

Fostering college and career readiness: How career development activities in schools impact on graduation rates and students' life success

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Foreword

I am very pleased to introduce this study and sponsor its publication.



At Career Cruising we are passionate about the role of career development in schools. We believe it is vital that young people are given the tools with which to manage their careers and are supported in making effective transitions to college and work. We believe that our products play an important role in helping young people manage their careers and make the most of their schooling. To that end, we are serious about understanding the evidence base around career development to ensure that the tools and systems we produce are informed by the latest research and the best practice.

Researchers at the International Centre for Guidance Studies have examined the evidence surrounding career development. In this study, they set out their findings and conclude that there is clear evidence that career development activities in schools can have a positive impact on the lives of young people. Specifically, they argue that career development can impact young peoples' decisions to stay in school and increase their likelihood of graduating. They go on to say that career development can support young people in making transitions to college and the world of work and ultimately increase their chance of career and life success.

For those of us who work with schools and young people none of this will come as a surprise. We can all recall memories of young people whose lives have been transformed by a visit to a school counselor or a career suggestion made while using a system like Career Cruising. However, this study enables those of us involved in the promotion of career development to point to a range of academic studies that demonstrate these impacts more systematically.

The study's authors also conclude that career development is most meaningful when it is integrated with academic curricula, begins early, leverages the benefits of technology and involves a variety of stakeholders. The inclusion of not only school counselors, but teachers, parents and employers creates a more compelling and effective environment for career development.

Many of us have observed a decrease in the number of career development opportunities that are available in our schools. We feel that this is regrettable and that the findings of this report demonstrate the value career development offers to young people and to communities. In our view, there is a need for a national campaign to reinvigorate school-based career development and to ensure that young people have access to career development that truly prepares them for college and the world of work. Career Cruising believes this study provides policy makers and school leaders with the evidence they need to make decisions about the availability of career development. We hope that you find it as valuable as we have.

Yours sincerely,

Matt McQuillen
President, Career Cruising

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Executive summary

This paper sets out the recent evidence around career development. This evidence is examined within the context of the college and career readiness agenda. The argument is made that in order for young people to be genuinely “ready” for both college and career they need to have attended to their academic achievement, their aspirations and plans for the future, their ability to make transitions and their ability to direct their own careers. It is argued that career development offers schools a body of practice that has been shown to have a positive impact on young people’s readiness for college and career. The report acknowledges that the provision of career development has been in decline in many North American schools despite evidence of its effectiveness. Given the current instability of the labor market, the increasing complexity of the education system and the need to grow the skills base of the workforce in a competitive global market, failing to attend to young people’s careers seems shortsighted. As this paper shows, there is a strong body of evidence which demonstrates that career development activity in schools can help young people to experience academic achievement, successfully transition to the labor market and live happier and more productive lives. It is hoped that setting out the evidence in this area of research will provide policy makers and school leaders with the resources required to make informed decisions and to support the development of the future generations of talent.

The paper explores the impacts of career development in relation to four main questions:

- Does career development engage young people in their schooling and help keep them attending school?
- Does career development positively impact on young people’s academic achievement?
- Does career development assist young people in making successful transitions to college or the labor market?
- Does career development have a positive effect on people’s career and life success?

Key findings are as follows:

Introduction

- In a dynamic labor market, career paths cannot be accurately predicted during schooling. However, school does have a formative influence on young people’s understanding of themselves and the world of work.
- Schools are not the only influence on young people’s careers, but they can and do exert an influence on young people’s approach to their career.
- There is an established body of practice, described here as career development, that is concerned with helping young people in their career.
- National policy currently emphasizes the importance of making young people “college and career ready” and career development can support the realization of this vision.

What is career development?

- Career development includes a range of practices designed to help people think about, plan for and manage their careers.
- Career development is related to vocational education, but is applicable to all students whether in vocational or academic programs.
- Career development provides a mechanism for linking the curriculum with the learning that students do in extracurricular activities and their wider life.
- Evidence suggests that the most effective career development programs involve teachers and school counselors working together and using a range of tools to develop students’ career awareness across the whole school experience.
- A variety of different technological tools have been employed to support career development in schools,

including computer-assisted career guidance systems, e-portfolios and computer-based work and life simulations.

- Technologically-supported career development can increase the access to career development as well as its effectiveness. However, evidence suggests that technological tools are most effective when used as part of a broader career development program.

Retention

- Dropping out of high school has serious and lifelong consequences for young people. Schools are therefore keen to enhance their retention rates and to develop strategies for retaining young people in the school system.
- Structural factors (poverty, parents' education, and single parent families) exert a major influence on a young person's likelihood of dropping out. However, research suggests that individuals, families and schools can also exert influence on the dropout rate.
- Research suggests that individuals who leave school early often cite the lack of work and life relevance of their schooling as a factor in their dropping out.
- Research also suggests that students who have a career plan are more likely to be retained in the school system.
- There is also evidence to suggest that career development, if combined with core academic learning, can improve retention. This is particularly the case when career development is introduced with younger students.
- Research also suggests that computer-assisted career guidance can be an important component of career development programs and that it can exert an influence on retention rates.

Academic achievement

- People who experience academic success are more likely to receive higher earnings and a range of other lifelong indicators of success.
- While structural factors are a key determinant of academic achievement, a great deal of educational research examines the range of school-based factors that can influence young people to achieve academically.
- A survey of school counselors revealed that they felt increasing academic achievement was the most important goal of a career development program.
- There are a number of studies (including large-scale studies and a meta-analysis) which demonstrate that career development programs can enhance students' academic achievement.
- The evidence suggests that career development activities have the most effect on academic achievement when they are introduced at a younger age and are implemented in more systematic ways, e.g. a comprehensive guidance program.
- The "comprehensive guidance program" is a particular model of career development that has been implemented and evaluated in some areas of the US. The approach emphasizes curriculum-based career development running from kindergarten to the 12th grade supported by a school counseling service and broader extracurricular activity.
- Computer-assisted career guidance systems have been shown to be an important element of career development programs and to contribute towards enhanced academic outcomes.

Transition

- The period in which young people make the transition from school to work can often be a challenging time for them.
- Career development can help to smooth the transition from school to work by providing young people

with the necessary knowledge and skills and by helping to support and broker their transition.

- There is evidence to suggest that providing support for transition can enhance young people's job satisfaction when they go to work.
- Research suggests that career development is effective in helping young people to successfully enter the labor market. Evidence also suggests that work experience and work-related learning are an important element of career development programs in relation to labor market transitions.
- Research suggests that career development can increase the likelihood of college enrollment and high school graduation and support young people in making the transition to college.
- Career development programs that are effective in supporting transition tend to combine curricular and extracurricular activity and mobilize a range of stakeholders (teachers, school counselors, parents and employers).
- Technologically-mediated career development offers tools that can provide young people with a window through which they can learn about college and work. It also provides communication tools that young people can use to build a bridge into their new environment, e.g. using e-mentoring or social media tools.

Career and life success

- Measuring career and life success can be difficult. However, there is a considerable body of research that has examined what factors can be said to lead to success.
- Career and life success are usually seen to be combined of extrinsic factors (e.g. salary, status) and intrinsic factors (e.g. job satisfaction).
- Researchers have found that structural factors, personality, attitudes and social capital all have an influence on the likelihood of career and life success.
- There is some evidence to suggest engagement with career development can have an impact on an individual's short- to medium-term earnings as well as foster a more optimistic outlook in relation to work.
- There is also evidence to suggest that the use of a computer-assisted career guidance system can enhance career satisfaction.

Conclusions

- There is a promising base of evidence around the practice of career development in schools.
- Evidence suggests that career development can have an impact on retention, achievement, transition and career and life success.
- There would nonetheless be value in continuing to develop the evidence base with new meta-analyses, randomized control trials and longitudinal work.
- An evidence base exists around the use of technologically-supported career development. This is most developed in the area of computer-assisted career guidance systems which clearly contribute to career development in all areas. However, the rapidly changing nature of technologically-supported career development means that there would be value in commissioning some new work examining developments such as the role of social media.

1. Introduction

The philosopher Alain de Botton commented in his book *The Pleasures and Sorrows of Work* (2009) that most people “were resigned to spending their entire adult lives working at jobs chosen by their unthinking sixteen-year-old selves.” One response to this is to recognize that people’s careers are something that they build incrementally over their entire life and that decisions made at school therefore need to be regularly revisited. An alternative perspective would be to ask the question, “Is there anything that the education system can do to help young people to give more consideration to their careers?” These two responses are able to co-exist as long as we agree that one of the roles of the education system is to prepare individuals to pursue useful lives in a world in which change is one of the only certainties.

A career can no longer be seen as a once in a lifetime choice made towards the end of schooling. Despite this change, the choices that people make at school variously enable and constrain many choices later in life. Furthermore, many people’s understanding about themselves, the careers that are available to them and the nature of different jobs are formed during the years that they spend in formal education (Trice & McClellan, 1993, 1994; Magnuson & Starr, 2000; Schoon & Parsons, 2002).

If young people’s impressions of the labor market and their own career journeys develop during their time at school, it is reasonable to suggest that schools have some responsibility to provide a context within which these ideas can be formed in positive and constructive ways. Schools can help young people to learn about the labor market, to develop their approaches to learning and to help them to make successful transitions. These sorts of activities will be referred to as “career development” in this report. “Career development” describes an established educational activity which has existed for decades (Guichard, 2001; Dixon, 2002; Peck, 2004; Hoyt, 2005) and which can be found in school systems across the world.

This report will showcase some of this practice and reflect on the evidence that has been gathered regarding its effectiveness. The report will present evidence and examples drawn from the North American context; however, it is important to recognize that career development is something that is happening in schools across the developed world and beyond. There are notable examples of this in the UK (Andrews, 2004; Bowes, Smith, & Morgan, 2005; McGowan, 2006; Barnes et al., 2011), Malta (Debono et al., 2007), Australia (Skorikov & Patton, 2007), and Japan (Mochizuki, 2011) amongst many others.

Career development activities aim to achieve a range of outcomes for the individuals engaged in them. This typically includes helping young people to increase their understanding of the educational and vocational options that are open to them, to better understand themselves and their abilities, to have the capacity to use information to support decision making and to support them in their transition from the world of education to the world of work. Career development strives to provide young people with the tools that they will need to manage their career throughout the rest of their life. It seeks to answer the question, “Where should I go next?” and also to help people to think about, “How should I live my life?” In answering these questions those involved in teaching and supporting career development hope to contribute to the completion of a high school education and successful transition to the next destination.

1.1. The policy context

In the early 1990s Congress was concerned that US school children did not have the necessary skills to identify their career goals and develop the educational foundation to achieve them (Hershey et al., 1999). This led to the School-to-Work Opportunities Act (STWOA) which targeted areas of high poverty with funding that increased career development activity, integrated the academic and vocational curricula and developed work-based

learning. The STWOA initiative was based on the assumption that if students were given more knowledge of how education prepared them for work, they would become more engaged in their schooling and achieve better results (Hoyt, 2005). STWOA funding ended in 1999, which was unfortunate given that an evaluation of the STWOA argued that it was valued by students and helped to clarify their career goals (Hershey et al., 1999).

A related initiative is the Carl D. Perkins Vocational and Technical Education Act of 2006. This requires states to have programs of study which link academic and technical content. Funding associated with the Act led to renewed interest in the States' Career Clusters Initiative (SCCI) which is a collaboration involving state, schools, educators, employers, industry groups and other stakeholders, originally developed in 1997. The career clusters allow students to identify pathways (currently 79) from secondary school to two- and four-year colleges, graduate school, and the workplace. The career clusters help motivate young people to achieve academically and pursue their career goals by demonstrating how they can develop a chosen career.

The economic recession has provided the context in which the Obama administration has engaged with issues around careers. The American Recovery and Reinvestment Act (ARRA) of 2009 and the Race to the Top initiative promote an increased investment in education to improve the school curriculum, encourage greater academic achievement and work to reduce the dropout rate as part of a strategy to aid recovery and improve America's competitiveness. The administration has also highlighted the importance of Science, Technology, Engineering and Mathematics (STEM) careers and created, in partnership with industry, the Educate to Innovate initiative which encourages young people, especially from underrepresented groups, including women, to take STEM career paths.

The Obama administration has recognized that school to work (or college) transition is a crucial element in the attempt to link the education system with economic recovery and has correspondingly adopted the idea of "college and career readiness". The President gave a speech (Obama, 2010) in which he argued that states and schools should "adopt more challenging standards that will actually prepare our kids for college and their careers." This line of thought is also found in approaches like the Achieve (2011) *State College- and Career-Ready High School Graduation Standards* which focus on developing knowledge in math and English. The dominant policy discourse around "college and career readiness" is focused on the idea of academic achievement but currently has little to say about how young people make transitions or attain the skills needed in order to successfully manage their careers. The Association for Career and Technical Education (ACTE) has produced a useful summary of the three broad sets of skills that it argues students need to be career-ready: core academic skills, employability skills and technical skills (ACTE et al., 2010).

Academic achievement is clearly a very important element of what enables young people to achieve career success particularly if this is constructed in terms of lifetime earnings (Cheeseman Day & Newburger, 2002). The evidence around a relationship between educational achievement and job satisfaction (Florit & Vila Lladosa, 2007; Fabra & Camisón, 2009) or a more general level of happiness (Michalos, 2008) is more contestable. This will be discussed in more detail in Section 6, but it is important to note that the focus on academic standards may not be sufficient in itself either in terms of delivering academic achievement within the high school system or in underpinning a broader conception of lifetime career success. Furthermore, as the recent report *Pathways to Prosperity* (Harvard, 2011) argues, there is a need to create an educational system that provides students with a range of different pathways to a successful life, rather than one that is overly focused on conventional academic achievement.

The need to equip students with skills that go beyond conventional academic achievement has long been articulated by employers. In the report *Are They Really Ready to Work?* (Conference Board et al., 2006), employers identified five employability skills that they felt students should be developing. The skills identified included critical thinking/problem solving, information-technology application, teamwork/collaboration,

creativity/innovation and diversity. Elsewhere the skills that young people need for college and career readiness have been labeled “21st century skills” (Partnership for 21st Century Skills, 2004) and described as comprising of life and career skills; learning and innovation skills; information, media and technology skills; and core academic subjects. Some of this skill development can be addressed within the classroom setting by contextualizing learning within the world of work. However, some skills require experiences beyond traditional classroom teaching to be acquired and thus necessitate the development of deeper programs of work-related learning. Career development practice offers a range of tools through which various kinds of work-relevant learning can be undertaken in the classroom and with the involvement of employers in a variety of different forms.

The policy context in the United States makes strong connections between a successful school system, the process of transitioning from school and economic productivity. Career development offers educators and policy makers a body of practice and theory which is concerned with the connections between learning, transition and work. This report examines the educational and social elements that need to be in place in order for young people to be truly college and career ready. It argues that career development has some role in motivating young people to achieve academically, but also that it can enable people to make the most of their academic qualifications and to best use the skills and knowledge that they have acquired in school.

1.2. Building an evidence base around college and career readiness

Being college and career ready requires more than academic achievement. Returning to the ACTE’s (2010) definition of “career readiness” as consisting of the development of academic, employability and technical skills, this report will particularly focus on the area of employability skills (skills needed to get a job and stay employed) and on the related area of career management skills (skills needed to pursue learning and work across the lifecourse). Watts (2006) argues that employability is most valuable if it is viewed as sustainable employability, i.e. the focus is not merely on developing the skills to get a job, but rather on enabling individuals to find work, keep work and transition to new work opportunities. The concept of career management skills has been developed by various authors (Arnold, 1997; Jarvis, 2003; King, 2004) and builds on the idea of sustainable employability to include the skills and attributes that enable individuals to do things such as identify and pursue appropriate learning opportunities, make transitions, apply learning to real world situations, adapt to change and actively manage their working lives. The National Career Development Guidelines (NOICC, 2007) and the American School Counseling Association (ASCA) National Standards for Student Academic, Career and Personal/Social Development (2005) both provide useful articulations of what is meant by “career management skills” in the North American context.

This paper therefore starts from the policy initiative of college and career readiness. This is an important question for public policy to attend to, but there remains a question about how this readiness can best be fostered. Without seeking to diminish the importance of academic achievement, the report explores the evidence that exists around employability/career management skills and the way in which these can be developed through career development programs. There is already a considerable research base in this area which has been variously mapped by Maddy-Bernstein (2000), Hughes, Bailey & Mechur (2001), Gillie & Isenhour (2003), Hughes & Mechur Karp (2004), McGannon, Carey & Dimmit (2005), Bowes, Smith & Morgan (2005), Hughes & Gratton (2009) and Whiston et al. (2011).

This report builds on previous studies in order to examine the role that career development has in meeting schools’ aspirations to foster college and career readiness. This paper draws together the available evidence to enable policy makers, school leaders, teachers and school counselors to base their actions on the best evidence that is available. In drawing the evidence together the authors of this study have been particularly interested in examining meta-analyses where researchers have used statistical tools to pool the findings of earlier studies and thereby increase the reliability of the conclusions. Whiston, Sexton & Lasoff (1998) provide a good example of

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this type of meta-analysis which examines a range of different career development activities. Their meta-analysis showed a positive effect on those individuals who had experienced a career intervention. In this report we will be looking at further meta-analyses that focus on career development in schools, such as Brown and Ryan-Crane (2000), who concluded that career interventions are effective, especially in helping people to make, commit to and achieve short-term satisfaction with work and career choices.

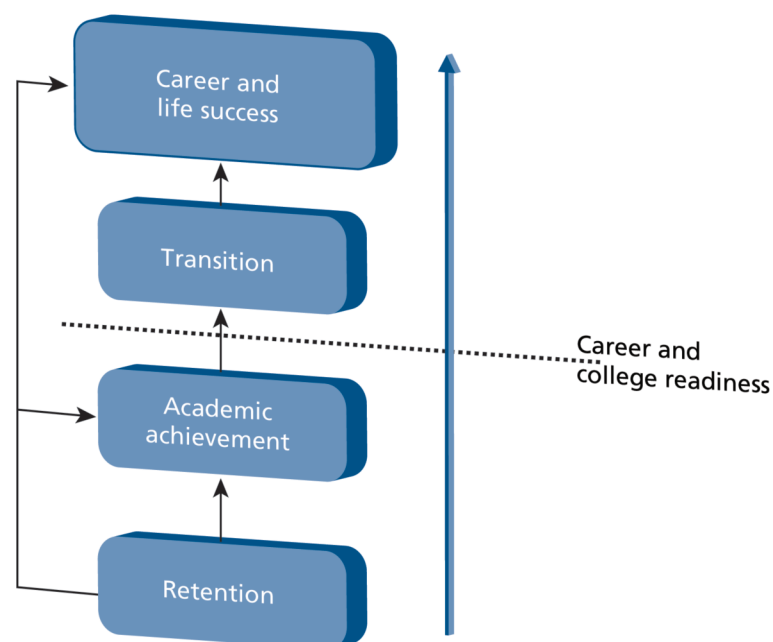
The drawing together of previous studies around career development enables this report to explore the approaches that have been taken by schools and to examine their success. It will examine how effective career development initiatives have been in:

- Engaging young people in school participation (Retention)
- Inspiring young people to achieve academic results from their schooling, for example by receiving a high school diploma (Achievement)
- Enabling young people to make smooth transitions to work (Transition)
- Preparing young people to pursue successful careers (Career and life success)

It will argue that well-organized career development programs have the potential to positively impact all of these factors. By helping students to orient themselves towards their futures and to consider how their actions might shape different life journeys, career development programs speak to both current academic engagement and individuals' plans for the future. This picks up Hoyt's (2005) argument that students who see the links between what they are learning in school and career and work opportunities beyond high school are more likely to attend to their class work and build a positive mental image of their future.

The areas of retention, academic achievement, transition and career and life success are highly interconnected. A young person needs to remain within the education system in order to achieve academically. The level and nature of their academic achievement impacts their chosen transition and the resources necessary in order to make this transition. Finally, all of these factors contribute to the way in which they experience success or otherwise in their life journey. We can conceptualize the relationship between these areas as follows. As Figure 1 shows, career management skills are being developed throughout life. Career management skills help young people to find their way through the school system, to achieve academically and to become ready to make their next step along their life journey. However, people continue to develop and use their career

Figure 1.



management skills as they transition from school and seek career and life success. Career development activities and programs seek to help individuals develop career management skills and to positively impact retention, academic achievement, transition and career and life success.

2. What is career development?

The college and career readiness agenda has been developed to improve the success of the school system in developing young people's potential into productive careers and ultimately into economic value. As argued previously, a narrow focus on high academic standards is unlikely to help young people to be truly ready for college and career. The abilities to make positive decisions, to manage transitions and to build a positive future orientation are also important. These are the areas that career development activities seek to impact. This report will scrutinize these claims about impact, but before looking in detail at the evidence around impact it is useful to explore what is meant by career development.

Career development describes a range of different practices that are undertaken in schools. According to Watts (n.d.), career development is the lifelong process of managing progression in learning and work. The quality of this process significantly determines the nature and quality of individuals' lives: the person they become, the sense of purpose they have and the income at their disposal. It also determines the social and economic contribution they make to the communities and societies of which they are part. This is therefore a useful concept when thinking about how people become college and career ready. This report will use this terminology for consistency, but it is important to recognize that "career education", "career learning" and "career guidance" are often used as broadly synonymous terms.

School-based career development activities take a variety of forms. Many of these activities can exist within an overall framework such as a comprehensive guidance system or as discrete interventions. Some examples are given in Table 1, which summarizes the findings from a survey of schools that was used to build a categorization of different types of career development activities (Dykeman et al., 2001).

This list of examples is not comprehensive, but serves to demonstrate the wide range of different tools that schools may seek to use in developing career development practices within their institutions. In particular there would be value in updating Dykeman et al. due to the growth of forms of computer-assisted guidance since 2001. These will be discussed in this report in Section 2.1.

Career development is closely related to the area of vocational education, which is often referred to as career and technical education (CTE) in North America. However, career development is not limited to a particular educational pathway. Regardless of whether students are following academic or vocational pathways, career development activities can be integrated into a variety of curricula. An important facet of career development is the way that it links the curriculum with extracurricular activities such as school counseling. This report will show that career development takes place in a wide variety of contexts and can be particularly effective when it serves to integrate different aspects of a young person's life. The integration of core academic curricula with career development activities and other forms of personal and skill development was explored in a qualitative study of Massachusetts schools (Rennie Centre for Education Research & Policy, 2010). Teachers felt that this integration had a positive impact on their teaching and enhanced students' learning and engagement.

This broader conceptualization of career development within schools is often described as a "comprehensive guidance system" (Gysbers, 1997). The ASCA and the ACTE have enthusiastically backed this type of approach (ACTE, 2003). The ACTE argues that this career learning environment requires teachers and school counselors to work together to create an environment that fosters both academic success and greater knowledge of the world of work and ability to transition to it. There are a variety of other frameworks for career development (Lynch,

Table 1: Career development interventions in US secondary schools (Dykeman et al., 2001)

Work-based interventions	Advising interventions	Introductory interventions	Curriculum-based interventions
Cooperative Education Internship Job Shadowing Job Coaching Job Placement Mentorship Programs Service Learning/ Volunteer Programs Work-Based Learning Project Work Study Youth Apprenticeships	Academic Planning Counseling Career Focused Parent/Student Conference Career Peer Advising/Tutoring Career Map Career Maturity Assessment Career Counseling Career Interests Assessment Career Library/Career Resource Center Career Cluster/Pathway/Major Career Passport/Skill Certificate College Admissions Testing Computer Assisted Career Guidance Cooperative/Dual Enrollment Information Interviewing Job Hunting Preparation Personal/Social Counseling Portfolio/Individual Career Plan Recruiting Referral to External Training Programs Referral to External Counseling/Assessment	Career Day/Career Fair Career Field Trip Career Aptitude Assessment Community Members Teach in Classroom Guidance Lessons on Personal/Social Development Guidance Lessons on Career Development Guidance Lessons on Academic Planning	Career Information Infused into Curriculum Career/Technical Education Course Career Skills Infused into Curriculum Career Academy/Career Magnet School School-Based Enterprise Student Clubs/Activities Tech Prep/2+2 Curriculum

2000; American School Counseling Association, 2005; Southern Regional Education Board, 2008), many of which also discuss how to combine career development with academic and vocational curricula.

The available evidence does not suggest that there is only one way to deliver school-based career development but some evidence does point towards the kind of model set out by the Gysbers and the ACTE in which professional school counselors work with teachers and stakeholders to develop interventions that are holistic and cross-curricular and contribute to the wider culture and achievement of the school. Whiston, Brecheisen & Stephens (2003) conducted a meta-analysis which examined the relative impacts of different kinds of interventions. In general their findings suggest that more integrated approaches (e.g. computer-assisted guidance plus the input of a counselor) and more structured group approaches increase the effectiveness of career development activities and programs.

Despite the activities of bodies such as the ACTE and a growing base of practice and evidence, it is clear that within the US school system not all schools are equally engaged with the concept of career development. In 2003, Parsad et al. found that career development was available in fewer US high schools than in 1984. A more recent report for the US Department of Labor (Wills & Mack, 2009) found that there were gaps and inconsistencies in the implementation of career services in schools. They suggested a range of measures to reinvigorate the role of career development and to enable stakeholders to track its impact more effectively. Lapan & Harrington (n.d.) echoed these findings in their study of Chicago high schools. They argued that there is an "implementation gap" around career development resulting from school leadership's role confusion about how to best use school counselors. This frequently means that school counselors are loaded with administration and have little time to concentrate on career development. Most recently *Pathways to Prosperity* (Harvard, 2011, p. 26) has argued that although "career counseling is an essential component of any effective pathways system, America's current system of career guidance and counseling is wholly inadequate, and many adolescents receive virtually no useful guidance."

2.1. Technologically-supported career development

In a study in 1998, Behrans and Altman found that 80 percent of college students would rather gain career information from a computer than from a book or a person. It is likely that reliance on computer-based sources of information has increased since the publication of this study. While many career needs are met most effectively in on-site ways such as in-person counseling, group work, curriculum interventions and work-related learning, it is increasingly clear that computer-based and online channels are central to career development. This report argues that the positive impacts of career development tend to be higher when career development is implemented in a holistic and multi-modal way. In other words, career development programs are more likely to be effective if they make use of technology to allow learners a range of ways to obtain and share information.

How high school students use the Internet for career exploration has been examined by Gore et al., (2006) through an analysis of online behavior. It was found that out of 87,293 high school students, the students could be divided into three groups.

In general, Gore et al's (2006) research demonstrates that most high school students will engage with self-directed resources in a fairly limited way as general browsers. Gore et al., (2006, p.432) speculate that these are "individuals who suffer from career indecisiveness or a lack of decision motivation" while those who benefit most from self-directed resources, the focused and in-depth users, are "individuals with a heightened need for occupational and self-information". This encourages the provision of career development that is both multi-faceted and differentiated to individual need. Technologically-supported career development is clearly an important tool which can enable the delivery of this kind of differentiated and learner-centered career development.

Table 2: High school student approaches to online career exploration (Gore et al., 2006)

	Percentage of high school students	Typical behaviours
General browsers	61%	Spent an average of 30 minutes using technologically-supported career development tools and returned for one additional session.
Focused	25%	Spent between 30 minutes and 1 hour on using technologically-supported career development tools and returned for multiple sessions. These users tended to focus their exploration in specific areas, particularly self-assessments and occupational information.
In-depth	3%	Spent more than 1 hour using technologically-supported career development tools and recorded multiple visits to self-assessments, occupational information and learning opportunity information.

Technologically-supported career development is therefore best considered as part of a broader career development intervention rather than as an alternative to it. High school students, such as Gore et al’s (2006) “general browsers”, will often need help and support to engage with and maximize their use of these tools. However it is important to state a number of areas where it is likely to offer particular value:

1. **Increased access** – technology can increase access by allowing more students to engage with career development resources without a corresponding increase in staff resources.
2. **Learner centered** – technologically-supported career development, especially in online forms, is something that students can engage with at their own pace and on their own schedule.
3. **Extensibility** – technologically-supported career development can provide engaged students with a range of opportunities to extend their learning beyond school hours and the scope of the curriculum.

Technologically-supported career development utilizes a wide range of tools and techniques. Hooley, Hutchinson & Watts (2010) created a typology of different purposes that technology can be used for in career development.

1. The provision of career and labor market information. This includes the provision of career development websites and occupational information sources such as the Occupational Information Network (O*NET).
2. To offer forms of automated interaction which provide individuals with tailored experiences without necessarily requiring a career professional. This includes computer-assisted career guidance systems (CACGS), career assessments and games and simulations.
3. To provide a channel for communication between the individual and a host of other people who may be able to support his or her career development such as school counselors, employers, teachers, mentors, or peers. This can also include e-guidance, use of social media and some uses of e-portfolios.

There has been considerable academic discussion of many of these technological tools and it is useful to briefly explore some of the different areas in which research evidence exists. Information resources such as the O*NET have been evaluated (e.g. Peterson et al., 2001 and Converse et al., 2004). This research has concluded that

these kinds of information resources have considerable value in career development and are particularly useful in enabling people to identify appropriate careers.

The area of automated interactions is probably the area of technologically-supported career development that has received the most attention in research. In particular there are a number of studies that explore the use of CACGS (Oliver & Whiston, 2000; Sampson et al., 2009; Betz & Borgen, 2010). A useful literature review undertaken by Fowkes and McWhirter (2007) argued that most users of CACGS are satisfied with these tools, and that CACGS have positive effects on career maturity, the readiness to cope with vocational development tasks.

Another key area in which technologically-supported career development tools have been used within North American schools is in the area of educational games and simulations. Jarvis and Gangitano (2007, p.2) argue that “future-based simulations with role-playing in which learners’ imaginations are engaged” can be powerful tools to stimulate learner engagement and facilitate deep learning. There is considerable research that emphasizes the value that simulations can have in learning (Mitchell & Savill-Smith 2004; Klopfer, 2008; Moos & Azevedo, 2009) with an increasing recognition that computer games provide an ideal vehicle for this kind of simulation (Durkin, 2002; Robertson & Howells, 2008; Adams et al., 2008). Hooley, Hutchinson and Watts (2010) argue that the growth of computer gaming is one of the key technological trends that is likely to influence the practice of career development and there is already some research emerging in this area (Jarvis, 2004; Dimmitt, 2007; Dugosija et al., 2008; Maxwell & Angerhrn, 2008; Brookes, 2009).

Maxwell and Angehrn (2008) argue, based on a sample of 108 14-17 year olds, that computer game work simulations have a measurable impact on the development of work-based skills and behaviors in young people. Rowe (2009) surveyed the literature around *The Real Game* (a curriculum-based work and life simulation) and argued that it provided teachers with valuable tools to help students prepare for transition and improve their career management and critical thinking skills. There are a number of empirical studies which back up these assertions (Jarvis, 2004; Dimmitt, 2007; Rowe, 2007; Maxwell & Angerhrn, 2008) noting that these kinds of experiential simulations had an observable impact on students’ knowledge of the world of work and understanding of the role that academic achievement has in planning for the future.

There is also evidence of the value of electronic portfolios, also known as e-portfolios or career portfolios, in enhancing educational and career development. Much of the current evidence on the value of e-portfolios is based on the higher education and adult setting (National Life Work Center, n.d.; Lorenzo & Ittelson, 2005; Tosh et al., 2005; Herman & Kirkup, 2008). For example, Greenburg (2004) identified an important role for e-portfolios in supporting both formal and informal lifelong learning and Desmet et al., (2009) found that college students who keep an e-portfolio do better academically and have a higher overall retention rate than students who do not.

There is a growing evidence base surrounding the value of e-portfolios in a school context as well (Emis & Dillingham, 2002; Wonacott, 2002; Wade, Abrami, & Sclater 2005; Barrett, 2008; Abrami et al., 2008). The largest study of e-portfolios in schools was carried out by Barrett (2007) who found that the majority of students articulated benefits from the use of e-portfolios such as the ability to store their work, access to their work at home as well as at school, and new ways of presenting their work and demonstrating their progress to other people. They also reflected that e-portfolios allowed them to express their own individuality, choice and creativity. Solberg et al., (forthcoming 2011) note that Individualized Learning Plans (ILPs) are being used in high schools throughout the United States. They argue that ILPs are increasingly being implemented in e-portfolio form, often as part of a broader online career information system. Solberg notes that while research on the impact of ILPs remains in its infancy, research in 15 schools across four states found that parents, teachers and students felt that ILPs were valuable in supporting career exploration, decision-making and planning.

Technologically-supported career development is clearly an important element of the career development picture. Sampson, Dozier and Colvin (2011) argue that a key challenge for career development policy is balancing access with *effectiveness*. The use of technology clearly provides a mechanism for enhancing access at minimal relative cost. The resources required to deliver a thousand online career assessments are considerably less than those required to deliver a thousand career interviews. However, the evidence suggests that it is not useful to define technologically-supported career development as an alternative to conventional career development techniques. Technology can increase access, but if used in isolation this is likely to be at the expense of effectiveness. However, the research discussed in this section suggests that technology can enhance effectiveness as part of a comprehensive package of career development. In addition to increasing access, technology also offers opportunities to make career development more learner-centered and to enable learners to extend their own learning beyond the boundaries of the curriculum.

3. Retention

Retention of students has always been a significant concern for educators and parents because of the life damaging impacts of dropping out of school. Various studies demonstrate a relationship between dropping out of high school and a variety of negative consequences for the lives of the individuals who have dropped out (Bridgeland et al., 2006; Alliance for Excellence in Education, 2007; Richards, 2011). It is possible to quantify this in terms of annual income. For example, in 2008 the average annual income for a high school dropout was \$28,496 compared to \$40,352 for a high school graduate (Federal Student Aid Information Center, 2011). The potential damage to the community in the US of students dropping out has been further explained by Solberg (2007), who states that the detriments include poorer health, higher incarceration rates, higher rates of individuals who qualify for free food programs, and higher rates of public financial assistance. The negative consequences of dropping out have been further elaborated by Bridgeland et al., (2006) who argue:

The decision to drop out is a dangerous one for the student. Dropouts are much more likely than their peers who graduate to be unemployed, living in poverty, receiving public assistance, in prison, on death row, unhealthy, divorced, and single parents with children who drop out from high school themselves. (p.i)

The United States does not rank well in comparison to other developed countries on the issue of educational non-completion. The US ranks eighteenth in high school graduation rates and fifteenth in college graduation rates (OECD, 2007). The Alliance for Excellence in Education (2010) suggests that 1.3 million American children each year do not reach graduation and that 7,000 students per day are dropping out. This problem is particularly prevalent amongst minorities with nearly half of all eligible African American, Hispanic and Native American young people leaving school before graduation (Bridgeland et al., 2006).

Given this relatively bleak picture, there has been considerable interest in what leads some young people to drop out and in what kinds of interventions can make a difference in graduation rates. Evidence suggests that those children who are at risk of dropping out can be identified early by both their grades and their behavior (Ensminger & Slusarcick, 1992; Alexander, Entwisle, & Horsey, 1997; Jerald, 2007). It also suggests that poverty, coming from a single parent family and poorly educated parents have an impact on a young person's likelihood of dropping out (Ensminger & Slusarcick, 1992; Jerald, 2007).

Despite the importance of structural factors, there is also evidence that individuals (Fredericks, Blumenfeld & Paris, 2004), families (Jimerson et al., 2000) and schools (Rumberger, 1995; Reyes et al., 2000) can have an influence on a young person's likelihood of dropping out. This research highlights factors such as engagement in extracurricular activities (Mahoney & Cairns, 1997) and being part of a school-based friendship group (Ream & Rumberger, 2008) as reducing the likelihood of dropping out. In a study of 400 ninth grade students looking at the psychological factors associated with academic success, Solberg (2007) concluded that curriculum strategies

designed to reduce school dropout rates should focus on building stronger peer and teacher connections, relevance and meaningfulness of school, academic confidence, and stress/health management.

Bridgeland et al., (2006) surveyed individuals who had dropped out in order to explore their reasons for leaving school early and investigate what they felt would have increased their engagement. Eighty-one percent of respondents felt that if schools had provided more opportunities for real-world and work-related learning it would have improved their chances of graduating from high school. This finding suggests that career development has an important role to play in engaging young people in their education and retaining them within the school system. This message has recently been picked up by the *Pathways to Prosperity* report (Harvard, 2011) which argues that a major reason why students drop out of high school is that they can't see a "clear, transparent connection between their program of study and tangible opportunities in the labor market." (p.10-11). The sense that students fail to achieve their potential because they are unable to find relevance between their current learning activities and their aspirations is supported by Kenny et al., (2006), which found that a greater engagement with career planning was positively correlated with school engagement.

Another way to encourage retention and support academic achievement, particularly with vulnerable groups, is by using career development as a focal point around which multi-professional teams can work (school counselors, counseling psychologists, other educators, and mental health professionals). Howard & Solberg (2006) highlight that school counselors have the expertise to address the motivational and psychological challenges that accompany students' academic difficulties and decision to drop out. They demonstrate this ability by exploring the Achieving Success Identity Pathways (ASIP) program which supports students in developing effective school to work transitions through confidence building, stress management, building relationships with peers and employers and establishing academic and career goals (Solberg et al., 2002; Howard & Solberg, 2006). They highlight that evaluations of the ASIP program demonstrate that the program contributes to improvement in academic performance (grades, credits earned and classes passed) and school behavior (attendance, number of suspensions and severity of suspensions) (Solberg et al., 2001).

A link between career development and school retention was reported by Plank, DeLuca and Estacion (2005). This study was based on data from a nationally representative longitudinal survey.¹ They interviewed participants in this survey who had experienced a period of dropping out during their education. The report concluded that there was a reduced risk of dropping out for those individuals who had experienced career development in combination with core academic learning, particularly where this combination was provided for younger school students. However, they also found that an overreliance on career development programs at the expense of academic programs did not produce an improvement in retention.

Technologically-supported career development has also been found to play an important role in encouraging greater retention. Online provision is flexible and can be offered to learners who have begun to disengage with school either remotely or as part of a targeted re-engagement strategy within the school. As previously argued, students who are able to place their attendance at school within a long-term career narrative are more likely to remain engaged, and technologically-supported tools can provide cost-effective and learner-centered ways of doing this. Gore et al., (2006) argue that these tools allow learners to consider their career options in a 'natural context' which they can fit around their lives (Wonacott, 2002; Offer, 2004; UKCES, 2010). Technology also offers the ability to assess students (Offer, 2004; Gore et al., 2006) and identify those who are experiencing career indecision, in order to provide more support to prevent disengagement that could lead to dropping out.

Osborn and Reardon (2006) found that CACGS could be used as a key component of a broader intervention designed to support school engagement, through research with a group of middle school students who were at

¹ The National Longitudinal Survey of Youth 1997 (NLSY97). The NLSY97 tracks a nationally representative sample of 8,984 youths living in the United States who were 12 to 16 years old as of December 31, 1996.

risk of dropping out. The research found that at the end of the course the students had learned more about their interests, occupations, post-secondary opportunities and decision-making approach. They also found that the CACGS was particularly beneficial if supported by a counselor. This reiterates Whiston et al's (2003) finding that CACGS are most effective if they exist in a broader career development context. In a study of 33 high school sophomores at risk of dropping out, Bleier (2006) found that both of the two different CACGS used within the study had a statistically significant impact on attainment and retention within the school.

The evidence therefore suggests that career development programs have an important role to play in engaging students in their education and diminishing dropout rates. However, career development is not a magic bullet that can be administered at the last moment to "save" those at risk of dropping out. Rather, career development works best when it is part of an integrated strategy to increase academic achievement and support students to gain an understanding of the world of work. Furthermore, the evidence also suggests that career development is best started early so that by the time young people are facing choices about academic and vocational direction, they have a frame of reference within which to exercise these choices and the skills to follow them through.

4. Academic achievement

There has been growing concern about the educational achievement of American youth and its subsequent impact on society. The recent OECD (2010a) Program for International Student Assessment (PISA) results show that out of the 34 OECD developed countries, the United States was placed 14th in reading literacy and 17th in science literacy. The need to improve academic achievement is particularly significant because of the close link between academic achievement and success in later life.

The relationship between educational success and success in later life is usually described in terms of earnings (Rentner & Kober, 2001; Cheesman Day & Newburg, 2002). For example, Cheesman Day and Newburg found that when viewing US census data over an adult's working life, high school graduates can expect, on average, to earn \$1.2 million; those with a bachelor's degree, \$2.1 million; people with a master's degree, \$2.5 million; and people with a doctorate, \$3.4 million. A study by the National Alliance of Business (1998) found that people who are academically successful

- are more stable in their employment;
- are more likely to have health insurance;
- are less dependent on public assistance;
- are less likely to engage in criminal activity;
- are more active as citizens and charitable volunteers; and
- are more healthy.

Given the relationship between academic achievement and lifetime success there is clearly a lot of policy interest in enhancing academic achievement. Teachers and schools have developed a wide range of strategies to improve educational achievement at the high school level. Many of these are highly contested and intertwined with both the political and pedagogic positions of those who are advocating them. Unfortunately there is not time to fully represent the debates and research around educational achievement in this paper; however, it is perhaps useful to briefly review some recent trends in research around this area. In general, most research recognizes that structural, social and economic factors such as income, culture, geography and family organization and status play a role in influencing an individual's academic achievement. Sirin (2005) provides a good example of this area of research, as does chapter eight of Wilkinson and Pickett (2009). However, teachers and schools rarely have the power to influence these aspects of the lives of young people and thus much research has focused on changes in local policy and pedagogy that can have an impact on academic achievement.

Educational research has identified that improvement in academic achievement can be influenced through a range of factors. As might be expected, the roles of teachers (Heck, 2010) and school leaders (Robinson, Lloyd & Rowe, 2008) have been explored. Other research has focused on issues such as the involvement of parents (Hill & Tyson, 2009), student absenteeism (Gottfried, 2009), involvement in extracurricular activities (Guest & Schneider, 2003) and the physical fitness of young people (Chomitz et al., 2009). This barely scrapes the surface of the vast amount of research that exists around academic achievement. However, what remains clear is that although the academic achievement of school students is complex, it is possible to develop interventions that influence it. The rest of this section will examine how career development practices can exert an influence on academic achievement.

While career development is most obviously focused on the issue of successfully transitioning to work, many school counselors are focused on a wider conception of personal development. Parsad et al., (2003) reported that over half of the respondents to their survey of a representative sample of US high schools felt that increasing academic achievement was the most important goal of their career development program. Watts (1999, p.2) argues that the concept of career should be redefined to describe “the individual’s lifelong progression in learning and in work... The idea of career describes the negotiation of a pathway through education, work and other aspects of life.” In other words, career is a broad concept, and taken in this context it is not surprising that many schools and school counselors feel that their energies are appropriately put into educational guidance and support as well as supporting career transitions.

There is a large body of research demonstrating that career development at school can have a positive impact on students’ academic achievement (Gysbers & Lapan, 2001; Brigman & Campbell, 2003; Dahir & Stone, 2003; Poynton et al., 2006; Gratama, 2007; Carey & Harrington, 2010a). While dated, Evans & Burck’s (1992) meta-analysis is a good place to begin examining this literature as it drew together 67 studies examining the relationship between career development and academic achievement. They were able to demonstrate a small positive effect on academic achievement and to conclude that there was even greater effect in relation to certain subjects (math and English) for those young people with average ability level and for those who experience career development at a younger age. In addition, they found that career development was more effective if the program was in its second year of operation with the same students.

A large-scale study surveying over 20,000 students in Missouri (Lapan, Gysbers & Sun, 1997; Lapan, Gysbers, & Petroski, 2001) found that students who had attended schools which had implemented the Missouri Comprehensive Guidance Program (MCGP) were more likely to report that the school was a positive environment, that they had achieved better academic results and that the school supported them to consider their futures. The MCGP describes a state-level career development initiative which encourages schools to provide curriculum-based learning to support the development of student competencies around the areas of career planning, knowledge of self and others and educational and vocational development. In MCGP schools this curriculum runs from kindergarten to the 12th grade and is supported by a broader infrastructure of school counseling and other extracurricular support. Finally, MCGP schools also ensure that there are sufficient management resources to link curricular and extracurricular elements of the program and to ensure that the program is managed as a whole.

The findings of the Missouri studies suggest that where the MCGP was implemented, students were more likely to report that (a) they had earned higher grades, (b) their education was preparing them for their future, (c) their school made career and college information available to them, and (d) their school had a positive climate. These positive effects were found after removing differences due to school enrollment size, socioeconomic status and percentage of minority students in attendance. The study found little or no impact due to gender, student ethnicity/racial status or socioeconomic level of the student’s family.

There have been other studies based around the comprehensive guidance program model in Utah (Nelson, Gardiner & Fox, 1998; Nelson et al., 2007; Carey & Harrington, 2010b), Washington State (Sink & Stroh, 2003; Sink et al., 2008) and Chicago (Lapan & Harrington, n.d.). The most recent Utah study is based on data from 280 schools providing a strong indication that school counseling programs were making a measurable impact on student achievement. Carey and Harrington (2010b) also found that it was possible to distinguish the impacts of well-integrated guidance programs from those that were less well integrated and also to observe the impact of different counselor to student ratios. The Washington studies also found that schools that had maintained a comprehensive guidance program for five or more years were able to show significantly higher academic achievement than schools that did not offer a comprehensive guidance program.

The studies in Missouri, Utah and Washington provide some of the strongest empirical evidence around the implementation of career development. However, their methodology has been critiqued by Brown and Trusty (2005) who argue that there is a need to view these findings as “preliminary” (p.4). In a robust rejoinder to this comment, Sink (2005) argues that while it is “virtually impossible to make airtight causal statements” (p.10), “causal inferences can still be tentatively offered” (p.11). In other words, these studies remain some of the best pieces of evidence that are available in this area. Sink finishes his rejoinder by arguing that the only way to increase the conclusiveness of the evidence around the issue of career development and career guidance is by amassing a range of varied studies rather than holding out for a single study which is able to identify and control for all possible confounding variables.

Technology-based career interventions have also demonstrated a positive impact on academic achievement (Bleier, 2006; Borghans & Golsteyn, 2008). For example, Dimmitt (2007) found that school students who used the world and life simulation The Real Game as part of their career development experienced statistically significant increases in academic tests. Borghans and Golsteyn (2008) explain that career development, supported by CACGS, is part of a virtuous circle of lifelong learning (p.21). As people make positive educational choices (supported by career development), their likelihood of making future positive choices increases. Education and achievement beget each other and career development has the potential to help individuals to make positive educational moves. Furthermore, Borghans & Golsteyn (2008) also argue that “poor information about the future prospects of a chosen field of study also reduces the incentive to put effort in the study... students who have a less clear picture about their future study fewer hours per week.”

The evidence around academic achievement points in similar directions to the evidence around retention. Where guidance programs are started early in an individual’s school career, where they are holistic (comprised of both curricular and extracurricular elements), well-integrated into the school and supported by management, they appear to have a positive impact on students’ academic achievement.

5. Transition

In looking at college and career readiness it is important to recognize that the transition from school to work, or school to college to work, is a crucial period in a young person’s life and one which can often be challenging. The World Bank (2010) defines the school to work transition (from 15 to 24 years of age) as a period when young people develop and build skills based on their initial education and training, and become productive members of society. However, transitions from school to work are not merely economic acts; rather, they happen amongst a range of other personal transitions. The period in which young people move into the world of work is also the period in which they assume adulthood in a range of other ways, perhaps moving into their own homes, meeting partners or forming new friendship groups (Coles, 1995).

The period in which young people are transitioning into the labor market therefore has the potential to be a difficult one for them. Furthermore, young people engaged in this transition have been shown to be particularly vulnerable to economic downturns. In the third quarter of 2010, the youth unemployment rate in the US was at

18.2%, in comparison to a rate of 8.1% for adults (OECD, 2010b). Research in Europe has identified five factors (ETF, 2008, p.7) that impact on the ability of young people to successfully transition from school to work. These can be summarized as:

1. The economic, social and political context
2. The education and training system
3. The structure of the labor market
4. The interfaces linking education with work
5. The characteristics of transition itself

Many of these factors are outside of the control of the schools and career development practitioners who seek to positively influence the transitions of young people. The broad economic, social and political context (1) and the structure of the labor market (3) are not merely educational issues and need to be addressed through wider political and economic interventions. The Obama administration has focused attention on the education and training system (2) as the place in which leverage can be most successfully exerted. The aim is to make the education system more effective and provide young people with the skills and qualifications that make entry to the labor market easier. However, as already suggested, this approach fails to tackle some of the factors that make transitions challenging.

Complementary to the Obama administration's focus on (2) is a focus on the interface linking education and work (4). Career development speaks to both (2) and (4) and most importantly creates a meaningful link between them. Career development activities such as investigating the world of work and considering the real world applications of academic subjects can be about engaging young people in education and increasing the relevance and applicability of their learning (2). Alongside these curriculum-embedded activities, career development also seeks to smooth transitions into the labor market, for example, by explaining recruitment processes, aiding decision making and brokering relationships between young people and potential employers. Taken together this suggests that it may be possible for schools to have an influence over young people's transitions into the labor market.

While many young people are capable of making the transition from school to work without much support, a qualitative study by Blustein et al., (1997) suggests that young people are more satisfied with their jobs when the transition has been well supported. Blustein et al., (1997) interviewed 45 young men and women aged between 18 and 29. The analysis of their responses suggests that family, educators and career counselors need to be active in supporting the school to work transition and in providing both practical and emotional support while in transition. The findings of Blustein et al., (1997) were echoed by a recent Canadian study (Bell & O'Reilly, 2008) which sought to develop a framework for interventions to support successful school/work transitions. Their framework emphasizes the need to provide young people with a good understanding of both the labor market and the various 'transition pathways'. The framework also emphasizes the importance of engaging stakeholders, including students, parents, teachers and employers, and creating opportunities for dialogue and information exchange. The study also stresses that career development programs need to be embedded in and connected to both the academic curriculum and other personal and social education activity in the school.

Meta-analyses by Baker and Taylor (1998) and Baker and Popowicz (1983) have analyzed some earlier studies in order to provide some quantification of the size of the impact that career development is having on young people's transitions. Baker and Taylor (1998) looked at 12 studies and concluded that it was possible to demonstrate that career development interventions were having an impact on young people's transitions. Career development has also been found to support labor market transitions in studies such as Lapan, Aoyagi and Kayson's (2007) three year longitudinal study. This study followed 87 adults as they transitioned from school to

the labor market. It found that career development in high schools was significantly connected to more successful transitions into the adult roles of worker and learner and to greater satisfaction with one's life. As with a number of previous studies discussed, they found that holistic programs which combined curricular and extracurricular activity and mobilized teachers, school counselors and parents were most effective in supporting labor market transition.

Career development has also been found to increase the likelihood of college enrollment and college graduation (Metis, 1999; Maxwell & Rubin, 2001). Studies by Ogle (2001) and Lapan and Harrington (n.d.) suggest that school counselors, in particular, have an impact on how students prepare, plan, search, apply for and transition to college.

There is also a considerable amount of research recently that focuses on the role of the CTE curriculum in supporting transition (Lekes et al., 2007) and leading to positive labor market outcomes (Dare, 2006; Kemple & Willner, 2008). Work-based and work-related learning are also closely connected to career development and merit particular mention in the context of school to work transitions. Gemici et al., (2010) used data from the Educational Longitudinal Survey to examine the impact of work-based learning on at-risk students. Those students who had engaged in work-based learning were significantly more likely to orientate positively towards post-secondary education and work. A small-scale qualitative study by Phillips et al., (2002) also argues that work-based learning has a major impact on school to work transition.

Technology-mediated career development can also support transition by providing students with both windows and bridges to the world of work and further learning. Windows enable students to examine possible destinations and to develop strategies that will enable them to make an effective transition and acclimatize to the new environment. These might take the form of occupational information, video case studies or simulations (National Life Work Centre, 2008). For example, Maxwell and Angehrn (2008) found that young people exhibited a significant measurable increase in their awareness of work-based social behaviors following the use of a computer game-based work simulation. Bridges provide students with ways to form connections with the world which they are transitioning to and to build allies within it. These might include online mentoring and the use of social media.

As with the areas of retention and achievement, career development can be seen to have an impact on young people's ability to transition from school to work. Transitions are clearly influenced by a very wide range of social, economic and educational factors; however, the evidence suggests that career development interventions can have an impact on young people's ability to secure and keep work and their chance of securing income and personal satisfaction from that work. Again, the most effective career development seems to be applied early and maintained throughout schooling and delivered in a holistic and multi-modal way. Furthermore, successful career development to support transitions typically makes use of a range of partners and stakeholders including teachers, employers and parents.

6. Career and life success

The most difficult area to uncover hard evidence of the impact of career development is around the longitudinal impact on an individual's life journey. Can something that takes place during your school life be expected to produce a lasting and measurable impact throughout your life? In order to answer this question it is important to think briefly about what we mean by career and life success.

In measuring career and life success it is possible to focus on a variety of different elements. Is "success" essentially about measuring factors such as income, stability, job satisfaction, happiness, social connectedness and societal contribution, or is it about something even more subjective? Psychologists have long been attempting to

build “objective” instruments that are capable of measuring these subjective ideas about life success. Neugarten, Havighurst and Tobin (1961) attempted to measure “life satisfaction”, while Gill and Feinstein (1994) critically examined various instruments used by medics to assess quality of life. More recently there has been considerable research interest in the measurement of happiness (Hills & Argyle, 2001). All of these different scales have things to recommend them, as does a more straightforward measure of income or lifetime income. However, assessing which elements from the range of different factors (e.g. health, socioeconomic status, education or access to career development) have combined to bring about an individual’s happiness or wealth is methodologically very challenging.

Researchers who are interested in the relationships between education, career development and life success have postulated a number of models regarding career and life success. ACT (2009) argues that career success is built out of a mixture of academic achievement, certainty about occupation choice and college readiness. Thomas et al., (2005) and Heslin (2005) have stressed that career success is a mix of extrinsic factors such as salary and vertical career progression and intrinsic factors such as job and career satisfaction. However career success is conceptualized, the problem remains that it is difficult to tease out the mix of personality traits, opportunities and interventions that brought this about.

Despite the challenges, there is a considerable body of research that explores what factors lead to career success. Some researchers have focused on a range of structural determinants of career success such as socioeconomic status (Gelissen & de Graf, 2006), gender (Mayrhofer et al., 2008; Orser & Leck, 2010), personality (Judge et al., 1999) and race (Cokley et al., 2004; Greenhaus, Parasuraman & Wormley, 1990). Many researchers have focused on how the individual’s attributes such as intelligence and personality type have a role in predicting career success (Judge et al., 1999; Seibert, Kraimer & Liden, 2001; Sutin et al., 2009). Other researchers have concentrated on the interaction between the individual and his or her environment. These researchers have argued that career success is dependent on the ability to build social capital (Seibert, Kraimer & Liden, 2001) or to create an appropriate balance between work and family responsibilities (Parasuraman, 1996).

There is considerable evidence that vocational education, with its strong focus on transition and career development, can have positive lifelong effects. Silverberg et al., (2004) found that participation in career development and vocational education impacted positively on a young person’s short- and medium-term earnings. Similarly Gore et al., (2003) found that focusing on a particular vocational area at school had a positive effect for three subjective measures of career success: job quality, employment match and career outlook. The study consisted of 1,143 high school seniors who were interviewed, once as seniors in 1998 and again two years later. The study specifically found that people who took a career major were more positive about the career path they had taken and were more optimistic about the future. They also believed their career major had prepared them for their current activities and achieving their future plans.

There is also evidence of the benefit to career success from the use of CACGS. Gati et al., (2006), in a study of the predictive validity of a CACGS, looked at the experiences of participants six years after they had used the tool and found that 84% of the participants who chose a career recommended by the CACGS were highly satisfied with their career choice, while the remaining 16% were satisfied to a moderate extent. Earlier studies using the same CACGS (Barak & Cohen, 2002; Gati, et al., 2003) also demonstrated that it was more popular and more accurate than a paper-based interaction.

Evaluating career and life success is clearly difficult and isolating the impact of an educational intervention across an individual’s life course poses further challenges still. However, there is some evidence suggesting that career development can have positive long-term impacts on both extrinsic and intrinsic measures of career and life success. There would clearly be value in undertaking further research, perhaps using longitudinal methodologies.

7. Conclusions

This report has sought to investigate the evidential basis of career development in schools. It has demonstrated the existing evidence which suggests that career development can have an impact on retention, achievement, transition and life success. In particular it has concluded that the most significant impacts are likely to result from programs which engage young people early in their school careers, deliver interventions in holistic and multi-modal ways and mobilize a wide range of stakeholders. It has also shown that both school counselors and a variety of technologically-mediated career development tools have an important role to play in the delivery of school-based career development.

It is hoped that this review of the evidence can be useful in underpinning the actions of decision makers within the school system and policy makers in this area. In particular the report suggests that the concept of college and career readiness would benefit from increased engagement with the established body of practice around career development. If we seek to have a substantial impact on the lives of young people through the medium of the education system, it is important to pay attention to established educational approaches such as career development. This report argues that a narrow focus on academic achievement is unlikely to achieve the worthwhile aims of the college and career readiness agenda. A broader approach incorporating career development could be far more powerful.

While there is considerable evidence around career development, further work could considerably strengthen the evidential basis of current policy and pedagogy. As Hughes and Mechur Karp (2004) argue, there is a need for further research using randomized control groups to evaluate impact more thoroughly, a point that is reinforced by McGannon, Carey and Dimmit (2005). Solberg, Wills and Niles (2009) call for a more systematic examination of the impact of career development and the development of national metrics through which impact could be measured. In the context of discussion about how the evidence base could be improved it is also worth mentioning the What Works Clearinghouse's (2008) *WWC Procedures and Standards Handbook*, as this sets out detailed, robust and useful standards that could be used to shape further efforts to gather evidence in this area.

In particular the authors of this report would like to see some of the following work being commissioned and undertaken:

- New meta-analyses based on recent research.
- Randomized control trials examining career development interventions.
- Further longitudinal work based on longer time periods than much of the existing research.
- Further studies examining the nature, role and impact of technologically-mediated career development.

While there is always more to be done, this report demonstrates the strength of the existing evidence base. Career development is a natural ally of the college and career readiness agenda and it is hoped that this report makes some contribution towards joining these ideas together.

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