was also noted that some studies would not simply fall into a single category—that overlapping findings were likely to emerge—as discussed in each section.

Table 5: Overview of types of outcomes and outcome combinations

Overview	Total number of documents	Percentage of documents
Broad outcome measure		
Education outcomes	23	32%
Economic outcomes	14	19%
Social outcomes	12	16%
Total	**49**	**67%**
Combinations of outcomes		
Education and economic outcomes	11	15%
Education and social outcomes	11	15%
Economic and social outcomes	2	3%
Total	**24**	**33%**

Figure 3: Representation of broad outcome measure and combinations of measures



It became apparent in the in-depth review of 96 studies that that some research findings offered particularly content-rich and strong insight as to which interventions and approaches have an impact on young people's outcomes, particularly for disadvantaged young people. As a result, not all studies are discussed in-depth but they all feature in the main references section (see Appendix 3).

4.3. Brief overview of the types of interventions

Table 6: Broad outcome measure by intervention

Intervention	No. of documents	Broad outcome measure			
		Education	Economic	Social	Combination of measures
Work-related learning	28	13	3		12
Work experience	10	1	5	1	3
Volunteering	0				
Leadership	6	4			2
Mentoring	18	6	4	1	7
Job shadowing	6		3		3
ICT in careers education	5	3		2	
Enterprise	10	1	3	4	2

Careers provision	29	3	10	7	9

4.4. Literature relating to part-time teenage employment

Twenty-three studies were identified as relevant to the review. As set out in the tables below, literature is predominantly US in origin and split in analyses of outcome areas between educational and economic impacts.

Table 7: Broad outcome measures by country of study (part-time employment)

Country of study	Broad outcome measure			
	Education	Economic	Social	Combination of measures
Australia	1	1		3
England*	1	2		
Northern Ireland	1			
UK		2		1
USA	4	4		3
Wales*	1			

The weaknesses in the literature are discussed more fully later on in the report.

Note: The total number of documents reviewed is 23, but this table totals to 24. This reflects that one study was undertaken in England and Wales.

5. What works? Education outcomes

- Does careers education improve educational outcomes?
- What difference can it make to educational outcomes?
- Why does it make a difference?
- Which interventions can be expected to be most effective?

5.1. Does careers education improve educational outcomes?

On educational outcomes related to careers education, a literature using level 3 and 4 methodologies does exist but it is limited. Our initial review identified 58 pieces of research literature. Having set aside the literature related to part-time employment, 45 studies on careers-focused education provision meeting the review criteria were identified.

The literature is overwhelmingly American. Of the 45 studies identified, 33 (75%) relate to the United States; seven (16%) relate to the UK, including England; four (9%) to Canada; and one (2%) to the Netherlands.

Of the UK research studies, it is notable that five of the seven studies were the direct result of government-funded activity—either by the precursors to the Department for Education or the National Audit Office—and the remainder represents evaluations of programmes funded by third sector organisations. The reviewers of this study have found no evidence of UK academia engaging in a serious fashion without such funded encouragement in the question of whether young people's educational outcomes can be related to school-mediated careers-focused education.

The literature is strongly focused on secondary education with 44 of the 45 studies providing comment on careers education received by pupils between the ages of 12 and 19. Ten studies (22%) did have something meaningful to say about the impact of provision received by pupils between the ages of 5 and 11. Such studies mainly related to US Middle School provision.

Studies often describe either programmes of activity which involve more than one intervention or, on occasion, look systematically at the impacts of different interventions in isolation. Within the 45 studies, it is possible to identify 67 discrete de facto studies providing assessments of the impact of different interventions on the educational outcomes of pupils.

Of the research studies, 27 (60%) provided largely positive findings, evidencing improvements in educational outcomes linked to pupil participation in careers education; 17 (38%) presented mixed findings, whereby outcomes were either both positive and negative in broadly even distribution, depending on variables such as pupil demographic, or wherein no meaningful changes in educational outcomes could be detected, whether positive or negative. Just one of the research studies (2%) showed that pupil participation in careers education could be unambiguously linked to negative educational outcomes for pupils.

As set out in Table 8, such studies focused specifically on educational interventions categorised as work-related learning (n = 24), mentoring (n = 13), careers provision (n = 10),

leadership (n = 6), work experience (n = 4), ICT in careers education (n = 4), enterprise (n = 3), and job shadowing (n = 3).

It is worth noting that some studies assessed multiple interventions separately and so the number of interventions (n = 67) is greater than the number of studies (n = 45) reported here. Of the 67 individual assessments of interventions within the literature relating to education outcomes, 41 (61%) were found to have generally positive outcomes.

Table 8: Educational outcome assessments by intervention

All studies (education outcomes only and combination of outcomes with education)	No. of studies	Generally positive outcome	Mixed results	Generally negative outcome
Work-related learning	24	14 (58%)	9 (38%)	1 (4%)
Work experience	4	4 (100%)		
Leadership	6	4 (67%)	2 (33%)	
Mentoring	13	8 (62%)	5 (39%)	
Job shadowing	3	1 (33%)	2 (67%)	
ICT in careers education	4	4 (100%)		
Enterprise	3		3 (100%)	
Careers provision	10	6 (60%)	4 (40%)	

Note: Some studies in the above table have more than one intervention.

UK studies (education outcomes only and combination of outcomes with education)	No. of studies	Generally positive outcome	Mixed results	Generally negative outcome
Work-related learning	5 (63%)	3 (60%)	2 (40%)	
Work experience				
Volunteering				
Leadership	1 (13%)		1 (100%)	
Mentoring	1 (13%)	1 (100%)		
Job shadowing				
ICT in careers education				
Enterprise				
Careers provision	1 (13%)		1 (100%)	

Negative educational outcomes

While some studies classified as 'mixed' (considering a number of different educational outcomes) found no evidence of impact, we found little evidence of negative outcomes—that pupils undertaking an intervention consistently performed worse than peers in academic assessments. It is Tran and Nathan (2010) who unambiguously find negative educational outcomes linked to a problem-solving-focused, project-based programme of study 'aimed at showing students how engineering skills, including those from maths, science and technology, are used to solve everyday problems'. The programme, Project Lead the Way, is delivered over five nine-week courses between grades 6 and 8 in the US. It is unknown to what extent, if any, real-world learning resources are used within the curriculum or whether it was delivered within the context of careers provision. Compared to a matched group of students (controlled for prior achievement) who did not enrol in the programme, participating students made significantly smaller gains in maths assessments and no measurable advantages in science assessment. This was the only study to find evidence of pedagogic disadvantage or that an opportunity cost applied related to participation in an episode of careers education.

The lack of evidence associating career education activities with poorer academic attainment is a significant finding given the potential opportunity costs involved in what is a time-consuming activity for young people that often takes place during the school day, displacing valuable teaching and learning time.

5.2. What difference can it make to educational outcomes?

Positive educational outcomes

In this review of educational outcomes, a majority of studies provided evidence of improvements in academic achievement. However, a review of the studies highlights a very considerable variation in how academic outcomes were measured.

Measurements of educational outcomes vary significantly across the literature and include:

- examination results, academic course-taking behaviour (the selection of more advanced courses) (Dalton *et al.*, 2013);
- progression to, and completion of, higher education and institution-based courses successfully undertaken (Bragg *et al.*, 2002; Neild; Fletcher and Zirkle, 2009; MacAllum *et al.*, 2002, p. 9);
- GCSE or equivalent qualifications results—eight highest grades achieved;
- staying-on rates (UK) at 16 (Golden *et al.*, 2005);
- high school graduation rates (US) (Kemple, 2001; Nield *et al.*, 2015; Bishop, 2004)
- Grade Point Average (US) (MacAllum *et al.*, 2002); and
- credit accumulation (Nield *et al.*, 2015).

By consequence, a simple table will do no justice to what is a complex set of indicators that offer little by way of easy comparison. To this end, reviewers focused on data related to educational outcomes in one jurisdiction, at one pupil age, related to one set of qualifications—the GCSE results of 16-year-old pupils in English schools. As set out in Table 9, below, in three of five of the studies adjudged to find evidence of positive educational outcomes, the average impact on attainment is modest. It should be recognised, of course, that averages will disguise outcomes that may well be very different by pupil characteristic or by delivery mode.

Table 9: Illustrative studies investigating impact on attainment

Study	Method	Impact size
Golden *et al.*, 2005	Multi-level model analysis. Data collected from those participating in the Increased Flexibility for 14- to 16-year-olds Programme (IFP). 16,654 total students participated in IFP in first cohort (from 2002–2004). Data matched to the NFER's Register of Schools and DfES's National Pupil Database (NPD). Creates a comparison group of 453,699 Year 10 students in the UK (in 2003/2004).	IFP was a programme of learning designed to 'create enhanced vocational and work-related learning opportunities for 14- to 16-year-olds of all abilities who can benefit most'. Students who participated in IFP attained slightly higher total points overall at KS 4 than students who were similar in terms of their prior attainment and other background characteristics who had not participated in the programme. 90.9% of known IFP students achieved A*–G at GCSE, compared to 90.2% of non-IFP students at IFP schools, and 90.5% of all students nationally. (A*–C was 36.1%, compared to 33.1% and 34.6%.) Female students gained 6 points more than male students in attainment through IFP.
Harrison *et al.*, 2012	Statistical analysis of National Pupil Database records for cohort completing KS4 in 2010. Quasi-experimental analysis of a randomised paired sample of 200 young people taking Certificate of Personal Effectiveness	CoPE is a nationally recognised qualification that involves modules on: communication, citizenship and community, sport and leisure, independent living, the environment, vocational preparation, health and fitness, work related learning and enterprise, science and technology, international links, expressive arts, and beliefs and values (ASDAN website).

	(CoPE) and 200 young people who did not.	Taking CoPE in a 'wide usage school' (where CoPE is taken by 25% or more of the cohort), after controlling for background there is an overall 10% increased likelihood of achieving GCSE English at A*–C, compared with similar students not taking CoPE. CoPE is associated with: • an average of an extra one-fifth of a grade in GCSE English; and • 5% increased likelihood of achieving 5 GCSEs at A*–C (including English and Maths) ('wide usage' compared to no CoPE).
Hooley et al., 2014	DfE data, student performance—schools with Quality Award for careers vs comparable schools (matched by pupil/teacher ratio, SEN, FSM, EAL proportion, prior pupil performance, neighbourhood deprivation); proportion of students completing five good GCSEs (defined as 5 A*–C grades including English and Maths).	The study considers the performance of 820 schools that have successfully validated the quality of their careers provision with an external party leading to a Quality Award. Compared to matched schools, possession of an Award is associated with a statistically significant 1.83% increase in the number of students attaining at least five good GCSEs and a 1.80% increase in the number of students achieving Maths and English GCSEs.
Miller, 1999	176 students split between mentored control group) from seven schools took the Year Eleven Learning Information System (YELLIS) test devised by the University of Durham. GCSE results were matched against the YELLIS predictions using the standard scoring system (i.e. A* = 8 points to G = 1 point) (1996/7 school year).	Miller examines a mentoring programme designed to support Year 11 pupils identified as being on the borderline of achieving 5 GCSEs A*–C. 46 mentored girls scored an average 2.26 GCSE points above YELLIS prediction compared to 1.87 GCSE points for the 43 control group girls. The difference between these scores gives a measure of the value added by mentoring of 0.39. The 44 mentored boys had an average score of –1.72 GCSE points below YELLIS compared to –2.13 for the 49 control group boys (mentoring value added = 0.41).
NAO, 2010	Surveys of 1,274 pupils (2008). Analysis with the National Pupil Database and ONS population estimates (linear regressions).	The NAO report reviews a range of different initiatives aimed at increasing pupil participation, and achievement, in science and mathematical subjects. Interventions include STEM Ambassadors—a programme that recruits volunteers with working experience of STEM subjects to act as positive role models to young people and so improve their perception of science. Pupil engagement with STEM Ambassadors is associated with statistically significant increase of 0.525 in the number of pupils achieving grades A*–C in GCSE sciences.

5.3. Why does it make an impact?

In attempting to understand evidence of improved academic attainment, Hughes and colleagues (2004)[24] and Hooley and colleagues (2014) drew on the earlier work of Killeen and colleagues (1999)[25] who theorised 'that the relationship of career guidance to attainment is due to its capacity to help young people to:

- understand the relationship between educational goals and access to occupational goals;
- clarify valued outcomes;
- set attainable educational goals; and
- understand the relationship between current educational effort and performance to the achievement of educational and career goals'.

Career guidance that complements careers education programmes can therefore help individuals to set achievable goals and identify the practical steps that can be taken towards these goals. This in turn provides 'meaning making' and motivation, leading to greater academic engagement and attainment. Empirical studies of career guidance (career counselling) and its direct impact on education outcomes, particularly in relation to online provision and tracking career trajectories, are largely absent from the literature. In many OECD countries this topic has been identified by researchers and impact-assessment specialists as an area that requires greater attention by both policymakers and the research community.

The literature reviewed here has little to say about why interventions related to careers education have, on average, positive impacts on the attainment of young people. However, what it does have to say is in broad support of the hypothesis offered by Killeen and colleagues (1999).

A review of the assessments given in Table 9 above is illustrative. Miller (1999), for example, draws on interviews with teaching staff to make sense of the improvements in attainment observed, suggesting perhaps an indirect causal link between improved GCSE performance and heightened pupil senses of self-worth and motivation while noting mentor support for pupils in the management and completion of course work and development of study skills (pp. 75–76).

Harrison and colleagues (2012) acknowledge that their study can 'draw no firm conclusions about the mechanisms' by which the qualification they assess may impact upon GCSE outcomes, but point readers towards reported boosts to pupil 'confidence, self-esteem, motivation and attendance' linked to participation in the evaluated programme of study. From a firmer basis, using a database of information surrounding the attitudes, behaviour and achievements of 1,800 pupils, Golden and colleagues (2005) find 'evidence that students' attitudes and behaviour could influence their outcomes at key stage 4' (p. 30). The authors, in particular, note correlations between positive pupil perspectives on the value of

[24] See http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.543.4468&rep=rep1&type=pdf

[25] Killeen, J., Sammons, S. and Watts, A.G. (1999) 'The effects of careers education and guidance on attainment and associated behaviour', Cambridge: NICEC/University of Hertfordshire/ ULIE.

schooling to their futures and improved attendance with participation in a work-related learning programme. Finally, while drawing on an assumption that improved access to careers advice and guidance will drive positive change in pupil behaviour, the National Audit Office's 2010 review of interventions to increase science take-up and achievement in UK schools includes no exploration of rationales for improved pupils at programme level.

A clear priority of ongoing work in this field is to combine quantitative with qualitative methodological approaches to explore the 'black box' of causality.

5.4. Which interventions can be expected to be most effective?

Four types of intervention feature in five or more studies from which conclusions can be drawn and a brief analysis shows that they involve:

1. leadership (67% of 6 assessments indicating largely positive outcomes);
2. mentoring (62% of 13 assessments);
3. careers provision (60% of 10 assessments); and
4. work-related learning (58% of 24 assessments).

However, caution must be applied—the literature is simply too sparse to provide a reliable response to the question of which intervention can be expected to be most effective.

A number of studies do, however, include internal comparisons that provide insight into patterns of more effective delivery. Bayer's (2015) analysis of mentoring relationships in the US finds that closeness of the match, as defined by students, drives better academic performance rather than the duration of the relationship. In contrast, Linehan (2001), within this review, finds that duration (in excess of half an academic year) of mentoring relationship has a significant, greater positive effect on academic outcomes. Elsewhere, however, he has identified mentor 'credibility' as the key factor in pupil perceptions on the utility of such a relationship.

Literature does provide some evidence to support the view that careers-focused education can act, in some complex ways, to compensate for preceding lack of resource suggesting that it will be more effective when targeted. Schwartz and colleagues (2011) show that young people with very strong relationships, or with very weak relationships with adults prior to entering a mentoring relationship, benefit much less in academic terms than young people enjoying moderately strong relationships at base line. The literature within the scope of this review often fails, however, to explore in any significant depth how outcomes relate, by way of direct comparison, to pupils from differing social backgrounds.

6. What works? Economic outcomes

- Does careers education improve economic outcomes?
- What difference can it make to economic outcomes?
- Why does it make a difference?
- Which interventions can be expected to be most effective?

More so than educational outcomes, careers-focused mediated provision has been primarily concerned with the individual and 'meaning making' in the context of economic (and social) outcomes. It is these benefits that justify public investment in the careers education field, most importantly, for investments made by individuals themselves. We examined literature on economic outcomes to understand the range and depth of evidence currently available.

6.1. Does careers education improve economic outcomes?

On economic outcomes related to careers education, a literature using level 3 and 4 methodologies does exist, linked mainly to wage premiums using national longitudinal databases. Our initial review identified 40 pieces of research literature. Having set aside literature studies related to part-time employment, 27 research studies on careers education meeting the review criteria were identified. They are reported below.

The literature relates overwhelmingly to the United States. Of the 27 studies identified, 19 relate to the States, six relate to the UK, one to Canada, one to the Netherlands, and one to Finland.

Studies either describe one or more programmes of activity—such as mentoring, learning, or the use of financial incentives—that involve more than one intervention or, on occasion, look systematically at the impacts of different interventions in isolation, for example, job shadowing, work experience or career talks. Within the 27 articles of research literature, it is possible to identify other more generalised studies providing assessments of the impact of different interventions on the economic outcomes of pupils.

As set out in Table 8 below, literature identified 49 discrete studies focused specifically on economic interventions categorised as careers provision (n = 15), work-related learning (n = 11), work experience (n = 8), mentoring (n = 6), job shadowing (n = 5), and enterprise (n = 4).

Table 10: Economic outcome studies by intervention

All studies (economic outcomes only and combination of outcomes with economic)	No. of studies	Generally positive outcome	Mixed results	Generally negative outcome
Work-related learning	11	6 (54.5%)	5 (45.5%)	0
Work experience	8	6 (75%)	2 (25%)	0
Volunteering	0	0	0	0
Leadership	0	0	0	0
Mentoring	6	4 (66.7%)	2 (33.3%)	0
Job shadowing	5	4 (80%)	1 (20%)	0
ICT in careers ed.	0	0	0	0
Enterprise	4	3 (75%)	1 (25%)	0
Careers provision	15	10 (66.7%)	5 (33.3%)	0
Total	49	33 (67.3%)	16 (32.7%)	0

UK studies (economic outcomes only and combination of outcomes with economic)	No. of studies	Generally positive outcome	Mixed results	Generally negative outcome
Work-related learning	0	0	0	0
Work experience	3	2 (66.7%)	1 (33.3%)	0
Volunteering	0	0	0	0
Leadership	0	0	0	0
Mentoring	2	2 (100%)	0	0
Job shadowing	2	2 (100%	0	0
ICT in careers ed.	0	0	0	0
Enterprise	2	2 (100%)	0	0
Careers provision	5	4 (80%)	1 (20%)	0
Total	14	12 (85.7%)	2 (14.3%)	0

Table 10 illustrates the limited character of modern research literature. There were no UK studies identified focusing on volunteering, leadership, and ICT within careers education testing for improvements in economic outcomes. The literature on ICT and careers education is negligible, particularly in relation to young people as well as schools and colleges' use of labour market information or intelligence (LMI). Research findings on how

young people use the internet for career support to improve their economic outcomes concludes that their information search and retrieval strategies were limited, that few were concerned about the reliability and validity of the information they found, paying little attention to the provider and provenance of the information (Bimrose *et al.*, 2010;[26] Howieson and Semple (2013).[27]

6.2. What difference can it make to economic outcomes?

While the literature is limited, a clear pattern does emerge from consideration of the studies. No piece was found to evidence negative economic outcomes for young people; 37% were judged to offer mixed results, and 63% are associated with positive economic outcomes. The literature investigating economic outcomes related to the engagement of young people in careers education focuses primarily on measuring variations in employment levels (or NEET), occupational status, and earnings. A number of studies provide clear statements of wage premiums related to school-mediated activity and these provide insight into the extent of employment boosts detected. To provide a clear insight into the potential extent of impact, we have isolated studies which detect variation in earnings between young adults. Variation in wages represents a transparent indicator of the value applied by employers to the outcome of careers education as witnessed in some distinctive element of attitude, behaviour, skill, or knowledge possessed by a young adult. It also reminds us that the subject of careers education is relevant to both education and labour market policy arenas. Where wage premiums are detected it will be argued that employers are likely to be recognising higher levels of productivity—an implication of very considerable interest.

Table 11: Illustrative studies investigating impact on economic outcomes

Study	Method	Impact size
Arum and Way, 2004	Analysis of longitudinal survey data (US)—High School and Beyond survey, following 14,825 students from sophomore year (1980) through to post-secondary and labour market experiences (1986).	The study examines the early labour market experiences of young people and finds that women who received their first job after education through the use of a high school-based assisted job placement programme earned 21% more than comparable peers. Such school-assisted job placement does not significantly affect male earnings.
Bishop and Mane, 2004	Analysis of NELS88 (US) longitudinal database.	The study finds that young people who devoted one-sixth of their time in high school between ages of 15 and 19 to occupation-specific vocational (Career Technical Education, CTE) courses earned at least 12% extra one year after graduating high school and 8% extra seven years later than peers who did not take CTE courses. The results apply to both young

[26] Bimrose J., Barnes S. A., Atwell G. (2010) *An investigation into the skills needed by Connexions Personal Advisers to develop internet-based guidance*. Reading: CfBT Education Trust.
[27] Howieson, C. and Semple, S. (2013) The Impact of Career Websites: what the evidence, *British Journal of Guidance and Counselling,* 41(3), 287–301.

		people who progressed to higher education and those who did not. Minimal impact on overall academic attainment detected.
Fletcher and Zirkle, 2009	Analysis of US National Longitudinal Survey of Youth 1997 dataset.	The study explores links between the course selection of US high school students and their later degree attainment and occupational earnings (age 22–26). Specifically, it compares curriculum young people undertaking 3+ credits in CTE occupational courses with peers on exclusively academic pathways. The study finds that the alumni of the CTE pathway earn between $1,386 and $3,279 more than peers.
Jobs for the Future, 1998	Study follows post-high school outcomes of 124 US high school graduates (graduating in 1993, 1994, and 1995).	The study explores the impact of a programme of school-mediated work-related learning (combining in-school and work-based experiences) on economic outcomes one and four years after graduation in comparison to a control group matched by academic achievement, attendance, and ethnicity, The mean hourly wage of intervention graduates was $8.92 compared to $8.10 for the control group. For programme alumni who did not enrol in higher education, the mean wage was $9.68 ($8.56 for the comparison group).
Kashefpakdel and Percy, 2016	Analysis of British Cohort Study (1970) longitudinal dataset using data from 1986 and 1996.	The study tests for relationships between teenage participation in school-mediated career talks 'with speakers from outside of the school' undertaken at ages 14–16 and full-time earnings at age 26. Extensive controls include family and social background, learning environment, and prior attainment. The study finds that at age 14–15 participation in each career talk is associated with an earning premium, at age 26, of 0.8% (rising to 1.6% where the teenager reported their career talks to have been 'very helpful').
Kemple and Wilner, 2008	A longitudinal, randomised controlled trial of 1,764 teenagers applying to undertake US work-related learning programme randomly allocated to intervention and control group and followed 8 years after high school graduation.	The study examines the impact of a three-year (one day a week) occupationally-focused US study programme rich in employer engagement. At age 26, alumni of the programme earned, on average, 11% ($175) a month more than comparable peers from the control group. Results strongest for young men, averaging a 16% age premium. Female results not statistically significant. The intervention and control groups achieved and were employed to comparable extents.
Page, 2012	Analysis of MDRC dataset used by Kemple and Wilner (2008) focusing on a subset of students who both enrolled and completed the three year Career Academies	Young men who compete Career Academies earn (at age 26) $588 a month more, on average, than peers who had not been not selected to take part in the programme within the initial process of randomised selection.

	programme. 1,306 individuals.	
MacAllum and Bozick, 2001	US five-year longitudinal study following 48 young people who undertook a programme of work-related learning compared to a control group of 46 individuals matched by gender, ethnicity, and academic achievement.	The study examines the impact of the year-long US LAMP programme including significant work experience. Sixteen months after graduation, alumni of the intervention earn an average of $11.27 compared to a control group average of $8.49. Employment rates are similar.

The scale of the wage premiums detected is considerable. As Kemple and Wilner note:

> '*the magnitude of the impact of Career Academies on annual earnings during the eighth year after high school for young men—a 16 percent increase over the non-Academy group's earnings—is larger than the earnings premium that other researchers have calculated for two full-time-equivalent years of enrolment in a community college*' (p. 20).

Mann and Percy (2013) find wage premiums of up to 18% for young adults related to their participation in school-mediated employer engagement activities and speculate that wage boosts may be still higher for activities other than the four specifically explored in their study. Jobs for the Future, MacAllum and Bozick (2001), and Arum and Way (2004) find evidence of wage premiums of between 10% and 33% related to careers-focused interventions. Perhaps most striking is the analysis of Kashefpakdel and Percy (2016), which finds adult premiums at age 26 of up to 1.6% related to each occasion an individual participated as a teenager in a careers talk with someone from outside of the school. The identification of such premiums related to interventions that vary considerably by character (intensity or extensiveness) has challenged scholars to make sense of findings.

6.3. Why does it make an impact?

Considering the operation of school-assisted job placement programmes whereby US students were referred either informally through a recommendation from a teacher or career guidance counsellor or formally through a High School placement service, Arum and Way (2004) see impact, witnessed through higher initial wages, mediated through institutional social capital.

> '*School assisted job placement is a clear manifestation of closer school-industry links. School assisted job placement can be the result of either formal or informal relationships […] In different ways […] school job placement resources rely on relationships with employers that are dependent on both institutional and network connections.*
>
> *Employers will develop and utilize these types of institutional ties with schools more frequently when such relationships provide solutions to specific problems faced by firms. Organizational research indicates that while organizational behaviour is not solely motivated by rational economizing, firms will seek to lower costs and reduce risks of uncertainty when making hiring decisions. Network relationships, such as*

> *those implicit in most school assisted job placements, 'are particularly apt for circumstances in which there is a need for efficient reliable information.'*[28] *Research in job finding largely confirms employer use of formal and informal network relationships to fill vacancies in this manner. Granovetter's study of professional, managerial and technical job changers, for example, demonstrates the usefulness of informal, weak interpersonal ties in locating a job.*[29] *Employers can rely on both informal relations between individuals or more formal relationships with schools to lower risks of hiring unreliable or incompetent workers […] schools can provide a valuable connection to businesses that otherwise would not be established [by young people]. Many teachers, vocational teachers in particular, are adeptly situated to broker employment opportunities for disadvantaged youth*' (pp. 260–262).

Mann and Percy (2013) draw a distinction between evaluations of US work-related learning programmes (Kemple and Wilner, 2008; MacAllum *et al.*, 2001) wherein employer engagement is typically experienced within a coherent learning programme which is both intensive (absorbing a day or more of weekly curriculum time) and extensive (operating over a whole academic year or longer) and the commonplace British experience which over the decade prior to analysis had been of short duration, episodic, and unintegrated into any programme of study with defined learning outcomes. To Mann and Percy, the comparison helps provide an answer to a key question:

> '*can wage premiums be best explained by the comparative skills development of programme participants (and so heightened human capital accumulation prior to labour market entry) or by enhanced ability to understand and navigate the transition from education into work through greater relative social and cultural capital accumulation?*' (p. 14).

Finding limited evidence of human capital accumulation, Mann and Percy also draw on Granovetter's conception of the 'strength of weak ties' as developed by Raffo (and other sociologists) to make use of employer contacts to gain 'non-redundant trusted information' about the operation of the labour market—information which transcends the socially constructed constraints of family networks (p. 17).

Kashefpakdel and Percy (2016), in their effort to account for wage premiums linked to still more incidental interventions—career talks with people from outside of school—also look to Granovetter to explain their findings. Noting the wage boosts associated with teenage perceptions of career talks being 'very helpful', they argue, after Granovetter, that teenagers gained benefit from exposures to the labour market which provided them with 'new and useful' information.

> '*Such an understanding would be consistent with the finding that teenagers experiencing higher volumes of careers talks were more likely to agree they had found sessions to be relevant (and so helpful) to themselves. As they moved through their teenage years, the participants in this study can be imagined responding in different ways to external presenters and what they had to say about their*

[28] Powell, W. (1990) 'Neither market nor hierarchy: network forms of organization', *Research in Organizational Behavior*, 12, 304.
[29] Granovetter, M. (1973) 'The strength of weak ties', *American Journal of Sociology*, 78, 1,360–80.

occupations, with those young people experiencing the greatest volume of career talks more likely to encounter presentations which provide insights judged to be of practical relevance to aspirations shaped by preceding experiences and interactions' (p.14).

Kemple and Wilner (2008) do venture into discussion on the nature of causality in the significant earnings boosts which they evidence at age 26, eight years after their subjects graduated from high school participation in the US Career Academies programme.

'*The analyses focus on the relationship between Career Academy impacts on high school experiences and subsequent impacts on postsecondary earnings. This comparison provides suggestive evidence that substantial increases in students' exposure to career awareness and development activities were associated with more substantial labor market impacts. Such career awareness and development activities included job-shadowing, work-based learning activities, career fairs, guest speakers, and career-related guidance.*[30]

It is important to note, however, that these findings are only suggestive and do not account for other high school experiences that may be affected by the Career Academies which may, in turn, have an impact on postsecondary earnings. For example, longer term earnings were also associated with measures of personalised support that students reported during high school and with their completion of a curriculum consisting of both academic core courses and a sequence of career-related courses' (p.40).

In explaining causality, MacAllum and colleagues (2001) also draw out participation of young people in 'career-enhancing opportunities' within the complex LAMP programme of learning described as 'an academically rigorous business/labour-driven curriculum, [with] an emphasis on project-based learning, a team teaching structure, and extensive opportunities for staff and students to maintain close, ongoing interaction with workplace employees' (p. 5). Citing survey evidence, the authors argue that graduates of the programme enter the labour market twice as likely to pursue 'career enhancing opportunities' than peers.[31] With broadly similar qualifications, the group studied by MacAllum and Bozik (2001), like those considered by Kemple and Wilner and by Page, are able to generate considerably higher returns for their human capital.

6.4. Which interventions can be expected to be most effective?

Five types of intervention from five or more studies in which conclusions can be drawn may be identified:

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[30] Orr and colleagues also use statistical testing to identify distinctive elements within the US Careers Academies experience finding graduates of the programme to have experienced significantly greater levels of employer engagement and careers provision. See: Orr, M. T., Bailey, T., Hughes, K. L., Kienzl, G. S. and Karp, M. M. (2007) 'The National Academy Foundation's Career Academies: Shaping Secondary Transitions', in Neumark D. (ed.) *Improving School-to-Work Transitions*, New York: Russell Sage Foundation (pp. 169–209).

[31] For example: researching career goals, obtaining work experience, exploring further training or higher education, or preparation for entrance exams.

- job shadowing (80% of 5 assessments indicating largely positive outcomes);
- work experience (75% of 8 assessments);
- careers provision (67% of 10 assessments);
- mentoring (67% of 6 assessments); and
- work-related learning (55% of 11 assessments).

A theme of the wider literature is the extent to which careers education can be best situated within a broader conception of the lived experience of a young person. Where providing a young person with access to trusted useful information and experiences relevant to ultimate career progression, experiences will build on and interact with preceding family-based access to such resource.[32] The analysis suggests both that young people at greatest distance from the labour market of their aspirations within their home lives can be expected to gain greatest value from careers education and that schools can use careers education as a strategic resource to democratise access to resources of significant value in career progression. As articulated by Erickson and colleagues (2009), such interventions can serve to compensate for lack of resource, but also can serve to attenuate inequalities.[33]

[32] Stanley, J. and Mann, A. (2014) 'A Theoretical Framework for Employer Engagement', in Mann, A., Stanley, J. and Archer, L. (eds.) *Understanding Employer Engagement in Education: Theories and Evidence*, London: Routledge ; Jones, S., Mann, A. and Morris, K. (2015) 'The "Employer Engagement Cycle" in Secondary Education: examining the testimonies of young British Adults', *Journal of Education and Work*. DOI: 10.1080/13639080.2015.1074665.

[33] Erickson, D., McDonald, S. and Elder, G.H. (2009) 'Informal Mentors and Education: Complementary or Compensatory Resources?', *Sociology of Education*, 82, 344–67.

7. What works? Social outcomes

- Does careers education improve social outcomes?
- What difference can it make to social outcomes?
- Why does it make a difference?
- Which interventions can be expected to be most effective?

7.1. Does careers education improve social outcomes?

Careers are to a large extent unpredictable (Rodrigues and Guest, 2010)[34] and young people are increasingly expected to demonstrate self-directedness and resilience based on a well-developed identity, both in the labour market and in society as a whole (Giddens, 1991).[35] Yates and colleagues (2011) have shown that young people who were uncertain or unrealistic about career ambitions at 16 went on to be three times more likely to spend significant periods of time being NEET as an older teenager than comparable peers. In this study, the ambitions of two in five young people were unrealistic, with young people from disadvantaged backgrounds being nearly twice as likely to suffer from such confusion as their more prosperous counterparts. According to Raffo (2000)[36] different types of careers-focused mediated provision can increase social relations and can be 'enriched by outside yet authentic culturally appropriate, significant others'. He argues this can yield positive impacts for young people, particularly in relation to their social capital accumulation both within and beyond their schooling.

On social outcomes related to careers education, a literature using level 3 and 4 methodologies does exist. A total of 28 studies were identified including part-time work studies. Of these, 25 studies were identified as specifically relevant to careers-focused education. There is strong overlap between social outcomes and education and economic outcomes, for example, refer to Golden and colleagues (2010), Gutman and colleagues (2014), Kemple and Willner (2008), and Staff and colleagues (2010). Enhancing social mobility is a common thread featured in the literature linked to ensuring fairness for individuals, prosperity for the economy, and cohesion for society as a whole (Currie *et al.*, 2007; Neumark and Rothstein, 2003; Hooley *et al.*, 2014, for example).

The individual should be the direct beneficiary of careers-focused mediated provision. Indirect beneficiaries also include: family, peers and other networks, schools, colleges and other training providers, employers, local communities, and the economy as a whole. Generally, it is argued that by providing careers-focused education it should be possible to enhance an individuals' capacity to navigate education and employment systems more effectively, particularly those most disadvantaged. Ultimately, the goals are to demystify

[34] Rodrigues, R.A. and Guest, D. (2010) 'Have careers become boundaryless?', *Human Relations,* 63(8), 1,157–75.
[35] Giddens, A. (1991) *Modernity and Self Identity: self and society in late modernity*, Stanford University Press.
[36] Raffo, C. (2000) 'Youth Transitions and Social Exclusion: Developments in Social Capital Theory', *Journal of Youth Studies*, V3 (2).

learning and labour market pathways, to facilitate access to networks beyond those that individuals normally have access to, and to provide information, guidance and support that nurtures decision-making, career adaptability, resilience and employability.

Of those studies focusing on 'social outcomes only', 13 studies related to the US, eight were from the UK, two from The Netherlands, one from Australia, and one from Canada.

As set out in Table 12 below, literature identified focused on all **social outcome studies by interventions** categorised as careers provision (n = 13), work-related learning (n = 5), mentoring (n = 6), enterprise (n = 5), ICT in careers (n = 3), leadership (n = 1), work experience (n = 1), and job shadowing (n = 1).

Table 12: Social outcome studies by intervention

All studies (social outcomes only and combination of outcomes with social)	No. of studies	Generally positive outcome	Mixed results	Generally negative outcome
Work-related learning	5	2 (40%)	3 (60%)	
Work experience	1	1 (100%)		
Volunteering				
Leadership	2		2 (100%)	
Mentoring	6	3 (50%)	3 (50%)	
Job shadowing	1		1 (100%)	
ICT in careers education	3	2 (66.7%)	1 (33.3%)	
Enterprise	5	3 (60%)	2 (40%)	
Careers provision	13	8 (62%)	4 (31%)	1 (8%)

UK studies (social outcomes only and combination of outcomes with social)	No. of studies	Generally positive outcome	Mixed results	Generally negative outcome
Work-related learning	1		1 (100%)	
Work experience	1	1 (100%)		
Volunteering				
Leadership				
Mentoring				
Job shadowing				
ICT in careers education	1		1 (100%)	
Enterprise	2	2 (100%)		
Careers provision	4	1 (25%)	3 (75%)	

Beyond this, there is a substantial body of literature on 'career adaptability' (Savickas *et al.*, 2009; Savickas, 2011)[37] part of which features career resilience (Lyons, Schweitzer, and Ng, 2015).[38] In the context of our literature review, resilience is defined as 'the process of bending and rebounding to overcome adversity' (Hunter, 2001, p. 172)[39] as noted by Lengelle and colleagues (2016).[40] This is a multi-dimensional phenomenon that varies according to contexts, internal variables, and external changes (Chiaburu, Baker, and Pitariu, 2006). Resilience is often viewed as a positive outcome 'which is defined by the presence of positive mental health (such as positive self-concept and self-esteem, academic achievement, success at age-appropriate developmental tasks, etc.) and the absence of psychopathology, despite exposure to risk' (Metzl and Morrell, 2008).[41] This concept is also interpreted as a dynamic learning process dependent upon interactions between individual and contextual variables that evolve over time. In this sense, resilience refers to the capability to 'bounce back' from negative emotional experiences associated with adversity,

[37] Savickas, M. L., Nota, L., Rossier, J., Dauwalder, J. P., Duarte, M. E., Guichard, J. and Van Vianen, A. E. (2009) 'Life designing: A paradigm for career construction in the 21st century', *Journal of vocational behavior*, 75(3), 239–250; and Savickas, M. L. (2011) 'Career Counseling', Washington DC: American Psychological Association.

[38] Lyons, S. T., Schweitzer, L. and Ng, E. S. W. (2015) 'Resilience in the modern career', *Career Development International,* 20(4), 363–383.

[39] Hunter, A. J. (2001). A cross-cultural comparison of resilience in adolescents. *Journal of Pediatric Nursing,* 16, 172-179.

[40] Lengelle, R., Van der Heijden, B and Meijers, F. (In Press) *The Foundations of Career Resilience*, Springer Books.

[41] Metzl, E. S. and Morrell, M. A. (2008). 'The role of creativity in models of resilience: Theoretical exploration and practical applications', *Journal of Creativity in Mental Health*, 3(3), 303–318.

uncertainty, and threat (Tugate and Fredrickson, 2004).[42] It should be noted, quasi-experimental and experimental studies focusing exclusively on resilience within careers-focused education are not included in this review but they do merit a more detailed analysis outside of this literature review.

The literature on careers education highlights a requirement for some form of effective 'dialogue' and 'action' in which personal meaning is attached to concrete experiences of learning and work. See for example Buckler and colleagues (2015); Currie and colleagues (2007); and Morris (2004). Kuijpers and colleagues (2011) strongly argue the learning environment has to be both practice-based and dialogical. To achieve a dialogue, the thoughts and feelings of young people with respect to their views and experience of work (or lack of it) must be given a central place in the schooling conversation. This is highly relevant in the context of young people being the seekers and recipients of a range of differing types, and a variation in quality, of careers information and LMI both online and offline. However, there is scant literature available on ICT and careers education that includes the use of learning and labour market information and intelligence (LMI). The use of technologies (UKCES, 2014),[43] combined with other factors such as changes in consumer behaviours and the availability of more 'open source' data, has resulted in profound shifts in how individuals utilise services in a rapidly changing world. Alongside this, centralised versus localised policy shifts also raise new questions concerning the adaptation of available careers education for young people, particularly amongst the most vulnerable groups.

Positive outcomes

The majority of studies provided evidence of improvements in self-efficacy, self-confidence, career maturity, decision-making skills, career competencies, or career identity. As discussed in the education and economic outcomes sections, leadership in careers education is crucial to the achievement of positive outcomes for young people.

Measurements of social outcomes vary considerably across the literature and include:

- the use of measurement or inventory tools—such as the Crites Career Maturity Inventory (measuring attitude and competency levels); the Coopersmith Self-Esteem Inventory and grades (Legum and Hoare, 2004); the Career Decision Self-Efficacy Scale (McComb-Beverage, 2012); Career Identity and Learning Motivation tools (Kuijpers and Meijers, 2009); Enterprise Potential (Athayde, 2009, 2012); 'Explore Your Horizons' and 'Learning Accounts' within the Future to Discover (FTD) Canadian approach (Currie *et al.*, 2007);[44] and the Inventory of Parent and Peer Attachment (IPPA)—a 23-item scale containing questions related to a child's or adolescent's relationship with his or her primary care-giver linked to Big Brothers Big Sisters programmes in the US (Rhodes *et al.*, 2000);

[42] Tugate, M. M., and Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, 86, 320–333.

[43] UKCES (2014). *The Future of Work, Jobs and Skills in 2030, Evidence Report 84*. Sheffield, Wath-Upon-Dearne.

[44] See also, a more recent Canadian quasi-experimental study 'Career Motions' – http://www.srdc.org/media/8355/careermotion_final_report_en.pdf.

- the degree of exposure to work experience (Hillage *et al.*, 2011);
- school-based mentoring programmes including surveys to describe various characteristics of programme delivery—including training and support for mentors, characteristics of mentors, matching of students to employers (Bernstein *et al.*, 2009; Schwartz *et al.*, 2012), longer-term impacts of mentoring, educational services, and learning incentives (Rhodes and Resch, 2000; Rodriguez-Planas, 2012); and
- entrepreneurship programmes such as BizWorld—an entrepreneurship education programme for primary schools (Huber *et al.*, 2012; Peterman and Kennedy, 2003).

7.2. What difference can it make to social outcomes?

Family and neighbourhood factors—such as having a lower number of employed family members or living in a high unemployment area—can degrade the job network of poor and minority youth because fewer people are able to pass along information about employers or job openings (Hossain and Dan Bloom, 2015).[45] The latest sociological research suggests that 'racial minorities, particularly low-income minorities, have access to job contacts, but may be unable to effectively make use of their contacts' social capital for a job search' (MacDonald *et al.*, 2009).[46] It is not common among low-income minorities to switch off a career pathway because of barriers associated with poverty (limited transportation or unstable housing, for example), or a lack of awareness of opportunity structures (such as higher education, apprenticeships, STEM options, for example). Gender role expectations are highly prevalent throughout schooling. Moreover, while gender relates to a single social variable, in reality it is often associated with multidimensional disadvantage. Other biological, social and cultural categories, like ethnicity, socio-economic status, age and other axes of social identity interact, often simultaneously and at different levels, contributing to systematic injustice and social inequality. Bimrose, McMahon and Watson (2015)[47] highlight the term 'intersectionality' as useful to understanding of the complexity of the layers of disadvantage that are often evident in this context. We may conclude that effective careers-focused education should raise young people's aspirations, improve social mobility, highlight and address inequalities and, most importantly, provide hope for a better future.

Impact can be seen in the context of different strategic intentions that inform and support careers education in relation to young people's social outcomes. These can broadly be set out in a typology of *prevention*, *integration* and/or *recovery*. Prevention measures are aimed at keeping young people 'switched on' to learning, encouraging them not to close down opportunities too early, broadening horizons and challenging inaccurate assumptions, for example using alumni (Buckler *et al.*, 2015), enterprise measures (Peter and Kennedy, 2003; Athayde, 2006 and 2012), or self efficacy approaches (McCombe-Beverage, 2012). This may also include preventing young people from 'switching off' or becoming disaffected

[45] Hossain and Dan Bloom (2015) 'Toward a Better Future: Evidence on Improving Employment Outcomes for Disadvantaged Youth in the United States', MDRC.

[46] MacDonald, S., Lin, N. and Ao, D. (2009) 'Networks of opportunity: gender, race and job leads', *Social Problems*, 56 (3) 385–402.

[47] Bimrose, J., McMahon, M. and Watson, M. (eds.) (2015) *Women's career development through the lifespan: An international perspective*, London: Routledge, pp 1–9 (Introduction).

in the first place—particularly those who are most at risk of 'dropping out'—and taking action that engages young people, families and communities as a whole. Integration measures are aimed at developing curriculum approaches that inform and support young people in their transitions into learning or work, for example, by focusing on cross-curricular themes (Henderson, 1995), work experience (Hillage, 2011), career exploration activities (Morris, 2004), or mentoring (Berstein *et al.*, 2009). Recovery measures are aimed at re-energising or reconnecting young people to learning that meets their individual needs, for example, by focusing on 'career maturity' (Legume and Hoare, 2004) or self determination (Powers *et al.*, 2012). These three different measures are all addressed to the ultimate destinations of young people, but schools and colleges will use differing ways of achieving them.

Athayde (2009, 2012) highlights that young people are increasingly becoming the target of entrepreneurial and enterprise policy initiatives and enterprise education in schools. This increases the need to clarify the entrepreneurial focus in order to effectively measure the impact these programme have on young people's lives. For example, a control-group cross-sectional design was used to investigate the impact of participation in a Young Enterprise Company Program—based on the U.S. Junior Achievement model—in six secondary schools in London. Young black people were more positive about self-employment and displayed greater enterprise potential than either white or Asian pupils. A family background of self-employment had a positive influence on pupils' intentions to become self-employed. The research raises a conceptual issue concerning the multidimensionality of the construct of enterprise potential linked to the career dialogue that takes places in schools and colleges with young people and their parents.

Research findings of mentoring programmes have been shown to vary widely with regard to the amount of time spent on academic versus social activities (Bernstein *et al.*, 2009). The social outcome studies provide positive insights into the benefits of mentoring within careers-focused education, but 50% of studies do show mixed results. This is most likely to be due to the contrasting definitions and approaches used to describe mentoring and their reported impact (Rhodes and Resch, 2000; Schwartz *et al.*, 2011; Rodriguez-Planas, 2012).

7.3. What is the impact?

Both parental social class and education have been shown to have a major impact on school-to-work transitions. The fact that children from families with low socio-economic status perform on average below their middle and upper class peers is well established. Young people from high socio-economic status backgrounds are more likely to stay on in full-time education after the end of compulsory schooling than their less privileged peers, consequently securing good jobs and reducing the risk of substantial unemployment or teenage motherhood (Schoon, Martin and Ross, 2007).[48] By contrast, while young people from low socio-economic status families are increasingly staying on in education, they

[48] Schoon, I., Martin, P. and Ross, A. (2007) 'Career transitions in times of social change. His and her story', *Journal of Vocational Behavior*, 70(1), 78–96.

continue to be over-represented among early labour market entrants (Furlong and Cartmel, 2007)[49] and NEET populations (Crawford *et al.*, 2011).[50]

The role of intermediaries involved in some form of career education is a dominant theme in the literature with positive or mixed results. Brown and colleagues (2011) highlight that 'the relationship between the teacher and the student is found to be particularly important […] students have better academic performance when they perceive that teachers care about them'. Raffo and Reeves (2000)[51] emphasise that the process of developing social capital through 'trustworthy reciprocal relations with individualised networks' is crucial, along with 'everyday practical knowledge created through interaction, dialogue, action and reflection on action within individualised and situated social contexts'.

Whiston and colleagues (1998)[52] undertook a meta-analysis that drew together 47 studies that utilised controls and involved a total of 4,660 participants. They identified that across all of the studies which sought to identify a diverse range of impacts, participants who had received a guidance intervention were more likely than those who had not to display an identifiable impact. They found impacts across all types of career interventions, but individual career counselling was much the most effective for the student, whereas computer-based and classroom/group interventions were more cost-effective in terms of counsellor time. Table 13 provides some illustrative examples of selected varied impact studies on social outcomes. These are given to show some differing types of innovative interventions.

Table 13: Illustrative studies investigating impact on social outcomes

Study	Method	Impact size
Kuipers and Meijers, 2009 The effects of career education and guidance among students (ages 12–19) enrolled in prevocational and secondary vocational education in the Netherlands. A total of 3,499 students and 166 teachers from 198 classes in 35 schools participated in the study.	Randomised field experiment with regression analyses applied. Career identity was measured with an instrument, consisting of 88 items (Cronbach's a = 0.81), that was based on studies by Meijers (1995) and Meijers and Wardekker (2002). All multi-item scales had an adequate Cronbach's alpha (i.e., N0.70), with the exception of the three-item Locus of Control Scale which only had an	Results showed that career competencies positively contributed to learning motivation, as well as to quality of study choice, fit of choice with learning tasks, and fit of internship. Career identity positively contributed to career outcomes, and career dialogue contributed more than traditional interventions have with respect to career outcomes. The amount of variance due to differences between schools and between

[49] Furlong, A. and Cartmel, F. (2007), *Young People and Social Change: New Perspectives,* Series: Sociology and social change, McGraw-Hill/Open University Press.
[50] Op. cit.
[51] Raffo, C. and Reeves, M. (2000). Youth transitions and social exclusion: Developments in social capital theory. *Journal of Youth Studies*, 3(2), 147-166.
[52] Whiston, S.C., Sexton, T.L. and Lasoff, D.L. (1998). Career intervention outcome: a replication and extension of Oliver and Spokane (1988). *Journal of Counseling Psychology,* 45(2), 150-165.

	alpha equal to 0.62.	classes is negligible, although the class variance is statistically significant.[53]
Peterman and Kennedy, 2003 Enterprise Education: Influencing Students' Perceptions of Entrepreneurship	A pre-test post-test control group research design. Changes in the perceptions of a sample of secondary school students enrolled in the Young Achievement Australia (YAA) enterprise programme are analysed. This research examines the effect of participation in an enterprise education programme on perceptions of the desirability and feasibility of starting a business.	After completing the enterprise programme, participants reported significantly higher perceptions of both desirability and feasibility. The degree of change in perceptions is related to the positiveness of prior experience and to the positiveness of the experience in the enterprise education programme. Self-efficacy theory is used to explain the impact of the programme. Overall, the study provides empirical evidence to support including exposure to entrepreneurship education as an additional exposure variable in entrepreneurial intentions models.
Currie *et al.*, 2007 [54] The impact of a guidance intervention involving some 5,000 students in New Brunswick and Manitoba. Preference given to high schools with a greater share of lower-income families in their catchment areas. The demographic and socioeconomic characteristics of the 5,429 students as reported in a baseline survey were those expected for a sample of grade 9 students from the participating provinces.	Surveys with participants who were randomly assigned to receive one of two career education interventions: Explore Your Horizons (a programme enabling young people to access information about academic and careers options delivered online and in person), or Learning Accounts (during the early years of high school, promises up to $8,000 of non-repayable financial aid to students from lower-income families should they go on to pursue post-secondary education). Participants' sampled both interventions or none. The survey data was	Results from a cost–benefit study, a summary of the implementation results, and includes results from the National Longitudinal Panel (a qualitative study of a sub-sample of participants' decision-making, intended to gain insight on the mechanisms underlying the pattern of programme impacts). The offer of Learning Accounts raised post-secondary enrolment in the Francophone sector in New Brunswick by over ten percentage points. The increase was highly concentrated in college

[53] Note: the additional variance is due to the total effect of all learning environment variables, in addition to student and school variables (varies from 7% to 11% for career reflection, career forming and career networking). The corresponding effect sizes are characterized as small to moderate.

[54] For more a recent randomised controlled trial see: Career Motions http://www.srdc.org/media/8355/careermotion_final_report_en.pdf

	linked to administrative data sets, e.g. college enrolment data, to allow real-world impacts to be traced. The research team explored the process of linking tax data.	enrolment. The impact of Learning Accounts on post-secondary enrolment occurred across all sub-groups in the Francophone sector. In the Anglophone sector, youth from lower-income, lower-education families and boys saw improvements in enrolment. Receiving a guidance intervention enhanced attainment and made some groups of students more likely to enrol in post-secondary education as well as improved their social skills.
Legum and Hoare, 2004 Career maturity levels, academic achievement, and self-esteem. 27 at-risk middle school students in Baltimore County representing the experimental group, and 30 at-risk middle school students making up the control group.	A pre-test and post-test design using a control group. The effects of a 9-week career intervention programme 'Career Targets' on at-risk middle school students' career maturity levels, self-esteem, and academic achievement. Modes of measurement consisted of the Crites Career Maturity Inventory (measuring attitude and competency levels), the Coopersmith Self-Esteem Inventory, and grades. Data for this study was coded numerically and analysed using inferential t-tests and analysis of covariance.	Post-test career maturity-competency scores for the experimental group (M = 15.26, SD = 3.058) were higher than at pre-test (M = 14.22, SD = 2.636). The control group's career maturity-competency post-test scores (M = 14.27, SD = 3.162) were slightly lower than pre-test scores (M = 14.93, SD = 2.677). Although results revealed that the sample's career maturity attitude and competency levels and academic achievement improved, such increases were not statistically significant.
Huber *et al.*, 2012 Entrepreneurial knowledge and non-cognitive skills for enterprise activity. Sample consists of 85 schools in the Netherlands involving 1,188 classes and 2,751 pupils typically aged 11 (2010 + 2011).	Randomised field experiment. To estimate the impact of BizWorld on the development of pupils' knowledge, non-cognitive skills, and intentions. A Difference in Difference (DD) approach is used.	The mean values for the outcomes variables at t = 0 and t = 1 are shown for both the treatment and control group. All but one of the non-cognitive entrepreneurial skills increased significantly between t = 0 and t = 1 within the treatment group. The only exception: 'persistence' the difference is positive but not significant.

7.4. Which interventions can be expected to be most effective?

Social outcomes

Four types of interventions feature in five or more studies whose conclusions show positive outcomes:

- careers provision (62% of 13 assessments);
- mentoring (50% of 6 assessments);
- enterprise (60% of 5 assessments); and
- work-related learning (40% of 5 assessments).

Most literature on careers education and its effectiveness is focused on influencing students' knowledge, attitudes, and decision-making skills, while students' behaviours often are not examined. Research should focus more on exploring the relationships between career guidance interventions and positive students' behavioural outcomes. Within the literature, studies looking for evidence of positive career behaviour change—such as teaching career competencies linked to concrete experience (Kuijpers and Meijers, 2009)—offer promising practice for the UK

The literature highlights the following types of practical activities in schools or colleges as having a positive impact on social outcomes:

- Career reflection: making concrete the thinking about one's own motivation and aptitudes, self-regulation, self-determination, and resilience to cope with unforeseen setbacks (for example, McComb-Beverage, 2012; Peterman 2003; Legum and Hoare, 2004; and Kuijpers and Meijers, 2009).
- Career exploration: giving shape to one's own career path by exploring the options for study and work (Athayde, 2009 and 2012; Furstenberg and Neumark, 2005; and Kuijpers and Meijers, 2009).
- Career action: opportunities to make sense of and act upon the learning gained from differing types of interventions (Orthner, *et al.*, 2013; and Kuijpers and Meijers, 2009).
- Networking: building and maintaining a network of key contacts (Bernstein *et al.*, 2009; Rhodes and Resch, 2000; and Kuijpers and Meijers, 2009).
- Learning environment: stimulating real-life experiences with work and a dialogue about these experiences (Morris, 2004; Gutman *et al.*, 2014; and Kuijpers and Meijers, 2009).
- Career dialogue: young people having meaningful conversations with teachers, parents/carers, employers/employees, alumni, or trained and qualified career development professionals (Buckler *et al.*, 2015; Powers *et al.*, 2012; Schwartz *et al.*, 2011; Hughes *et al.*, 2004; and Hooley *et al.*, 2014).
- Career conversations students have in the workplace: gaining exposure to, and experience of, work in simulated and real-life situations (Hillage *et al.*, 2011; and Kuijpers and Meijers, 2009).

Results show that different aspects of the learning environment explain the variance between career outcome scores, in particular career dialogue at school and in the workplace (the work placement). Without this dialogue, careers education methods and instruments

barely contribute to the acquisition of career learning, including career competencies. The role of ICT and careers education is under-developed and is fairly silent in the literature. We learned of an innovative randomised controlled study underway in Canada focusing on whether the labour market competencies of students from colleges and universities can be improved by using web-based technologies.[55] There is a clear gap in the literature on young people's labour market competences using web-based technologies, as discussed earlier. Finally, studies on the role of transformational leadership in schools and colleges regarding careers education are also currently quite sparse.

[55] Career Motions, see: http://www.srdc.org/media/8355/careermotion_final_report_en.pdf

8. Part-time work

While the literature on careers education can best be described as weak, it stands in contrast to an extensive literature which has used longitudinal databases to make sense of the influence of teenage participation in the labour market through part-time employment, alongside full-time education. In our analysis, we have not classified this as 'an intervention' but recognise many of the findings are linked to economic outcomes for young people. The review identified 23 pieces of research literature using level 3 and 4 methodologies that looked at the impact of school-age part-time working on academic achievement and long-term employment prospects. Twelve studies relate to the US, eight to the UK (including one which looks narrowly at Northern Ireland and three focused on England), and five Australia. The studies present analysis from a range of longitudinal studies, including: National Child Development Study (UK), British Cohort Study, Longitudinal Study of Young People in England, Youth Cohort Study (UK), Longitudinal Study of Australian Youth, National Education Longitudinal Study (US), National Longitudinal Survey 1979 (US), and Youth Development Study (US). Collectively, the dataset provides significant insight into the effects of teenage part-time working on young people. This brief review represents the most comprehensive survey of such literature and reveals a great deal of consistency in results.

8.1. Educational outcomes

Of the 15 studies that tested for evidence of academic attainment, 12 (80%) found a negative relationship with young part-time workers performing more poorly than could be reasonably expected in standardised assessments. Studies do tend to find that negative impacts are modest (such as Anlezark and Lim, 2011; Dustmann and van Soest, 2007; Ruhm, 1997; and Singh, 1998) particularly when hours worked are low (less than 5 hours a week). Working greater numbers of hours a week, particularly in excess of 15 hours, is routinely more detrimental to academic achievement. The fact that simple participation in the labour market through paid employment cannot be associated with enhanced attainment in the way that careers education can be suggests that schools have a particularly meaningful role to play in converting new insight into the labour market's operation and enhanced engagement in educational provision.

8.2. Economic outcomes

Fourteen studies looked alternatively at evidence of employment gains and 13 (93%) found evidence of boosts, compared to peers, in terms of adult earnings and reduced risks of unemployment/NEET status. The size of impact can be large: Duckworth and colleagues (2012) report incidence of NEET being at twice the level for young people without experience of teenage part-time employment with longitudinal controls in place.

The analysis suggests that something of meaning happens to young people as a result of their teenage exposure to the labour market and further analysis is warranted to improve both understanding of what it is about the employment experience that drives such change,

and if connections can be made between the impact of school-mediated employer engagement activities and part-time working.[56]

8.3. Social outcomes

In addition, four studies looked for, and found positive evidence of, positive benefits to young people in terms of social outcomes.

[56] For a survey of some 400 teenagers reflecting on their comparative experiences of part-time employment and work experience placements - see: Fullarton, S. (1999) *Work experience and work placements in secondary school education.* LSAY Research reports. Longitudinal surveys of Australian youth research report. The survey suggests very similar (self-declared) outcomes for young people in terms of employability skill development, but that work experience placements serve to much greater extent to support career planning.

9. Conclusions

9.1. About the literature

Careers-focused mediated provision is a public as well as a private good. Effective careers education relies heavily on collaborative activities and interventions between a wide range of 'careers influencers' including young people themselves, parents and carers, other learning providers, employers, professional bodies, local community organisations, as well as very many individual volunteers.

A literature using robust methodologies does exist. It is limited but consistent in its findings allowing implications to be drawn. The literature largely relates to the US secondary education though examples of good and interesting approaches are apparent in other OECD countries such as Australia, Canada, the UK and the Netherlands.[57] The literature identified in this study primarily relates to programmes of activity: work-related learning programmes and programmes of careers education which present challenges of disaggregation in order to understand true impact.

In this review we have focused our attention on studies adopting quasi-experiential and experimental approaches. The limited literature identified by selection of such criteria is not broad and it is not deep, but it does provide insights which can be relied upon. It is recognised that many studies of value (particularly qualitative studies), including many by leading academics working in the field, have been excluded from this analysis, but that does not mean that they too do not provide insights of value to researchers, policymakers, and practitioners.

What does the literature tell us? The outcomes linked to schools' careers education provision, including employer engagement, are primarily positive:

- 60% of studies looking at educational outcomes are positive (only 2% negative);
- 67% of studies looking at economic outcomes are positive, none are negative; and
- 62% of studies looking at social outcomes are positive (only 3% negative).

The remainder of studies produced outcomes that were overwhelmingly mixed. It is extremely difficult, however, to find high quality research studies into aspects of careers education, as defined in this review, that are detrimental to young people.

Too often the studies reviewed investigate wildly different aspects of the outcome areas, presenting challenges to reviewers seeking simple and clear statements of impact. In drilling down into series of related studies, we find:

[57] Evidence from South Korea and New Zealand is also worthy of mention. This does not feature in this report as it does not fully meet the inclusion criteria, but it certainly merits attention. See, for example, comparative work in schools undertaken by the Korean Research Institute for Vocational Education and Training (KRIVET).

- some evidence to suggest that impacts on attainment can be expected to be relatively modest, recognising that impacts can be expected to vary, perhaps considerably, by individual circumstance and character of intervention delivery;
- good evidence to show that earnings premiums are commonly sizeable for young adults especially when they engage with employers within teenage careers-focused provision; and
- good evidence that careers education also underpins a wide range of beneficial social outcomes.

In explaining causality, the literature points more towards issues of social and cultural capital accumulation than human capital accumulation: that higher levels of supported, authentic exposure to the labour market, in its very different forms, can challenge young people to think afresh about their aspirations and their engagement with education and pathways through it. Changing attitudes and assumptions are commonly important within the studies reviewed. However, US literature does also suggest that occupationally specific skills developed in high school can be successfully linked to better labour market outcomes.

It is unsurprising that such careers education is associated with positive outcomes for young people as a range of high quality studies have shown that what young people think about careers (particularly whether they are uncertain or confused/misaligned) influences later academic and employment outcomes. Our small-scale systematic review of the high quality literature relevance to part-time employment alongside full-time secondary education shows that it too is related to adult outcomes for the better in terms of economic outcomes, but for the worse in terms of educational outcomes.

The literature shows the extensive use of differing forms of intermediaries for personalised support to deliver active and experiential learning activities, including career guidance within and beyond schooling. However, the literature findings suggest more could be done to understand better the relationship between certain types of interventions delivered by differing forms of personalised support both online and offline, particularly (though not exclusively) for disadvantaged young people.

The frequent difficulty identified from the literature lies in verifying the relationship between quality outcomes and the specific careers education interventions. Often the measures of such outcomes are crudely measured and the precise interventions are not adequately isolated or the 'treatment' fully described. In many cases, the research considers only one system of influence at a time in isolation of other impeding factors. Some outcome studies of careers interventions have shown that the models or theories supposedly guiding the interventions were not fully implemented (Miller and Brown, 2005).[58]

[58] Miller, M. J. and Brown, S. D. (2005) 'Counseling for career choice: Implications for improving interventions and for working with diverse populations', in Brown, S. D. and Lent, R. W. (eds.) *Career development and counseling: Putting theory and research to work,* New York: Wiley, (pp. 441–465).

It is important to recognise that attempts to undertake definitive studies, or provide conclusive evidence of the outcomes of careers education activities, continue to be beset by a recurring set of issues, as follows:

- There are a wide range of factors which influence individual career choice and decision-making, or which can impact on outcomes.
- Careers education interventions are sometimes not a discrete input, but instead are embedded in other contexts such as programmes of distinctive learning provision, employer/employee relationships, or within multi-strand initiatives.
- Comparing the evidence available in different studies is problematic when the nature of careers-focused education, the depth of work undertaken, and client groups vary considerably.
- There is not an agreed set of outcome measures for career education (or career guidance, career counselling, or career development), neither are there common methods of collecting output, or outcome data, except in the case of a limited number of discrete programmes.
- Definitional problems also present themselves when addressing this issue. The first of these may be in attempting to define what careers-focused education is, and what it is intended to do. In seeking to identify and measure the outcomes of careers-focused education a clearly delineated type of intervention is desirable, although not always achievable.
- Effective career guidance (career counselling or career development) is a process which, over time, is made up of a number of individual interventions, possibly of different types.

Table 14: Overview of selected examples by types of interventions

		Evidence of positive impact on:			
Type of intervention	**Description**	**Educational outcome**	**Economic outcome**	**Social outcome**	**Example intervention, impact and strength of evidence**
Transformational leadership	A programme of careers-focused activity requiring substantive changes in staff action and behaviour, commonly requiring some element of staff training.	67% of 6 assessments			Woolley *et al.* (2013) examine the US Career Start programme wherein teaching staff (grades 6 to 8) follow an interactive professional development process to revise methods to teach core academic curriculum through use of specific career examples. The study reviews results across 14 randomly assigned schools and finds statistically significant increases in pupil achievement in mathematics, but not in reading. **Evidence strength: medium**
Mentoring	A sustained relationship between a pupil and a largely untrained volunteer (selected on the basis of their occupational experience) managed by a school to support and encourage the young person through a period of transition.	62% of 13 assessments	67% of 6 assessments	50% of 6 assessments	Miller (1999) examines the impact of business and community mentoring in seven schools in England. A value-added analysis found a small but positive impact on GCSE results compared with a similar group of non-mentored students. **Evidence strength: medium**

Careers provision	A process of learning, individually or in groups, designed to help young people to develop the knowledge, confidence and skills they need to make well-informed, relevant choices and plans for their future, so they can progress smoothly into further learning or work.	60% of 10 assessments	67% of 15 assessments	62% of 13 assessments	Kashefpakdel and Percy (2016) examine the impact of school-mediated careers talks with speakers from outside of school at ages 14–16 on earnings (in full-time employment) at age 26. The study finds that young adults experience wage premiums of up to 1.6% per careers talk with premiums greatest when participants agreed, as teenagers, that the talks were 'very helpful'. **Evidence strength: high**
Work-related learning	A programme of learning that uses the context of work to develop knowledge, skills and understanding useful in work, including learning through the experience of work, learning about work and working practices, and learning the skills for work.	58% of 24 assessments	55% of 11 assessments	40% of 5 assessments	Kemple and Wilner (2008) examine the impact of teenage participation in a three-year (one day a week) occupationally-focused US study programme rich in employer engagement. Using randomised assignment, they followed 1,764 young people to age 26 and find the intervention group to earn, on average, 11% more than the control group. **Evidence strength: high**
Job shadowing	A short period of career exploration (typically no more than three days) within a workplace wherein a pupil observes a number of staff members at work, reflecting on their		80% of 5 assessments		Neumark and Rothstein examine the impact of teenage participation in US. school-mediated job shadowing programmes on education and employment outcomes. Using longitudinal data, they find job shadowing boosts post-secondary education participation rates and reduces incidence of young adult

	occupational experiences.				idleness. **Evidence strength: high**
Work experience	A time-limited placement undertaken by a young person (while still in full-time education) in a workplace, designed to give the young person insights into the experience of being employed in such a workplace.		75% of 8 assessments		Linnehan (2001) examines the experiences of 202 African American high school students who engaged in extended periods of work experience (one day a week) alongside mentoring with employee volunteers. Young people whose experience lasted more than six months achieved higher examination results than control group peers. **Evidence strength: medium**
Enterprise	An activity wherein pupils work together to create an economic enterprise over either a short or long duration, commonly with support from volunteers from the world of work.			60% of 5 assessments	Huber *et al.* (2014) examine the impact of a five-day entrepreneurship education programme on primary school age Dutch participants. A total of 2,751 pupils were randomly allocated to control and intervention groups by class. The study found significant positive impact on the non-cognitive entrepreneurial skills of pupils (e.g. risk-taking, creativity, self-efficacy). **Evidence strength: high**

9.2. What the literature can tell us about interventions

Given the limitations of the evidence, conclusions on the efficacy of specific interventions should be treated with great caution. This review of the literature can only provide an indication of areas of greater efficacy. As set out in the table below, no simple patterns emerge from summaries of assessed impact against the outcome areas. It may well be the case that different interventions are more effective in supporting young people to enhance performance across different outcome areas.

Table 15: Efficacy of interventions by outcome area

Educational outcomes	Economic outcomes	Social outcomes
1. Leadership	1. Job Shadowing	1. Careers provision
2. Mentoring	2. Work experience	2. Mentoring
3. Careers provision	3. Mentoring	3. Enterprise
4. Work-related learning	4. Careers provision	4. Work-related learning
	5. Work-related learning	

This review has identified consistent features of effective careers education:

- Career reflection: making concrete the thinking about one's own motivation and aptitudes, self-regulation, self-determination, and resilience to cope with unforeseen setbacks.
- Career exploration: giving shape to one's own career path by exploring the options for study or work.
- Career action: opportunities to make sense of, and act upon, the learning gained from differing types of interventions.
- Networking: building and maintaining a network of key contacts.
- Learning environment: stimulating real-life experiences with work and a dialogue about these experiences.
- Career dialogue: young people having meaningful conversations with teachers, parents/carers, employers/employees, alumni, and trained and qualified career development professionals.
- Career conversations students have in the workplace: gaining exposure to, and experience of, work in real-life situations.

9.3. What the literature can tell us about outcomes

There is considerable evidence that suggests a strong relationship between immediate learning outcomes and longer-term social and economic outcomes. The learning outcomes could thereafter be regarded not only as of value in their own right, e.g. gaining experience of work, but also as proxies or indicators for longer-term outcomes such as improved wage earnings and/or job satisfaction.

Moreover, there is need to review longitudinal datasets to ensure that they are fit for purpose in addressing the key questions behind this study. In doing so, it is important to disaggregate the activity or intervention from the programme in order to develop finer understandings of causality.

The literature is slender, but it is not a blank page. There is a need, in filling in our collective knowledge, to build iteratively on existing studies and address as a priority the main gaps in the literature. There is a call for new studies that include a focus on:

- how careers education can support the greatest boosts to the academic achievement of the largest numbers of young people, including understanding how identifiable groups of young people can be expected to respond to different interventions—this would require combining quantitative and qualitative approaches to further unlock the 'black box' of causality;
- personalised and targeted careers education (and career guidance) for young people (and parents), particularly those in lower socio-economic groups, young immigrants and those from other disadvantaged ethic groupings, and young people who are disabled or have special educational needs;
- careers education and systems for tracking students' enrolment and progression in learning and work over time—using data available from learning information and HM Revenue and Customs—to learn more about career trajectories and about ways of identifying cycles of intergenerational poverty and evidence of what helps to break cyclical trends;
- the effectiveness of ICT in careers education (and career guidance) online, or the use of ICT and labour market information and intelligence (LMI) in the classroom;
- understanding the career guidance process and the 'meaning making' this provides for young people in receipt of learning and labour market information; and
- the importance of social and cultural capital as a resource for schools, for example, opportunities for young people to broaden their networks and expand their horizons.

9.4. Where next?

In countries such as Austria, Finland, Germany, Scotland, and Switzerland careers education and guidance feature prominently in education systems (OECD, 2015). Findings indicate an urgent need for more research on careers-focused education, including career guidance and work-related learning designed to improve students' education, employment, and social outcomes in the UK in particular, and in other geopolitical contexts.

There is a clear need for research that is longitudinal and is therefore capable of identifying longer-term and possibly more deep-seated effects, not merely in terms of individuals' pathways and assessment of opportunity structures (such as the take-up of learning or job opportunities), but also in terms of career behaviours, attitudinal shifts, and perceptions of career identity—also of great importance.

While qualitative studies often focus on the aspirations, motivation and attitudes to learning of participants in research, there is a need to identify shifts in the use of 'softer' measures using longitudinal data, randomised controlled trials, and other such approaches.

The EEF is well placed to consider ways of bringing together policymakers, researchers, and practitioners to address some or all of the issues emerging from this review.

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Appendix 1: Key informants from OECD countries

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https://educationendowmentfoundation.org.uk/uploads/pdf/The_Impact_of_Digital_Technologies_on_Learning_FULL_REPORT_(2012).pdf.

3. PEF Impetus—Axford, N., Heilmann, S. and Sonthalia, S. Dartington (2015) Ready for Work II: The Effectiveness of Work Readiness Programmes for Young People, Social Research Unit REPORT for Impetus PEF, 14 August 2015.

Key expert international informants who willingly supported and contributed to the literature search in their respective countries: Dr Mary McMahon, Queensland University (Australia); Sareena Hopkins, Lynne Bezansen, Dr Roberta Neault, Tannis Goddard, David Redekopp and Ruben Ford (Canada); Dr Rie Thomsen (Denmark); Dr Ji-Yeon, Korean Research Institute for Vocational Education and Training (South Korea); Professor Mark Watson, Nelson Mandela University (South Africa); Dr Raimo Vuorinen, University of Jyväskylä (Finland); Prof. Dr Frans Meijiers (The Netherlands); Julie Thomas and Pat Cody, Careers Service New Zealand (New Zealand); Peter Tatham (Tasmania); Ivan Diego (Spain); Anne Hampshire (Australia); Andrew Rothstein (USA); and Paul Comyn (International Labor Organisation).

Appendix 2: Keyword search terms

The sample		Input		Outcome		Methodology
Children	AND	Career*	AND	Attainment	AND	Randomised trials
OR		OR		OR		OR
Young people		Employer*		Achievement		Longitudinal
OR		OR		OR		OR
Adolescent		Enterprise*		Qualification		Cohort
OR		OR		OR		OR
Pupil		Entrepreneur		Employment		Counterfactual
OR		OR		OR		OR
Education		Experiential learning		Occupation		Causal
OR		OR		OR		OR
School		Job shadowing		Wage		Control group
		OR		OR		
		Mentoring		Earning		
		OR		OR		
		Volunteering		Labour		
		OR		OR		
		Work based learning		Transition		
		OR		OR		
		Work related learning		Progression		
		OR		OR		
		Work experience		Social mobility		
		OR		OR		
		Workplace		School-to-work		
		OR		OR		
		Work placement		School-to-career		
		OR				
		Vocational				
		OR				
		(Part time work)				

Appendix 3: Details of 96 studies selected for in-depth review

Anlezark, A., and Lim, P. (2011). *Does Combining School and Work Affect School and Post-School Outcomes? Longitudinal Surveys of Australian Youth* (No. 978-1-9219-5518-1). Australia: National Centre for Vocational Education Research (NCVER).

Abstract: In this report the authors seek to answer the question of whether combining school and work is detrimental or beneficial to a student's school educational performance and labour market outcomes. They find that young people who combine school and work are distributed right across the school population. Results show that individuals can combine school and work with minimal impact on their study if the hours are modest and those working longer hours show a stronger orientation towards work than study. The authors used data from the 2003 cohort (Y03) of the Longitudinal Surveys of Australian Youth.

Applied Research Unit. (2001). *Post-secondary employment and college enrolment among Montgomery County Public School Graduates: the role of career-focused programs*. Rockville, Maryland: Montgomery County Public Schools.

Abstract: Over the years, many have speculated about the post-secondary school and employment activities of Montgomery County Public Schools (MCPS) graduates. Knowledge of what our graduates do after high school graduation, in particular, how well they perform in college and in the workplace, is unarguably of paramount importance. Knowing which aspects of students' high school education are associated with successful transitions to college and to the workplace has implications for maintaining, redesigning, expanding, or developing programs to better meet the needs of our graduates in tomorrow's workplace. Despite the clear demand for this knowledge and its undeniable importance to understanding and preparing our youth for their futures, there have been few, if any, systematic, large-scale studies examining graduates' post-secondary school and employment activities. Consequently, recurrent questions about our graduates remain unanswered; questions, such as:

- To what extent do graduates follow through with their post-secondary school and career plans? What do MCPS graduates do after high school graduation?
- How well do MCPS graduates perform in college? What are their first-year grade point averages? How many complete their degrees? How long do graduates take to complete college degrees?
- How well do MCPS graduates perform in the workplace? How many graduates are employed? In what industries are they employed? What are graduates' earnings?
- What effect does high school career and technology education have on graduates' post-secondary school and employment activities?

Arum, R., and Way, S. (2004). School-community relationships and the early labour market outcomes of sub-baccalaureate students. In K. Albright and D. Conley (Eds.), *After the Bell: Family Background, Public Policy and Educational Success* (pp. 257-289). London and New York: Routledge.

Abstract: This book chapter examines how a U.S. school-assisted job placement, via a non-curricula mechanism, can boost occupational outcomes for young people, specifically those most likely to be vulnerable to labour market failure. Data from the High School and Beyond (HSB) survey, a longitudinal study of 1,222 high schools. The sample of individuals selected for analysis is 3,571 young people who possess a high school diploma or less and who report no post-secondary schooling in the four years after high school. Findings suggest that when schools foster relationships

with employers and assist in finding employment opportunities, then there are likely to be benefits within the labour market, especially for women. School-assisted job placements deliver higher wages and reduced unemployment for women in comparison to women who did not participate in such placements.

Athayde, R. (2009). Measuring Enterprise Potential in Young People. *Entrepreneurship Theory and Practice, 33*(2), 481-500.
Abstract: As young people increasingly become the target of entrepreneurial and enterprise policy initiatives and enterprise education in schools increases, so does the need to effectively measure the impact these programs have. A research instrument was designed to measure “enterprise potential” in young people using attitudes toward characteristics associated with entrepreneurship. A control-group cross-sectional design was used to investigate the impact of participation in a Young Enterprise Company Program, which is based on the U.S. Junior Achievement model, in six secondary schools in London, United Kingdom. The study found that participation in a Company Program can foster positive attitudes toward self-employment and that participants displayed greater enterprise potential than nonparticipants. Demographic differences also emerged in enterprise potential between ethnic groups. Young Black people were more positive about self-employment and displayed greater enterprise potential than either White or Asian pupils. A family background of self-employment had a positive influence on pupils' intentions to become self-employed. Finally, the research raises a conceptual issue concerning the multidimensionality of the construct of “enterprise potential.”

Athayde, R. (2012). The impact of enterprise education on attitudes to enterprise in young people: an evaluation study. *Education + Training, 54*(8/9), 709-726.
Abstract: Purpose - The purpose of the paper is to present evidence on the impact of enterprise education on young people still at school in London, UK. The study was designed to measure the effect of participation in a Young Enterprise (YE) Company Program on young people's attitudes toward starting a business, and on their enterprise potential. Design/methodology/approach - A longitudinal pre and post test design was used, with a sample of 276 young people. A control group provided a method of isolating the impact of the programme and was used as a test for self-selection bias. An attitudes to enterprise test was administered at the start of the programme and again at the end, nine months later. Findings - It was found that participation does have a positive impact on young people's enterprise potential, however this is moderated by other factors such as gender, ethnicity, socio-economic background and type of school attended. Research limitations/implications - The paper demonstrates the added value of a longitudinal design and the use of a control group. The relatively small sample size limited the extent of multivariate analysis that could be carried out. Practical implications - The paper provides an example of a robust evaluation methodology for the evaluation of enterprise education programmes in schools. Social implications - The paper highlights the importance of context in the delivery of enterprise education. The impact of enterprise programmes is likely to be moderated by a number of other factors such as socio-economic background. Originality/value - The paper cautions against a one-size fits all approach to enterprise education, and is relevant to policy makers and providers. The research design used attempted to overcome some of the criticisms often made of evaluations studies.

Bae, S. H., Gray, K., and Yeager, G. (2007). A Retrospective Cohort Comparison of Career and Technical Education Participants and Non-Participants on a State-Mandated Proficiency Test. *Career and Technical Education Research, 32*(1), 9-22.
Abstract: The sometimes poor performance of Career and Technical Education (CTE)

concentrators on a state-mandated proficiency test is a major concern of CTE educators. This study examined whether (a) there are performance differences on state-mandated 11th -grade math and reading tests between CTE and non-CTE students with similar proficiency scores in the 8th -grade; and (b) 11th -grade math test scores are related to 8th -grade math proficiency and high school math course-taking paerns. This exploratory study was conducted using two different cohorts of students from the high school classes of 2004 and 2005, from two CTE schools and their sending schools in Pennsylvania. The study found no statistically significant differences in reading proficiency on the state-mandated 11th -grade math test. In one of the two cohort groups, a statistically significant difference was found in math performance between CTE students and their counterparts, with the CTE students scoring lower. CTE students as a group had taken fewer college-prep math courses than their non-CTE peers. Such differences were associated with CTE students' lower achievement on a state-mandated math test. When math course-taking was controlled, CTE participation was found not to be associated with math test scores.

Bayer, A., Grossman, J. B., and DuBois, D. L. (2015). Using volunteer mentors to improve the academic outcomes of underserved students: the role of relationships. *Journal of Community Psychology, 43*(4), 408-429.
Abstract: Schools can benefit from understanding how to use community volunteers to achieve academic goals. A randomized control evaluation, involving 1,139 students from 71 schools, of the school-based mentoring program of Big Brothers Big Sisters of America found modest but statistically significant improvements in the teacher-rated academic performance and self-reported scholastic efficacy of mentored students. The present study explores the causal mechanism behind these effects. We find that a close relationship between mentor and protégé appears key to better academic outcomes. Because relationship closeness is not randomly assigned, we use two-stage least squares and other methods to control for potential selection bias. The role of emotional closeness as a mediator of program effects is evident across mentoring relationships of various lengths and statuses. Students were more likely to feel close to their mentors in programs that included weekly meetings and opportunities for mentor–protégé pairs to interact outside of a large-group setting.

Bernstein, L., Rappaport, C. D., Olsho, L., Hunt, D., and Levin, M. (2009). *Impact Evaluation of the U.S. Department of Education's Student Mentoring Program. Final Report (NCEE 2009-4047)*. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
Abstract: This report summarizes the findings from a national evaluation of mentoring programs funded under the U.S. Department of Education’s (ED) Student Mentoring Program. The Office of Management and Budget (OMB) requested that the Institute of Education Sciences (IES) within ED oversee an independent evaluation of the Student Mentoring Program. In 2005, ED contracted with Abt Associates and its team of subcontractors, Branch Associates, Moore and Associates, and the Center for Resource Management, to conduct the Impact Evaluation of Student Mentoring Programs. The impact evaluation used an experimental design in which students were randomly assigned to a treatment or control group. Thirty-two purposively selected School Mentoring Programs and 2,573 students took part in the evaluation, which estimated the impact of the programs over one school year on a range of student outcomes. The evaluation also describes the characteristics of the program and the mentors, and provides information about program delivery.

Bishop, J. H., and Mane, F. (2004). The impacts of career-technical education on high school labor market success. *Economics of Education Review, 23*(4), 381-402.
Abstract: The paper assesses the effects of offering upper-secondary students the opportunity to pursue vocational education in high school on completion rates and

subsequent earnings. Analysis of international cross-section data found that nations enrolling a large proportion of upper-secondary students in vocational programs have significantly higher school attendance rates and higher upper-secondary completion rates. Test scores at age 15 and college attendance rates for people over age 20 were not reduced.Analysis of 12 years of longitudinal data found that those who devoted about one-sixth of their time in high school to occupation-specific vocational courses earned at least 12% extra one year after graduating and about 8% extra seven years later (holding attitudes and ability in 8th grade, family background and college attendance constant). This was true both for students who did and did not pursue post-secondary education. Computer courses had particularly large effects on earnings eight years after graduating.

Bragg, D. D., Loeb, J. W., Gong, Y., Deng, C.-P., Yoo, J.-s., and Hill, J. L. (2002). *Transition from High School to College and Work for Tech Prep Participants in Eight Selected Consortia*. St. Paul, Minnesota National Research Center for Career and Technical Education, University of Minnesota.
Abstract: The transition from high school to college and work for tech prep participants was examined in a 4-year longitudinal study of local tech prep consortia in eight regions of the United States. The study methodology drew heavily on transcript analysis and two surveys with tech prep participants and nonparticipants. The tech prep participants and nonparticipants did not differ substantially in race/ethnicity, income, and parental education. The wide variations in secondary education and tech prep participation from consortium to consortium made it difficult to formulate definitive conclusions about particular models or approaches. The study findings did, however, support the notion that school and consortium requirements influence student participation in core academic courses relative to tech prep programs of study. The findings also suggested that it is incumbent upon school personnel to link tech prep core curricula to high school graduation requirements that go beyond the basic minimum requirements and prepare students for college entrance.

Brown, S., Oritiz-Nunez, A., and Taylor, K. (2011). What Will I Be When I Grow Up? An analysis of childhood expectations and career outcomes. *Economic of Education Review, 30*(3), 493-506.
Abstract: In this paper, we utilise the British National Child Development Study to explore the determinants of career expectations formed at the age of 16. We analyse the influence of careers advice and resources at school on career expectations as well as the influence of education. In addition, we explore the accuracy of occupational expectations as compared to the occupation that the respondents subsequently become employed in. Throughout our findings, human capital and gender play a pivotal role in explaining career expectations as well as explaining the accuracy of the occupational forecast. Interestingly, the level of school resources available for careers guidance in terms of the number of teachers who are qualified to give careers advice and the amount of specific careers guidance training received by these teachers both have relatively small effects upon career expectations.

Buckler, N., Coles-Jordan, D., Crisp, P., and Silvera, S. (2015). *Future First's alumni programme: Evaluation report* Coventry: Centre for the Use of Research and Evidence in Education (CUREE).
Abstract: During the academic year 2013-14, Future First partnered with J.P. Morgan to run an alumni programme for a target group of 25 schools in the areas of greatest need (based on the proportion of students eligible for free school meals). An alumni programme involves bringing former students back to their schools to talk to learners about careers. This particular programme included Future First running six alumni events in each of the schools. These sessions were largely targeted at the students who were currently studying for their GCSEs. Session foci ranged from reflecting on

the importance of getting a C grade in English and maths and discussing revision strategies to post-16 career routes. The programme as a whole aimed to increase students': career confidence; motivation to work harder for their exams; GCSE attainment; employability skills; aspirations; and access to work experience. CUREE were commissioned to undertake an evaluation of the programme to establish how far it met these aims, and to put forward recommendations for how Future First could continue to build on the work they are doing with schools. In order to evaluate the impact of the programme, the evaluation team performed an analysis of a range of evidence, including observations of sessions; student and staff perception data gathered through an electronic survey, phone and face-to-face interviews and focus groups carried out during case study visits; and documentary evidence. In order to build on and extend Future First's own evidence base about the impact of the programme, an analysis of student assessment data was carried out to test the hypothesis of whether students' improved study skills and learning behaviours, paired with the increased commitment to do well in their studies result in better grades. More information about evidence for this report and evaluation methods can be found in the main report.

Buscha, F., Maurel, A., Page, L., and Speckesser, S. (2012). The Effect of Employment while in High School on Educational Attainment: A Conditional Difference-in-Differences Approach*. *Oxford Bulletin of Economics and Statistics, 74*(3), 380-396.
Abstract: Using American panel data from the National Education Longitudinal Study of 1988, this article investigates the effect of working during grade 12 on attainment. We employ, for the first time in the related literature, a semiparametric propensity score matching approach combined with difference-in-differences. We address selection on both observables and unobservables associated with part-time work decisions, without the need for instrumental variable. Once such factors are controlled for, little to no effects on reading and math scores are found. Overall, our results therefore suggest a negligible academic cost from part-time working by the end of high school.

Castellano, M., Sundell, K., Overman, L. T., and Aliaga, O. A. (2012). Do Career and Technical Education Programs of Study Improve Student Achievement? Preliminary Analyses from a Rigorous Longitudinal Study. *International Journal of Educational Reform, 21*(2), 98-118.
Abstract: This longitudinal study examines the impact of programs of study on high school academic and technical achievement. Two districts are participating in experimental and quasi-experimental strands of the study. This article describes the sample selection, baseline characteristics, study design, career and technical education and academic achievement results of 9th and 10th graders, and qualitative findings from site visits. Few differences existed across groups in 9th grade, but by the end of 10th grade, students' test scores, academic grade point averages, and progress to graduation tended to be better for the students in programs of study (i.e., treatment students) than for control/comparison students. Qualitative results suggest that treatment schools have created school cultures around programs of study that appear to explain improved engagement and achievement. (Contains 9 tables and 2 notes.)

Crawford, C., Duckworth, K., Vignoles, A., and Wyness, G. (2011). *Young people's education and labour market choices aged 16/17 to 18/19 (Research Report DFE-RR182)*. London: Department for Education.
Abstract: In the context of a difficult 2011 labour market, this report examines the early educational and labour market transitions made by young people, age 16 to 17 through to age 18 to 19. The the research looked to obtain empirical evidence on the transitions made by young people which can then inform policies to improve transitions into the labour market for young people. The primary focus is on comparing the outcomes of those who initially take jobs without training with those who initially take jobs with

training. The research analyses the average effect from initially taking a job with or without training, regardless of whether the training actually led to a qualification or not.

Currie, S., Hutchinson, J., Ford, R., Kurakye, I., and Tattrie, D. (2007). *Future to Discover Pilot Project: [Early Implementation Report]*. Ottawa, Ontario: The Social Research and Demonstration Corporation.
Abstract: The Future to Discover (FTD) Pilot Project was established to determine what approaches work best to increase participation in post-secondary education. Although the pilot project is intended to help high school students in general, it also includes a focus on those students who are commonly identified as under-represented in postsecondary education: students from lower-income families whose parents have little or no post-secondary experience. Future to Discover is testing two interventions, which are called Explore Your Horizons and Learning Accounts. The pilot project is designed to determine the impact of these two interventions on access to post-secondary education, measured as participants' completion of the first year of their chosen post-secondary program.

Dalton, B., Lauff, E., Henke, R., Alt, M., and Li, X. (2013). *From Track to Field: Trends in Career and Technical Education across Three Decades: Prepared for the National Assessment of Career and Technical Education (NACTE)*. U.S.A: U.S. Department of Education, Policy and Program Studies Service.
Abstract: This report examines change and stability across two decades in the sociodemographic characteristics, educational experiences, and postsecondary outcomes of high school graduates with different occupational coursetaking patterns. Occupational coursetaking is part of the broader field of career and technical education (CTE), which also includes general labor market preparation and family and consumer sciences education courses. Historically, CTE and occupational studies provided low-achieving or academically disengaged students with courses that prepared them for immediate entry into the labor market. However, the expansion of new types of career education within magnet schools, career academies, and traditional high schools, and the increasingly accepted perspective that all students can benefit from training that improves their workplace skills, suggests that the older dichotomies between college-bound academic education and work-oriented occupational preparation are less salient. To examine whether this is the case, this report analyzes three high school cohorts—the graduating classes of 1982, 1992, and 2004—and compares their involvement in CTE and occupational courses, their academic coursetaking and achievement outcomes, and their initial postsecondary school and work experiences. We find that CTE, as measured by occupational coursetaking, has moved from being a clearly delineated vocational track for graduates headed to jobs immediately after high school to an exploratory program for an increasing proportion of both academic and general curriculum graduates. This shift from "track to field" involves smaller groups of graduates intensively studying an occupational area and larger groups of graduates earning a few occupational credits. It also coincides with shifts toward more academic coursetaking, improved academic achievement in math, and more involvement in postsecondary education for those with more involvement in occupational preparation. Before describing these findings further, the definitions and methodology for the report are explained.

Duckworth, K., and Schoon, I. (2012). Beating the odds: exploring the impact of social risk on young people's school-to-work transitions during recession in the UK. *National Institute Economic Review, 222*(1), R38-R51.
Abstract: Drawing on nationally representative data collected for two age cohorts in the UK, this paper a) assesses the effect of multiple independent socioeconomic risk factors in shaping the transition from school to work; and b) identifies potential protective factors enabling young people to beat the odds. By comparing experiences

and findings across two cohorts we assess the generalisability of findings across contexts, i.e. the 2008 and 1980s recessions. The results show that some young people exposed to even severe socioeconomic risks avoid being NEET (not in education, employment or training). Factors that appear to reduce the cumulative risk effect in both cohorts include prior attainment, educational aspirations and school engagement, as well as the social mix of the school environment.

Dustmann, C., and Van Soest, A. (2007). Part-time work, school success and school leaving. *Empirical Economics, 32*, 277-299.
Abstract: In this paper, we analyse part-time employment of teenagers still in full-time education, their academic performance, and their school leaving decisions. Our estimation strategy takes account of the possible interdependencies of these events and distinguishes between two alternative states to full time education: entering the labour force full time and going on to further training. We model this decision in a flexible way. Our analysis is based on data from the UK National Child Development Study, which has an unusually rich set of variables on school and parental characteristics. Our main finding is that working part time while in full-time education has only small adverse effects on exam performance for females, and no effects for males. The effect of part-time work on the decision to stay on at school is also negative, but small, and marginally significant for males, but not for females. Other important determinants of exam success as well as the continuation decision are parental ambitions about the child's future academic career.

Fletcher, E. C., Jr., and Zirkle, C. (2009). The Relationship of High School Curriculum Tracks to Degree Attainment and Occupational Earnings. *Career and Technical Education Research, 34*(2), 81-102.
Abstract: The purpose of this study was to investigate the relationship between high school curriculum tracks and student achievement outcomes through the consideration of degree attainment and occupational earnings. Data pertaining to graduates were analyzed through the National Longitudinal Survey of Youth (NLSY) 1997 dataset. This study investigated the linkage between participation in high school curriculum tracks, degree attainment, and occupational earnings. Findings of this research study indicated that the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 may not be meeting its objectives in terms of CTE students earning postsecondary degrees. However, this study found that CTE students were outperforming the general, dual, and college preparatory tracks in terms of occupational earnings. In addition, the dual track was more likely to earn associates' degrees than their general track counterparts. The college preparatory track outperformed all tracks in terms of degree attainment, particularly in earning bachelors' degrees.

Ford, R., Frenette, M., Nicholson, C., Kwakye, I., Hui, T. S.-w., Hutchison, J., *et al.* (2012). *Future to Discover: [Post-secondary Impacts Report]*. Ottawa, Ontario: Social Research and Demonstration Corporation.
Abstract: Future to Discover (FTD) is a pilot project testing the effectiveness of two interventions designed to help students overcome certain barriers to post-secondary education, namely lack of career clarity, misinformation about post-secondary education, and lack of financial resources. This report presents post-secondary impacts of the project, which has involved 5,429 students at 51 high schools in Manitoba and New Brunswick since 2004.

Ford, R., Grekou, D., Kwakye, I., and Nicholson, C. (2014). *Future to Discover: Fourth Year Post-secondary Impacts Report*. Ottawa, Ontario: The Social Research and Demonstration Corporation (SRDC).
Abstract: This report presents the latest results from the Future to Discover project. It is

the first in a new series that will be produced for New Brunswick, evaluating new ways to tackle a key challenge provinces face in meeting their future needs for skilled workers: engaging enough young people in post-secondary education. Promotion of high school students' access to post-secondary education is a major goal of Canadian governments, in part because of its increasingly important role in helping individuals attain social and economic success. Yet uncertainty remains as to the best policy interventions to encourage students to make the transition.

Fruiht, V. M., and Wray-Lake, L. (2013). The Role of Mentor Type and Timing in Predicting Educational Attainment. *Journal of Youth and Adolescence, 42*(9), 1459-1472.
Abstract: Having an adult mentor during adolescence has been found to predict academic success. Building on previous work, the present study examined interactions between the type of mentor (i.e., kin, teacher, friend, or community), the time that mentor became important (i.e., before, during, or after high school), and the ethnicity of the protégé in predicting educational attainment in young adulthood. Analyses used Waves III and IV of the National Longitudinal Study of Adolescent Health (N = 2,409). Participants' ages ranged from 18 to 27 (M = 21.75, SD = 1.79). The sample was 56.7 % female and nationally representative of ethnic diversity. Analyses showed that having a teacher-mentor was more predictive of educational attainment than having other types of mentors and that overall, having a mentor after high school predicts the most educational attainment. Kin- and community-mentors appeared to be more important to educational attainment during and before high school, respectively. Findings were consistent across ethnic groups. Overall, results highlight the value of teacher-mentors throughout childhood, adolescence, and early adulthood and our study further suggests that different types of mentors may be particularly useful at specific points in development.

Furstenberg, F. F., Jr., and Neumark, D. (2005). *School-to-Career and Post-Secondary Education: Evidence from the Philadelphia Educational Longitudinal Study*. St. Louis: Federal Reserve Bank of St Louis.
Abstract: We study a set of programs implemented in Philadelphia high schools that focus on boosting post-secondary enrollment. These programs are less career oriented than traditional school-to-work programs, but are consistent with the broadening of the goals of school-to-work to emphasize post-secondary education. The Philadelphia Longitudinal Educational Study (PELS) data set that we examine contains an unusually large amount of information on individuals prior to placement in STC programs. We use the detailed information in the PELS to study the process of selection into these programs and to examine their impact on a set of mainly schooling-related outcomes during and after high school, although we also consider their impact on non-academic outcomes. The data point to positive effects of these programs on high school graduation and on both academic and non-academic awards in high school, and similar negative effects on dropping out of high school. The results also suggest positive effects on aspirations for higher education and on college attendance. In addition, there is some evidence that these programs are more effective in increasing college attendance and aspirations among at-risk youths.

Golden, S., Golden, S., O'Donnell, L., Benton, T., and Rudd, P. (2005). *Evaluation of Increased Flexibility for 14 to 16 Year Olds Programme : Outcomes for the First Cohort (Research Report No. 668)*. London: Department for Education and Skills.
Abstract: The Increased Flexibility for 14-16 year olds Programme (IFP) was introduced in 2002 by the Department for Education and Skills (DfES) to provide vocational learning opportunities at key stage 4 for those young people who would benefit most. The programme, which entailed FE colleges and training providers working in partnership with schools to offer GCSEs in vocational subjects, NVQs, other vocational qualifications and GNVQs to students, was subsequently extended to three

further cohorts of young people. The DfES commissioned NFER to undertake an evaluation of the first cohort of participants. This summary presents selected key findings relating to the attainment, progression, attendance and attitudes of the first cohort of IFP students (2002-2004).

Golden, S., O'Donnell, L., Benton, T., and Rudd, P. (2006). *Evaluation of Increased Flexibility for 14 to 16 Year Olds Programme : Outcomes for the Second Cohort (Research Report No. 786)*. London: Department for Education and Skills.
Abstract: The Increased Flexibility Programme for 14 to 16 year olds (IFP) was introduced in 2002. The aim of the programme was to 'create enhanced vocational and work-related learning opportunities for 14 to 16 year olds of all abilities who can benefit most' - this included supporting provision of the GCSEs in vocational subjects. The first cohort of Year 10 students embarked on their programme in 2002 and this was followed by a second cohort in 2003 and subsequent cohorts in the following years. This summary focuses on the outcomes for participants who participated in the programme between 2003 and 2005 (cohort 2) during a time of change in 14 to 19 policy. It should be stressed that this summary reflects the outcomes for only the second cohort of young people to participate in this new and developing approach to delivering a more flexible and vocational curriculum through institutions working in partnership.

Gong, X., Cassells, R., and Duncan, A. (2012). *Does Part-Time Work at School Impact on Going to University?* (No. 978-1-9220-5629-0). Victoria, Australia: National Centre for Vocational Education Research (NCVER).
Abstract: Combining school study with part-time or casual work is an increasing trend for Australian high school students. For some, it is a way of earning some extra cash and having a bit of freedom from their parents, or it is an opportunity to get some experience in an occupation they are interested in. This paper looks at the impact that working while studying has on students' intentions to go to university as well as their actual enrolments. The authors use data from the Longitudinal Surveys of Australian Youth (LSAY) 1998 cohort to observe the work and study patterns of young people over a period of time. The paper confirms the findings of other research: that students are more likely to combine study and work as they progress through their school years, with over half of students working in Year 12. The study also found that girls are more inclined to combine study and work, but boys tend to work more intensively than girls. Combining some work with study does not change the likelihood of enrolling in university, but working intensively--more than 15 hours per week--does reduce the chances of going to university, especially for girls. This paper adds new detail to what is emerging quite clearly: that some part-time work for full-time students is fine, but long hours do impact on academic progress.

Gutman, L. M., Sabates, R., and Schoon, I. (2014). Uncertainty in educational and career aspirations: gender differences in young people. In I. Schoon and J. S. Eccles (Eds.), *Gender Differences in Aspirations and Attainment: A Life Course Perspective* (pp. 161-181). Cambridge: Cambridge University Press.
Abstract: Drawing upon data from two British age cohorts born in 1970 and 1990, this chapter examines gender and socio-historical differences regarding uncertainty in the educational and career aspirations of young people. Despite differences in the age of assessment and measurement, findings suggest that similar background characteristics are associated with uncertain aspirations in the two age cohorts. Males were more uncertain of their educational aspirations than were females. Uncertainty was also associated with growing up in a relatively disadvantaged family, with parents who did not expect their children to continue in education, as

well as with low academic attainment, low levels of school motivation, and lack of belief in one's own ability. However, findings indicated differences in the associated outcomes of uncertain aspirations between the two age cohorts. In the earlier-born cohort, young people with uncertain aspirations were more likely to be not in education, employment, or training (NEET), while there were no differences in NEET due to uncertain aspirations in the later-born cohort. The findings point toward a female advantage regarding certainty in aspirations as well as a prolonged period of career exploration in the later born cohort.

Harrison, N., James, D., and Last, K. (2012). *The impact of the pursuit of ASDAN's Certificate of Personal Effectiveness (CoPE) on GCSE attainment*. Bristol: University of West of England and ASDAN education.
Abstract: Analysis is based upon the National Pupil Database (NPD) data, of 500,000 pupils who completed Key Stage 4 (KS4) in 2010, alongside qualitative data from four schools offering ASDAN's Certificate of Personal Effectiveness (CoPE) in the UK. Results find that students undertaking CoPE within 'wide usage' schools (between 25-100% of the cohort) have a 10% increased likelihood of obtaining GCSE English graded A* to C and a 5% increased likelihood of obtaining five GCSEs at A* to C including English and Maths, compared to similar individuals. The impact is specifically pronounced for young people with low KS3 attainment in English, special educational needs (SEN), those eligible for free school meals, and those from black and minority ethnic (BME) communities. Academic attainment for young people in 'thin usage' schools (lower than 25% of the cohort) is lower than similar individuals who are not taking the CoPE qualification.

Henderson, R. (1995). Effects of Thematically Integrated Mathematics Instruction on Students of Mexican Descent. *The Journal of Educational Research, 88*(5), 290-300.
Abstract: The effects of thematically integrated in struction in mathematics on achievement, attitudes, and motivation in mathematics among middle school students of Mexican descent were investigated. A school-university collaborative effort led to the development and testing of a thematic approach undertaken as a means of contextualizing instruction for students considered to be at risk for school failure. Instruction relied heavily on small, collaborative learning groups and hands on activities designed to help students make real-world sense of mathematical concepts. As hypothesized, experimental and control students made equivalent gains in computational skills, but experimental students (thematic treatment) surpassed controls in achievement on mathematical concepts and applications. The two programs did not have a differential effect on attitudes toward mathematics or self-perceptions of motivation in mathematics, but motivational variables did predict achievement outcomes for both groups. Issues of "opportunity to learn" the full range of mathematics content of the curriculum within a thematic approach are examined.

Hillage, J., Kodz, J., and Pike, G. (2011). *Pre-16 work experience practice in England: an evaluation*. London: Department for Education and Employment.
Abstract: Commissioned by the Department for Education and Employment, this study assesses current work experience policy and practice in England. In particular, it evaluates the impacts of policy changes implemented since the last major evaluation in 1996, and informs the development of policies to further enhance the quality of work experience. This report is based on national surveys of school and area work experience co-ordinators, and qualitative interviews and surveys of students, school staff, employers and intermediaries in five case study areas.

Hooley, T., Matheson, J., and Watts, A. G. (2014). *Advancing ambitions: The role of career guidance in supporting social mobility*. Derby: University of Derby and The Sutton Trust.

Abstract: Career guidance describes activities which support individuals to learn about education and employment and plan for their future lives, learning and work. These activities contribute to social mobility, helping people to discover and access opportunities that might exist outside of their immediate networks. They also encourage individuals to challenge their pre-existing assumptions about what they are capable of and to develop practical strategies to operationalise their aspirations.

Career guidance has a long history in England going back to the start of the twentieth century. From 1948 a Youth Employment Service with a national footprint was created to work with schools. When this service became the Careers Service in the 1970s, a model of partnership working was developed between the service and schools. In 2000 Connexions replaced the Careers Service, resulting in a considerable weakening of provision. Then, in 2011, the coalition government cut Connexions and transferred responsibility for career guidance to schools. The new responsibility was imposed on schools with weak statutory guidance and little help or support. None of the funding that had previously supported Connexions was transferred to schools, which had to deliver this new responsibility out of existing school budgets. This has resulted in a decline in the quality and quantity of the career guidance available to young people in England and the emergence of a 'postcode lottery' where some young people have access to much better career guidance than others.

These changes have resulted in a major reorganisation of the delivery of career guidance in schools. Unfortunately this has not been monitored in any systematic way, and only limited attempts been made to measure the impacts of the changes. This report aims to fill some of this gap by drawing together existing research and undertaking new empirical work. It investigates how career guidance has changed as a result of recent policy, what its impacts are, what effective practice looks like, and what the effects of such effective practice are likely to be.

Hossain, F., and Bloom, D. (2015). *Toward a better future: evidence on improving employment outcomes for disadvantaged youth in the United States*. New York City: MDRC.

Abstract: In the aftermath of the Great Recession of 2007-2009, youth unemployment in the United States reached its highest level since the Second World War. Only about half of young people ages 16 to 24 held jobs in 2013, and recent estimates suggest that about one in five people in this age range — 6.7 million people — were neither working nor in school. The recession has taken an unprecedented toll on the economic prospects of young people, and recovery for them has been the slowest. According to one estimate, persistent high unemployment among young people has resulted in up to $25 billion a year in uncollected taxes and, to a lesser extent, higher expenses on safety net pro-grams. Increased investment in strategies to improve the employment prospects of youth, especially those who are economically disadvantaged, is necessary to confront this growing problem and to ensure a better future for the next generation.

To date, most efforts to improve labor market outcomes for young people have focused on supply-side strategies to build human capital and have included some combination of education, training, work experience, and developmental activities to produce a better supply of skilled, employable youth. But relatively little attention has been paid to the demand side of the labor market equation — the private employers who account for the lion's share of jobs in the US economy. Many programs that prepare youth for work by providing education, training and employment services are often not backed by an appropriate demand for particular skills in the local labor market. These programs have also historically lacked strong employer partnerships to create job opportunities for the

youth they serve. Thus, while these programs increase the supply of new workers in the labor market, these workers are not necessarily placed in new jobs created for them and often displace existing workers. A demand-driven approach to workforce development with strong employer participation should be a vital component of any policy response to youth unemployment, since the private sector is a direct source of jobs and can also provide training to improve career mobility for youth in the long run.
This paper draws from an MDRC review of literature (funded by The Rockefeller Foundation) on labor market trends and employment-related programs for youth over the past 30 years. It aims to inform the search for demand-side solutions by providing a better understanding of: (1) factors that potentially drive high rates of unemployment among young adults; (2) the current state of evidence on employment-related interventions for youth, especially economically disadvantaged youth; and (3) future directions for change that involve stronger employer involvement.

Hotz, V. J. (2002). Are There Returns to the Wages of Young Men from Working While in School. *Review of Economics and Statistics, 84*(2), 221-236.
Abstract: This paper examines the effects of work experience acquired while youth were in high school (and college) on young men's wage rates. Previous studies have found sizeable and persistent rates of return to working while enrolled in school, especially high school, on subsequent wage growth. We evaluate the extent to which these estimates represent causal effects by assessing the robustness of prior findings to controls for unobserved heterogeneity and sample selectivity. We explore more-general econometric methods for dealing with the dynamic of selection and apply them to data on young men from the 1979 National Longitudinal Survey of Youth (NLSY79). We find that the estimated returns to working while in high school or college are dramatically diminished in magnitude and are not statistically significant when one applies dynamic selection methods.

Huber, L., Sloof, R., and Van Praag, M. (2012). The effect of early entrepreneurship education: Evidence from a randomized field experiment. *European Economic Review, 72*, 76-97.
Abstract: The aim of this study is to analyze the effectiveness of early entrepreneurship education. To this end, we conduct a randomized field experiment to evaluate a leading entrepreneurship education program that is taught worldwide in the final grade of primary school. We focus on pupils' development of relevant skill sets for entrepreneurial activity, both cognitive and non-cognitive. The results indicate that cognitive entrepreneurial skills are unaffected by the program. However, the program has a robust positive effect on non-cognitive entrepreneurial skills. This is surprising since previous evaluations found zero or negative effects. Because these earlier studies all pertain to education for adolescents, our result tentatively suggests that non-cognitive entrepreneurial skills are best developed at an early age.

Huber, L.R., Sloof, R., and Van Praag, M. (2014). The effect of early entrepreneurship education: Evidence from a field experiment. *European Economic Review, 72*, 76-97.
The aim of this study is to analyze the effectiveness of early entrepreneurship education. To this end, we conduct a randomized field experiment to evaluate a leading entrepreneurship education program that is taught worldwide in the final grade of primary school. We focus on pupils' development of entrepreneurship knowledge and a set of non-cognitive skills relevant for entrepreneurial activity. The results indicate that knowledge is unaffected by the program. However, the program has a robust positive effect on non-cognitive entrepreneurial skills. This is surprising since previous evaluations found zero or negative effects. Because these earlier studies all pertain to entrepreneurship education for adolescents, our result tentatively suggests that non-cognitive entrepreneurial skills are best developed at an early age. As the entrepreneurship program has various features besides its entrepreneurship content, we must leave it to future research to determine which

specific element has the greatest impact on the development of non-cognitive entrepreneurial skills.

Jobs for the Future. (1998). *School-to-career initiative demonstrates significant impact on young people*. Boston, MA: Jobs for the Future.
Abstract: Research on Boston Public School graduates provides evidence that linking high schools with employers and other community allies can have a strong, lasting influence on students. The study was among the first to collect information on college enrollment and postsecondary employment and earnings over several years.

Kashefpakdel, E. T., and Percy, C. (2016, forthcoming). Career education that works: An economic analysis using the British Cohort Study. *Journal of Education and Work*.
Abstract: There is significant policy interest in the issue of young people's fractured transitions into the labour market. Many scholars and policy-makers believe that changes in the education system and labour market over recent decades have created a complex world for young people; and that this can partly be addressed by enhanced career education while individuals are at school. However, the literature lacks in-depth quantitative analysis making use of longitudinal data. This paper draws on the British Cohort Study 1970 to investigate the link between career talks by external speakers and employment outcomes, and finds some evidence that young people who participated in more career talks at age 14-16 enjoyed a wage premium 10 years later at age 26. The correlation is statistically significant on average across all students who receive talks at age 14-15; but remains the case for 15-16-year-olds only if they also described the talks as very helpful.

Kemple, J. J. (2001). *Career Academies: Impacts on Students' Initial Transitions to Post-Secondary Education and Employment*. New York: Manpower Demonstration Research Corp.
Abstract: Career academies are characterized by these three basic features: a school-within-a-school organizational structure, curricula that combine academic and career or technical courses based on a career theme, and partnerships with local employers. In a 10-year longitudinal study of the academy model, begun in 1993 in 9 schools around the country, some 1,700 academy applicants in the 8th or 9th grade were randomly assigned to their high schools' academy or any other high school program. The evaluation found, as of the year after scheduled high school graduation, that although the career academies enhanced the high school experiences of their students in ways that were consistent with the reform's short-term goals, these positive effects did not translate into changes in high school graduation rates or initial transitions to postsecondary education and jobs. Other key findings included: (1) the academies had little influence on course content, classroom instructional practices, and standardized test scores; (2) for students at high risk of dropping out, the academies increased the likelihood of staying in school through 12th grade, improved attendance, and increased number of credits earned; and (3) relative to similar students nationally, both studied groups had high rates of high school graduation, college enrollment, and employment. The results suggest that career academies should consider expanding their efforts to recruit students who may not be motivated to enroll in academies on their own, to provide college counseling, and to increase teacher professional development activities in order to improve curriculum and instruction.

Kemple, J. J., and Willner, C. J. (2008). *Career academies: long-term impacts on labor market outcomes, educational attainment, and transitions to adulthood* (Report). New York: MDRC publications.
Abstract: Established more than 30 years ago, Career Academies have become a widely used high school reform initiative that aims to keep students engaged in school and prepare them for successful transitions to postsecondary education and

employment. Typically serving between 150 and 200 students from grades 9 or 10 through grade 12, Career Academies are organized as small learning communities, combine academic and technical curricula around a career theme, and establish partnerships with local employers to provide work-based learning opportunities. There are estimated to be more than 2,500 Career Academies operating around the country. Since 1993, MDRC has been conducting a uniquely rigorous evaluation of the Career Academy approach that uses a random assignment research design in a diverse group of nine high schools across the United States. Located in medium- and large-sized school districts, the schools confront many of the educational challenges found in low-income urban settings. The participating Career Academies were able to implement and sustain the core features of the approach, and they served a cross-section of the student populations in their host schools. This report describes how Career Academies influenced students' labor market prospects and postsecondary educational attainment in the eight years following their expected graduation. The results are based on the experiences of more than 1,400 young people, approximately 85 percent of whom are Hispanic or African-American.

Koivisto, P., Vuori, J., and Vinokur, A. D. (2010). Transition to work: Effects of preparedness and goal construction on employment and depressive symptoms. *Journal of Research on Adolescence, 20*(4), 869-892.

Abstract: This study examines the mediating role of employment preparedness in improving employment, mental health, and construction of work-life goals among young vocational school graduates who participated in the School-to-Work effectiveness trial. The trial included a 1-week intervention program that focused on enhancing employment preparedness. In this trial, 416 graduates of secondary vocational institutes were randomized into a control and experimental group. All the study participants were assessed at baseline, immediately after the intervention, and 10 months later. The results showed that the School-to-Work intervention increased employment preparedness, which in turn increased employment at the 10-month follow-up. Furthermore, employment predicted work-life-related personal goals and lower financial strain, which in turn was associated with lower depressive symptoms. The implications for theory and practice are discussed.

Kuijpers, M., and Meijers, F. (2009). Learning environment for career learning: A study of the relations between the learning environment and career competencies in students in pre-vocational and secondary vocational education. *Pedagogische Studien, 83*(3), 93-109.

Abstract: This article focuses on which aspects of the learning environment, aimed at fostering career learning, correspond with the development of career competencies among students (aged 12–19 years) enrolled in prevocational and secondary vocational education in The Netherlands. Aspects of the learning environment that are taken into account here are the following: career orientation and guidance methods used, instruments implemented, and the degree to which the curriculum is practice-based and dialogical. In the study, three career competencies are identified: career reflection (reflective behaviour), career forming (proactive behaviour), and networking (interactive behaviour). To research the relationship between the learning environment and the presence of career competencies, a study was done among 3499 students and 166 teachers in 226 classes in 34 schools. The results show that career guidance in school, in which a dialogue takes place with the student about concrete experiences and which is focused on the future, contributes most to the presence of career competencies among students. Without this dialogue, career guidance methods and instruments barely contribute to the acquisition of career competencies.

Legum, H. L., and Hoare, C. H. (2004). Impact of a Career Intervention on At-Risk Middle School Students' Career Maturity Levels, Academic Achievement, and Self-Esteem.

Professional School Counseling, 8(2), 148-155.
Abstract: The purpose of this study was to assess the effects of a 9-week career intervention program on at-risk middle school students' career maturity levels, self-esteem, and academic achievement. This study was based on a pretest and posttest design using a control group. Data were collected from 27 at-risk middle school students representing the experimental group and 30 at-risk middle school students making up the control group. Modes of measurement consisted of the Crites Career Maturity Inventory (measuring attitude and competency levels), the Coopersmith Self-Esteem Inventory, and grades. Data for this study were coded numerically and analyzed using inferential tests and analysis of covariance. Qualitative interviews were conducted with teachers of 5 randomly selected participants from the experimental group to compare self-esteem and academic achievement prior and subsequent to the treatment. Although results revealed that the sample's career maturity attitude and competency levels and academic achievement improved, such increases were not statistically significant. Recommendations for future research and implications for school counselors are discussed.

Light, A. (2001). In-school work experience and the returns to schooling. *Journal of Labor Economics, 19*(1), 65-93.
Abstract: Students often accumulate substantial work experience before leaving school. Because conventional earnings functions do not control for in-school work experience, their estimates of the return to schooling include the benefit of work experience gained along the way. Using data from the National Longitudinal Survey of Youth, I estimate wage models with and without controls for in-school work experience. The estimated schooling coefficients are 25%–44% higher (depending on how I control for ability bias) when in-school work experience is omitted than when it is included. These findings indicate that conventional models significantly overstate the wage effects of “school only.”

Linnehan, F. (2001). The Relation of a Work-Based Mentoring Program to the Academic Performance and Behavior of African American Students. *Journal of Vocational Behavior, 59*(3), 310-325.
Abstract: Using a sample of 202 African American students from four urban high schools, this study examined participation in a work-based mentoring program in relation to academic performance and behavior. Based on the program's academic goals, the unique characteristics of mentoring programs, and social learning theory, it was anticipated that participating in the program would be related positively to grades and attendance. Results indicated that participating in the program for more than half the academic year had a significant, positive relation with students' grade point averages and attendance rates after controlling for their previous-year GPA and attendance. This relation was not significant for those who participated in the program over a shorter period of time. Implications of the results for the career development of African Americans are discussed and areas for future research are identified.

MacAllum, K., and Bozick, R. (2001). What Happens after They Graduate? Results from a Longitudinal Study of STC Graduates, *75th Annual Conference of the Association for Career and Technical Educations* New Orleans.
Abstract: The Lansing Area Manufacturing Partnership (LAMP) is an academically rigorous, business/labor-driven school-to-career (STC) program in Lansing, Michigan, that includes business, union, school, and parent partners. The effects of participation in LAMP on transitions from school to higher education and work were examined in a longitudinal study of 48 LAMP participants and 46 students who did not participate in LAMP. Both groups were similar from the standpoints of gender, race, age, grade-point average (GPA), and school attended. Data were collected from both groups 6, 12, and

18 months after graduation. The following were among the key findings: (1) postsecondary enrollment was higher among the LAMP participants (96% versus 79%) in March 2000, whereas both groups had nearly identical postsecondary enrollment rates (about 79%) in winter 2001; (2) the average GPA of the non-LAMP students remained marginally higher than that of the LAMP graduates throughout the study; (3) little difference in the two groups' employment rates was found; (4) 16 months after graduation, LAMP graduates hourly wage averaged $11.27 versus $8.49 for the non-LAMP participants; (5) LAMP appeared to better prepare students for the challenges and responsibilities of work; and (6) LAMP graduates pursued career-enhancing opportunities at higher rates than non-LAMP graduates did.

MacAllum, K., Worgs, D., Bozick, R., and McDonald, D. (2001). *Transitioning to College and Career: Interim Findings of the LAMP Longitudinal Study*. Washington D.C.: Academy for Educational Development, National Institute for Work Learning.
Abstract: The Lansing Area Manufacturing Partnership (LAMP) is an academically rigorous, business/labor-driven school-to-career program in Lansing, Michigan, that includes business, union, school, and parent partners. The effects of participation in LAMP on transitions from school to higher education and work were examined in a longitudinal study that compared the progress of LAMP students and non-LAMP participants from the classes of 1998, 1999, and 2000 at more than 20 high schools. Changes in educational and employment status were tracked through mailed surveys administered every June and December. The LAMP students pursued postsecondary education at higher rates than the comparison groups did. As a group, the LAMP students were maintaining good grades and a significant majority were working and attending school at the same time. Compared to the non-LAMP participants, the LAMP students participated in more career development activities during their senior year in high school and appeared to have been better prepared for the transition from high school to college and employment. Many LAMP graduates were initially dissatisfied with their jobs, particularly with their opportunities for training and advancement, and they have changed jobs at higher rates than the comparison group. However, many LAMP graduates considered their job changes positive steps toward their career goals.

Mann, A., and Percy, C. (2013). Employer engagement in British secondary education: wage earning outcomes experienced by young adults. *Journal of Education and Work, 27*(5), 496-523.
Abstract: Since 2004, the devolved education systems of England, Scotland and Wales have introduced initiatives to increase contact between employers and young people, particularly aged 14-19, as a supplementary, co-curricular activity within mainstream education. The initiatives are motivated partly to increase wage-earning potential but studies to date have not explicitly tested this hypothesis. Robust evaluations from the US suggest a potential wage uplift of 6.5%-25% but these evaluations do not directly comment on the UK approach, as they focus on highly-specialised forms of education with closely integrated employer involvement. A new 2011 survey associates wage returns and school-mediated employer contacts for 169 full-time 19-24 year old workers on annual salaries within the UK environment – and suggests a link of 4.5% between each additional school-mediated employer contact, such that four employer contacts would produce results in line with the US studies. Contrasting the US and UK studies suggests that any causal link from school-mediated employer contact to wage outcomes is likely to be driven more by increased social capital as witnessed in improved access to non-redundant, trustworthy information and social network development than by the development of either technical or 'employability' skills.

Marks, G. (2008). *The occupations and earnings of young Australians: the role of education and training (LSAY Research Reports No 55)*. Victoria, Australia: Australian Council for Educational Research.

Abstract: This report investigates the effect of post-secondary education and training on the occupation and earnings of young people. The majority of young Australians undertake further education and training after leaving school, and it is important to better understand the pathways that they follow, and the impact of different types of experience on the early career. Such analyses can help young people in choosing appropriate programs as well as assist policy makers in identifying resource priorities. They can also contribute to debates about the role of education in promoting social mobility and economic development. The data analysed are from a sample of young people who were first interviewed when they were in Year 9 in 1995 and subsequently interviewed annually. This report analyses annual data collected up until 2005 when they were, on average, 24 years of age. Longitudinal data can provide important insights into the pathways that young people follow and the influences they experience. The report examined the occupational status of jobs and weekly earnings by type of post-school education and training. Occupational status provides a convenient summary measure of occupations based on job status or prestige, while earnings measure the financial reward from work.

Maxwell, N. L., and Rubin, V. (1997). *The Relative Impact of a Career Academy on Post-Secondary Work and Education Skills in Urban, Public High Schools. HIRE (Discussion Paper Number 97-2)*. Hayward, CA: The Human Investment Research and Education Center.

Abstract: The relative impact of career academies on postsecondary educational attainment and knowledge and skills acquired in urban public high schools was examined through an analysis of single-district and national databases. The national data were obtained from the first and third follow-up surveys of the National Education Longitudinal Study. Compared with the students in the national sample, students in the single-district sample were less likely to be white (less than 10% versus 44.7%), more likely to receive free lunches (40% versus 28%), and more likely to have limited English proficiency (more than 25% versus 14%). Of the 10,102 students in the single-district sample, 1,257 attended career academies. The data analyses established that, although career academies have the potential for increasing aggregate educational attainment with an impact equal to that of the academic track, career academies may not be equally effective for all students. It was therefore recommended that an array of high school programs be offered to meet the needs of diverse student bodies.

Maxwell, N. L., and Rubin, V. (2000). *High School Career Academies: A Pathway to Educational Reform in Urban School Districts?* Kalamazoo, MI: Upjohn Institute for Employment Research.

Abstract: This book examines the capacity of the career academy--one of the initiatives spawned by the school-to-work movement--to address academic reform in terms of increased education and workplace skills. Qualitative data collected as part of a 7-year local evaluation of career academies and a data set that contains transcript data on a population of three cohorts of public high school students with a survey of the students' plans for after high school were used to conduct the analysis. Chapter 1 discusses the historical trends and social conditions that led to the emergence of school-to-work educational reforms. Chapter 2 outlines the methods used to answer the questions about the ability of career academies to meet educational reform needs. Chapter 3 shows how the economic and education-related problems in one city led to adopting the career academy model as the primary focus of high school reform. The next two chapters present multivariate findings from the quantitative analysis, including (Chapter 4) the overall impact of career academies on postsecondary education and labor market outcomes and (Chapter 5) the impact of the career academy as it unfolds in various school environments. Chapter 6 contains a summary and policy implications of the research, concluding that career academies can be quite effective at facilitating postsecondary educational success for their students, with two cautions: (1) the career

academy must build academic knowledge and skills in high schools; and (2) the career academy strategy may not be appropriate in all high schools or for all students.

McComb-Beverage, S. K. (2012). *An Experimental Design: Examining the Effectiveness of the Virginia Career View Program on Creating 7th Grade Student Career Self-Efficacy.* Liberty University, Lynchburg, VA.

Abstract: Across the country students are graduating from high school without the career knowledge and skills they need to be successful in today's global economy. In response, school officials are considering career development as an essential component for adolescent education. In the state of Virginia, the Virginia Career View program has been designed to assist school personnel with the career education of middle school students. This quantitative research study measured the effectiveness of the Virginia Career View program on 7th grade students' career pathway identification and career self-efficacy. Upon completion of the program, students in the experimental group and control group completed the Career Decision Self-Efficacy Scale – Short Form. This study included 148 randomly assigned 7th grade students from Alpha Middle School. A multivariate analysis of variance (MANOVA) was used to analyze the association between the dependent variable, career self-efficacy, based on the independent variable, Virginia Career View. A Pearson's chi-square analysis was used to analyze the relationship between the experimental group's and the control group's ability to identify a career pathway that matched their career interests and skills. Results showed statistically significant differences between groups, and the null hypotheses for both research questions were rejected.

McVicar, D., and McKee, B. (2002). Part–Time Work During Post–Compulsory Education And Examination Performance: Help Or Hindrance? *Scottish journal of political economy, 49*(4), 393-406.

Abstract: This paper examines the effects on examination performance of having a part-time job whilst in full-time post-sixteen education, using new data on young people in Northern Ireland. Around 35% engaged in part time employment during their education spell, compared to over 60% found by recent GB studies. This may be related to Northern Ireland's comparatively slack youth labour market and might reflect part-time employment levels in other peripheral regions. Our estimations suggest working part-time per se is not detrimental to examination performance, although working long hours is. Policy makers might improve educational performance by reducing incentives to work long hours.

Miller, A. (1999). Business mentoring in schools: does it raise attainment? *Education and Training, 41*(2), 73-78.

Abstract: The article describes research into the impact of business and community mentoring in schools on students' attainment. The research, which was conducted in seven schools during the 1996/97 academic year, was funded by the Department for Education and Employment and three Training and Enterprise Councils. An overview of mentoring schemes and models is followed by analysis of objectives for mentoring from various perspectives. Value -added anal
mentoring on a sample of mentored students, compared with a similar group of non -
mentored students acting as a control group. The research found a mixed picture in the seven schools involved with girls out -performing
but positive, impact on the attainment of mentored students. Finally, the researchers offer some recommendations to schools and scheme organisers on how to increase the impact of mentoring upon GCSE attainment.

Morris, M. (2004). *The Case for Careers Education and Guidance for 14-19 year olds*. Slough: National Foundation for Educational Research.

Abstract: The recent interim report by the Working Group on 14-19 Reform (DfES,

2004) brought into sharp focus the need for a coherent, integrated and well planned careers education and guidance programme in schools and colleges. In order for young people to make the most of the opportunities in the proposed 14-19 curriculum, Tomlinson argued that young people 'must be prepared with the skills and self-awareness to exercise their choices effectively'. What are these skills? How compelling is the evidence that such skills can support young people in making effective choices about their future? How well prepared are schools and colleges to support their students' career development? This briefing paper explores some of the summarised findings from a number of large-scale research studies conducted at NFER (mostly on behalf of the DfES and its predecessor Departments, but also on behalf of a number of different careers services) over the last decade. It argues that it is possible to identify the skills that promote successful transition and traces some of the links between successful transition and programmes of careers education and guidance. It also suggests that, in the light of the Tomlinson Report (2004), the recent National Audit Office report (2004) and the findings from current research on transition from schools engaged in Excellence in Cities and Aimhigher (Morris and Rutt, 2003); the conclusions from this earlier research are equally pertinent today.

Nagengast, B., Marsh, H. W., Chiorri, C., and Hau, K.-T. (2014). Character Building or Subversive Consequences of Employment during High School: Causal Effects Based on Propensity Score Models for Categorical Treatments. *Journal of Educational Psychology, 106*(2), 584-603.

Abstract: The present study revisited the unresolved issue of the long-term effects of part-time working intensity during high school on students' achievement, participation in postsecondary education, time allocation, and work-related values and expectations. Using data from the Educational Longitudinal Study of 2002 (N = 14,654), the effects of part-time working in Year 12 on outcomes assessed at graduation from high school and 2 years later were studied with propensity score methods for categorical treatments. Three theoretical perspectives on the effects of part-time working intensity (subversion of academic goals, character building, threshold model) were contrasted. Substantively, there were negative linear effects of working intensity on achievement outcomes. Results for higher education participation partly supported a threshold model. Heterogeneous effects for self-reported time use and work-related values suggested that the negative effects on achievement outcomes were not due to a simple zero-sum game. Ironically, working with high intensity led students to value having a good job more strongly but might undermine their chances of achieving this goal. However, these effects were only recognized 2 years after high school graduation, when occupational expectations were negatively affected by working intensity in Year 12.

National Audit Office. (2010). *Educating the next generation of scientists*. London: The Stationery Office.

Abstract: This report aims to evaluate the factors that implicate the uptake of maths and science before the age of 18. Analysis is drawn from a mixed-method approach combining, surveys of 1,274 pupils in the 'STEM pipeline' in the UK, focus groups and interviews, literature review, analysis of the National Pupil Database, ONS population estimates and examination data. Findings reveal the following factors to be critical in determining the amount of young people taking maths and science: careers information and guidance, quality and quantity of school and science facilities, quality and quantity of science teachers, image and interest, and the availability of separate GCSE sciences ('triple science'). Based upon such factors, the report explores the effectiveness of a selected number of programmes aiming to improve up-take. The authors recommend all factors need to be combined to effectively increase the number of students engaging with maths and science, perhaps through an overarching programme based upon the evidence provided.

Neild, R. C., Boccanfuso, C., and Byrnes, V. (2015). Academic Impacts of Career and Technical Schools. *Career and Technical Education Research, 40*(1), 28-47.
Abstract: This study presents findings from three cohorts of students - the classes of 2003, 2004, and 2005, in the School District of Philadelphia - that were admitted to the district's career and technical education (CTE) schools through a randomized lottery process. This study takes advantage of this so-called 'natural experiment' to compare high school academic outcomes for lottery applicants who were admitted with those for students who did not receive an acceptance. Results find that CTE students had significantly better outcomes in terms of graduation rates, credit accumulation, and the successful completion of the college preparatory mathematics sequence algebra 1, algebra 2, and geometry. Results for other outcomes such as the completion of science and foreign language course sequences, overall grade point average, and mathematics and reading comprehension achievement, were inconsistent across cohorts and statistical tests, neither favoring nor against students accepted to CTE schools.

Neumark, D. (2004). *The Effects of School-to-Career Programs on Postsecondary Enrollment and Employment*. San Francisco: Public Policy Institute of California.
Abstract: This report uses national data from the 1997 National Longitudinal Survey of Youth (NLSY97) to evaluate the effectiveness of the types of school-to-career (STC) programs that were encouraged and supported in California by the grants received by the state from the federal School-to-Work Opportunities Act of 1994 (STWOA). In particular, the empirical analysis focuses on whether participation in these STC programs increases postsecondary college enrollment or employment. STWOA provided more than $1.5 billion over a five-year period to support increased school-to-work activities in the nation?s public schools. This money was made available to states to create STC systems entailing cooperation among schools, private business, and government bodies (Office of Technology Assessment, 1995). STWOA set out to increase (1) school-based initiatives such as career links to academic curriculum and career awareness activities, (2) workbased activities such as job shadowing, internships, and apprenticeships, and (3) connecting activities, such as the development of partnerships with employers and postsecondary institutions. STWOA was not reauthorized after its initial five years. And although certain other school-to-career programs still exist, mainly Tech Prep and Career Academies, this loss of funding appears to have left a gaping hole in efforts to prepare low-skilled youth for higher-paying jobs?the principal goal behind the original legislation. This is particularly problematical for California because, as research in other studies has shown, income inequality is higher in California than in the rest of the nation, and the difference between the incomes of the "haves" and "have nots" is largely attributable to education. Given the loss of federal STWOA funding, it is important to determine just how effective the activities supported by this program were and whether it might be in California's best interest to restore some of the funding for these activities. p their careerve on to work, further education, or a combination of the two.

Neumark, D., and Rothstein, D. (2003). *School-to-Career Programs and Transitions to Employment and Higher Education (NBER Working Papers: 10060)*. Cambridge, MA: National Bureau of Economic Research Inc.
Abstract: The 1994 Federal School-to-Work Opportunities Act (STWOA) provided more than $1.5 billion over five years to support increased career preparation activities in the country's public schools. However, the STWOA was not re-authorized, so state governments face decisions about levels of funding support for school-to-career (STC) programs. Coupled with the availability of a new longitudinal data source with rich information on STC programs the 1997 National Longitudinal Survey of Youth (NLSY97) it is therefore an opportune time to study the effectiveness of STC programs.

This paper uses the NLSY97 to assess the effects of STC programs on transitions to employment and higher education among youths leaving high school, with a focus on estimating the causal effects of this participation given possible non-random selection of youths into STC programs.

Neumark, D., and Rothstein, D. (2005). *Do School-to-Work Programs Help the "Forgotten Half"?* St. Louis: Federal Reserve Bank of St Louis.
Abstract: This paper tests whether school-to-work (STW) programs are particularly beneficial for those less likely to go to college in their absence - often termed the "forgotten half" in the STW literature. The empirical analysis is based on the NLSY97, which allows us to study six types of STW programs, including job shadowing, mentoring, coop, school enterprises, tech prep, and internships/apprenticeships. For men there is quite a bit of evidence that STW program participation is particularly advantageous for those in the forgotten half. For these men, specifically, mentoring and coop programs increase post-secondary education, and coop, school enterprise, and internship/apprenticeship programs boost employment and decrease idleness after leaving high school. There is less evidence that STW programs are particularly beneficial for women in the forgotten half, although internship/apprenticeship programs do lead to positive earnings effects concentrated among these women.

Neumark, D., and Rothstein, D. (2006). School-to-career programs and transitions to employment and higher education. *Economics of education review, 25*(4), 374-393.
Abstract: The 1994 federal School-to-Work Opportunities Act (STWOA) provided more than $1.5 billion over 5 years to support increased career preparation activities in the country's public schools. A new longitudinal data source with rich information on school-to-career (STC) programs—the 1997 National Longitudinal Survey of Youth (NLSY97)—provides previously unparalleled opportunities to study the effectiveness of STC programs. This paper uses the NLSY97 to assess the effects of STC programs on transitions to employment and higher education among youths leaving high school, with a focus on attempting to estimate the causal effects of this participation given possible non-random selection of youths into STC programs.

Nicholson, C. (2012). *Preparing to Access Post-secondary Education: The Influence of Future to Discover on High School Academic Choices*. Ottawa, Ontario The Social Research and Demonstration Corporation (SRDC)
Abstract: Future to Discover (FTD) is a pilot project established by the Canadian Millennium Scholarship Foundation in collaboration with the governments of New Brunswick and Manitoba. The goal of FTD is to test early high school interventions that may increase access to postsecondary education (PSE), particularly for students from families with lower incomes and or little or no postsecondary education experience. Two interventions, Explore your Horizons (EYH) and Learning Accounts (LA), are pilot tested through FTD. This paper presents the impact of Future to Discover on a number of high school outcomes, using administrative data. It is intended to augment the analyses presented in Future to Discover: Interim Impacts Report, which were primarily based on survey data. The goal is to complete the account of FTD's effects on participants' behaviour and experiences up to the end of high school. The paper begins by presenting a brief description of the FTD project and an overview of the findings. It then discusses the data and methodology used in calculating the impacts of FTD up to the end of Grade 12. The remaining sections present the interim impacts of FTD on some of the outcomes that the original program logic model (SRDC, 2007) anticipated would be affected while still in high school.

Orthner, D. K., Jones-Sanpei, H., Akos, P., and Rose, R. A. (2013). Improving Middle School Student Engagement Through Career-Relevant Instruction in the Core Curriculum. *Journal of Educational Research, 106*(1), 27-38.
Abstract: The authors assessed the effect of career-relevant instruction on school

valuing and engagement of middle school students in a southern US school district. Previous research and theory indicate students learn best when new knowledge is provided within the context of information students consider to be of value. The data come from a school-based randomized trial of the CareerStart intervention that was introduced in 7 of 14 middle schools, and include the initial 3 years of data for 3,493 students. The authors examined the effect of the CareerStart intervention and student-reported career-relevant instruction on psychosocial measures of school engagement and school valuing. After controlling for previous school engagement, demographic, socioeconomic, and academic factors, the analysis confirms that students in the treatment schools reported significantly higher levels of school valuing than students in the control schools, and students reporting greater career-relevant instruction indicated significantly higher levels of school engagement and valuing.

Page, L. C. (2012). Understanding the impact of career academy attendance: An application of the Principal Stratification Framework for Causal Effects Accounting for partial compliance. *Evaluation Review, 36*(2), 99-132.
Abstract: Background: Results from MDRC's longitudinal, random-assignment evaluation of career-academy high schools reveal that several years after high-school completion, those randomized to receive the academy opportunity realized a $175 (11%) increase in monthly earnings, on average. Objectives: In this paper, I investigate the impact of duration of actual academy enrollment, as nearly half of treatment group students either never enrolled or participated for only a portion of high school. Research Design: I capitalize on data from this experimental evaluation and utilize a principal stratification framework and Bayesian inference to investigate the causal impact of academy participation. Subjects: This analysis focuses on a sample of 1,306 students across seven sites in the MDRC evaluation. Measures: Participation is measured by number of years of academy enrollment, and the outcome of interest is average monthly earnings in the period of four to eight years after high school graduation. Results: I estimate an average causal effect of treatment assignment on subsequent monthly earnings of approximately $588 among males who remained enrolled in an academy throughout high school and more modest impacts among those who participated only partially. Conclusions: Different from an instrumental variables approach to treatment non-compliance, which allows for the estimation of linear returns to treatment take-up, the more general framework of principal stratification allows for the consideration of non-linear returns, although at the expense of additional model-based assumptions.

Payne, J. (2003). The Impact of Part-Time Jobs in Years 12 and 13 on Qualification Achievement. *British Educational Research Journal, 29*(4), 599-611.
Abstract: Presents data from nationally representative sample of the England/Wales Youth Cohort Study, describing patterns of paid work among full-time students in Years 12/13 working for qualifications. Shows paid work of a few hours has negligible impact on "A" level grades, but long working hours significantly reduce grades. (BT)

Pearson, D., Sawyer, J., Park, T., Santamaria, L., van der Mandele, E., Keene, B., *et al.* (2010). *Capitalizing on Context: Curriculum Integration in Career and Technical Education. A Joint Report of the NRCCTE Curriculum Integration Workgroup*. U.S.A: National Research Center for Career and Technical Education.
Abstract: The National Research Center for Career and Technical Education (NRCCTE) has undertaken three scientifically based research studies in an effort to determine whether the integration of career and technical education (CTE) courses with academic content can increase student achievement. These include the Math-in-CTE study, completed in 2005 (also known as "Building Academic Skills in Context"; Stone, Alfeld, Pearson, Lewis, and Jensen, 2006); the Authentic Literacy Applications in CTE pilot study, completed in 2009, with a full-year study launched in 2010; and the

Science-in-CTE pilot study, launched in 2010. Each of these three studies was designed as a group-randomized trial in which teachers and their classes were randomly assigned to control and experimental groups. Each also employed a mixed-methods approach intended to capture qualitative data in order to ensure fidelity of the treatment. This report contains a summary of findings from the Math-in-CTE study, with emphasis on the five core principles that emerged from the study. Evaluation data collected from Math-in-CTE technical assistance sites further illustrate these principles. This report also contains findings from the Authentic Literacy in CTE pilot study and evidence from that study supporting the five core principles.

Percy, C. (2010). NEET status during sixth form years vs. part-time paid work in years 9, 10 and 11 - an initial statistical analysis using the LSYPE, *UK Education and Employers Taskforce Research Conference*.
Abstract: This paper identifies a compelling and beneficial correlation between part-time paid employment in years 9, 10 and 11 and being NEET during the sixth form years. The raw relationship shows, across 10,017 young people in England, that the average time spent NEET in a 21 month period is around two weeks for those who worked part-time in each of those three school years, but nearer five weeks for those who did not work at all. This relationship remains statistically significant, if roughly half the effect size, after controlling for KS4 attainment. However, the data reveal significant variations in this relationship across many characteristics of interest, including ethnicity, social background and local area deprivation. The driver of this change in NEET-status is individuals entering employment rather than remaining in education. The data do not allow comment on causality in these relationships, and it seems likely that the attitudes and behaviours are mutually reinforcing, rather than easily reduced to directional conclusions.

Percy, C. (2010). *The impact of formal work experience and term-time paid employment using longitudinal data from England (2003-2007)*. London: Education and Employers Taskforce.
Abstract: This paper marks an introductory exploration of a pre-existing longitudinal dataset on the impact of two types of activity: formal work experience placements and part-time paid employment during term-time. It exploits the Longitudinal Study of Young People in England (LSYPE), a government-funded survey tracking the opinions, activities and outcomes of initially around 15,500 of the same young people each year, all of whom turned 14 during academic year 2003/04. At the time of writing data is available over five years, until the young people were 18 or 19, providing a rich data source on their short-term outcomes. The key findings are that young people who work intensively part-time, over 10 hours per week, are more likely to see the benefit of education in terms of earning a job in the future. Young people working fewer than 10 hours per week were more likely to be critical of the value of the education they were receiving. Importantly, working part-time during school years tends to reduce the time spent not in education, employment or training (NEET) after compulsory education, even after controlling for prior attainment.

Percy, C., and Mann, A. (2014). School-mediated employer engagement and labour market outcomes for young adults: Wage premia, NEET outcomes and career confidence. In *Understanding Employer Engagement in Education: Theories and Evidence* (pp. 205-220). London: Education and Employers Taskforce.
Abstract: This book explores employer engagement in education, how it is delivered and the differentiated impact it has on young people in their progression through schooling and higher education into the labour market. Rather than narrowly focusing on vocational or technical education or work-related learning, it investigates how employer engagement (work experience, internships, careers education, workplace visits, mentoring, enterprise education etc.) infl uences the experiences and outcomes

of the broad range of young people across mainstream academic learning programmes. The chapters explore the different ways in which education can support or constrain social mobility and, in particular, how employer engagement in education can have signifi cant impact upon social mobility – both positive and negative.

Peterman, N. E., and Kennedy, J. (2003). Enterprise Education: Influencing Students' Perceptions of Entrepreneurship. *Entrepreneurship Theory and Practice, 28*(2), 129-144.
Abstract: This research examines the effect of participation in an enterprise education program on perceptions of the desirability and feasibility of starting a business. Changes in the perceptions of a sample of secondary school students enrolled in the Young Achievement Australia (YAA) enterprise program are analysed using a pre-test post-test control group research design. After completing the enterprise program, participants reported significantly higher perceptions of both desirability and feasibility. The degree of change in perceptions is related to the positiveness of prior experience and to the positiveness of the experience in the enterprise education program. Self-efficacy theory is used to explain the impact of the program. Overall, the study provides empirical evidence to support including exposure to entrepreneurship education as an additional exposure variable in entrepreneurial intentions models.

Pierce, K. B., and Hernandez, V. M. (2015). Do Mathematics and Reading Competencies Integrated into Career and Technical Education Courses Improve High School Student State Assessment Scores? *Career and Technical Education Research, 39*(3), 213-229.
Abstract: A quasi experimental study tested a contextual teaching and learning model for integrating reading and mathematics competencies through 13 introductory career and technical education (CTE) courses. The treatment group consisted of students in the 13 introductory courses taught by the CTE teachers who designed the units and the control group consisted of students in all other non-integrated sections of the 13 introductory courses. After a 26-week intervention, 9th and 10th grade student state reading and mathematics test scores were analyzed to determine if the mean change in post-test scores was greater in the treatment group than the mean change in scores in the control group. Quantitative analysis revealed that the integrated CTE courses were statistically significant in improving reading treatment group scores, but not statistically significant in improving mathematics treatment group scores.

Powers, L. E., Geenen, S., Powers, J., Pommier-Satya, S., Turner, A., Dalton, L. D., *et al.* (2012). My Life: Effects of a longitudinal, randomized study of self-determination enhancement on the transition outcomes of youth in foster care and special education. *Children and Youth Services Review, 34*(11), 2179-2187.
Abstract: Youth in foster care disproportionately receive special education services and those in foster care and special education are at compounded disadvantage as they attempt to transition from high school to adult life. Given enhanced self-determination has been associated with improved transition outcomes for youth in special education, the purpose of this longitudinal, randomized trial was to evaluate the efficacy of the TAKE CHARGE self-determination intervention for improving the transition outcomes of those highly at-risk youth who are in both foster care and special education. The intervention included coaching for youth in the application of self-determination skills to achieve youth-identified goals, and youth participation in mentoring workshops with near peer foster care alumni. Sixty-nine youth, ages 16.5 to 17.5, were randomly assigned to TAKE CHARGE or to the foster care independent living program. Assessment at baseline, post-intervention and at one year follow-up revealed moderate to large effect sizes at post-intervention and one year follow-up for the differences between groups in self-determination, quality of life, and utilization of community transition services. Youth in the intervention group also completed high school, were employed, and carried out independent living activities at notably higher rates than the comparison group. Self-determination was confirmed as a partial

mediator of enhanced quality of life. Implications of the findings for supporting youth in foster care, with and without disabilities, as well as future research directions are discussed.

Purtell, K. M., and McLoyd, V. C. (2013). A Longitudinal Investigation of Employment among Low-Income Youth: Patterns, Predictors, and Correlates. *Youth and Society, 45*(2), 243-264.
Abstract: Drawing on previous research linking patterns of adolescent employment--defined in terms of duration and intensity--to educational and occupational outcomes later in life (Staff and Mortimer, 2008), the present study (a) examined positive social behavior and academic variables as longitudinal predictors of patterns of adolescent employment during the school year in a low-income, ethnically diverse sample and (b) assessed patterns of employment as correlates of adolescents' optimism for the future and perceived efficacy. Results revealed a predictive relationship between youths' autonomy and steady employment 3 years later. Furthermore, steady employment during adolescence was related to greater optimism about the future and higher levels of efficacy.

Radcliffe, R. A., and Bos, B. (2013). Strategies to Prepare Middle School and High School Students for College and Career Readiness. *Clearing House: A Journal of Educational Strategies, Issues and Ideas, 86*(4), 136-141.
Abstract: Trends among adolescents continue to be discouraging in terms of career and college readiness based on National Assessment of Educational Progress (NAEP) achievement reports and high school graduation rate data. In response, this article presents five goals and eight strategies we have engaged in during a seven-year research study focused on building college and career readiness among adolescents. During our final year of helping students build college and career readiness, we found associated improvements in their academic-related perceptions, beliefs, and strategies; positive personal achievement and goal orientation; rising perceptions of college; improving trends in academic performance; and stronger perseverance in high school when compared to a control group. Because the students in this study have not completed their high school senior year, we do not have data that predict their college acceptance or career readiness.

Rhodes, J. E., Grossman, J. B., and Resch, N. L. (2000). Agents of Change: Pathways Through Which Mentoring Relationships Influence Adolescents' Academic Adjustment. *Child Development, 71*(6), 1662-1671.
Abstract: A conceptual model was tested in which the effects of mentoring relationships on adolescents' academic outcomes were hypothesized to be mediated partially through improvements in parental relationships. The parameters of the model were compared with those of an alternative, in which improved parental relationships were treated as an outcome variable rather than a mediator. The study included 959 young adolescents (M age = 12.25 years), all of whom applied to Big Brothers Big Sisters programs. The adolescents were randomly assigned to either the treatment or control group and administered questions at baseline and 18 months later. The hypothesized model provided a significantly better explanation of the data than the alternative. In addition to improvements in parental relationships, mentoring led to reductions in unexcused absences and improvements in perceived scholastic competence. Direct effects of mentoring on global self-worth, school value, and grades were not detected but were instead mediated through improved parental relationships and scholastic competence. Implications of the findings for theory and research are discussed.

Robinson, L. (1999). *The Effects of Part-Time Work on School Students. Longitudinal Surveys of Australian Youth (LSAY Research Report)*. Victoria, Australia: Australian Council for Educational Research.

Abstract: A study examined character and consequences of student part-time work using data from the 1975 birth cohort of the Youth in Transition project of the Longitudinal Surveys of Australian Youth program. Findings indicated that most students worked because they liked the independence their job gave, enjoyed the work, and believed the experience would help them gain employment in later life; employed students were more likely to be happy with many aspects of their lives; and students did not perceive jobs to have a significant negative impact on school performance. The hypothesis that a part-time job could adversely affect school performance was tested by examining the associations between in-school employment and school completion and year 12 results. Findings showed that employment status did not have an adverse effect on likelihood of secondary school completion or on academic performance in year 12; end of school results of year 12 students were a little lower for those who had been intense workers during years 11 and 12; part-time work reduced likelihood of post-school unemployment; a part-time job was significant in reducing amount of time spent unemployed in early post-school years; the highly gender-segregated jobs of in-school workers and their later occupations were only slightly related; and hourly earnings at age 19 and having a part-time job in school were not related.

Rodriguez-Planas, N. (2012). Longer-Term Impacts of Mentoring, Educational Services, and Learning Incentives: Evidence from a Randomized Trial in the United States. *American Economic Journal: Applied Economics, 4*(4), 121-139.
Abstract: This paper reports on a randomized evaluation of a program designed to improve high school graduation and postsecondary education enrollment among low-performing high school students. Treated youths were offered mentoring, educational services, and financial rewards. The program was evaluated when the youths were 19, 21, and 24 years old. Treated youths obtained their high school diplomas earlier and were more likely than controls to attend postsecondary education. Five years after the end of the program, we find no significant overall effects of this intervention on employment outcomes. The program improved outcomes to a greater extent for the female enrollees than the male ones.

Ruhm, C. J. (1997). Is High School Employment Consumption or Investment? *Journal of Labor Economics, 15*(4), 735-776.
Abstract: This study examines how high school employment affects future economic attainment. There is no indication that light to moderate job commitments ever have a detrimental effect; instead, hours worked during the senior grade are positively correlated with future earnings, fringe benefits, and occupational status. These gains occur even though employed seniors attain slightly less education than their counterparts. The results are robust across a variety of specifications and suggest that student employment increases net investments in human capital particularly toward the end of high school and for females.

Schwartz, S. E. O., Rhodes, J. E., Chan, C. S., and Herrera, C. (2011). The impact of school-based mentoring on youths with different relational profiles. *Developmental Psychology, 47*(2), 450-462.
Abstract: Associations between youths' relationship profiles and mentoring outcomes were explored in the context of a national, randomized study of 1,139 youths (54% female) in geographically diverse Big Brothers Big Sisters school-based mentoring programs. The sample included youths in Grades 4–9 from diverse racial and ethnic backgrounds, the majority of whom were receiving free or reduced-price lunch. Latent profile analysis, a person-oriented approach, was used to identify 3 distinct relational profiles. Mentoring was found to have differential effects depending on youths' pre-intervention approach to relationships. In particular, youths who, at baseline, had satisfactory, but not particularly strong, relationships benefited more from mentoring

than did youths with profiles characterized by either strongly positive or negative relationships. Implications for research and practice are discussed.

Schwartz, S. E. O., Rhodes, J. E., and Herrera, C. (2012). The influence of meeting time on academic outcomes in school-based mentoring. *Children and Youth Services Review, 34*(12), 2319-2326.
Abstract: This study explores the role of mentor–youth meeting time on academic performance within school-based mentoring. Participants in the study (N = 1139) were part of a national evaluation of the Big Brothers Big Sisters school-based mentoring programs, approximately half of whom had been randomly assigned to receive mentoring at their schools. Within the treatment group, 44% were in programs in which matches met after school, 25% were in programs in which matches met during the school day excluding lunch, 6% were in programs in which matches met during lunch, and 26% were in programs in which matches met at various times during and after school. Among academically at-risk youth, the impact of school-based mentoring on academic outcomes was moderated by the time during which matches met. Specifically, academically vulnerable youth derived significant academic benefits from mentoring in programs that met after school or during lunch. In programs that met during school as a pullout program, there was no evidence of benefits and some evidence of negative effects on academic outcomes. Implications of the findings for research and intervention are discussed.

Scott, M. A., and Bernhardt, A. (1999). *Pathways to Educational Attainment and Their Effect on Early Career Development*. Berkeley, CA.: National Center for Research in Vocational Education.
Abstract: A study identified different educational and working paths that workers take, asked which paid off for long-term wage growth and career development, and tested whether educational pathways helped explain more of the variability in wage outcomes. It compared long-term wage growth for two cohorts of young white men: the original cohort that entered the labor force in the late 1960s at the end of the post-World War II economic boom and the recent cohort that entered in the early 1980s after the onset of economic restructuring. Long-term wage growth between the ages 16-36 declined and became significantly more unequal for the recent cohort. The rising demand for education and skill in the new labor market apparently benefitted only those with four-year college degrees. Rising inequality in wage growth was found in all education groups. Working while enrolled and interrupting and returning to school were the dominant pathways to educational attainment. A second set of analyses focused on the recent cohort. Multiple regressions showed educational pathways had a strong effect on long-term wage growth: working while enrolled had a positive impact and interrupted schooling had a negative one. Career choices about industry and occupation mattered. Taking an academic track in high school paid off for workers who get some college credit or enter occupations requiring cognitive skill. Applied and practical fields of study offered the most long-term wage growth to college graduates.

Shandra, C. L., and Hogan, D. P. (2008). School-to-work program participation and the post-high school employment of young adults with disabilities. *Journal of Vocational Rehabilitation, 29*(2), 117-130.
Abstract: Previous research on the education-to-employment transition for students with disabilities has suggested that participation in school-to-work programs is positively associated with post-high school success. This article utilizes data from the National Longitudinal Survey of Youth 1997 (NLSY97) to extend these findings in several ways. First, we assess the efficacy of specific types of school-based and work-based initiatives, including job shadowing, mentoring, cooperative education, school-sponsored enterprise, technical preparation, internships, and career major. Next, we

extend the usual focus on the employment outcomes of work status and financial compensation to consider job-specific information on the receipt of fringe benefits. Overall, results from longitudinal multivariate analyses suggest that transition initiatives are effective in facilitating vocational success for this population; however, different aspects of school-to-work programs are beneficial for different aspects of employment. School-based programs are positively associated with stable employment and full-time work while work-based programs most consistently increase the likelihood that youth with disabilities will be employed in jobs that provide fringe benefits. Analyses also indicate that – once individuals with disabilities are stably employed – they can be employed in "good" jobs that provide employee benefits.

Singh, K. (1998). Part-time employment in high school and its effect on academic achievement. *Journal of Educational Research, 91*, 131-139.
Abstract: Part-time employment during high school has grown dramatically. High school students are twice as likely to be working part-time as they were in 1950. Despite the fact that many adolescents work between the ages of 12 and 17, little empirical evidence exists about the impact of part-time employment on academic performance. In the present research, the nationally representative sample of 10th graders, the First Follow-Up of the National Educational Longitudinal Study of 1988 (NELS-88), was used to examine the effects of part-time work during the school year on academic achievement, as measured by the standardized achievement scores and high school grades earned in 4 subject areas: English, mathematics, science, and social studies. The findings of the study point to a small negative effect of employment on both measures of achievement when socioeconomic status, gender, and previous achievement were controlled. The study helps to illuminate an important question and has implications for parents, educators, and counselors.

Singh, K., and Ozturk, M. (2000). Effect of part-time work on high school mathematics and science course taking. *Journal of Educational Research, 94*(2), 67-74.
Abstract: The effect of part-time work intensity on high school course work completed in mathematics and science and its indirect effect on 12th-grade achievement was explored. Longitudinal data from a nationally representative sample were used to test the models through path analysis. Socioeconomic status and previous achievement were included as exogenous variables for control purposes, and part-time work intensity was hypothesized to negatively affect course work completed in the 2 subjects, as well as 12th-grade achievement through course work during high school. Results suggest that, controlling for the background variables, there was a significant negative effect of part-time work intensity on course work and that its indirect effect on 12th-grade achievement through course work was larger than its direct effect.

Staff, J., Harris, A., Sabates, R., and Briddell, L. (2010). Uncertainty in Early Occupational Aspirations: Role Exploration or Aimlessness? *Social Forces, 89*(2), 659-683.
Abstract: Many youth in the United States lack clear occupational aspirations. This uncertainty in achievement ambitions may benefit socio-economic attainment if it signifies “role exploration,” characterized by career development, continued education and enduring partnerships. By contrast, uncertainty may diminish attainment if it instead leads to “aimlessness,” involving prolonged education without the acquisition of a degree, residential dependence and frequent job changes. We use nationally representative data from the National Education Longitudinal Study to examine how uncertainty in occupational aspirations in adolescence (age 16) affects wage attainments in young adulthood (age 26). Results suggest that youth with undecided career ambitions earn significantly lower hourly wages in young adulthood than youth with more certain aspirations, supporting the view that uncertainty heightens the risk of labor-market problems.

Stern, D., Finkelstein, N., Urquiola, M., and Cagampang, H. (1997). What Difference Does It Make If School and Work Are Connected? Evidence on Cooperative Education in the United States. *Economics of Education Review, 16*(3), 213-229.
Abstract: A new longitudinal study reveals that the negative association between hours worked and grade point average is weaker for high schoolers in cooperative education (co-op) than in "outside" jobs. High school co-op leads to higher wages soon after graduation. However, students who curtail their education to pursue full-time employment could negatively affect future earnings.

Stone, J. R., III, Alfeld, C., and Pearson, D. (2008). Rigor "and" Relevance: Enhancing High School Students' Math Skills through Career and Technical Education. *American Educational Research Journal, 45*(3), 767-795.
Abstract: Numerous high school students, including many who are enrolled in career and technical education (CTE) courses, do not have the math skills necessary for today's high-skill workplace or college entrance requirements. This study tests a model for enhancing mathematics instruction in five high school CTE programs (agriculture, auto technology, business and marketing, health, and information technology). The model includes a pedagogy and intense teacher professional development. Volunteer CTE teachers were randomly assigned to an experimental (n = 59) or control (n = 78) group. The experimental teachers worked with math teachers to develop CTE instructional activities that integrated more mathematics into the occupational curriculum. After 1 year of the math-enhanced CTE lessons, students in the experimental classrooms performed equally on technical skills and significantly better than control students on two standardized tests of math ability

Stone, J. R., III, Alfeld, C., Pearson, D., Lewis, M. V., and Jensen, S. (2006). *Building Academic Skills in Context: Testing the Value of Enhanced Math Learning in CTE*. St Paul, M.N.: National Research Center for Career and Technical Education.
Abstract: An experimental study tested a model for enhancing mathematics instruction in five high school career and technical education (CTE) programs (agriculture, auto technology, business/marketing, health, and information technology). The model consisted of a pedagogy and intense teacher professional development. Volunteer CTE teachers were randomly assigned to an experimental (n = 57) or control (n = 74) group. The experimental teachers worked with math teachers in communities of practice to develop CTE instructional activities that integrated more mathematics into the occupational curriculum. After 1 year of the math-enhanced CTE lessons averaging 10% of class time, students in the experimental classrooms performed significantly better on 2 tests of math ability-the TerraNova and ACCUPLACER[R]-without any negative impact on measures of occupational/technical knowledge.

Thiessen, V., and Looker, E. D. (1999). *Investing in Youth: The Nova Scotia School-to-Work Transition Project* (No. 0-662-27883-6). Canada: Human Resource Development Canada, Ottawa (Ontario) and Nova Scotia Dept. of Education and Culture, Halifax.
Abstract: Economic, technological, and social changes occurring around the world have produced incredible challenges for youth, symbolized by persistently high youth unemployment rates despite increasing educational attainments and a shrinking youth population. Chapter 1 of this book provides an overview of the initiatives undertaken by Canada and the province of Nova Scotia to address these challenges, and focuses on the Nova Scotia School-to-Work Transition (NSSWT) program. This program had a common set of parameters and objectives, but allowed site-specific variations in implementation. Chapter 2 highlights successful proposals and the similarities and the differences among the 6 actual implementations. Generally, the programs included an in-school component of 20-60 hours per year in grades 11 and 12 devoted to career exploration, career guidance, and job skills, and a work experience component of 125-200 hours per year in the 2 grades. Chapter 3 describes the backgrounds,

characteristics, and aspirations of participants and a comparison group at the start of the program. Females made up about two-thirds of participants, who otherwise reflected a range of backgrounds and characteristics. Chapter 4 documents program effects and assesses the extent to which program objectives were met. Program completion rates were low; 54 and 37 percent for the two cohorts studied. Student outcomes yielded a mixed message. Participants who completed the program were very clear that it had met their expectations. However, there were few differences between participants and the comparison group in academic achievement, skills enhancement, higher education outcomes, or employment outcomes. Chapter 5 focuses on the expectations of the employers/supervisors and the schools and how they contributed, or not, to the program's functioning. Chapter 6 examines program effectiveness based on an independent assessment of the program. Appendices list primary data sources and other reports on the NSSWT project.

Thompson, L. A., and Kelly-Vance, L. (2001). The impact of mentoring on academic achievement of at-risk youth. *Children and Youth Services Review, 23*(3), 227-242.
Abstract: Planned mentoring programs have flourished as one possible solution to the problems affecting youth. Unfortunately, little research has been conducted evaluating mentoring programs in spite of the generally accepted belief that only positive effects can result from their implementation. The present study examined the impact of mentoring on the academic achievement of at-risk youth involved in Big Brothers/Big Sisters. Academic achievement tests were individually administered to 12 boys in the treatment group (i.e., had a mentor) and 13 boys in a control group (i.e., were on a waiting list to receive a mentor) pre- and post-test over a nine month period. Results indicated that boys in the treatment group made significantly higher academic gains than the control group, even after controlling for ability. Implications of these results are discussed.

Tran, N. A., and Nathan, M. J. (2010). Pre-College Engineering Studies: An Investigation of the Relationship Between Pre-college Engineering Studies and Student Achievement in Science and Mathematics. *Journal of Engineering Education, 99*(2), 143-157.
Abstract: Background The US has experienced a shift from a manufacturing-based economy to one that overwhelmingly provides services and information. This shift demands that technological skills be more fully integrated with one's academic knowledge of science and mathematics so that the next generation of engineers can reason adaptively, think critically, and be prepared to learn how to learn. Purpose (Hypothesis) Project Lead the Way (PLTW) provides a pre-college curriculum that focuses on the integration of engineering with science and mathematics. We documented the impact that enrollment in PLTW had on student science and math achievement. We consider the enriched integration hypothesis, which states that students taking PLTW courses will show achievement benefits, after controlling for prior achievement and other student and teacher characteristics. We contrast this with alternative hypotheses that propose little or no impact of the engineering coursework on students' math and science achievement (the insufficient integration hypothesis), or that PLTW enrollment might be negatively associated with student achievement (the adverse integration hypothesis). Design/Method Using multilevel statistical modeling with students (N = 140) nested within teachers, we report findings from a quantitative analysis of the relationship between PLTW enrollment and student achievement on state standardized tests of math and science. Results While students gained in math and science achievement overall from eighth to tenth grade, students enrolled in PLTW foundation courses showed significantly smaller math assessment gains than those in a matched group that did not enroll, and no measurable advantages on science assessments, when controlling for prior achievement and teacher experience. The findings do not support the enriched integration hypothesis. Conclusions Engineering education programs like PLTW both challenges and opportunities to effectively

integrate academic content as they strive to prepare students for college engineering programs and careers.

Vickers, M., Lamb, S., and Hinkley, J. (2003). *Student Workers in High School and Beyond: The Effects of Part-Time Employment on Participation in Education, Training and Work*. Victoria, Australia: Australian Council for Educational Research.
Abstract: Data on the Y95 cohort (first interviewed in 1995 when in Year 9) of the Longitudinal Surveys of Australian Youth were analyzed to identify the effects of student employment on participation and attrition in secondary school and tertiary study and on young people's activities after secondary school. Working between 1 and 5 hours during Year 9 of secondary school had no impact on the likelihood of completion of Year 12. Participation in more than 5 hours of employment each week was associated with an increased likelihood of dropping out before the end of Year 12, especially for males. The more hours per week students worked, the more likely they were to drop out. Compared with their male counterparts, females who worked part-time during Year 9 were much more likely than to complete Year 12. Students who worked part-time during high school were 65% more likely to gain an apprenticeship or traineeship and 46% more likely to be in full-time employment rather than be unemployed after high school. Field of study has a major impact on dropping out. An inverse relationship between contact hours and dropping out was discovered. Participating in part-time work did not increase the odds of dropping out of tertiary study.

Vuolo, M., Mortimer, J. T., and Staff, J. (2014). Adolescent Precursors of Pathways From School to Work. *Journal of Research on Adolescence, 24*(1), 145-162.
Abstract: Longitudinal data from the Youth Development Study are used to examine (1) how young people establish work with self-identified career potential and how these patterns are linked to educational attainments; and (2) how adolescent achievement orientations, experiences in school and work, and sociodemographic background distinguish youth who establish themselves in careers and those who flounder during this transition. Multilevel latent class models reveal four school-to-work pathways from ages 18–31: two groups that attain careers through postsecondary education (via bachelor's or associate's–vocational degrees) and two groups that do not (distinguished by attempting college). Multinomial logistic regression models demonstrate that academic orientations, socioeconomic background, and steady paid work during high school help adolescents avoid subsequent floundering during the school-to-work transition.

Woolley, M., Woolley, M. E., Rose, R. A., Orthner, D. K., Akos, P. T., and Jones Sanpei, H. (2013). Advancing Academic Achievement Through Career Relevance in the Middle Grades: A Longitudinal Evaluation of CareerStart. *American Educational Research Journal, 50*(6), 1309-1335.
Abstract: Research and theory suggest that students learn more effectively when they perceive course content as relevant to their futures. The current research assessed the impact of CareerStart, a middle grades instructional strategy designed to advance the occupational relevance of what students are being taught in the core subjects—math, science, language arts, and social studies. CareerStart was introduced randomly in 7 of 14 middle schools in a diverse district with 3,295 students followed for 3 years. The analyses examined impact on end-of-grade test scores on math and reading exams. Findings confirm a significant treatment effect for math performance but no effect for reading performance.

Appendix 4: Criteria for levels of evidence

Impact assessment: A four-level model (Hughes, 2004) was used to describe impact studies in terms of the robustness of the research design and the reliability of the causal evidence they provide. Generally speaking, the higher the level the more robust the evidence provided. The literature review did not include level 1 or level 2 studies, as agreed with EEF.

Level 1 comprises 'outcome measurement studies with no counterfactuals'. Such studies measure specified variable(s) representing outcomes following the intervention; for example, rates of progression to full-time education or to employment. 'Counterfactuals' are indications of what would have happened in the absence of the careers education, information or guidance intervention. If no evidence on counterfactuals is available, there may be little basis on which to attribute causality.

Level 2 comprises 'outcome measurement studies with weak counterfactuals'. These are more robust than level 1, but still subject to reservations. They may include: comparisons with measures of the same variables prior to careers education, information or guidance; though where gains are made, these may have been due to other factors; comparisons with a population parameter e.g. mean duration of unemployment; though the sample that has experienced the careers education, information or guidance may differ from this population in other respects, and any variations between them may be due to these differences; comparisons between groups of participants and of non-participants in careers education, information or guidance, typically where the two groups have resulted from self-selection and where there has been no adequate 'control by calculation'. In such cases, controls for possible confounding factors may also be reviewed and assessed.

Level 3 comprises outcome measurement studies with control by calculation. These comprise 'outcome measurement studies with control by calculation'. Here multivariate statistical techniques are used to control retrospectively for those who have and have not been exposed to careers education, information or guidance. Propensity score matching can also be used whereby individuals from the two groups are matched on a range of observable characteristics (such as age, gender, learning/work histories) on the grounds that, having removed as many personal differences as possible, any differences in outcomes between the two groups can be more reliably attributed to the intervention. However, there still remains the possibility that any apparent impact may have been due to additional unmeasured and unmatched variables; the more relevant variables that can be included in such analyses, the more this risk is reduced.

Level 4 comprises 'outcome experimental studies with a control group'. Classically, this involves random assignment to a careers education, information or guidance group (the 'experimental' or 'treatment' group) and to a non- careers education, information or guidance group (the 'placebo' or 'control' group). Depending on the sample sizes, randomly assigning individuals should ensure that there are no differences between the groups other than the careers education, information or guidance intervention to which any differences in outcomes can be reliably attributed. In reviewing impact research, the volume of evidence is also important, both in terms of sample size and of numbers of studies, as well as its level of rigour. More confidence can be placed in evidence emerging from studies with large samples, or which emerge consistently from different studies. In the case of smaller, but

comparable studies, where the results can be combined and interrogated as a single data pool, more reliable conclusions can be reached by a so-called ‘meta-analysis’. But volume of evidence at lower levels cannot compensate for lack of evidence at higher levels.

Appendix 5: Definitions of types of interventions emerging from the keyword searches

Careers provision[59]*:* is a process of learning, individually or in groups, designed to help young people to develop the knowledge, confidence and skills they need to make well informed, relevant choices and plans for their future, so they can progress smoothly into further learning and work.

Career guidance*:* is a process, delivered individually or in groups, which helps individuals to gain a clearer understanding of their career development needs and potential through the successful understanding and application of their career management skills. This includes the use of techniques and tools which focus on personal challenge and growth.

Enterprise: an activity wherein pupils work together to create an economic enterprise on either a short or long duration, commonly with support from volunteers from the world of work. Also known as Entrepreneurial Education; Enterprise Competitions.

ICT and labour market information/intelligence*:* a means to offer access to information or to provide an automated interaction, or to provide a channel for communication.

Job Shadowing: a short period of career exploration (typically no more than three days) within a workplace wherein a pupil observes a number of staff members at work, reflecting on their occupational experiences. Also known as Work Shadowing.

Mentoring: a sustained relationship between a pupil and a largely untrained volunteer (selected on the basis of their occupational experience) managed by a school to support and encourage the young person through a period of transition.

Part-time working: a period of part-time paid employment coinciding with full-time enrolment in secondary education.

Transformative Leadership: a programme of careers-focused activity requiring substantive changes in staff action and behaviour, commonly requiring some element of staff training.

Volunteering: volunteering within a workplace whilst in full-time education

Work experience: a time-limited placement undertaken by a young person (whilst still in full-time education) in a workplace designed to give the young person insights into the experience of being employed in such a workplace.

Work-related learning: a programme of learning that uses the context of work to develop knowledge, skills and understanding useful in work, including learning through the experience of work, learning about work and working practices, and learning the skills for work.

[59] See note 1, page 1.