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Our Evidence Base

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Making Education Relevant

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Foreword

At the Edge Foundation, we want to do everything we can to help schools and colleges to make education relevant and prepare students for life and work in the twenty-first century. That means not being afraid to leave behind old fashioned rote learning for exams and embrace the most effective techniques and approaches for richer and deeper learning.

We have spent the last few years visiting and working with some of the most effective schools, colleges and models around the world. From High Tech High in San Diego to the P-TECH school in Brooklyn, South East Regional College in Northern Ireland to School 21 in London and XP School in Doncaster, our team has worked closely with a wide range of professionals to understand their approach and practice.

Although they may have used different language, the similarities between their highly effective approaches was striking. We distilled them into the three key principles that sit at the heart of Edge Future Learning – Project Based Learning, Real World Learning and Community Connected Learning.

It is essential that this work is underpinned by the strongest possible evidence base. That is why we asked leading researcher Dr Lynne Rogers from UCL Institute of Education to draw together that evidence base from international academic literature and to present it here to provide a concrete foundation for our work.

Our team looks forward to working with you to build on this evidence base to support you in integrating these principles into your work and to bring the curriculum to life for young people.

Olly Newton
Executive Director, Edge Foundation

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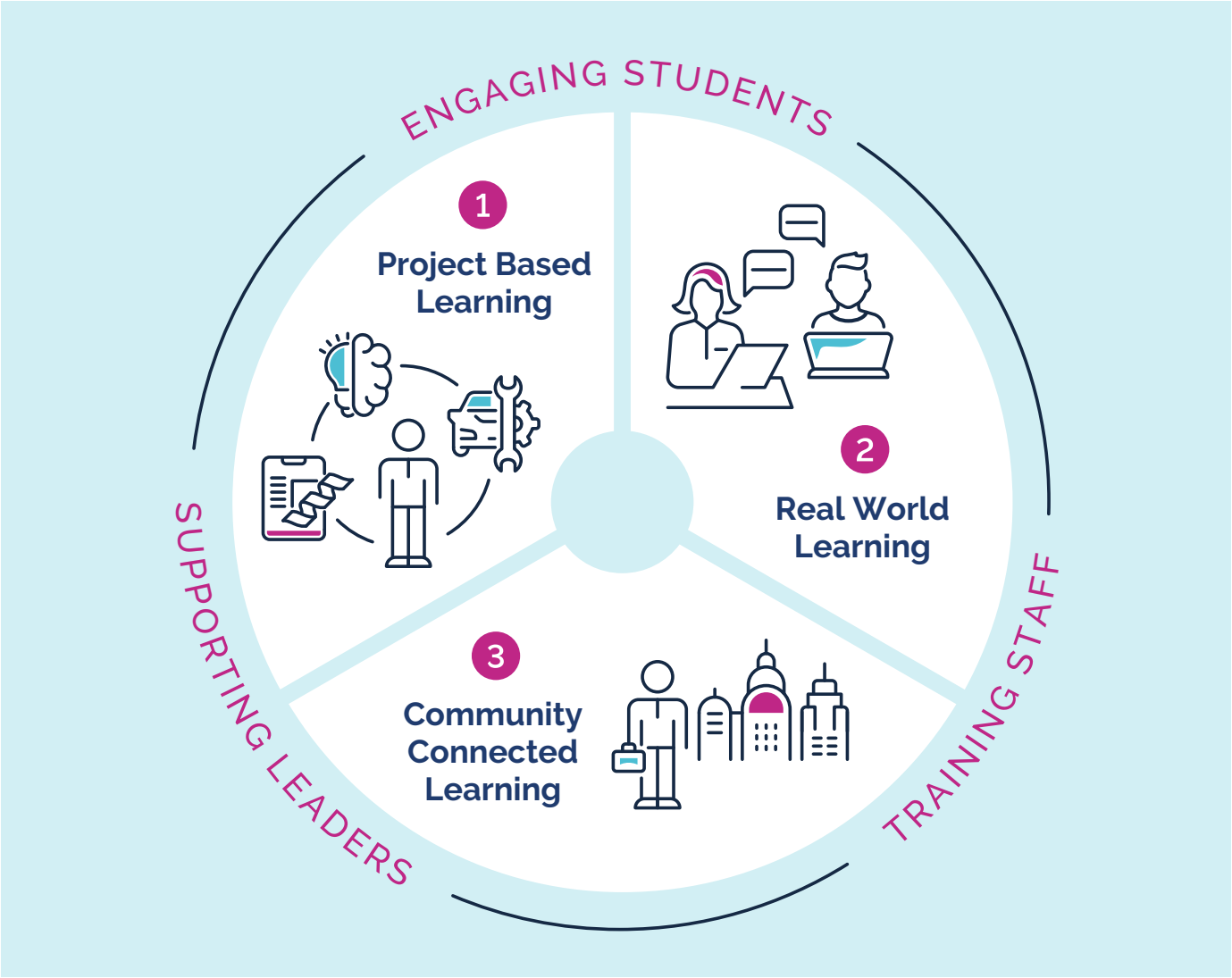
Our Model



1 Project Based Learning

A pedagogical style that helps students develop knowledge, skills and motivation through relevant, interactive learning experiences where they work on a driving question towards a tangible product. This creates opportunities to connect across traditional subject boundaries and build transferable skills such as teamwork and communication.

2 Real World Learning

An approach to learning that provides students and teachers with opportunities to apply knowledge and skills through connections to the real world – from employer engagement in the classroom to externships in the workplace for teachers. These opportunities break down the boundaries between school, college and real life, demonstrating relevance in order to build motivation.

3 Community Connected Learning

A form of experiential learning where students collaborate to address societal challenges as part of their wider learning. Drawing on a rich tradition of youth social action and citizenship, students develop youth voice and leadership skills, supporting their peers and building a deep sense of agency and purpose to drive their learning and benefit the world around them.

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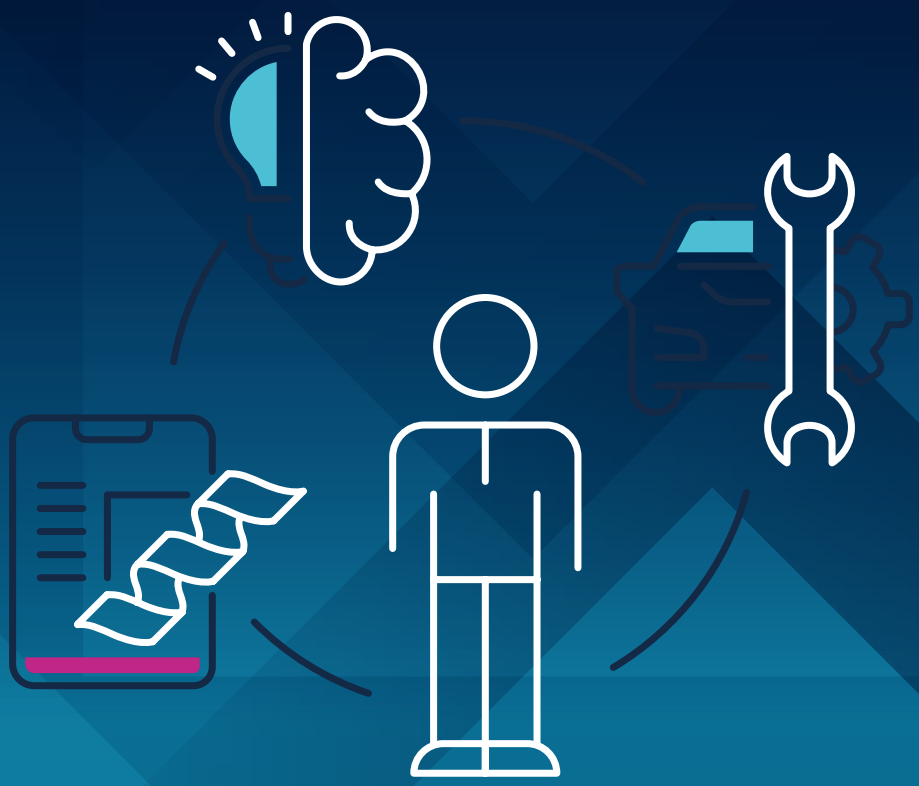
Evidence Base – 1 Project Based Learning



Project-based learning

Introduction

The demands of the 21st century, in relation to the complex economic, environmental and social challenges that we face, call for different approaches to teaching and learning and assessment that enable young people to develop a wider range of skills and attributes than previous generations (e.g. Hipkins & Cameron, 2018; OECD, 2018). Within this, student-centred approaches to teaching and learning, as seen in project-based learning, can prepare young people for life and work; it also makes them engaged, motivated and keen to learn, all of which underpin life-long learning.

Pedagogically, project-based learning is underpinned by three constructivist principles: learning is context-specific; students are actively involved in the learning process; and students learn through social interactions and the sharing of knowledge and understanding (Menzies et al., 2016). Common characteristics of this approach include a) a student-centred learning approach that is organised around achieving a shared goal, b) teachers focused on the role of facilitating learning rather than tutoring, c) strong links to a real-world problem, and d) engagement in higher-order thinking skills such as analysis, evaluation and synthesis. In practice this includes working collaboratively in teams to solve real-world problems, working outside and across traditional curriculum boundaries to make learning more holistic and relevant, and presenting project outputs and artefacts to real audiences in exhibitions and showcases. The global perspective of the research into project-based learning, which spans all stages of education and encompasses a range of subject disciplines, demonstrates the value assigned to the power of relevance in many educational systems. However, applying the principles and methods is not without challenge, being heavily determined by national education policies, resources, teacher expertise, curriculum requirements and forms of assessment. These may not always foster the type of educational environment that researchers believe is best able to deliver the development of skills recognised to be important for the 21st century.

Project-based learning

Research that involves some form of inquiry learning is widely reported in the education literature, but the approach is not new: project-based methods were in use early in the 20th century (Knoll, 2012). Project-based learning is closely linked with problem-based learning and expeditionary learning. All these approaches promote experiential and collaborative learning, with active reflection and conscious engagement. Problem-based learning is, however, defined by the learner's key role in setting the goals and outcomes, in recognition of the fact that real world issues often require an ability to both define the problem and develop solutions (Savery, 2006). Expeditionary learning is distinguished by a whole school approach in which a series of cross-curricular 'expeditions' have a clear place in the school curriculum and similar to project-based learning will involve an opening or guiding question, and an entry or immersion event at the start (Expeditionary Learning, 2014). The distinctive feature of project-based learning is the co-construction of an end product or artefact and the way in which the problem to be solved drives the learning activities (Helle et al., 2006). Patton puts forward three criteria to consider when establishing the driving question: 'it should be a question that people ask in the 'real world', it should be a question that has no easy answer, and stretches students' intellectual muscles and it should be a question that ignites students' imaginations' (2012, p. 20).

One of the challenges of project-based learning as a pedagogic approach is the lack of consensus about what constitutes project-based learning and how this is operationalised in the institution or classroom (Thomas, 2000; Condliffe et al., 2017; Chen and Yang, 2019). As Hanney and Savin-Baden noted, project-based learning 'is broad, far reaching and means different things in different countries and different disciplinary areas' (2013, p. 7). For instance, there is little agreement about how project-based learning fits in with other approaches to teaching and learning, the amount of time allocated to project-based learning, the optimum size of groups, how groups are chosen or the level

of student autonomy in choosing the project (Chen and Yang, 2019). There is a similar lack of consensus about whether there is a need for 'taught' input from the teacher to ensure that students have the relevant knowledge and understanding to be able to undertake the project in a meaningful way and if so, how much. For instance, at High Tech High and XP students have more formal lessons within the project where teachers help the students get to grips with the knowledge and expertise needed to tackle the guiding question. There are questions too about the amount of scaffolding that is provided to students as part of project-based learning and how the level of scaffolding is effectively reduced during the project as students become more confident to explore independently. At XP school, for example, teachers spiral up the knowledge skills and understanding to ensure students build on previous expeditions and experiences (XP Trust, 2014).

There is however a consensus of key characteristics which form part of the staged approach to working on projects. These include a challenging problem, sustained inquiry, authenticity, the involvement of students in choosing the project, reflection on the process, critique and revision and the creation of an artefact or product (Larmer, 2020; Thomas, 2000).

A common challenge acknowledged in the literature is that students who are new to project-based learning will require support and without appropriate scaffolding students may disengage from project-based learning (Lajoie, 2005). Hmelo-Silver et al. (2007) describe a need for considerable instructional scaffolding to support the development of self-directed learning and teamwork skills. The aim of scaffolding is generally seen as two-fold. Firstly, it is to limit the complexities of the task so that students do not become overly confused and can therefore engage with the big question. And secondly to ensure that students focus on the key aspects of the task and do not adopt a superficial approach (Ertmer and Glazewski, 2019). Dynamic scaffolding in response to issues arising during a project includes modelling by the teacher, asking clarification or probing questions and open-ended questioning strategies. In addition static scaffolds that are prepared in advance, such as breaking the project into parts, providing briefing notes and guidance or cues, images and organizers to develop a timeline for the project, are usually based on the teachers' perception of where students might experience difficulty in a project. Also important is the role of teachers in giving ongoing praise that is awarded for effort, not just outcomes (English and Kitsantas, 2013).

The current popularity of project-based learning amongst researchers and practitioners is evident in the literature, which offers examples at every stage of education from early years to degree finalists (for instance, Bacon, 2005; Habok 2015; Kokotsaki, et al., 2016). The techniques have been applied across a wide range of subject disciplines (e.g. Chiang & Lee, 2016, food and beverage; Doppelt, 2003, electrical/technical; Han et al., 2015, STEM). Its perceived value as a means of delivering 21st century skills and learning is further evidenced by the worldwide application of project-based learning in the research literature.

Project-based learning: addressing real world issues

Authentic, real world issues form a crucial component of project-based learning. Stern (2016), writing about external policy challenges at an Expeditionary Learning middle school, referenced 'expeditions' topics with an obvious real-world focus: for example, an intensive exploration of local invasive crab species, or investigations of current civil rights issues. Stern described the 'engagement, curiosity and excitement of students both in the classroom and outside the school' (p. 453), contributing to the development of a wide range of skills. Within the UK, Menzies et al. (2016) evaluated the impact of *Learning through REAL Projects*, a randomised controlled trial (RCT) involving 24 schools and over four thousand Year 7 students in the north of England. Students in intervention schools completed a series of projects: for example, learning about the environmental impact of rubbish, creating fashion pieces from recycled waste, and putting on a fashion show of these pieces for an audience. The evaluation found the project had developed skills that could be used in real life situations, and students referred to the learning as 'connected', 'interesting' and 'fun' (p. 45).

A more recent RCT, involving 3,645 students from five mainly urban districts across the US, explored the implementation of project-based learning in Advanced Placement (AP) Environmental Science and AP US Government and Politics (Saavedra et al., 2021). AP courses are set at a higher level than normal high school lessons and credits earned through AP

exams are accepted by most colleges/universities as work towards graduation. Projects included mock presidential elections, creating political action plans and environmental resources for farming. The students in the intervention group valued the group work and engagement with learning and were more likely to earn a qualifying score of 3 or above, increasing their chances of receiving college credit.

A further approach to project-based learning is seen in industry-relevant projects that are developed by schools and colleges in collaboration with employers. In England, the Career Colleges Trust runs an annual industry-led project as an inter-college competition among Career Colleges. As an example, in 2019, the partnership included Amazon Web Services (AWS), Samaritans, London Sport, Marylebone Cricket Club and UK Active. The involvement of several partners meant that the project crossed boundaries between aspects of digital, and health and social care and thereby extended beyond the curriculum to enable young people to think about the wider community. A total of 58 students from four digital Career Colleges undertook the eight-week challenge to develop an innovative digital solution to promote the physical, mental and emotional wellbeing of young people. Each team appointed a project manager, and participants had two project meetings with the client to develop their ideas. The project culminated with students presenting their ideas to judges at the AWS head office in London (Rogers et al., 2020).

Similarly, project-based learning through employer engagement is a key focus for University Technical Colleges (UTCs) in England. At UTC Reading, for example, industry partners work with teachers to identify learning topics and design project briefs. In small teams, students work on projects for an extended period ranging from one term to a year. The partners launch the project often at their business site and visit the UTC four times during the project to deliver knowledge transfer session(s) and to support and critique project work. The partners carry out a final visit at the end of the project to judge the project presentations and select the winning team (McCrone et al., 2019).

In both examples the high levels of employer engagement, in conjunction with the highly experienced staff in schools and colleges, supported the adoption of project-based learning as a pedagogic approach. Students benefitted from rich, authentic experiences and through these developed a wide range of employability skills that enabled them to progress to further study, apprenticeships or employment. In both evaluations the students were aware that they were acquiring appropriate workplace behaviour, communication and interpersonal skills, developing their problem-solving skills as well as learning industry relevant skills and knowledge. Staff interviewees pointed out that young people's confidence had improved through working with employers, their understanding of the way the world of work operates had progressed, and their decision-making was perceived to be better informed.

While student destinations were positive in both evaluations the question arises about whether a focus on project-based learning impacts achievement. Boaler (1998) carried out a longitudinal study of students from Years 9 to 11 in two UK secondary schools. An open, project-based approach using real world examples helped students to develop understanding and to make use of their mathematical knowledge when similar tasks were encountered in the real world. Boaler suggested the students had been "apprenticed" into a system of thinking and using mathematics that helped them apply their skills in non-school settings. They were also more likely to pass GCSE maths than a control group taught by traditional methods.

In another quasi-experimental study Hsu et al. (2015) in the US explored seventh graders' development of argumentation skills and construction of science knowledge in a graph-oriented computer-assisted project-based learning environment. A significant difference in science knowledge, counterargument and rebuttal skills was found in favour of the treatment condition. Kanter (2009) described a PBL approach to teaching the biology curriculum in a US middle school that was focused on the question 'how can we redesign school lunches to meet the needs of the body?', a real-world topic that could help the learner anticipate a utility for the content to be learned. Pre- and post-test results suggested the study had proved effective in *developing meaningful understanding* of the science content.

What is also apparent is that through project-based learning experiences students develop improved critical thinking, the ability to work collaboratively, they become more self-reliant and are generally more engaged with learning.

Working in teams

Group work has been cited as beneficial to students in terms of their social development, appreciation of diversity, critical thinking and problem solving (Freeman & Greenacre, 2010) and can offer a dramatic increase in experiential learning resulting in improved learning outcomes (Cheng et al., 2008). It is seen as an important element of the learning process at every stage of education, from elementary school (Slavin, 2015) to final year degree level (Harms, 2015) but how researchers define team work can vary considerably.

Slavin (2015) argued that co-operative learning, even at kindergarten, has the potential to become a primary format to achieve both traditional and innovative goals, and showed how theoretical models based on motivation, social cohesion, or group structure can all have positive outcomes, provided there is cooperative effort in which students are genuinely working together: simply placing students in groups does not necessarily make a team. Savery (2006) emphasised the need to ensure that information collected by individuals is shared coherently with other team members and used to inform the group's decision-making processes, but also the importance of students taking responsibility for their own learning and contribution to a project. This point is also relevant in relation to assessment since in project-based learning students may be assessed as part of a group or as an individual. Through a mixed portfolio of assessment, for example, a group product or artefact, a written report and a presentation (Nation, 2006) assessment can be focused at the individual or group level enabling each individual contribution to be made clear. In addition, Savery noted that effective collaboration will be an essential skill for most learners in the world after school. Continuing the theme of self-regulated learning, English and Kitsantas (2013) identified the need for students to be able to set goals, monitor, reflect, and sustain their motivation, processes that do not usually occur naturally or easily. Learning environments and teaching practices must therefore be designed to support these skills as primary requirements.

Teachers can play a crucial role in the success of team work, and Jassawalla et al. (2008) noted a possible mismatch between the intentions of teachers (e.g. expectations of intense information exchange, cross fertilisation of ideas, etc.) and students (team work seen as late stage combining of individual outputs). Research into intragroup dynamics has identified the concept of *social loafing*, when one or more group members fail to make an adequate contribution to the group, as a frequent threat to effective team work. Jassawalla et al. (2008) found that undergraduate business students regarded loafing as poor performance that impacted negatively on other group members and tended to see this as a problem that should be managed by teaching staff, rather than resolved by the team. Freeman and Greenacre (2010), however, found that undergraduate marketing students had difficulty distinguishing between those who were loafing and those who were struggling, often showing destructive behaviour towards both types of non-contributors: for example, contributing students deliberately withholding information from those they perceived to be loafing. Group performance and student satisfaction were found to improve after interventions aimed at destructive behaviours, combined with discussion of the need to focus on benefits to the group as a whole.

Authenticity – beyond the classroom walls

Education systems that use the subject as the primary element of curriculum design do not easily facilitate the implementation of teaching outside of curriculum boundaries. Cross-curricular work is often project based and of short duration, but this can deliver positive outcomes and conclusions. For example, Volk et al. (2017) explored the potential of tablet-based learning to support the delivery of a cross-curricular maths project integrating maths, natural science, and the Slovene language. A control group followed the maths curriculum using traditional pen and paper methods. The intervention group had better outcomes for conceptual knowledge, procedural knowledge and problem solving when compared with those following traditional methods. They concluded that tablets offered an efficient way to combine resources drawn from several subjects and enabled the contextualisation of maths in real life problems. Karvánková and Popjaková (2018) combined elements of geography, maths and biology in a field work project to investigate the impact of environmental noise focused on the question "why does everything around us hum and buzz?" The project

referenced aspects of the three subjects that had already been taught and made use of technology that added interest for the students. The study concluded that the approach equipped the students to formulate hypotheses by drawing on competencies already acquired, and spontaneously present relevant knowledge and skills.

An example of more extensive cross-curricular work can be seen in the REAL learning study (Menzies et al., 2016) which crossed many subject boundaries. For example, the first project was to create an A-Z book, an outcome that involved 'researching the topic, writing and redrafting text and images, creating proofs, getting publishing quotes, getting a book published, and launching the book at a student-led book launch' (Menzies et al., 2016 p. 6). Teachers involved in the projects commented on the importance of getting 'buy in' from departments working together, and of support for teachers who may be working outside their comfort zone.

The most comprehensive approaches to cross-curricular work tend to be found in research that describes a 'whole-school' approach. Stern (2016) described how a central pillar of an Expeditionary Learning school's philosophy and practice was that teachers worked co-operatively to create authentic, inter-disciplinary curricula that enabled an expeditionary learning approach to be maintained even when the model appeared to lack compatibility with national policy that placed increasing emphasis on 'teaching to the test'.

Digital technology

The considerable developments in digital technology mean that learning can now take place in multiple modes, whether entirely through face-to-face, or fully online where all interactions occur through digital technology often using a virtual learning environment, or through blended learning, a combination of face-to-face and online interactions between students and teachers. Evident from the literature reviewed so far is that digital technology is used frequently in project-based learning - it makes it easier for students to conduct serious work, to keep a record of the process of design and development, to share this with other students and with the wider world (Patton, 2012). Specifically, collaborative tools, such as discussion forums, chat rooms, wikis and blogs, make a positive contribution to successful student collaboration in solving problems (Kim et al., 2011; Oliver, 2005). Integrating technology into project-based learning also has many affordances for teachers especially in relation to scaffolding student learning (Kali & Linn, 2008; Krajcik & Mun, 2014) and in maximising individualised, independent learning (Krajcik & Shin, 2014).

While online educational programmes have been present for many years, blended learning approaches, including flipped learning, are becoming increasingly popular particularly in the US (Horn & Staker, 2014). In flipped learning approaches students undertake tasks and activities to do at home on computers or tablets prior to the lesson. Through video lessons made by the teacher or online activities related to the content, students access concepts and acquire learning before the lesson. These pre-learning experiences enable the teacher to use class time to focus more on problem-solving and on higher order thinking tasks in class to help develop pupils' thinking (Rudd et al., 2017). Flipping typically involves an inversion of the traditional learning structure (Bergmann & Sams, 2012).

Shireland Collegiate Academy, in England, adopted flipped learning as parts of a maths initiative called MathsFlip. This involved the students learning core content through an online learning environment, outside of class time, and then participating in activities in class to reinforce their learning. The online learning environment provided teachers and students with resources for learning mathematics outside the classroom, enabled opportunities for collaborative communication, and provided information to teachers on students' progress prior to planning and teaching a lesson. An independent evaluation found that students who engaged in MathsFlip made the equivalent of one additional months' progress in maths, on average, compared to children in comparison schools (Rudd et al., 2017).

In the US, students at New Tech High create a four-year blog portfolio using the website platform Weebly. Writing prompts from their teachers provide a stimulus for the blogs which are used by the students to highlight and reflect on their work. At the end of each year students showcase their portfolio work to their peers, families and community partners. Through the blogs students interact with online communities and make

real-world connections which in some instances lead to internships and employment opportunities. Students are able to promote their content via social media and in this way build a digital presence (New Tech High, 2020).

While technology offers many exciting opportunities in education there remain concerns that students from disadvantaged families are further disadvantaged by having no computers at home. To an extent the emergence of Web 2.0 technologies and mobile devices has changed this, since even the very disadvantaged have mobile phones (Walsh et al., 2011). However there remain many parts of the world where students lack reliable high-speed internet connections, or where the one mobile phone or computer is shared by many members of the family. Among low and middle-income families in the USA many parents and their children are under-connected (Rideout & Katz, 2016). This needs to be borne in mind when seeking to integrate technology into project-based learning.

Assessment opportunities with project-based learning

While assessment has always been about the measurement of learning i.e. the assessment of learning, more recently the focus internationally has shifted to the key role that assessment plays in driving learning and of assessment for learning (Stobart, 2008), where emphasis is placed on how assessment can be used as a positive tool for learning purposes. Within this perspective there have been calls to think about new approaches to assessment that better align assessment with teaching (Biggs, 2011; Hipkins & Cameron, 2018) and challenges to traditional assessment methods such as closed examinations and essays with calls for greater authenticity of assessment (Pellegrino et al., 2001). Allied to this has been growing recognition that students will need to develop a wider range of skills and attributes than previous generations (OECD, 2018). Employers also are demanding different skill sets (Impetus, 2014; Mann & Huddleston, 2016). For instance, Strongin et al. (2016) placed an emphasis on social skills, creativity and judgment, while Mourshed et al. (2014) highlighted the importance of spoken communication, teamwork and problem solving. Within this there is a growing recognition that conventional assessment practices are not a one size fits all solution for changing or shaping student achievement. Advocates of project-based-learning are part of this movement and while several alternative approaches to assessment have been considered, the most prominent of these have been performance-based assessments and exhibitions.

Performance-based assessments provide students with the opportunity to demonstrate a range of competencies that can include tasks based around extended problem solving, applying learning to new situations, conducting investigations, and explaining and defending thinking in relation to an issue or argument (Darling-Hammond & Falk, 2013). The student-centred nature of performance-based assessment can include oral presentations, computer simulations, group work, project work, role plays and interviews, to name but a few (Hao & Johnson, 2013; OECD, 2013).

Doppelt (2003) described how low-achieving junior high school students in Israel completed a three-year electricity curriculum track in a learning environment with enhanced technology. A key aspect of the assessment was the completion of authentic projects presented in an exhibition to which parents and other teachers were invited. The project elevated pupils' motivation and self-image and had a significant unexpected finding: the number qualified by their matriculation results to enter further education increased in every school. Al-Balushi and Al-Aamri (2014) in a quasi-experimental study with 62 11th grade female students found that involvement in environmental projects had a significant positive impact on environmental knowledge and science attitudes, with an enjoyable final product such as producing a documentary movie, or a school-wide exhibit having the most impact. Mosier et al. (2016), reporting on perceptions of project-based learning in the New Tech School Model, found that community engagement, particularly when it included adults from the community coming in to evaluate the outcomes of student projects, was valued by students and perceived to contribute to the development of 21st century skills.

Underpinning all these approaches to performance-based assessment is the concept of rich tasks that encourage and foster critical thinking, reflection, analysis and reasoning, and that also enable students to develop and apply skills in real-life situations.

Professional development for teachers

In project-based learning the role of the teacher is no longer focused on instructing or transmitting knowledge but shifts to being that of a facilitator or tutor who scaffolds the complex activity and interactions among students in the process of producing the end artefact. As Stauffacher et al. (2006:55) indicate 'The teacher's role changes from a distributor of knowledge to a process manager, helping students in their learning process by initiating reflection processes and supporting them, if necessary, on substantive matters'. This change in dynamic means that learning derives not just from the teacher but from the knowledge, ideas and interactions between students working in groups with the result that traditional student-teacher hierarchies are overturned. It also requires the facilitator to understand the different phases of group work and adapt their level of support accordingly, as the group moves to greater independence. As observed by Hmelo-Silver and Barrows 'the facilitator must continually monitor the discussion, selecting and implementing appropriate strategies as needed' (2006, 24).

The underlying pedagogical approach to project-based learning requires multiple shifts in classroom practices and can be challenging for teachers (Azer, 2005; Dole et al., 2016; Frank & Barzilai, 2004). Reported difficulties include initiating the student inquiry process, facilitating dialogic interactions to scaffold learning, and finding the time and resources to support in-depth student investigations (Alozie et al., 2009; Hertzog, 2007; Thomas, 2000).

Evidence suggests that the move from a teacher-centred approach to more student-centred learning is a gradual process and one that requires support and training over an extended period (Hertzog, 2007). Mentoring of teachers is also useful as part of this process and can be provided by teachers who are more experienced in project-based learning, educational organisations or from employers. Feldman and Pirog (2011), for example, showed how school teachers working alongside practising scientists in a university developed sufficient knowledge and expertise to deliver authentic, real world science projects in elementary schools.

Teachers also report difficulties with the management of group work. Darling-Hammond et al. (2008) observed that establishing, modelling, and maintaining classroom norms for effective group work is one method teachers use to support students' engagement in group activities. Other strategies include allocating rotating group roles, providing time and support for groups to get to know each other and feel comfortable together, and the provision of training in groupwork before the project begins (Harmer, 2014). Educational institutions that are supportive of teacher competence and autonomy produce motivated teachers who persist in project-based learning (Lam et al., 2010). Furthermore, where teachers make a successful shift to project-based learning approaches they report increased job satisfaction (Hixson et al., 2012; Strobel & van Barneveld, 2009).

Conclusions

The research literature clearly indicates that project-based learning is beneficial, with positive outcomes including increases in level of student engagement, heightened interest in content, more robust development of problem-solving strategies, and greater depth of learning and transfer of skills to new situations (Condliffe et al., 2017; Hmelo-Silver, et al., 2007; Kingston, 2018; Thomas, 2000). There is though a need for more rigorous research on the effects of project-based learning especially in relation to experimental studies with random allocation of participants to control groups (Kingston, 2018; Kokotsaki et al., 2016).

With the above caveat in mind project-based learning shows much promise especially regarding its potential to prepare young people to confront the complex problems that we face. None of these problems will have easy solutions, rather they will require people to work together in sophisticated ways across multiple disciplines with creativity and resilience. High quality project-based learning offers students at all stages of education invaluable opportunities to work together on authentic complex tasks in preparation for their future. To enable this, it is essential that teachers and those training to become teachers have explicit training and ongoing support to deliver project-based learning so that they are confident in scaffolding students' learning effectively, working across curriculum boundaries and working with other staff and students to facilitate effective team work.

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EDGE FOUNDATION

Evidence Base – 2 Real World Learning

Real world learning

Introduction

Integrating real world learning with careers education and guidance has the potential to make a huge difference to young people at a time when changes in the labour market mean that there are more complex careers for young people to consider and more options in work and learning (OECD, 2010). The corollary is that increased opportunities make decisions harder for young people as they face ongoing complex choices over their lifetime (OECD, 2010). Internationally, careers education is seen as a means for young people to develop the requisite knowledge and skills that will enable them to plan and manage their lifelong career journey (Andrews 2011; Hooley et el., 2011), it also acts as a vehicle to enable students to connect academic learning with future life goals (Palladino Schultheiss, 2005).

For young people, the benefits of an approach whereby careers education is integrated into real world learning work are many. Through engaging in real world authentic activities in the community, the classroom and/or with local employers, young people learn about the world around them including different career pathways and professions. Evidence suggests that students understanding is increased when they are given meaningful opportunities to apply, interpret and solve problems situated in the real world, that motivation is enhanced, and that longer-term retention is higher than in more didactic teaching approaches (for example, Lindemann-Matthies & Kamer, 2005; Scherz & Oren, 2006; NFER, 2019). For those responsible for the curriculum, teaching within a real world context provides many opportunities to link curriculum learning to careers and employer engagement, something that is reflected in the Gatsby benchmarks, where four of the eight benchmarks relate directly to careers, labour market information, encounters with employers and experience of workplaces (Gatsby Foundation, 2014).

Offering high quality careers education through real world contexts is not without challenges. Many teachers lack experience of the world of work or are out of date with current practice, do not understand how subject knowledge is applied in industry and business to solve real problems, and many have had little or no training in embedding careers education into subject teaching. This necessitates that teachers need time to engage with employers, such as through externships, so that they can learn about the application of subject content in the real world and from this develop authentic activities for students. Strong support from middle and senior management is essential.

Curriculum within a real-world context

Current debate around the relative place of knowledge and skills in the curriculum focuses on three possible models: knowledge-led, skills-led, or knowledge engaged (Spielman, 2018). A knowledge-led approach concentrates on the teaching of a body of subject specific knowledge determined by the school or college, with skills development considered to be an outcome of the curriculum, not its purpose. Skills-led approaches focus on skills development, learning behaviours, and generic knowledge as explicit intentions, not by-products, with specific knowledge having limited value in the curriculum. A knowledge engaged approach sees skills and knowledge as intertwined: a certain degree of knowledge needs to be delivered before a skill can be demonstrated, and the knowledge then underpins the development and application of relevant skills. Matching and synchronising knowledge and skills is therefore important.

To introduce middle school students to science and technology in the real world an Investigation into Science and Technology (IST) programme was implemented across three schools in Israel (Scherz & Oren, 2006). The programme lasted two months and was broken into three to four-hour weekly classes. The students visited laboratories and/or technological sites and were able to observe and interview professionals, have exposure to advanced experimentation and up-to-date equipment, and get involved in activities at

the laboratories and technological sites. Pre and post measures through questionnaires, drawing tasks, and interviews revealed that the programme had enabled the students to develop more accurate and realistic views of scientific and technological sites and the people who work there.

At School 21 in East London all students from Year 10 onwards, undertake a Real World Learning Project - an innovative approach to work experience. Over a term and a half, students spend half a day a week in the workplace and are tasked with solving an authentic problem for a real organisation. The projects all have an authentic outcome produced by the students that has to be of genuine value to the organisation. Examples include a piece of research, a social media campaign, the redesign of a process, promotional videos, the creation of a piece of art, or the planning and delivery of a community event (School 21, 2020).

A further example is seen at XP school where students worked on a project on coal mining including the effect of the pit closures on Doncaster, the science and maths behind coal mining and the art and poetry that portrayed the impact of the closures. The students researched the different subject areas related to mining, visited local museums, interviewed staff there and interviewed representatives from local families involved in the mining industry. One young person explained: 'on the mining expedition we went out to meet experts, for example the national coalmining museum and had a tour of the pits and visited old people in their homes' (NFER, 2019, p. 4). The culmination of the project was a published ebook, *From the ground up: What does Doncaster owe to Mining?* and a presentation of learning to their parents and members of the mining community.

In Career Colleges in England staff valued the high level of employer input and the positive difference that this made to the experiences of the young people (Rogers et al., 2020). This meant that students benefitted from rich, authentic experiences and through these developed a wide range of employability skills that enabled them to progress to further study, apprenticeships or employment. In one Career College the local RAF Fire and Rescue museum had closed and lost its building. The charity had a vast collection of 40 to 50 old engines, however, there was a huge cost to take old engines to public displays and exhibitions and they did not have any storage for them. They wanted a way of promoting the museum and had an idea of a mobile museum trailer which opens out with digital activities. The museum bought the trailer and then took it into college. The students were then involved in a project about what the mobile museum should look like and what should it have. This real world problem focused on a) we need to go out to the shows b) we want to talk about the history and the engines and c) talk about fire safety. The students were split into different groups – project management, finance, construction, digital info graphics to tackle this (Rogers et al., 2020).

Within higher education, the introduction of a research-engaged curriculum can demonstrate many features of student centred learning. Neary et al. (2014) described a cross-institution initiative whereby students learned primarily by engagement in real research projects, or projects which replicated the process of research in their discipline. Engagement was created through active collaboration amongst and between students and academics, both within the curriculum and in extracurricular activity. Student surveys found that 95 per cent said they could see advantages for employability and real life, and there were many examples of strong relationships developing that crossed staff/student boundaries. Outcomes were embedded into the structures of the university, and the initiative was described by the Higher Education Academy as a model of good practice.

The value of an expanded curriculum

An expanded curriculum, such as through extracurricular activities undertaken either outside the normal day in schools or colleges or within the community, offers the chance for students to engage with learning in non-academic contexts. Extracurricular activities in schools and colleges include sports clubs, cheer leading, art and photography, drama, music, technology and volunteering. As well as such activities, community settings offer participation in church activities, youth clubs, scouts, guides, DJ-ing and radio production. Students who engage in extracurricular activities have been found to be more engaged in the classroom (Fredricks & Eccles, 2006). In addition, extracurricular activities in the community offer a nurturing and family-like environment (Fredricks et al., 2010).

Alvermann et al. (1999) found that an after-school book club, held in libraries and led by local librarians, created an element of choice that could liberate students from the institutional context of schooling (in which texts are determined by the teacher) and remove connotations of being perceived as 'weird' for a love of reading. Gatenby et al. (2011) described how a multicultural after-school cooking club led by the food technology teacher developed not only cooking skills but also citizenship skills and an understanding of different cultures.

An interesting use of space is seen in an example of collaboration between further education (FE) and the local community in which an 'Arts Depot' is incorporated within an FE college (Ofsted, 2009). This fully functioning community arts centre is equipped with two theatres, an exhibition gallery, rehearsal studios for music, dance and theatre and a disability arts and education forum. Ofsted describes this as a model of a shared-use arts space in which students behave and work to professional standards. According to Ofsted, this venue helps students develop realistic creative knowledge and skills more comprehensively than they would have had they studied solely in a college environment. Both the venue and the learning provision help to motivate young people

There are also benefits for teachers. For example, Feldman and Pirog (2011) described a three-year project in which 30 teachers and over 500 students participated in an out of school club for elementary schools that enabled teachers and students to engage in authentic scientific inquiry processes. The STEMRAYS programme was developed so that small groups of teachers could learn by collaborating with practising research scientists and then lead science clubs in activities that contributed to that research. The teachers gained the knowledge and expertise to facilitate the children's participation in authentic scientific research and the children developed the proficiency to contribute useful data and findings.

Research with university students, who might be expected to have a strong focus on employment prospects, can offer a perspective on the meaning students may attach to extracurricular activities. Stevenson and Clegg (2011) explored activity through the lens of possible selves. Given that the UK employability agenda assumes an orientation towards the future and employers increasingly expect students to display capacities beyond those of simply achieving a degree, they argued that extracurricular activity offers a means by which students could develop these additional capacities towards their future imagined selves. However, their analysis of 61 in-depth student interviews found different orientations to the future, with some displaying future selves oriented to employability, but others more firmly attuned to the present and to developing student identities. Research with university alumni can demonstrate the longer-term impact of extracurricular activities engaged in whilst at university. Clark et al. (2015) explored both early and late career jobs and found both short- and long-term effects on employability from extracurricular involvement whilst at university.

A challenge with extracurricular activities is that some students from lower socio-economic groups may be less likely to participate than their more affluent peers. Bathmaker et al. (2013) found that students who did not engage in any extracurricular activities due to financial or time constraints or because they wanted to prioritise their studies, were entirely from working-class backgrounds; consequently, they missed opportunities to develop new social networks, create links and develop skills that could have assisted career progress.

Careers guidance integrated into the curriculum

In the UK, the replacement of the Careers Service with Connexions in 2000, and its subsequent demise in 2012, have transferred responsibility for careers advice and guidance from external careers services to schools, with some loss of expertise and disparity in outcomes (Ofsted 2013). This pattern has occurred across Western Europe (Draaisma et al., 2017). Within England, for example, careers education, advice and guidance is patchy and subject to a 'postcode lottery' whereby some young people receive better guidance than others (Hooley et al., 2014). Concerns about the quality of careers education are seen internationally (e.g. Australia: Gonski et al., 2018, Canada: Connelly et al., 2013, and the US: Jacob, 2017). This is of concern given that careers education can result in a range of wider positive outcomes, such as promoting motivation and positive attitudes towards learning (Harkins 2001) and enhanced self-awareness (Palladino Schultheiss 2005).

In addition, careers education is perceived as a useful tool for promoting social equity (Archer et al., 2014) and is key for social mobility (OECD, 2004 Hutchinson, 2012). When students have experienced considerable careers education from a young age, they are more likely to express broader career expectations and aspirations and are less likely to be constrained by societal and/ or familial pressures to make early career compromises (Welde et al., 2016).

The publication of the Good Career Guidance Report (Gatsby Foundation, 2014) triggered a step change in how careers education is conceived and embedded in education in England. Noteworthy is that the report drew on case study visits to Canada (Ontario), Finland, Germany, Hong Kong, the Netherlands and Ireland in addition to visits to schools in England. The Gatsby Benchmarks, arising from the report have been adopted as a standard of excellence in career education and are now firmly embedded in the work of the Careers & Enterprise Company, the Government's Careers Strategy (DfE, 2017) and embraced in the new Ofsted inspection framework. Particularly important in enhancing the standing of careers education has been the requirement for schools to publish the name and contact details of the Career Leader on their website and the development of Good Career Guidance for colleges. Relevant here is benchmark 4: Linking curriculum learning to careers: 'By the age of 14, every pupil should have had the opportunity to learn how the different STEM subjects help people to gain entry to, and be more effective workers within, a wide range of careers' (Gatsby Foundation, 2014, p. 7).

Collins and Barnes (2018), in a review of the literature, note that the 'careers curriculum' can be taught in three distinct, yet often overlapping and interrelated ways: delivered as a subject in itself, or via the vehicle of other subjects, or through co-curricular activities. However, the shift in responsibility for the delivery of careers education by schools and colleges would suggest that there is a huge opportunity to embed careers education into a curriculum-orientated approach that can positively impact students' decision making about future education and career pathways.

Research conducted by Archer and colleagues (2013) has been instrumental in demonstrating the challenges around participation in science education and through the concept of Science Capital has helped shed light on why particular social groups remain underrepresented in post-16 science. In addition, the researchers found that STEM-focused careers in the curriculum interventions increased young people's occupational awareness. Careers orientated curricula can also support improved academic attainment. Hooley et al., (2014) analysed the performance of 820 schools in the UK that had successfully validated the quality of their careers provision with an external party leading to a quality award, the Quality in Careers Standard (QiCS). Compared to a statistical sample of matched schools, possession of QiCS was associated with a statistically significant 1.83 per cent increase in the number of students attaining at least five good GCSEs and a 1.8 per cent increase in the number of students achieving maths and English GCSEs. Similar associations between subject-orientated career activities and school attendance and completion have been found in US studies (Hughes & Karp, 2004). Evidence also suggests that embedded career learning can be associated with long-term economic benefits (e.g. Kemple & Willner, 2008).

Strong career learning environments include: an explicit relationship between career-related learning and the aims and ethos of the school (Gatsby Foundation, 2014); an integrated, whole-school approach that involves tutors, teachers and managers in delivering a careers curriculum (Hooley et al., 2015); a well-organised timetable and high quality resources (Careers Development Institute (CDI), 2014) and the need for schools to bring in expertise from employers and other stakeholders (Careers Sector Stakeholders Alliance, 2014). It is important, as has been highlighted in explorations of career-related learning in primary schools (Kashefpakdel et al., 2019), to appreciate that good practice is influenced by contextual factors. While it is recognised that there is no 'one-size-fits-all' approach to organising these activities, with geographical location often being an important consideration, school/college-wide approaches are essential in the implementation of career guidance programmes, as opposed to isolated interventions (OECD, 2004; Hooley et al., 2015).

A common theme in guidance for schools and colleges is the importance of buy-in from senior staff, and sufficient time allocation for a middle manager to take on the role of the career leader, who has responsibility

for spearheading this area of education. Good practice also suggests that external careers providers can further support school/college/employer partnerships, and that when a link governor is involved in employer activities, employer engagement is 'more likely to be coordinated, relevant, progressive and quality assured' (CDI, 2014, p. 6).

Within the UK the role of the careers leader embraces:

- **Leadership** – a leader who is responsible for developing, running and reporting on the school's careers programme.
- **Management** – a manager who plans careers activities, manages the careers budget and, in some instances, manages other staff involved in the delivery of careers guidance.
- **Coordination** – a coordinator of staff from across the school and from outside.
- **Networking** – a networker who establishes and develop links with employers, education and training providers and careers organisations (DfE, 2018, p. 15).

Teachers and tutors are also highly influential, since young people often turn to their teachers for career advice. Indeed, Hutchinson and Bentley (2011) suggest that young people are more likely to ask their subject teacher for careers advice than they would their form teacher, a careers teacher or adviser. It would seem then that the curriculum can provide a rich space for helping young people to understand different career pathways and for developing skills that employers are seeking (Hooley et al., 2015). As such embedding career education within the curriculum can be driven either by using career interest to engage students in the subject or by helping students to see how subject skills can be utilized within the labour market (Musset & Kurekova, 2018). Problematic is that staff who are not themselves guidance specialists may, by drawing on personal experience, provide information that is no longer current or does not meet the needs of the students. In addition, teachers are trained to help students with their academic achievement, not to construct career competencies (Draaisma et al., 2017). If teachers are to embed careers education effectively into the curriculum then teachers and trainee teachers would benefit from direct knowledge of the workplace and exposure to a wide variety of professionals. Data from PISA 2015 indicates that many teachers might not have had training in understanding career guidance (Musset & Kurekova, 2018).

One attempt to address this deficit is seen in a university-led teaching training programme in Atlanta, Canada, where an intervention was piloted to enable trainee teachers to integrate career education projects into their mainstream elementary school courses. With support from the university, trainee teachers developed and delivered a variety of career education projects. Even though the projects varied considerably in their structure, delivery, and implementation, most students (n = 413, 77%) agreed that they had learned more about careers, and 435 (81%) students agreed that career education had made them excited about what they could do with their lives (Welde et al, 2016). In addition, Welde and colleagues et al. (2016) identified significant improvements by allowing teachers to gain confidence and competence to incorporate careers education into their mainstream subjects. This embedded model of careers education where classroom learning is methodically linked to a wide range of real-life careers and applications has also been piloted in the US and been found to be effective in raising student engagement and attainment (see for example the CareerStart programme, Woolley et al., 2013).

Teacher externships

Teacher externships, also called placements, are a form of continuing professional development (CPD) for teachers that are delivered by employers, often through a facilitating agency who sets up the externships. Externships are possible in all subject areas for example, business and management (Zaid and Champy-Remoussenard, 2015), construction (Dodd and Hanson, 2018), health (Academies of Nashville, 2012), law (Sintons, 2020) and STEM (Education Services Australia, 2018). The length of a teacher externship varies from one day, to two weeks or even a term or a year; however little is known about how the length of an externship impacts on teacher development and practice. Externships remain relatively under researched in England (Dodd, 2017), however there is more that can be learned from Australia and the US.

Within primary and secondary schools most teachers internationally train to teach through an educational

programme that enables them to consider different pedagogic approaches to teaching and learning and to develop subject pedagogic knowledge. The common career trajectory for school teachers is school to university to teacher training then back to school teaching (Nasta, 2007). This means that school teachers often have little work experience outside the classroom and although they have deep knowledge of their content areas, they lack familiarity with industry and business and the different processes employed in the workplace where subject content is applied in authentic settings to solve real world problems. They may also lack, as is discussed above, an up to date understanding of different careers and occupations. Even among lecturers in Further Education, who have often had a professional career before embarking on teaching, developments in technology and digital ways of working means that their prior experience is soon out of date. It is perhaps not surprising then that there is often a disconnect with the way that subject knowledge is presented in a classroom, and how it relates to the application of this knowledge in authentic settings (National Academy of Engineering and National Research Council, 2009; Silverstein et al., 2009).

Teacher externships offer a way to enable teachers to develop new knowledge about business and industry and/or service-based organisations and to take this learning back to the classroom by developing activities and projects that are engaging for students and involve authentic real-world contexts. Put simply, given that teachers have responsibilities to assist young people in career decisions, to ensure that they are developing the wider skills needed for employment, and to keep up to date with how professions are developing, then they have to have an understanding of how current workplaces operate.

In Australia teachers undertake an industry-based work placement relevant to their subject area. They work with industry professionals to design learning activities and participate in industry supported workshops, online courses, or conferences. The partnerships enable teachers to develop their skills so that they can enrich the curriculum and equip teachers with the latest research and industry relevant knowledge. Partnerships range from work with individual teachers, a whole school approach or with multiple jurisdictions for example Google and the University of Adelaide's free online professional learning MOOC on Digital Technologies for Australian teachers (Education Services Australia, 2018).

Educators in Industry, a K-12 Externship Program in the US, involves a four-week programme in the summer with teachers placed at a company whose primary focus is engineering, manufacturing, or other design or process-oriented activities. Participation in the programme also involves completing an accompanying two-credit university course in the summer, and a one-credit follow-up course in the autumn. Teachers who participated in the programme demonstrated an increased understanding of the importance of skills for problem solving, collaboration, and communication in today's workplace environments, and expressed commitment to creating classroom opportunities for students to develop these skills through active learning in relationship to authentic, real world contexts (Bowen & Shume, 2018, 2020).

Teacher externships have been shown to be a valuable professional development experience for giving teachers knowledge about different working environments (Bowen & Shume, 2018, 2020; Dodd, 2017; Silverstein et al., 2009) and enhancing their understanding of career pathways in different subject areas. By seeing 21st century skills and problem-solving methods in action, externship experiences seem to impact a teacher's perception of the need to incorporate more authentic classroom activities that link the curriculum to real world applications, employability and future careers.

Conclusion

The research literature provides positive examples of real world learning at every stage of education, covers a wide range of subjects, and has a global perspective. Bringing the real world into the classroom and liberating teachers by crossing curriculum boundaries can have a measurable impact on academic achievement but is also associated with skills development and personal attributes such as motivation. Extracurricular activities, fieldwork, site visits and sustained work experience all contribute to this.

Transferring responsibility for careers guidance from external careers services to schools created a huge opportunity to link enquiry learning approaches, real-world tasks and integrated careers education and learning. Research suggests that strong career learning environments require an integrated, whole-institution approach that involves tutors, teachers and managers in delivering a careers curriculum and the need to bring in expertise from employers, careers professionals and other stakeholders.

Enabling teachers to connect with employers and community organisations through teacher externships offers an alternative means of linking the workplace with curriculum delivery and ensuring that teachers can take accurate and current information back into the classroom. Employers also benefit from engagement through profile raising or supporting future recruitment (Rogers et al., 2020), but barriers that can prevent employer partnerships from thriving include a lack of time to prioritise such relationships alongside delivering the curriculum (Torii, 2018). Teachers and those training to teach need explicit training and ongoing school and college support to deliver real world learning, to develop approaches to integrated careers education and opportunities to establish and maintain meaningful relationships with employers.

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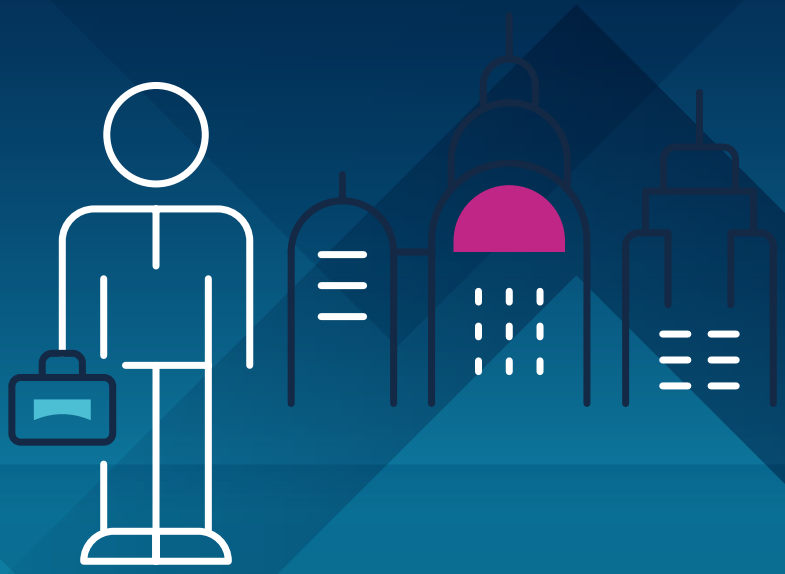
Evidence Base – 3 Community Connected Learning



Community connected learning

Introduction

For some time now, educational researchers have been talking about the benefits of partnerships between schools, colleges, families and communities as a way to boost student achievement and wellbeing (see for example Epstein & Sanders, 1998; Epstein, 2001; Henderson et al., 2007). Community connected learning is often characterised as a medium for augmenting and enhancing the social, cognitive, emotional, and spiritual development of students (Epstein, 2011). For Preston, *community involvement* is similarly defined as any student-focussed school/college-community connection that directly or indirectly supports students' physical, social, emotional and intellectual needs (Preston, 2013). To effectively transform the way schools and colleges prepare young people for life and work in the twenty-first century, educational institutions must strive to also engage and facilitate dialogue between: teaching staff, school and college leaders, students and parents, governors, employers and community organisations. These community stakeholders and partners are vital in enabling young people to broaden their knowledge and develop new skills through contributing to a labour market informed curriculum, providing rich opportunities for youth social action and citizenship, and in supporting a whole-community approach to nurturing citizens.

Involving employers, a key pillar of the wider community, as part of these programmes and experiences has become a commonplace aspect of education internationally (e.g. Australia: Education Services Australia, 2018; Britain: Stanley and Mann, 2014). Through the participation in a meaningful programme of employer experiences such as short periods of work experience, work placements, mentoring, career talks, mock interviews, CV workshops and workplace visits, governments have sought to close the gap between the classroom and the workplace (Stanley & Mann, 2014; Mann et al., 2018). In England, for example, the Department for Education (DfE) released its Careers Strategy in December 2017 highlighting the importance of employer-led interventions. In Australia the Gonski review included school-community engagement as a key recommendation to improve excellence in Australian schools: 'Strengthen school-community engagement to enrich student learning through the establishment of mechanisms to facilitate quality partnerships, including engagement in mentoring, volunteering and extra-curricular activities, between schools, employers, members of the community, community organisations and tertiary institutions' (2018, xiii). This is not without challenges, England has continually struggled to develop sufficient employer engagement due to its financialized structure and the predomination of SMEs (Keep, 2015) and in Australia partnerships have not been implemented in all schools (Torii, 2018).

1. Linking with the local community and its underlying benefits

Existing literature provides helpful insights into the positive impact on young people of involving employers in education. Several studies demonstrate that engaging with local employers can successfully support young people's educational and employment outcomes, essential skill development and knowledge about careers and pathways. Partnership models vary in size and range from individual schools having a direct relationship with a local employer to large scale ecosystems that involve multiple schools, colleges, industry and community partners often supported by an intermediary such as a charitable organisation or a university (Torii, 2018).

Economic case

While policy interest in community connected learning as a mechanism for enhancing employment outcomes has been evident from the mid-20th century, in recent years research literature has begun to robustly demonstrate 'hard' outcomes experienced by young people related to their participation in such activities. Kashefpakdel and Percy (2017) employed data from the

British Cohort Study, a longitudinal dataset containing extensive details of thousands of individuals born in 1970 who were studied from birth through to adulthood over a series of surveys completed by themselves and their parents. The analysis found that for each 'career talk with someone outside of school' a young person experienced at age 14–15, young people could expect to benefit, on average, from a 0.8 per cent wage premium per activity when they were 26 and in full time employment. Where teenagers found careers talks to have been 'very helpful' at the time, impacts on earnings were even greater. In the US a study of Career Academies programmes, a combined academic and vocational high school pathway with strong industry links and workplace learning, found that Career Academies programme students had earnings up to 11 per cent higher than their peers eight years after leaving school (Kemple & Willner, 2008).

There is also significant evidence that young adults who recalled taking part in careers talks are less likely to be Not in Education Employment or Training (NEET) in adulthood than peers. The 2017 report by Mann and colleagues set out findings from a survey of 1,744 young British adults aged 19–24. The survey investigated the experiences of these young people as they engaged in transitions which took them from education towards the working world. Statistical analysis of the survey data found that respondents who recalled experiencing a career talk with employee volunteers at age 14–16 were 81 per cent less likely to be NEET than their peers who did not take part in the activity. Equally, the analysis (which controlled for social background and academic attainment) showed that young adults who recalled taking part in school or college-mediated careers events at ages 16–19 could also anticipate similarly much lower levels of being NEET on the day of the survey.

Education/attainment case

Research exploring the link between community connected learning and educational outcomes (attainment and attitudes towards schooling) has continued to find positive associations, despite the majority of work in this area being dedicated to future employment and economic outcomes. In 2016 and 2018, the Education Endowment Foundation (EEF) published a series of systematic reviews of careers education activities undertaken across the OECD countries which had been evaluated using experimental or quasi-experimental methodologies (Hughes et al., 2016; Mann et al., 2018). The reviews considered literature published since 1996 to review the impacts of careers education, defined as 'careers-focussed school or college-mediated provision designed to improve students' education, employment and/or social outcomes' (Hughes et al., 2016, p. 6). The authors found that 60 per cent of 47 studies which considered the impact of careers-focused interventions on the academic achievement found evidence of largely positive outcomes.

More recent research by Kashefpakdel et al. (2019a) also demonstrates the impact of community connected learning on educational outcomes. Using a pilot randomisation control trial, it finds just three career talks during year 11 can be positively associated with improved attitudes towards school, planned revision hours and GCSE results. The research shows that participation in career talks with employee volunteers can change the attitudes of Key Stage 4 pupils to education, influence their future plans and subject choices, motivate them to study harder, and support an improvement in academic attainment, even when taking place only a few months before their exams start.

In addition, some studies have demonstrated the impact of career development activities on improvement in maths attainment. Analysis of six countries' PISA data (Australia, Belgium, Canada, Denmark, Finland and Ireland) found a statistically significant relationship between direct exposure to the contemporary working world and higher student scores in the PISA mathematics assessments (Kashefpakdel & Schleicher, 2017). In the US 1,916 year 9 students were given brief careers-related tasks in their maths class that required them to reflect on the personal relevance of mathematics to their future careers. Students' maths test scores improved in the five months following the intervention (Brisson et al., 2017).

Developing essential employability skills and wider competencies

While personal circumstances and appropriate level qualifications are vital in making the transition from school to work (Impetus, 2014), there is growing international recognition of the need for schools and colleges to develop a wider breadth of skills beyond

academic disciplines such as employability skills and competencies, since these are paramount when it comes to making young people 'employable' and successful across a range of settings (Care et al., 2016; Kashefpakdel et al., 2018). Discussions with policy makers and recruiters demonstrate that structural changes in how employers recruit and what skills are required by the modern labour market have significance for schools, colleges and for young people. Businesses are increasingly looking for a broader set of skills and competencies reflecting an expectation of continual change within workplaces considering technological advancements, globalisation and geopolitical factors (Mann & Huddleston, 2016).

In recognition of these changes, many countries have developed overarching educational frameworks which embrace 21st century competencies. For example, in Finland the seven 'transversal competencies' in their new National Curriculum framework include 'thinking and learning to learn', 'entrepreneurial and work life skills', 'participation and building a sustainable future' (Finnish National Board of Education, 2016). In Ontario, Canada 21st century key skills are embedded throughout the curriculum and share a number of similarities with those in Finland, including 'learning to learn/self-aware and self-directed learning', 'innovation, creativity and entrepreneurship' and 'global citizenship and sustainability' (Council of Ontario Directors of Education, 2017).

What is less developed is how schools and colleges assess success in wider/soft skills compared to traditional subjects especially when these are embedded across the curriculum. Holistic approaches to learning as seen in problem-based learning may offer affordances here in the focus on authentic assessment and the fact that projects take place over time. In addition, some practitioners suggest that by quantifying student achievement in creativity or innovation, for example, this may discourage the development of these skills. In the UK the Skills Builder Framework, developed by Enabling Enterprise (Millard et al., 2017), is gaining traction among schools and colleges and focuses on tracking enterprise education through the monitoring of eight skills: aiming high, creativity, leadership, listening, presenting, problem-solving, staying positive and teamwork. Within the US New Tech Network, all schools adopt project-based learning and students are assessed on five overarching learning outcomes: knowledge and thinking, agency, collaboration, oral communication, and written communication. Noteworthy is that these outcomes were developed over time in collaboration with teachers, university academics, the business community and learning from research (Adams & Duncan Grand, 2019).

Nurturing civic engagement within the community

Community connected learning has an important role to play in developing the wider essential and socio-emotional skills needed for work and life, rather than simply the skills needed for employment. There is now widespread agreement about the importance of connectedness and the benefits of actively developing intra-and inter-personal skills for healthy relationships, well-being and civic engagement (Payton et al., 2008; Roffey, 2010; Flouri & Panourgia, 2012; Cefai & Cavioni, 2014). Youth social action, where children and young people undertake practical action in the service of others (Kirkman et al., 2016), is an important example of community connected learning given the perceived dual benefits of this activity. At one level research suggests that participants benefit from developing wider skills, increased self-confidence and life opportunities and at the other society benefits from meaningful solutions to community or social problems being addressed (Birdwell et al., 2015). As such youth social action in England is now seen as an important part of contributing to careers education in addition to the benefits to the local community and beyond (Birdwell et al., 2015). Social action takes many forms whether formal or informal activities for example volunteering, fundraising, giving time to a charity of a cause, mentoring, supporting people, helping improve the local area, campaigning for social causes and involvement in young advisor groups (Bratsa et al., 2020). In the most recent National Youth Social Action Survey (Bratsa et al., 2020), young people were keen to make a difference to society, 88 per cent of respondents cared about making the world a better place and 74 per cent believed they could make a difference.

The EKC (East Kent College) Group holds biannual 'Community Weeks' where students work together in teams to engage in social action projects from delivering workshops and activity classes to rejuvenating community spaces. After the projects, the students write up a reflection on their experience

as part of the learning experience. Examples include working with a local charity where the students built bookshelves and a gate for a local tearoom, working with a local nursery to make a more attractive environment in the garden, constructing signage for a college event, making plant pots for the town centre and students working with a local care home (EKC, 2020).

Envision, a social mobility charity, runs a range of programmes for 14–19-year olds in Bristol, Birmingham and London. For Key Stage 5 students the 10-month programme is designed to deliver three outcomes: inner confidence (or self-efficacy), outer, or social, confidence and leadership/employability skills (grit, creativity, teamwork and communication) with recent evaluations reporting positive outcomes. The student teams, comprising 12 members, meet with their Envision coach once a week and are each partnered with a local business who provides mentors to offer support. The young people decide what they want to do including how to raise funds and awareness (Envision, 2013). Previous examples have included supporting a food bank and raising awareness of how poverty affects people in the local area, creating a therapy room in a care centre for people who have dementia and supporting a homelessness charity.

There is no suggestion that social action as part of community connected learning is only undertaken by secondary students. For instance, at School 21, a 4–18 school in East London, all children are encouraged to engage with the world around them and the real world projects that are at the heart of the schools' pedagogic approach often take the students into their community. Year 1 pupils, for example, undertook a project on the environment, which 'led to a protest outside the Stratford Centre informing people about how they could be 'greener' or more environmentally friendly' (NFER, 2019, p 10).

Evidence suggests that engagement with youth social action can enable young people to develop non-cognitive skills such as empathy, resilience and perseverance, increases self-belief in gaining employment in the future and enhances their self-confidence and well-being (see for example, Kirkman et al., 2016; Bratsa et al., 2020).

Informing young people about both vocational and academic pathways

Many students' aspirations remain relatively narrow and consistent with their achievement in school and college subjects as well as gendered stereotypes (Musset & Mytna Kurekova, 2018). Evidence indicates that vocational and technical qualifications, work-based learning and apprenticeships are less well understood by young people, their parents and teachers (Batterham & Levesley, 2011). When thinking about apprentices, for example, there is a default view that they are stereotypically male and are narrow in terms of the vocational or occupational choices available (CIPD, 2013; ACCA, 2017). When pressed, young people express serious concerns that following an apprenticeship will limit or risk their career prospects; yet they are intrigued by the idea of an earn-and-learn model of training to take them into adult life (Sutton Trust, 2018).

Alongside this sits the continuing influence of class-based and gendered decision-making (OECD, 2015) and the importance of the capacity of a family to produce role models in setting up expectations for the future. Parents play a key role in supporting their children in the career decision-making process and are often the main most common first point of call for career development information, advice and guidance (NYA, 2010). But often parents are out of date, so the challenge is to up-date parents. Young people report valuing their input and are influenced by it (McCrone et al., 2009; Nicoletti & Berthoud, 2010). It is perhaps not surprising then that there is a clear alignment between what the parents say they want for their children and what the young people aspire to themselves (St Clair, et al., 2011). Parents, in particular, provide an important context within which young people form their educational and occupational aspirations (Archer et al., 2012).

By engaging with schools and colleges, employers are able to close the information gap for young people about what different vocational, technical and academic pathways can offer, and how to best prepare themselves for success in applications. By making recruitment requirements as transparent as possible and using language that young people can easily understand, employers can help themselves by increasing the flow of young people with the right balance of skills, qualifications and experience.

2. Why does it work?

Over the last decade, theorists have made use of social and cultural capital theories to challenge long-standing assumptions around the capacity to enhance human capital, whether in terms of technical or 'employability' skills. Stanley and Mann (2014) argue that capitals theory offers a useful means of making sense of employer engagement in education.

What young people learn, what they aspire to, what they choose to do and how they behave and achieve can be influenced by the social groups that they belong to, their current social relationships, the character and quality of their educational experiences and (residual) individual differences (Stanley & Mann, 2014: 30). Raffo (2000) and later Stanley and Mann (2014) use social and cultural capital theory to illustrate how employer-led interventions can influence students' attitudes towards schooling by exposing them to new information about the relationship between educational and economic outcomes. Interactions with employers, it is argued, extend (even if only temporarily) the social networks of young people and thereby help them bridge the gap between the adolescent world and the adult world (Stanley & Mann, 2014). The information available to students from a range of external speakers can be expected to be rooted in a broad range of experiences, increasing the likelihood of potential student interest.

Jones et al. (2015) have looked to test the conceptual framework presented by Stanley and Mann to explore the comparative impact of the three different capitals. They undertook a textual analysis of written statements offered by young British adults on what, if anything, they got out of their teenage school-mediated interactions with employers. The analysis categorised statements by capital and found that young adults rarely argue that they gained human capital through their experiences. Rather, it is in the field of social and particularly cultural capital accumulations where impacts are felt to accrue most readily. The notion that encounters with new people can lead a young person to change an important element of their own thinking about themselves and their own sense of agency—finds validation within the limited research literature (Jones et al., 2015).

3. Principles of effective community connected learning

A structured programme of employer and community experiences

A growing body of evidence has suggested that the more interactions a young person has with members of their local community, the better. Building on previous analyses, Mann et al. (2017) demonstrate relationships between the number of school-mediated teenage engagements with employers recalled by young adults and improved economic outcomes, including significantly reduced incidence of being NEET. Drawing on a survey of some 1,800 young British adults aged 19–24, the survey explored the extent to which they had engaged with employers as part of their educational experiences, whether they believed these engagements, and their schools in general, had been useful to them in preparing for adult life; and, whether the interventions they had received had made an actual difference to their adult economic outcomes. The finding is consistent with strong relationships observed in the data between teenage participation in higher volumes of engagements with employers and the belief that schools had done a good job in preparing them for adult working life, providing experiences of genuine utility for later life.

There is a relationship, moreover, between quantity and quality. It is young people who recalled higher levels of teenage engagements (three or more) who hold a higher regard for the quality of the preparation they received from their schools for adult working life. The finding is consistent with Kashefpakdel and Percy (2016) that young people's perceptions of the quality of their school-based experiences engaging with employers matters and this can be witnessed in statistical outcomes.

Students at the heart of community connected learning

Frequent opportunities for adolescents to engage with employers, either as part of careers guidance or through work experience or work placements, are essential in enabling young people to make positive choices about their futures based on authentic understandings of

different professional and technical occupations (Mann et al., 2016; Baker Dearing Educational Trust, 2017). As part of this, community based entrepreneurial and enterprise activities also contribute to developing the wider experiences of young people.

Rogers et al. (2020) report on one Further Education college that had its own trading company where students could bid for business. This gave the students the opportunity to gain earned work opportunities. For instance in the creative and digital space anyone from the community, any organisation or company could apply for a piece of work to be done. The students then do a pitch and quote for the work. One group of successful students had created apps for the NHS. Another group had worked on an advertising agency commission for a piece of artwork for new transport provision. As their teacher commented, the brief was to *'go along with the flavour of what the carriage was like, this one was ice-cool, air-conditioned, the polar bear idea, so things that were related to the whole idea of travelling on the new line'* (Rogers et al., 2020, p. 53).

The literature suggests that effective delivery of community connected learning will be valued by the young people taking part – the implication being that activities need to be matched to the aspirations of young people to enable them to better navigate progression through education and further training. Where young people themselves testified that episodes of community connected learning (e.g. employer engagement activities) were of value to them, the evidence suggests that they were right and better outcomes followed. Insights from both Mann and colleagues (2017) and Kashefpakdel and Percy (2016) demonstrate that what students think about the quality of the careers provision is important – specifically that better economic outcomes in adulthood are related to positive views of school or college interventions.

Authentic experiences that bring the curriculum to life

Community engagement operates at different levels within schools and colleges: the institution, teachers and departments, and students. At the institution level employers will often be involved in leadership and governance and sit on a governing body. For teachers, engagement with community partners enables knowledge sharing to support innovations in teaching and learning and the provision of enriched examples and ways of understanding the curriculum. Employers also provide opportunities for teacher externships in which to update their understanding of contemporary work-based practice. Within Further Education in England many colleges have profession-based employer boards comprising members from larger companies as well as SMEs. Through the employer board the community partners shape the curriculum offer delivered in colleges, and contribute their expertise in design, equipment and/or software. For instance, in one Career College, hosted within a Further Education college, employers had helped with the complete refurbishment of the kitchen and advised on state-of-the-art equipment. In another Career College where a new campus was being built, conversations with employers impacted the development of the curriculum. As the Career College Lead said: *'we've had employer engagement in the building of the campus, and they have said, 'have you thought about this' and this has helped the curriculum team also. They have helped thinking about equipment and software'* (Rogers et al, 2020, p, 48).

At the student level community partners can offer work placements, work shadowing, mentoring, and may act as coaches or judges in competitions, performances, and presentations in addition to providing technical expertise (Torri, 2018; Rogers et al., 2020). Through this sustained engagement with employers who bring an authentic experience of the world of work, schools and colleges can challenge the assumptions developed by children and young people, allowing them to draw richer, more informed connections between education and ultimate economic and wider success in adult life (Knight, 2015).

For a young person in an educational setting, the role of community connected learning through employer engagement or social action, for example, can replicate the function of social networks providing young people with access to information about the operation of the labour market which is commonly perceived to be authentic (Stanley and Mann, 2014). Recent studies such as Rehill et al. (2017) employ survey data gathered from young people attending community led interventions to explore this issue. In thinking about employee volunteers, the students were clear: what was most important to them was that volunteers had direct experience of jobs about which they spoke.

As has been seen, educational interest in community partnerships extends beyond interest in supporting classroom teaching. Through entrepreneurship, work placements, and youth social action, young people learn about what is happening outside their school or college classrooms and begin to understand more about what is happening in the wider community. In doing so young people are exposed to work-related knowledge and skills that may not be covered in the curriculum. In addition, community connected learning offers opportunities for students to get to know themselves, each other and their community better. When teachers create the time and space for students to connect to their sense of passion and purpose, students may become leaders in the name of a cause they care about and become active members of their community.

There is also growing interest in working with employers to support the wider leadership of the school or college. Studies have drawn relationships between the quality of governance (including the skills found on governing boards) and school performance (Balarin et al., 2008). Notably, James and Percy (2010) argue—on the basis of statistical analysis of school performance and school survey data—that the 'level of effectiveness of school governance is linked clearly and positively to the level of pupil attainment' (p. 3). Attempting to disentangle the unique contributions of employee governors within governing boards, which may include representatives of parents, school staff, and community stakeholders, Punter and Adams (2010) have surveyed the attitudes of head-teachers and chairs of governing boards towards employee volunteers recruited through government-funded initiatives. They find a consistently strong perspective that such employee volunteers make significant contributions on boards (see also SGOSS, 2011).

Contextualised

When community connected learning is undertaken within the context of effective careers provision some studies highlight – and underpinning theories of change suggest (Mann et al., 2018) – improved educational and employment outcomes. This appears logically sound – school-based staff are closer to students, and their knowledge of the institutional culture and their constant presence can render them more effective in exploiting teaching opportunities and following through more effectively. What this suggests is that institutional context is likely to matter in terms of outcomes. The support of senior leaders is also vital here. Interview data with school and college staff repeatedly notes one of the biggest barriers in integrating the community within and outside the classroom is buy-in from senior staff (Mann & Dawkins, 2014). Senior leadership teams should make the relationship between community involvement and the aims and ethos of the school or college explicit, thereby ensuring buy-in from other staff and key stakeholders.

This notion has been tested recently by Percy and Kashefpakdel (2018) who, in a quantitative setting, explored the importance of the school environment in determining how much of an impact outside speakers can have. Drawing on data from the large-scale British Cohort Study, the authors find that students who were in a richer internal career environment (measured by volume of careers classes, chats, and meetings) were more likely to say external speakers were quite or very helpful.

Started at a young age

Employer engagement activities therefore need to be considered strategically by practitioners and policymakers, adapting approaches to fit the differing needs of different young people. Logic and some evidence suggests that certain activities can also be timed in ways to enhance outcomes: the strongest adult wage premiums identified by Kashefpakdel and Percy (2016) accrued to teenagers undertaking career talks when 14–15 years old, rather than at 15–16. Mann and Kashefpakdel (2014) show that adults who recalled undertaking work experience at 16–19 are much more likely to agree that the placement was helpful to them in deciding on a career, getting into university, or getting a job after education than those who undertook placements aged 14–16.

Traditionally employer engagement has been directed towards students at the end of secondary school as in the research reported above. Increasingly community connected learning is seen as a way to engage children in primary school to develop a sense of themselves as citizens and broaden their career awareness and aspirations (Cahill & Furey, 2018; Kashefpakdel et al., 2019b; Millard et al., 2019). This is particularly important in STEM subjects where patterns of engagement and participation are set as young as age 10 (Mann et al., 2018).

Conclusion

There are a number of robust studies that provide evidence of improved employment outcomes for young people taking part in community connected learning, both in terms of wage premiums and reduced incidence of NEET. Research suggests that participation in such community-led activities can support these outcomes by 1) enhancing understanding of jobs and careers, 2) providing the skills and knowledge demanded by the contemporary labour market and 3) enriching education through authentic real world experiences and underpinning student attainment. In addition, there is growing evidence of the wider benefits of community connected learning that transcend improved employment outcomes. When young people are encouraged to participate in improving their communities it plants the seeds for a more just and sustainable society.

The existing literature offers several recommendations for optimising the impact of community connected learning. To be most effective this provision must, at a curriculum design and development level, involve all community partners and promote a more holistic educational offer. It must also be recurrent, authentic, started at an early age, and, importantly, must have students at the heart of such activities.

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