

Exploring contributions of project-based learning to health and wellbeing in secondary education

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Abstract

Regardless of the aims and purposes of education, recent trends in pedagogy suggest an increasing popularity of project-based learning (PBL) and a focus on interdisciplinary approaches to learning, however ill-defined they may be. Connections between PBL, curriculum trends and health and wellbeing are reviewed, as well as potential value of schools bringing the three together to enhance learning. Interviews were undertaken with students ($n=37$) following a range of 2-week residential involving PBL to examine students' perspectives on connections with prior learning at school, the approach to learning and any connections to health and wellbeing. The results from the hierarchical content analysis revealed five emerging themes. Implications for theory, practice and further research are discussed.

Keywords

Curriculum trends, health and wellbeing, interdisciplinary study, project-based learning, residential education

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Project-based learning and curriculum trends

Aims and purposes of education are contested extensively in education theory and more general education research (Carr, 2009; Peters, 1966; Pring, 2004). However, regardless of aims and purposes, recent trends suggest an increasing popularity of project-based learning (PBL) and a focus on interdisciplinary approaches to learning, however ill-defined they may be (Allison, Carr, & Meldrum, 2012). Such approaches generally lean towards more liberal and constructivist philosophies (Wurdinger, 1997) and can be traced back to, among others, philosophers such as Dewey (1916, 1938). In this article, we report empirical work on PBL as an approach to enhancing health and wellbeing. In this section, we review the literature in these two areas: PBL and curriculum trends.

Hugg and Wurdinger (2007) differentiate between problem-based learning, PBL, applied learning, practical skills/life skills training, service learning, authentic learning and action orientation. What all of these categories have in common is a focus on drawing together knowledge from a variety of curriculum subjects into an applied setting of some kind. The underlying assumption is that such approaches have greater meaning for the learner and lead to 'deeper learning' (Saravanamuthua & Yap, 2014). Wrigley (2007) provides an overview of what he refers to as 'open architectures'. He details four stages based on an example from Denmark noting that a project-based approach creates opportunities for initiative and personal learning and direct involvement in the world. Much of the PBL 'movement' has emerged as a response to traditional education. For example, Sidorkin (2009) similar to Dewey is critical of education systems that create essentially meaningless outputs (essays) and do not prepare people for work. He suggests that in the future, education will be much more market based, and that this will also help to address the lack of 'learning motivation' prevalent in many institutions and communities of learning.

Helle, Tynjälä, and Olkinuora (2006) conducted a systematic review of articles on PBL focusing specifically on the pedagogical and psychological aspects and methods of implementation in post-secondary education. They identify three purposes of PBL (p. 308), of which the second and third are most relevant to our work in this research:

(1) a very concrete and holistic experience regarding a certain process (e.g. the construction process, the management of a project). When project-based learning is used in this sense, it is usually as an introduction to something (e.g. the beginning of studies in a certain field or as a transition to working life). On the other hand, some practitioners and students are convinced that properly implemented project-based learning environments can promote (2) the integration of subject material (and the ability to apply it as circumstances dictate). When project-based learning is used in this sense, it is usually at the end of a course or curriculum as a 'capstone' experience. In addition, project-based learning can be used as (3) a method of guided discovery learning with the intention of promoting self-regulated deep-level learning. In this case, the project aspect is embedded in the course structure.

It is the second and third purposes that we have focused on in this research and these categories were particularly helpful in selecting the context in which to undertake the empirical work. The implications of adopting such approaches may have a variety of logistical consequences and shift the role of the educator significantly (Allison & Wurdinger, 2005). One approach used in some schools, and we believe worthy of further attention, is PBL in a residential context as it can provide a context that enhances health and wellbeing. An upsurge in residential education in the United Kingdom is highlighted by the organisation 'Learning Away', who provide guidance for educators to offer 'brilliant residentials'. They plan residential experiences that focus on a particular aspect of the curriculum to increase children's engagement and enhance their health and wellbeing. Indeed, they provide some evidence from the evaluations of their residential learning programmes

that participation in such programmes can lead to positive personal development, including relationships, leadership and resilience (<http://learningaway.org.uk/>). For example, recent work by Dettweiler, Unlu, Lauterbach, Becker, and Gschrey (2015) found that students who have lower 'self-regulated learning motivational behaviour' in the classroom benefit from learning science in a residential context the most. Similarly, Sproule et al. (2013) reported that residential project work was significant in contributing to, among other things, an autonomy supportive climate, autonomous motivation, perceived competence and task approach goal orientation.

In this article, we report on a residential programme for secondary-aged students that involved a number of different 'types' of projects. Consequently, we use the term PBL as an overarching term for practices that incorporate aspects of the above-mentioned categories.

It is possible to see aspects of the above principles present in recent curriculum developments and trends (Priestley & Minty, 2013). For example, Sinnema and Aitken (2013, p. 142) identified four common goals underpinning curricular reform across nations, two of which are relevant to this research: '. . . to be relevant to twenty-first century learners facing uncertain futures and . . . for national curricula to be increasingly coherent'. Such goals are illustrated in the Scottish context where 2004 saw the introduction of *A Curriculum for Excellence* (CfE; Scottish Executive, 2004) to Scottish schools. The curriculum set out the values, purposes and principles for education through the creation of a single, coherent curriculum from ages 3 to 18 years, with space for young people to achieve and teachers to teach. Four overarching capacities define how young people are intended to develop, through becoming *successful learners*, *confident individuals*, *effective contributors* to society and *responsible citizens*. The curriculum is supported by a number of documents, published by Learning and Teaching Scotland and subsequently Education Scotland. Throughout the documentation a concentration on interdisciplinary learning is evident and teachers are encouraged to utilise PBL to achieve these four aspirations (Learning & Teaching Scotland, 2009).

Health and wellbeing

Parallel to the above-mentioned trends associated with pedagogy, an increasing policy narrative regarding schools as locations for promoting health and wellbeing is also evident. This has moved beyond health and fitness (primarily concentrating on physical health and combating obesity) to a wider conceptualisation which incorporates mental health, community health and 'wellbeing'. For example, the works of Tiberius and Swartwood (2011) and Thorburn and MacAllister (2013) are examples of this broader narrative, which includes the contribution that reflective capacities might have on wellbeing and argues that the capacity to reflect well (quality rather than quantity) is associated with wellbeing. Perhaps not surprisingly, there is little agreement on a definition of 'wellbeing', although Thorburn (2015) provides a concise overview and some general themes can be identified.

In many developed countries around the world, including the United Kingdom, Canada, New Zealand and Australia, schools are viewed as logical sites to provide children and young people with opportunities to develop their understanding of ways to lead a healthy and active lifestyle. The result of this is the development of the curriculum area of 'Health and Physical Education (HPE)' or 'Health and Wellbeing', both now increasingly viewed as the main curricular area for the development of student experience and knowledge, understanding and behaviour surrounding health. In Scotland, for example, this learning area has been given a central role within the curriculum and aims to develop students' 'knowledge and understanding, skills, capabilities and attributes which they need for mental, emotional, social and physical wellbeing now and in the future' (Scottish Executive, 2009, p. 13). A major feature of many of the Health and Wellbeing (or HPE) curricula

around the world is the notion that health is viewed in a holistic way, involving not only physical health but also mental, emotional and social health (World Health Organisation, 2011).

From this perspective, being healthy is not only the absence of problems and risks (a deficit conception) but also the presence of positive factors, social situations and skills that contribute to the positive growth and development of children and young people (World Health Organisation, 2011). Good health, therefore, is shaped by the ways in which the culture and environment promote the development of emotional, social and mental skills – fundamental for success in learning and in life. The development of emotional skills, for example, enables children and young people to understand, experience and express a variety of emotions and to manage them to make decisions and cope with stress (Sabiston, Sedgwick, Crocker, Kowalski, & Mack, 2007). Social skills include communication and empathy, both of which enable individuals to develop relationships, interact with others, bring their ideas to discussions and contribute to democratic processes (Cohen, 2006). Mental skills include problem solving, critical thinking and being creative. They allow individuals to be open to new ideas, seek challenge and motivate them to expand their knowledge (Kuhn, Black, Keselman, & Kaplan, 2000). It is interesting to note that Wurdinger and Qureshi (2014) reported statistically significant improvement in problem solving, communication, creativity, responsibility and self-direction over a 16-week PBL course for graduate students. The development of emotional, social and mental skills is critical to an individual's overall wellbeing (Cohen, 2006). For example, when individuals are encouraged to understand their emotions and develop strategies for coping with various life situations, confidence and resilience can be enhanced (Hawkey, 2006). Furthermore, when individuals get on well with others, communicate effectively, solve problems and are eager to learn feelings of belonging, self-esteem and optimism are supported, which, in turn, has a positive impact on their overall wellbeing, learning and academic performance (Cohen, 2006; Hodgins & Knee, 2002; Sabiston et al., 2007). Interestingly, such skills and attributes are also evidenced through the 'brilliant residential' programmes that are supported by 'Learning Away', where school-aged children have opportunities to work with others to solve problems in contexts that they have often never experienced before.

Thus far, we have reviewed the current context of PBL in relation to education and identified connections to wider conceptions of health and wellbeing (a term associated with personal and social education). It seems logical to suggest that developing individual's capacities for social skills will contribute to health and wellbeing by increasing not only individual aspects (e.g. resilience and optimism) but also group or social aspects (e.g. teamwork, problem solving, collaboration and respecting others). However, these connections have received limited attention from researchers and little is known about any connections despite the increasing attention to this area from politicians (Alexander, 2015). A question arising, therefore, is, 'How do pupils experience project-based learning in relation to (health and) wellbeing?' In answering this question, we can understand more about students' experiences of PBL and perceived benefits as they relate to health and wellbeing such as the contributory environmental and social factors and the development of emotional and psychological wellbeing. Such information is useful in contributing to the professional judgement of educators and curriculum structures and pedagogical approaches.

The findings from this study will help to inform teachers' practice and to understand how students experience PBL specifically in relation to integrating subject materials from courses during the previous year of study. Gaining insights and understandings of this nature suggests a qualitative approach, often used in similar circumstances in education (Greener, 2011, pp. 8–10, 94; Pyvis & Chapman, 2005), life history and narrative research (Cohen, Manion, & Morrison, 2011, p. 552; Gill & Goodson, 2011) and in residential experiential education (Allison, 1998). Additionally, we use health and wellbeing to offer a broad conceptual framework to make sense of residential

project-based learning (RPBL) experiences and their potential value. As previously highlighted, we are concerned with the second and third forms of PBL identified by Helle et al. (2006).

Context

We undertook this research on a well-established (since 1962) programme using 12-day RPBL at the end of the school year for secondary pupils aged 13–14 years. The programmes take place every year and involve all of the students from 1-year group. Students are offered a choice of programmes that include a wide range of opportunities including birdwatching, archaeology, sailing, hill walking and mountain biking. All of these programmes include project-based elements. For example, students are involved in designing menus, shopping, preparing, cooking and serving meals to each other. Other aspects of the projects they are involved in do not have such a literal ‘product’ at the end but nonetheless involve undertaking a learning process which has an end point (e.g. on the sailing journeys students are involved in navigation charts which incorporate physics, maths and geography among other subjects).

All of the projects include a physical element, but the range of opportunities incorporates a variety of difficulties. More importantly, all of the projects are carefully designed to incorporate elements of the curriculum covered in the previous academic year and to draw together different threads from the subjects studied. Students self-select the projects that they wish to be involved in and the level of physical challenge.

As noted above, the term PBL covers a wide range of practices and is often used in a general sense. It is often associated with experiential learning (Moon, 2004) and is repeatedly referred back to Dewey’s work, in particular the pattern of inquiry (PoI; Dewey, 1938). The PoI involves an indeterminate situation of some kind. From this indeterminate situation, learners question and challenge the problem that interests them. From this questioning arises the creation of cognitive ideas, concepts and potential resolutions to the situation. Finally, the learner uses these ideas and concepts in other situations and contexts, testing their generalisability. In the contexts of this research, there are multiple PoIs for different individuals. During the course of the projects there are larger PoIs such as pre-departure decisions regarding where to go and what to do, which mountain areas to visit and which mountains to climb, in what sequence, where to stay, to camp or to stay in youth hostels and what equipment to take, for example. Once departed, there are further problems to solve: weather forecasts and their impact on route choices, meal selection, rotas of different responsibilities (e.g. cooking meals, washing up), negotiating speed of travel, fitness levels and days off/rest days. All of these tasks and many more involve facing indeterminate situations and progressing through the PoI often individually and in groups.

Methods

Design

Qualitative methodology was incorporated into the project evaluation in order to provide a more in-depth insight into the nature of the benefits associated with the PBL programme. A semi-structured interview consisting of six open questions (see Table 1) was designed to provide the basis for an exploration of the participants’ experiences and opinions and to elicit open-ended responses (Crotty, 1998; Greener, 2011; Patton, 1990). The interview questions were developed with the aim of encouraging the pupils to talk about their experiences and identifying any associated benefits from the programme with particular reference to PBL and health and wellbeing.

Table 1. Semi-structured interview questions.

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1. Can you briefly describe the S3 project that you took part in?
 2. What level of difficulty did you choose and why? (1–5 based on how much they want to be challenged.)
 3. What do you think about this S3 project in relation to
 - How personally meaningful/relevant it was for you.
 - Your contribution to the project (how and how much).
 - How you worked with others.
 4. What are the things that you did during this S3 project that made you want to do more? Why?
 5. What did you *learn* while taking part in your S3 project?
 - Was learning this important to you? Why/Why not?
 - What was easy to learn? What was difficult to learn (and why)?
 - How did you go about learning?
 - How was learning during the S3 projects different from learning during school time?
 6. How do you think that this S3 project has *influenced* you in relation to
 - Your learning?
 - The ways in which you relate to others?
 - Developing skills for living outside of school and into adulthood?
-

Two researchers carried out pilot interview discussions with eight pupils prior to the group interviews to evaluate and refine the interview guide and technique (Greener, 2011; Kvale & Brinkmann, 2009; Patton, 1990). Interviewer bias and influence were minimised through the use of a neutral, impartial stance when probing participant responses while maximising rapport, comfort, recall and open responses (cf. Richards, 2009; Silverman, 2001).

Procedures

The school was contacted in order to gain general consent for the evaluation of their PBL programme, and subsequently, the pupils and parents gave their consent to take part. Once the nature of the investigation was explained and confidentiality and anonymity were assured, everyone who was randomly selected for interview agreed to take part. Each group interview lasted approximately 30 minutes and was transcribed for the analysis. The interview guide provided a structure; however, in order to gain full understanding and clarify meaning, probing was used on an individual and group basis as required (Kvale, 1996; Patton, 1990). To improve the reliability of the interviewing process, in-depth discussion took place between all the interviewers with regard to the development and refinement of the questions and the management of the group interviews.

Participants

A random sample of pupils was selected from the 212 who participated in the PBL programme. A total of 40 participants were involved in eight separate group interviews within 2 weeks after returning from the projects. Each group interview comprised five pupils of mixed gender, all aged between 14 and 15 years. Informed consent was gained from the pupils, parents and school.

Establishing trustworthiness

Two steps were taken to establish trustworthiness. First, an interviewing style was used to maximise the levels of open-ended responses (as outlined above) and four researchers carried out the interviewing in order to reduce any personal bias. Second, two of the interviewing researchers carried

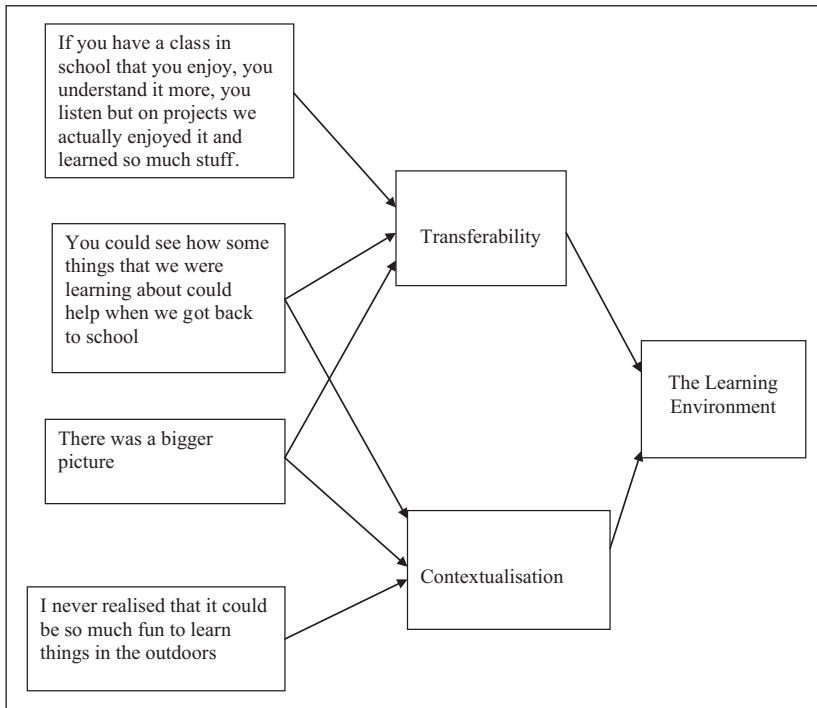


Figure 1. Example of hierarchical data analysis.

out reliability and consensus validation checks, with an additional third party to ensure an ‘external’ perspective (Richards, 2009, pp. 108–109; Silverman, 2001). This involved joint analysis on all eight of the interviews, whereby raw data quotes were coded, and themes developed by the researchers individually and then discussed together until agreement was attained. This acted to finalise details and confirm the satisfactory agreement and consistency of the emerging themes and categories.

In the remainder of the article, we use pseudonyms for quotes from students. The sex of the student is indicated by the name. All students were 14–15 years old.

Data analysis

Following transcription, an inductive grounded theory analysis was carried out, which utilised hierarchical content analysis (Boyatzis, 1998; Côté, Salmela, Trudel, Baria, & Russell, 1995), whereby three stages were followed: (1) coding experience, (2) inductive inference and (3) similarity processes. The structure emerging from the data is presented in Figure 1 and is utilised in the ‘Results’ section supported by illustrative quotes (Nash & Sproule, 2011; Sandelowski, 1994). The use of brief description alongside the quotes presented aims to provide further context for the emerging hierarchical content. Connections to the extant literature are highlighted throughout.

Findings and discussion

This section is presented in five interconnected sections, all of which suggest that PBL experiences influenced various aspects of health and wellbeing: context, responsibility, coping, building relationships and life after the projects. Inevitably some of the categories overlap and some of the

comments used could appear in different categories. Such is the nature of experience and the complexity of health and wellbeing.

The contexts for PBL

It was clear that many of the participants felt that the residential environment provided a different context that enhanced the quality of their learning. For example, William thought it was ‘more relaxed, more fun, more enjoyable and you’re outdoors’. Furthermore, this enjoyment appeared to lead to effective learning. Kerry said, ‘if you have a class in school that you enjoy, you understand it more, you listen but on projects we actually enjoyed it and learned so much stuff’. This is consistent with research that suggests factors such as enjoyment are closely linked to intrinsic motivation, a concept well associated with effective learning processes and positive wellbeing (Burton, Lydon, D’Alessandro, & Koestner, 2006; Gordon, Tucker, Burke, & Carron, 2013; Kavussanu, Morris, & Ring, 2009). When Kerry comments above that ‘you understand it more’, we read this as an indication that she is referring to the learning from the classroom during the previous semester. This suggests that she views the curricular learning as being what both Dewey (1916) and Whitehead (1916/1929) referred to as ‘inert’ (Jones, 2009, p. 146) and that the experience of the projects helps to make that meaningful and ‘understood’.

The residential projects also provided students the opportunity to understand and apply learning within a practical context that made sense. This applicability was highlighted as a crucial element of the learning experience; in other words, learning was more enjoyable in the practical situation and was immediately applicable to specific tasks. Jillian said, ‘you feel separated from the academic aspect if you actually go out and experience it – it was different, you’re actually going to learn’. John also said, ‘it makes much more sense out here – you can see how things work and also what could happen if you don’t do it right’. Furthermore, the unfamiliar residential learning environment, coupled with the inherently fun elements of being out of school, with friends and undertaking practical tasks appeared to these participants to increase their motivation during the tasks and emphasise their learning more deeply. As Joanne summed up, ‘there was a bigger picture’. These findings are consistent with the literature in the United Kingdom and United States on PBL, constructivist learning and experiential learning (Seaman, 2008; Thorburn & Allison, 2010; Wright, Grenier, & Seaman, 2010).

Taking responsibility

Many of the participants talked about how the different types of environment forced them to take on board different types of responsibilities. For example, Andrew discussed a situation where the weather created a new experience for him, explaining,

the first night we were up one of the highest Munros in Glencoe and it was awful weather. We all hated it but we still had to cook and do chores. We all kind of bonded as a team just from that one night.

These comments can be connected to both PBL and a wide conception of health and wellbeing. Setting up tents, cooking meals and all of the related tasks associated with camping can all be conceptualised as projects or problems that need to be solved and where decisions have to be made. Feelings of autonomy, combined with working closely with peers, all within a context where the (successful) outcomes of their endeavours can be seen, have previously been found to have a positive influence on health and wellbeing (Van den Berghe, Vansteenkiste, Cardon, Kirk, & Haerens (2014) and are characteristic of learning environments closely associated with personal and social health education (Allison & Von Wald, 2010). This feeling of collective responsibility was also in

this statement by Zac, who claimed, 'I think I've learned to be more responsible for myself and other people as well – how to help out, pull my own weight'. James also felt that 'everyone had a role within the group and we all kind of stuck to it'.

Many of the other participants viewed responsibility in relation to learning to do things for themselves. Lucy discussed her new found sense of responsibility, 'I found it quite difficult to organise yourself for the day – knowing where all your stuff was in that tiny room and choosing what to take because I had to carry it, whether to take that extra sandwich'. Jennifer was in agreement, saying, 'I learned to look after myself and that I can do more than I thought I could. On projects you've got to look after yourself, you can't just be mucking around with others'. Having this space to learn to do things for oneself provides opportunities for individuals to reflect on their own learning. These reflections are important because they allow the learner to focus on themselves, their strengths and weaknesses and their strategies for learning. In these reflections, they can begin to develop a sense of their own value, their own worth, and when the learning experience is a positive one, this can enhance aspects of wellbeing, for example, confidence and self-esteem (Ryan & Deci, 2006). By contrast, in classroom environments that are strongly influenced by the curriculum, high-stakes examinations and school inspections, students' sense of self-worth can be called into question (Ryan, Stiller, & Lynch, 1994). This more controlling environment inhibits the extent students can be themselves as they have to learn and behave in a particular way in order to reach a set of prescribed learning objectives.

Coping with challenge

There were a number of different views about how a sense of achievement and positive self-worth was attained as for some, for example, Steven, it was all about competition and demonstrating competence as he bragged, 'I was first to get to the top all the time'. For others, like Amanda, the sense of achievement was interlinked with the challenge, saying, 'I liked the achievement of getting to the tops of the Munros and it made me want to do it again. See when you got to the top of something that was so hard, it was so good'. This is consistent with theory, where individuals strive to demonstrate competence in achievement settings (Ames, 1992), and when the outcome of their endeavours is a successful one, often because the challenge of the task is appropriate and the focus of the activity is on self-improvement/achievement, intrinsic motivation and a sense of accomplishment are enhanced. There was also some evidence to suggest that this was achieved by developing specific coping strategies. Dan, for example, stated,

I learned to try and keep things positive. There was a time when we were half way up a Munro and it started to snow and we were getting weary by this point and we had to have lunch in the snow, people were getting cold. So I think just keeping things positive, will yourselves on because we were all going through it together. There's not much point in getting annoyed or negative about it because you're going to have to do it no matter what.

In another example of 'coping', Susan provided more details about the danger she perceived on the hill walking saying,

You come to a point on a Munro – there was a part on Ben Nevis that was horrible. It was, like, not wide and you could see off both sides and I hate heights so I kept talking the whole way through and made it through.

PBL presented the above students with challenging situations that have clearly resulted in strong emotional responses. In order to overcome these responses, they have developed coping strategies

that have enabled them to successfully complete the task. The development of such coping strategies is critical to the development of health and wellbeing because they enhance attributes such as confidence and resilience (Hawkey, 2006). Being presented with challenging and particularly 'risky' situations in learning may, therefore, be a necessary condition for emotional learning, a condition that may not be so easy to replicate in the classroom where 'risk' taking is minimised to ensure that students reach formal learning objectives and pass exams. This was highlighted by some students who chose certain activities because they deemed them to be 'risky'. Susan and John both considered the danger element in their choice, with John explaining, 'I've never climbed a Munro before and I've never planned to climb a Munro – my family would never do anything like that, it's much too dodgy'.

Building relationships

There is also evidence (especially in the comment above from Dan) of the social experiences contributing to the overall experience and to positive reflections (Thorburn, 2015; Tiberius & Swartwood, 2011). Sean felt the sense of achievement was something that could not only be seen and enjoyed but also shared with others, declaring,

I've done mountain climbing before in other countries but because it's with your friends it brings everyone closer and you are with people you have never met before you get a sense of achievement when you accomplish all the different activities. You can just see what you've done.

This statement highlights the importance of feelings of achievement and competence and also provides context in relation to the project work by emphasising individuals' need to feel included within a larger collective (Brewer, 1991; Faircloth & Hamm, 2005). Many of the participants reported that the challenges they came across in their residential experience were overcome because they were carried out in a group situation. This facilitated the development of resourcefulness and perseverance. For example, Jeremy stated,

I would say in our group we had to try and spur people on because there were many times if we weren't in a group together, people would have stopped. It was quite challenging going up hills – the hills were about 4 miles long and uphill – so it was a case of encouraging people on.

Discussions about working in groups with others also led to discussions about building good working relationships between participants. Peter felt that 'the projects helped us become a team and there are better relationships as a result of that. There are better relationships between pupils and pupils and teachers and pupils as well'. This is supported through Peter's comments about his new relationship with staff members, stating, 'some of the teachers have become quite good friends so I can stop and talk to them in the corridor. I'd never have done that before the projects'.

Perhaps unsurprisingly, more females mentioned that their experiences helped in developing new relationships and friends, as Angela said, 'projects helped me talk to people I probably wouldn't have before. We became quite a close group, quite nice to one another and quite friendly'. Jane confirmed the ease of making new friends, due, in part, to the nature of the residential experiences saying, 'I thought it would be kind of awkward to make new friends but it wasn't at all'. Rebecca said, 'I think I've learned to trust more people', a potentially powerful outcome that could transfer positively beyond the residential experience. However, some of the male participants also discussed the notion of making friends as Alan commented, 'People who were very shy and always wanted to keep to themselves suddenly started to chat to each other and we almost seemed to become in our wee group akin to family members'.

Life after the project

Many aspects of the residential experience may well have a long-term positive impact on the individuals, and even the school culture itself, aspects and experiences that would be unlikely to emerge from a typical school setting. The impact of the development of new relationships, the strengthening of current relationships, learning to cope with difficult situations and improvement of social skills should not be underestimated in terms of ongoing learning, wellbeing and success both within and outwith the school setting (e.g. Sheldon & Bettencourt, 2002). Chris took this one step further, talking about how this new found responsibility manifests itself while on the projects but also continued as he returned home, saying,

It makes you more responsible and self sufficient because you have to plan ahead for what you may need. Also cleaning up after you've been camping. You can transfer it all back but you have to do it yourself – you should be responsible at home for cleaning up after yourself.

Furthermore, Alec alluded to the fact that he has experienced a shift in attitude about 'what is possible', which may impact on him positively to other aspects of his life when he said,

before projects I didn't like doing things that I wasn't familiar with but on projects I had to do lots of things that I didn't know and wasn't familiar with. It's made me realise that I can do that and I can go on and do things that I'm not familiar with.

Similarly, Rachel described how the projects were a 'big change' for her, 'I'm a city girl and it was a big change – I've never really done anything like that. I have some amazing memories and like I've made new friends that I wasn't friendly with before'. It became evident from the group interviews that the residential experience provided an opportunity for the students to do and achieve something that would not be possible within a school or home context. This led to the students talking about having 'amazing and life changing' experiences. Indeed, all of those who participated in the residential had made mention of 'life-changing' experiences and memories as well as the sense of achievement engendered by their accomplishments.

Conclusion and recommendations

Through empirical work, we gathered views of young people on their PBL experiences and analysed their responses looking for themes relating to PBL, curriculum and health and wellbeing. In a broad sense, we can conclude that educators who have an understanding of PBL may be able to enhance pedagogy to make education more meaningful, relevant and engaging. From students' perspectives, this research suggests that activities that offer choice, challenge and novelty stimulate student interest in learning that goes beyond the immediate experience (PBL) and can be recreated by informed teachers using similar pedagogical approaches back in the school setting.

This research concentrated on student perspectives on PBL experiences and suggests that further work in several areas might prove to be fruitful. First, considering educators' experiences in a range of PBL contexts to draw together previous learning experiences into a coherent framework could help to develop principles of good practice and sharing of practical ideas. Second, further work on pupil perspectives in different contexts could help to further theorise PBL and its use to contribute to health and wellbeing. In particular, research with students of different ages engaging in different types of activities for different lengths of time could prove interesting. Third, we believe that much of the value of PBL is rooted in the relationships between pupils and teachers or others running PBL experiences. Research focusing on these relationships as contributing to creating 'conditions for learning'

may prove to be enlightening. Finally, while we reject instrumental conceptions of education, we are optimistic that PBL may be significant in contributing to employability, non-cognitive skills and skills for 21st-century life. While challenging to measure, these seem to be valuable and important aspects contributing to health and wellbeing.

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