

**The impact of residential experiences on pupils' cognitive and non-cognitive
development in year six (10 – 11 year olds) in England**

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Abstract

Using a comparative mixed methods approach, this study examines the impact of residential experiences on pupil cognitive and non-cognitive development in year six in England. SAT's results and termly progress data in numeracy and literacy were collected. In addition, a ROPELOC survey, focus groups and interviews were used to assess non-cognitive outcomes. Progress and attainment data were found to be invalid for the purposes of this study partly due to the coarseness of the categories. The ROPELOC survey evidenced significant impact of the residential in all but two of the fifteen categories and highly significant impact in seven areas. The findings add further support to the Learning Away learning pathway linking a range of non-cognitive outcomes developed through residential experiences with cognitive gains.

Keywords

Residential experiences

Progress and attainment

Cognitive and non-cognitive outcomes

Cognitive and non-cognitive assessment

Outdoor Learning

Real world learning

The impact of residential experiences on pupil progress and attainment in year six (10 – 11 year olds) in England

Introduction

The Learning Away (LA) Consortium commissioned *the* University of Cumbria to conduct a comparative research study to examine the impact of a residential experience on the progress and attainment of pupils in year six (ten – eleven year olds) in England. The study built on the findings of the Learning Away Initiative (Kendall and Rodger, 2015) which, whilst presenting strong evidence for a range of impacts, was less confident in its findings regarding progress and attainment despite a number of positive results. The study took place in the academic year 2017/18. After a call for expressions of interest to take part in the research the researchers decided to collaborate with one residential provider and eight of their primary school clients from one Local Authority.

There is a strong emphasis on justifying educational interventions that enhance cognitive outcomes and on measures of progress and attainment such as Standard Attainment Tests (SATs) in demonstrating effective schooling. Schools and residential providers, not unreasonably, place an increasing emphasis on the correlation between all educational interventions and these external measures of attainment. The Education Endowment Fund (EEF) was established by the Government to provide an evidence-based approach that supports schools in the making of well-informed decisions about the costs and benefits of various interventions. Their ‘toolkit’, the portal that provides this service, lists ‘Outdoor and Adventurous Activities’ as one intervention (Education Endowment Fund, nd). This provides information of the impact on attainment in only one of a number of approaches to learning

outside the classroom implemented by teachers. This study was designed to build an evidence base for the impact of residential experiences. In the two years since these decisions were made policy has shifted. The importance of non-cognitive benefits are now also emphasised in Government and Ofsted policy and other documents. The Department for Education has taken a growing interest in wellbeing (Brown, 2018), and character development and resilience (Dept. for Education, 2019). Ofsted have focussed on confidence building and aspiration (Harford, 2018), and has recently suggested that confidence should be restored in teacher assessment of progress across a wide range of cognitive and non-cognitive outcomes of education. The relationship between progress and attainment and a range of non-cognitive outcomes of residential experiences has already been established (Kendall and Rodger, 2015; Carne, Loynes and Williams, 2015). This study was therefore designed to collect evidence for the interplay between a range of cognitive and non-cognitive outcomes. Whilst this paper remains focussed on the question of the impact of residential experiences on progress and attainment in year six, evidence is also presented that captures the contribution residential make to character, social development, resilience and wellbeing. The relationship between non-cognitive and cognitive impacts is discussed.

Residential experiences and their impact

As part of LA, a systematic literature review of the impact of residential experiences in schools was undertaken (Curee, 2010). Ten competent and relevant studies were identified. A synthesis of these found that the most commonly reported or perceived forms of impact were non-cognitive, namely: changes in students' confidence and self-esteem; attitude changes: students feeling more 'positive'; relationship building: students forming productive peer relationships and student: staff relationships enhanced; improvements in behaviour; greater self-awareness; increased tolerance and understanding of others; increased independence and

the ability to make choices; pride in accomplishments; team working and problem solving; improved technical and physical skills; and increased resilience.

Although one study (Christie, Higgins and McLaughlin, 2004) found that students believed that they could perform better in certain academic areas after a residential no data was collected to put this claim to the test. Another study (Smith-Sebasto, 2009) found that, when residential experiences were reinforced by teachers in the classroom, students found the scientific topics and information to be the most meaningful of their residential experience. Again, no pre or post intervention achievement data were collected.

Williams (2013), in a small-scale study involving 232 pupils in primary schools, found that *'there are four clearly identifiable components of impact'* (p.119) that a residential has on pupils: living with others; challenge; teacher relationships; and learning about self. The study identified strong correlations between these components and attainment, pro-social behaviours and a reduction in self-perceived hyperactivity. Williams argues that it is not helpful to seek cause and effect relationships between inputs and impacts in complex circumstances such as a residential experience. Rather, he suggests, the outcomes emerge from the complex interaction of the many cognitive and non-cognitive elements in combination. However, he does suggest that it would be worthwhile carrying out a controlled experiment to establish whether attendance on a residential is causally related to pupils' rate of progress.

Table 1: Nine hypotheses for the impact of residential experiences on teaching and learning from the Learning Away Initiative

Learner Achievement and Engagement	Learning Experience	Transforming Schools
Achievement	Relationships	Pedagogical skills
Knowledge, skills and understanding	Transition	Cohesion
Engagement with learning	Leadership, co-design and facilitation	
	Resilience, self-confidence and wellbeing	

In a participative action research project over three years the Learning Away Initiative examined the impact of residential experiences on nine hypotheses (table 1). In this study residential programmes were developed in thirteen clusters of schools (60 schools in total) that were inclusive, progressive and integrated into the curriculum (Loynes, 2015). A mixed methods approach collected evidence using pre and post perception surveys, case studies, focus groups and interviews. The report on the findings of the Initiative (Kendall and Rodger, 2015) identified significant change between pre and post perception surveys in all but one of the hypotheses (improved relationships) in primary schools. The results were inconclusive for secondary schools. However, qualitative data from staff and student focus groups and interviews indicated significant impacts in all nine areas in both primary and secondary schools. In addition, the evidence highlighted the interconnectedness of the various cognitive and non-cognitive themes identified in table 1. Carne, Loynes and Williams (2015) identified a theory of change or learning pathway evidenced by the findings. This suggests that residential experiences enhance confidence and change student to student and student to teacher relationships. This, in turn leads to a shift in engagement in the classroom which, in turn leads to enhanced cognitive impacts measured by progress and attainment. Whilst the evidence was strong for the changes in and interconnections between relationships,

confidence and engagement, the data supporting changes in cognitive benefits was based on smaller scale studies and reporting of data collected by schools rather than available to researchers.

Scrutton (2014), evaluating the cognitive benefits of field study residential experiences for secondary school students, finds, like Williams (2013) and Carne, Loynes and Williams (2015), that cognitive and non-cognitive benefits are intertwined in a complex learning landscape navigated differently by each student. He also agrees that elements of the residential that are intended to enhance non-cognitive benefits also enhance the cognitive gains.

Related findings

Further research has taken place that examines the impact of learning outside the classroom non-residentially on progress and attainment in reading, writing and maths. Whilst these interventions do not have the element of an overnight stay, they share many other elements with residential out of doors.

Quibell, Charlton and Law (2017), in a comparative study of eight to eleven year olds, found that structured curriculum-based outdoor learning programme impacted significantly on reading, writing and maths compared with the control group. This improvement was sustained over an extended period. A recent Danish study examined the impact of an outdoor day every week undertaken for a year for the ages 7 – 16 years (Mygind, Bolling and Barfod, 2018). This was also a comparative study involving 48 schools. It builds on an earlier Danish study that found that both inter-personal and intra-personal non-cognitive skills were enhanced by *Udeskole* (learning outside the classroom) (Bentsen Mygind and Randrup,

2009). The study concluded that whilst reading skills were improved compared with the control group (Otte et al, 2019a), maths performance was not affected by *Udeskole* except for those pupils in year six (the equivalent school year to this study) (Otte et al, 2019b). The researchers also noted a positive impact on social relations and hyper-activity, and this was amplified amongst pupils with a low socio-economic background. They also found that teachers recognised improvements in both reading and maths. On analysis these were related to understanding and application of the subjects whilst the authors claim the national tests only measure performance (i.e. skills). Critiquing current methods of assessing attainment in Denmark the authors conclude that both reading and maths may well be impacted by *Udeskole* but that these impacts are more significant in relation to understanding and application rather than skills. They suggest that further research is needed.

In summary, there is an increasing body of evidence from a number of robust comparative studies that learning outside the classroom impacts on pupils' cognitive abilities in primary schools both directly and, also, indirectly by impacting on intra-personal and inter-personal non-cognitive functions. The LA researchers (Kendall and Rodger, 2015; Carne, Loynes and Williams, 2015) have proposed an evidence based 'theory of change' to explain how non-cognitive benefits impact on cognitive abilities. This model is supported by the evidence from studies of non-residential outdoor learning. Outdoor experiences have beneficial impacts on a wide range of educational outcomes other than cognitive ones. The evidence for the use of current measures of progress and attainment for determining the cognitive impact of residential experiences remains less conclusive.

The comparative study

The comparative study was designed to test the provisional findings for the impact of residential on cognitive outcomes using measures of progress and attainment. However, it should be noted that the schools that are a part of this study had not adopted the criteria of inclusion, progression and integration employed by the LA initiative. Whilst the residential were inclusive, they were not progressive and they were not always integrated into the curriculum. Nor were any of the schools seeking to make a direct impact on cognitive outcomes. The resources and timeframe of the study did not allow for a closer relationship with the schools that could influence the context of the residential experiences so that they were closer to the LA model. It was also considered to be important that the schools involved in this study had played no part in the original LA initiative.

Nevertheless, the schools in this study were seeking to impact on a number of non-cognitive outcomes. These outcomes have already been identified as significant outcomes of residential in the LA study, namely peer to peer and pupil to teacher relationships; resilience, self-confidence and wellbeing; and cohesion and transition. The LA study also indicates that these outcomes of residential experiences are causal in relation to cognitive impacts. It was therefore hypothesised that these non-cognitive outcomes would also impact on cognitive ones measurable using progress and attainment data in the comparative study.

The aims of the research were to:

- To investigate to what measurable extent residential experiences impact on cognition in numeracy and literacy in year six (ten – eleven year old) pupils

- To generate further understanding of the complexities of the factors influencing the outcomes of residential experiences on cognition
- To make recommendations for the most effective way forward for future research

The research design

Small-scale comparative case study research is useful when the researcher seeks to explore the causality between an input or intervention (in this case a residential experience) and outcomes (in this case progress in cognition in numeracy and literacy). To enhance the validity of the study, purposeful sampling was used to select case studies that were as similar as possible in all other ways. This helped to reduce the influence of other variables that inevitably affect experiments conducted in real world complex systems such as schools. This in turn increased the internal and external validity of the study and gave confidence in the results and in their generalizability (Goggin, 1986).

With the help of the Outdoor Education Advisor for the Local Authority, eight single form entry schools were identified that could be matched in pairs on socio-economic criteria including the number of free school meals served, percentage reaching national standards, percentage achieving greater depth pupil premium level, the number of pupils with special educational needs, attendance, recent numeracy and literacy standards, ethnic diversity and school inspection reports.

In addition, schools selected had already booked a four night long residential with the residential provider at one of its two residential centres. One paired school booking was prior

to and one school post the year 6 SATs test. The schools were then clustered as two groups of four schools, one group holding a residential pre and one group post SATs.

Only one of the eight schools explicitly set out to support the curriculum through a residential experience. In this case the subject focus was geography which is not assessed by the SAT's exam. All the remaining schools were focussed on the perceived benefits of non-cognitive and character development outcomes.

For a small-scale comparative study, it is the authors' view that the research design is strong. Although there is some variability between the schools, much of this has been avoided by matching the schools within one Local Authority and using one residential provider. Closer matching of the schools could only be achieved by much greater levels of intervention requiring a much longer time frame and a bigger study.

The study was approved by the University of Cumbria ethics committee.

Methods

A mixed methods approach was used allowing the researchers to triangulate the results between different sets of evidence giving greater confidence in the results and highlighting differences in the validity of the methods. In addition, the quantitative data provided a picture of what had taken place whilst the qualitative data helped to explain how these results came about and the impact that they had on pupils (Scrutton and Beames, 2015).

Four approaches were used to examine the impact of the residential on cognition in numeracy and literacy. Termly progress and attainment data in numeracy and literacy was

collected for the academic year. The SATs results were also collected. Whilst all the schools used the same approach to assessing progress in numeracy and literacy, they used different scoring systems. With the help of the year six teachers, a comparative chart was developed making comparison between the schools possible. Pupils completed two surveys to gauge their perception of their academic abilities and performance over the year. This was included as an addition to the ROPELOC survey (see below). Teacher interviews were conducted post-residential in both groups of schools and their analysis of SATs results were shared with the research team in the autumn. This enabled a more accurate reading of the scores in the light of other factors that may have affected the pupil's attainment.

Non-cognitive impacts were examined in three ways. The ROPELOC (review of personal effectiveness and locus of control) survey was used with the pupils (Richards, Ellis and Neill, 2002). The pupil attitude baseline surveys were carried out in person by the researcher to ensure that each school and each child undertook the survey under the same conditions with the same background information and instructions. This online survey asks for responses to a Likert scale with statements referring to personal effectiveness and control.

The interviews with teachers perceptions of the value of residential experiences and their impact on teaching and learning in school were explored. Focus groups with pupils and separately with teachers were also conducted to collect qualitative data of the experience of the residential for the pre SATs schools' group.

Results

This section summarises the results from the qualitative and quantitative data collected.

Analysis of SATs results

For the progression analysis five schools out of the original eight submitted progression and KS2 SATs results (n=112), of these 73 children attended the residential (the study group) and 39 did not attend the residential (the control group). Progression was measured for reading, writing, and maths at three points in the year, in the autumn, spring, and in the summer (this is the KS2 SATs test), resulting in a total of nine assessments for each school.

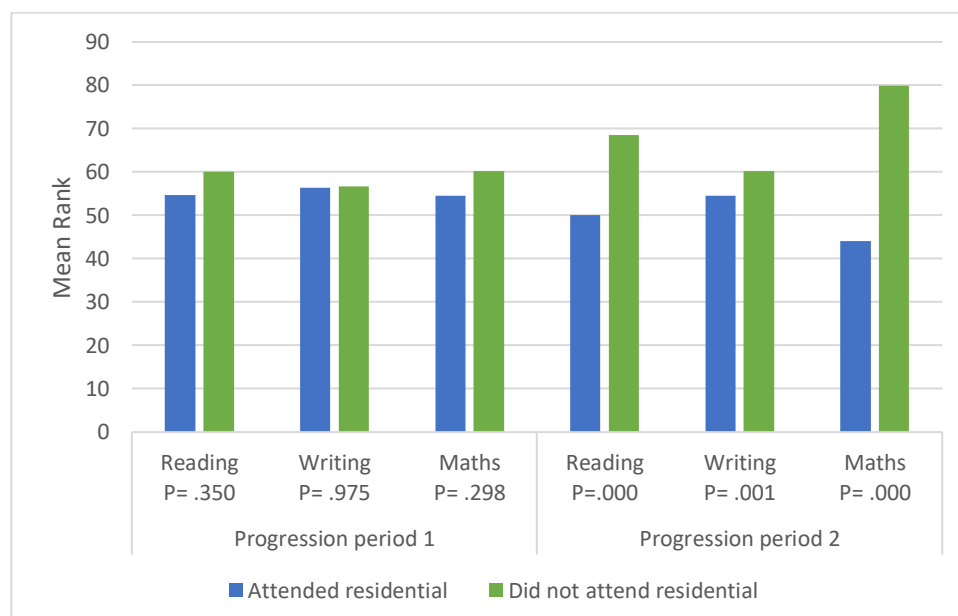
Out of the five schools, only three submitted portions of their assessments in numerical scaled scores (a standard calculation based on the raw test scores). All others were reported following categorical systems. As such all data was reduced to a single categorical system and coded for analysis.

Two progression periods between each assessment were extrapolated. The first period, between the first and second assessments, contained no residential experiences whilst the second, between the second and final (SATs) assessments, included a residential for the study group but not the control group. The magnitude of progression was calculated for each progression period. The data are non-parametric therefore the *Mann-Whitney U* test was used to compare the magnitude of progression between progression periods and between the study group and control group. The final categories were very coarse therefore much of the detail of progression (movement within the categories) is missing. For example, a child may have progressed from scaled score 91 to 99 between assessments. However, this was not apparent in the analysis as this can only report on movement across the broad category boundaries.

Also due to the relatively small sample size and the large time scale between assessments it was not possible to control for all external variables, for example, other interventions made by the school, parental involvement, or teacher absence during the time period.

In progression period 1, results indicate a similar level of progression between the study group and the control group in all subject areas (figure 1). In progression period 2, results show the magnitude of progression is smaller in the study group than in the control group in all three subject areas (figure 1). These results indicate that the children that attended the residential before sitting the SATs exam did not progress as much in reading, writing and maths during that time period as those that did not.

Figure 1: Progression between assessments: the magnitude of progression for pupils that did and did not attend the residential for the periods between the autumn and spring progress reports ('progression period 1') and the spring progress report and SATs ('progression period 2', in which the residential trips took place). $p < 0.05$ indicates a significant result.



The use of progress and SATs scores as data for measuring progress and attainment proved unhelpful. Although results show a larger magnitude of progression for children who did not attend the residential it should be noted that there was a clear progression through the year for the majority of children in all schools. This cannot be identified in the progress data and SATs results due to the lack of granularity of the data. The measure is too coarse so that incremental improvements are not captured. In addition, many pupils are at the top of the measure at the start of year six and so show no movement in their scores, something that does not reflect their progress in class. In addition, other evidence described below provides a different view of pupil progress in cognition in numeracy and literacy and more widely in other cognitive and non-cognitive outcomes. As such, the authors believe that the progress and SATs data is invalid for the purposes of this study.

Analysis of ROPELOC survey results

The ROPELOC survey contained 47 questions (not including control questions) encompassing 15 factor groups (Table 2). Eight schools took part in the ROPELOC survey with a total of 163 children completing both surveys, of these 78 attended the residential (the study group, 36 female, 40 male, 2 children didn't identify a gender) and 85 did not attend the residential (the control group, 40 female, 45 male).

Table 2: Factor groups and number of related questions: factor group descriptions and number of associated questions for each factor group

Factor	Description	Number of associated questions
Co-operative teamwork	Cooperation in team situations	3
Self-Efficacy	Ability to handle things and find solutions in difficult situations	3

Leadership Ability	Leadership capability	3
Internal Locus of Control	Taking internal responsibility for actions and success	3
Active Involvement	Use action and energy to make things happen	3
Open Thinking	Openness and adaptability in thinking and ideas.	3
Quality Seeking	Put effort into achieving the best possible results	3
External Locus of Control	Accepting that external issues control or determine success	3
Self Confidence	Confidence and belief in personal ability to be successful	3
Social Effectiveness	Competence and effectiveness in communicating and operating in social situations	3
Stress Management	Self-control and calmness in stressful situations	3
Overall Effectiveness	The overall effectiveness of a person in all aspects of life	3
Time Efficiency	Efficient planning and utilization of time	3
Coping with change	The ability to cope with change	3
Academic Performance	View of how well students feel they perform in Reading, Writing and Maths	5

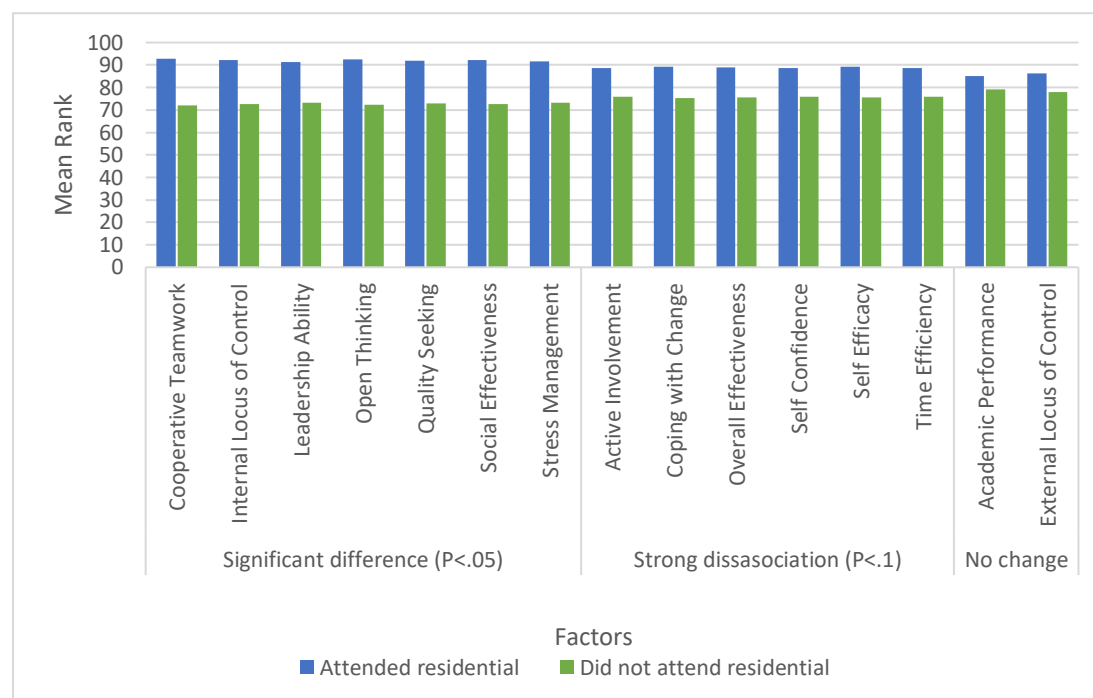
Following Richards, Ellis and Neill (2002) the survey data were tested for internal consistency using Cronbach's alpha coefficient of reliability. The result indicated a very high internal rate of consistency (0.960).

Results indicate significant difference between the study group and the control group (figure 2). The magnitude of change for all factors between the first survey and the second survey were positively greater in the study group than the control group. Moreover, a significant

positive change ($P < .05$) in children's responses were found in seven factors for the study group :

- Cooperative Teamwork (Mdn=.000, $U=2466$, $P=0.005$)
- Internal Locus of Control (Mdn=.000, $U=2519$, $P=0.008$)
- Leadership Ability (Mdn=.000, $U=2579.5$, $P=0.014$)
- Open Thinking (Mdn=.000, $U=2495$, $P=0.006$)
- Quality Seeking (Mdn=.000, $U=2553$, $P=0.011$)
- Social Effectiveness (Mdn=.000, $U=2516$, $P=.008$)
- Stress Management (Mdn=.000, $U=2560.5$, $P=0.012$)

Figure 2: The magnitude of change between the first and second ROPELOC survey responses clustered by factor groups, between pupils that attended the residential and those that did not.



The results of six of the remaining factors indicated an elevated trend towards significance ($P < .1$, 90% confidence):

- Active Involvement (Mdn=.000, $U=2804$, $P=0.87$)
- Coping with Change (Mdn=.000, $U=2741$, $P=0.056$)
- Overall Effectiveness (Mdn=.000, $U=2768$, $P=0.068$)
- Self Confidence (Mdn=.000, $U=2798$, $P=0.084$)
- Self-Efficacy (Mdn=.1841, $U=2759.5$, $P=0.064$)
- Time Efficiency (Mdn=.000, $U=2790.5$, $P=0.081$)

Only two factors indicated no clear change, the child's view of their own Academic Performance (Mdn=.000, $U=3080.5$, $P=.433$) and External Locus of Control (Mdn=-.5522, $U=2981$, $P=.266$).

Considering gender, the positive change in Cooperative Teamwork in females is significantly ($p=.011$) larger than males and the results for Open Thinking suggest the same trend ($P=.52$).

Qualitative evidence for the impact of residential

Six members of staff who attended the residential experiences with the pupils were interviewed (four year 6 teachers, one year 6 teaching assistant and one head teacher). The observations made in field notes during visits to residential complement the evidence from the interviews.

Whilst the interviews covered different schools and residential trips and recounted different stories, there is a remarkable congruence between them, a shared theory held in the mind of staff that, when combined, offers a comprehensive theory of change (Kellogg Foundation,

2004). Their model shows many similarities to the original theory of change developed from the LA evidence (Carne, Loynes and Williams, 2015). It reinforces the LA findings about the personal development that takes place on residential. As Williams (2013) suggests, the residential and their impacts emerge as complex systems of interacting factors producing diverse outcomes at an individual level. However, a consistent model of effective practices emerges from the combined evidence of the interviews triangulated with the field notes.

According to the staff, the residential lead to a range of outputs in their theory of change that manifest during and post-residential, namely: friendship including new friends, new ways of being friendly and friendships across normal social groups; a sense of achievement; a growing sense of motivation to learn and be part of the community; growing respect for each other and pro-active behaviours in the tasks, in community life and socially.

Staff offered evidence of the transfer of these attributes to the classroom in ways that were sustained and could be enhanced by changes in teaching practices. These were identified as the outcomes of: application to learning; awareness of capabilities and interests between peers and by staff; and changes in social behaviour.

In the view of staff, reflecting on these and previous residential, these three outcomes completed their theory of change with the following impacts: enhanced and transformed relationships; positive interplay between engagement and progression; and resilient, mindful pupils with enhanced metacognition.

These outputs, outcomes and impacts that form the theory of change were commonly deployed by staff as a narrative to justify an approach to teaching and learning (the

residential) that is demanding of school and family resources. Schools going on residential before SATs consciously used the experience to create class cohesion, closer relationships between staff and pupils and also to start preparing the pupils for transition to secondary school. The centre ethos of fostering independence in the children is highlighted as very important. Observation and interviews on residential showed that schools undertaking residential before SATs were making the decision to specifically go to the centre for these reasons. The sense of place was important as was the ethos of the centre and the staff expertise. The theory of change was also used reflectively as a comparison for approaches to teaching and learning in school and for the development of future residential experiences.

The theory of change can be triangulated with the results of the quantitative survey (table 1) providing additional confidence in a number of the themes identified in the focus groups, observations and interviews. Cooperative teamwork is evident in the nature of the tasks and the development of learning relationships. It is also notable that this persists in the classroom post-residential. Leadership ability, internal locus of control and active involvement emerge in a range of pro-active behaviours which teachers also claim persist post-residential. Open thinking, overall effectiveness and time efficiency correspond with a number of the learning processes encouraged by the residential experiences and, again, are likely to persist post-residential. Character development is highlighted by the increases in self-efficacy, self-confidence, coping with change and stress management and represented in the theory of change by the pupils' sense of achievement, enhanced motivation and ultimately more resilient attitudes.

Table 3: A comparison of the results of the ROPELOC Survey with the ‘Theory of Change’ themes

(S = Significant; ES = Elevated trend towards significance)

ROPELOC survey factors	Tasks, outputs, outcomes and impacts identified by qualitative means
<i>Cooperative teamwork (S)</i>	The nature of the tasks The development of learning Relationships
<i>Leadership ability (S)</i> <i>Internal locus of control (S)</i> <i>Active involvement (ES)</i>	Pro-active behaviours
<i>Open thinking (S)</i> <i>Overall effectiveness (ES)</i> <i>Time efficiency (ES)</i>	Learning processes
<i>Self-efficacy (ES)</i> <i>Self-confidence (ES)</i> <i>Coping with change (ES)</i> <i>Stress management (S)</i>	Sense of achievement Enhanced motivation Resilience

Whilst the outdoor activities that form the substantive part of the formal content of these residentials are not unique to residentials, the duration of sessions and the opportunity to experience progress in both practical, learning and social skills over the extended time were commented on by both pupils and staff. Pupils in particular highlighted the value of trying out new things and experiencing progress in their abilities from one day to the next. They also remarked that this had given them self-belief in their ability to make similar progress in classroom activities post-residential. A second set of comments highlighted the significance of the informality of the relationships developed with the instructors. Pupils highlighted how these were novel to them, that they came to like and trust the centre staff and, as a result, responded to their requests that they take responsibility for themselves. This included being on time with the right equipment and a packed lunch; looking after their bedrooms; playing a

part in the physical and social aspects of the activities including working out problems and making decisions. Staff also noticed the emerging willingness amongst pupils to take responsibility for themselves, that this was often observed in pupils they had not previously considered to have matured to this degree and that this was sustained on return to the classroom. These insights suggest that progressive experiences of an activity, residential or otherwise, have an enhanced impact on the capabilities of pupils to make progress and to take responsibility for their own learning.

Pupils and staff also identified the importance of the informal time between activities and especially during the evening and overnight in the dormitories. Comments fall into two sets. The social activities of living together were identified as important opportunities for pupils to experience rituals such as table setting, shared meals, building community around a fire or behaving in a civil manner to each other. These represent new social skills and the development, in a practical way, of how to contribute to a learning community. The second set of comments refer to the value of the informal time to make new friends, tell the stories of the day to each other, reflect alone or in small groups on themselves and each other, show more confidence in making and sustaining relationships, and practicing new social skills. This was also noted by the Learning Away report and considered to be an important element in support of deep understanding and lasting learning.

Comments also reflected on the value of going to sleep somewhere and waking up in the same new place with a day behind you and a new day ahead in which to take things forward. The iterative experience of a multi-day residential punctuated by the night and sleeping was identified as having significant benefit to progress and development during the residential. It

may lead to new found confidence and skills, knowledge and values becoming embedded. If so, this would be a significant contribution to the development of resilient beliefs and habits.

The interviews and field notes also provide understanding of some of what the staff consider to be the significant elements of the residential experience impacting both during and after the residential.

Just being away in such a different setting doing such different things supports our geography and creative writing curriculum. I wouldn't like to instrumentalise these experiences by bringing the curriculum with me. It's nice to let moments arise for different pupils in different ways and respond to that. I'd hate to start ticking the boxes while we're away. (Staff 1 interview).

It's good for the kids to see the staff can be less confident and struggle a bit. It makes us human and the trust between us goes way up when they can offer us help and we really appreciate it. (Staff 3 interview).

The school staff interviewed offered clear reasons for why they continue to choose the provider and how the way the centre staff work supports social and curriculum learning outcomes.

We did a traffic survey in the local town. It was so different from the school neighbourhood. So, we repeated the survey when we got back to school and talked about all the differences and what they might mean for what it's like to live in the two places. (Staff 5 interview).

The centre 'ethos' is touched on by several interviewees. The quality of the setting, the experiences and the facilitation are commented on by both pupils and staff. This ethos, as it is perceived by the pupils and staff from the schools, is described as a series of expectations of the pupils. They are expected to take responsibility in numerous ways, a positive mind set to the activities and other new experiences; an expectation of a helpful and collaborative approach; for being on time with the right clothes and personal equipment; for domestic chores; for community tasks. Centre staff take this approach in their support for the children. They also use every opportunity to link activities with a broad range of curriculum content. School staff refer to this 'ethos' as the reason why they value residential experiences and have a strong preference for this provider over others they have tried.

Impacts on teaching and learning post-residential

The residential has implications to teaching and learning on return to school. It provides pupils and staff with new strategies that support engagement and progress.

We come back with lots of stories and can have a laugh about it with the kids and amongst the staff. The kids can laugh at us too. We can use reminders from the trip to encourage them to face up to challenges or be determined like they were canoeing or something. (Staff 1 interview).

A pupil who was known for his bullying behaviours and shunned by his peers, was one of the first pupils to offer help and support to others challenged by some of the activities. He made friends at the centre and these friendships, and his helpful behaviour, have persisted back at school. (Staff 3 interview).

Residential also highlight the difficulties some schools have to offer the best teaching and learning as they understand it.

I like the opportunities we get to find different ways of working and different interests and capabilities amongst the kids. I'd like to work more like this at school, but we don't have any outdoor space here. (Staff 2 interview).

Another strand from this evidence highlights the impact of residential experiences on individual pupils with personal issues that are impacting on both learning and socialisation. These are best illustrated by the vignettes the interviewees told.

One high achieving pupil has been very shy and lonely in class. He came out of his shell on the residential speaking up a bit more. Some of the others asked him to join in with them and now has friends in class. (Staff 1 interview).

A pupil who was an elective mute made friends with the instructor's dog and, at first with the dog and then with the instructor and other pupils, started to talk again. (Staff 5 interview).

Our most badly behaved, low achieving and poorly attending pupil told the chef at the outdoor centre that he loved cooking. He spent most of each day preparing, cooking and serving the meals for everyone else. His picture, with a big grin, is now on the kitchen hatch at school and, most days, he helps prepare and serve the food in school. (Staff 4 interview).

Staff claim that some pupils, especially those experiencing challenges in their personal lives, were supported by the residential subsequently remaining engaged in the classroom and so achieving their predicted attainment results. These, in other circumstances, were perceived to be at risk. Discussion with one teacher on the impact of residential on attainment results suggests that it may have more to do with children attending school regularly as a result of better relationships between staff, pupils and parents, and therefore reaching their potential grades rather than falling back. This interpretation was repeated by several staff and across schools and residential.

Of wider interest to all pupils were the claims made by staff that residential experiences impact on understanding and application rather than knowledge acquisition (reading, comprehension) and skill acquisition (spelling, punctuation and grammar; calculation; mathematical fluency) which are tested by SATs. Examples were given in relation to both numeracy and literacy.

The instructors asked the children to guess how heavy a canoe was and, then, whether they thought they could lift it. He then asked them how much they thought they could lift on their own before asking them how many of them it would take to carry the canoe to the water. The children gave him the right answer but then said that there were more of them than they needed but that this would make the carry even lighter and easier (Field notes residential 2).

This goes some way to providing an explanation for why staff believe the residential experiences can and do make a difference to cognition, yet the progress and attainment data

suggests otherwise. Staff are taking into account a broader and deeper concept of cognition than is captured by current progress and attainment tests.

Discussion

As Williams (2013) suggests, educational residential experiences are complex involving a number of factors that interact with the pupil and the class in ways that are hard to predict at an individual pupil level. All that can easily be said is that they are widely impactful.

However, analysed at the group level, a range of outputs and outcomes recur and become stable. These outputs and outcomes are valued by pupils and teachers and, in turn, create the potential for a range of impacts most notably on the quality of social and learning relationships within the class; and engagement with learning. These include step changes in development noticed in class and in the home and often described as enhanced confidence and resilience. Young people are described as showing more pro-active and responsible behaviours; having new friendships and new qualities of friendship; and exercising new learning strategies especially social learning. In turn these outcomes have an impact on progress in meta-cognition, socialisation and maturation and, in some cases, cognition.

It is clear that individual pupils are helped to sustain their cognitive attainment during challenging times. However, there is also growing evidence that cognitive understanding and application, not so readily assessed by SATs, are impacted significantly. It could be argued that the confidence that arises from experiences of knowledge understanding and application enhances learner engagement rather than that learner engagement necessarily precedes impacts on measures of cognitive attainment. Complexity theory would argue that there is an important inter-relationship between engagement and cognitive attainment rather than a cause and effect relationship. The evidence indicates how this is enhanced by the pedagogy of residential experiences offering novel, intense, real and relevant experiences that are further

enhanced by social learning and reflection. The impacts are engagement, personal development and new learning skills including social learning and meta-cognition.

Developing a theory of change is a helpful middle road between complexity and cause and effect models. It captures the time line of inputs (the residential), outputs, outcomes and impacts whilst allowing for a complex of structural and process factors on the residential, in the pupil, in the class and in the classroom to be recognised. Staff intuitively use their version of a theory of change, held in the mind, to assess the trajectory of individuals and groups of pupils making interventions to enhance potential impacts and improving practice for future applications. They can readily articulate their model to other staff ensuring a collective approach to the interventions.

Indications are that relationship and confidence building have the most post-residential impact on pupils. Staff are able to use the experience of seeing children achieve in different ways and overcome obstacles and remind the children of that when they are facing difficulties at school. Barriers were broken down and eyes opened often with regard to individual children excelling in a way that they cannot at school because of time constraints, space and curriculum. It is worth noting, in the context of recent Ofsted comments concerning the value of teacher assessments of cognitive and non-cognitive progress and attainment, that staff regularly made assessments of their pupils and their attributes and progress during the residentials. Some of the areas observed and assessed whilst away persisted in the assessments staff made of their pupils on return to school. The areas highlighted in the evidence that were subject to assessment by staff on the residentials and in classrooms were: being pro-active; taking responsibility; emerging confidence and self-belief; developing and demonstrating pro-social skills and behaviours both new skills (from

the perspective of staff) and adjusted (from behaviours previously observed in school); demonstrating knowledge understanding and application; developing and applying personal and social learning skills; and creating collective social norms.

This evidence underpins the value of residential experiences in developing character, resilience, pro-social behaviours and learning communities. It also highlights the value of residential in providing contexts in which pupils can express and develop these attributes and in which staff can observe and assess them. Residential are therefore formative and summative providing transformative opportunities for pupils and episodic moments for teacher observation and assessment of educational domains rarely developed or exhibited so explicitly in the classroom. This would be an argument for progressive residential interventions throughout a pupil's education. It is clear from the evidence that residential are effective interventions developing character and resilience and supporting wellbeing. As such they have the potential to contribute to the aims of the new curriculum framework through their focus on core, non-cognitive skills leading to character development and resilient pupils.

Conclusions

Regarding the impact of residential experience on cognition in numeracy and literacy, this study found that the residential experiences did have a positive impact on progress and that they sustained cognitive attainment scores amongst students likely, for personal and family reasons, to underachieve in relation to their predicted grades. The interpretation offered by the staff is that the confidence gained whilst away, coupled with the enhanced relationships with peers and staff, compensates for the negative impacts on learning being experienced outside of the school's control.

Some light has also been shed on the complexities of the factors influencing the outcomes of residential experiences on cognition. Both the staff of the schools and the literature suggest that SATs are a poor measure of cognition in numeracy and literacy as they measure knowledge acquisition as opposed to understanding and application. In addition, the preparation for SATs assessments stands outside the curriculum work undertaken during the rest of the year. However, this study found that knowledge understanding and application were enhanced by residential experiences, amplified by non-cognitive benefits and subsequently underpin confidence and engagement in the classroom. A comparative study recently completed in Denmark with the same age group and using the Danish national test results found similarly that 'UteSkule' one day a week for a year had no impact on cognitive attainment. However, staff reported significant increases in both understanding and application in both literacy and numeracy. This supports the findings of this study and the tentative findings of the Learning Away report.

The qualitative data and the survey results provide further supporting evidence to the Learning Away campaign as to the impact of residential on a range of outcomes such as wellbeing; confidence; self-belief; peer to peer and student to teacher relationships. These benefits will inform the debate about the contribution of residential experiences to the emerging policy shifts that are placing an emphasis on wellbeing, character development and resilience, the 'bread and butter' of residential experiences. It is these outcomes that the staff of residential centres are confident and committed to achieving and it these benefits to the educational experience of pupils in schools that are valued by teachers when they choose to accompany their pupils on a residential.

Perhaps a future study could ask the question of impact differently i.e. ‘what is the impact of learning and teaching in the classroom on the learning and development during a residential experience?’ If residential are real world, albeit novel, experiences, and education aims to prepare young people for the real world, then perhaps the impacts that are worth ‘measuring’ are the capabilities of pupils during a residential experience. Staff frequently comment on how the experiences of a residential allow them to see a wider range of capabilities in their pupils than are typically revealed in a classroom suggesting a more equitable assessment opportunity. The caveat would be, as one teacher pleaded, ‘*don’t instrumentalise the experience*’ (Staff 1 interview).

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