

## Evaluation of Learning Away

### Hypothesis 1: GCSE Attainment

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## Hypothesis 1: GCSE attainment

*High quality residential learning programmes can significantly boost GCSE attainment in the core subjects of English, mathematics and science particularly for students otherwise predicted to achieve grades of C and below.*

### Background

For young people, attaining GCSEs in English and mathematics is crucial. The achievement of a grade C or above at GCSE in English and mathematics is often a prerequisite for further progression in education or training; not achieving at least grade C in English and mathematics can stop a young person from moving on to their next chosen step.

Attaining a GCSE in science is important too. Many jobs and careers require a GCSE science qualification, including pharmacy, environmental studies, primary teaching, engineering and computing as well as medicine, dentistry and all areas of science.

Recognising the importance of GCSE achievement for both students' future education and employment opportunities and schools' own performance scores, many schools develop support packages and specific interventions that would boost GCSE attainment in their settings. Some common approaches to improving the exam results of, for example, C/D borderline students include tuition and mentoring, often long term and on a one-to-one basis<sup>1</sup>. Residential learning experiences, explored in this report, provide an interesting and powerful alternative to these more traditional and often more costly approaches.

### Programme wide outcomes related to GCSE attainment in the core subjects

Two clusters – Canterbury and Thomas Tallis – developed programmes of residential learning that were specifically aimed at raising the achievement and attainment of their students in English, mathematics and science. Canterbury focused on Year 10 students who wanted to improve their GCSE grades, particularly C/D borderline students. Thomas Tallis offered residential learning opportunities to Year 9 students who were not making two national curriculum levels of progress. In both schools, teachers felt that the students who attended these residentials '*... were a group who with a boost could achieve and attain at higher levels*' (deputy head, Thomas Tallis).

Both clusters monitored the progress that students made during and after attending the residentials. Without claiming direct causality between the residentials and improved student achievement, the clusters reported some very positive trends and outcomes.

Before the residential, only 15% of the target Thomas Tallis students had made two levels of progress in English, 24% had made two levels of progress in mathematics and 18% had made two levels of progress in science between Year 7 and January of their Year 9. In the six months following the residential, these figures doubled for English and mathematics (reaching 30% and 45% respectively) and nearly tripled for science (52%).

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<sup>1</sup> Cordingley, P., Temperley, J. & Buckler, N. (2010) *Leadership for Closing the Gap: final report*. Nottingham: National College. Accessible at: <http://www.nationalcollege.org.uk/leadership-for-closing-the-gap-full-report.pdf>

Around a third of students, who participated in the Canterbury English and mathematics residential, achieved grade C in mathematics immediately after the residential. This was a 65% improvement in their results (students were resitting an exam previously taken a few months before). Finally, in English, many students got good Bs for their descriptive writing coursework, which helped the entire cohort involved in Canterbury LA programme to subsequently achieve A\*-C grades in English Creative Writing.

### **Excerpts of English creative writing from the Canterbury cluster**

#### *Student A*

'As I stood, jittery before this gulf of water, my flimsy box of a boat swayed back and forth, striking the surface edge, sending waves back from where they had come. The dull, damp, plump vision of the pregnant skies started to crack as tyrannical rays from the sun high above, streaked fiercely to the earth's floor. I gazed across the setting that I was about to explore, the lake spread far and wide, with the surrounding lush green trees stationed like soldiers on watch, protecting their homeland. A tedious, grim smell of sodden mud drifted lazily with the faint scent of salt water accompanying it. My wet, soggy feet sank sedately into the goey earth below; my mind, however, remained vigorously on the task ahead. I hauled my leg out of the sucking mud then placed it down again tentatively, like a ballet dancer all the way down to the lake's edge'.

#### *Student B*

'At the dawn of the day by the river, the sun attempted to rise to conquer the surroundings below, like a light house guarding stranded people, battling crashing shelves of water. Standing against the illuminating rays was the daunting, demanding space of clouds, intercepting the spark of life the sun was trying so deeply to produce. They scudded and danced with animation'.

### **Examples of residential interventions aiming to improve students' GCSE attainment**

As the programme's emphasis on local contextualisation, there were differences in how the two clusters organised their residentials. Canterbury combined formal learning sessions with context-based learning, based on the outdoor environment, whilst Thomas Tallis combined workshop sessions with the development of collaborative problem-solving and decision making in the residential environment.

Around 30 Canterbury students, who attended their residential at Bewl water centre in Kent, experienced a blend of outdoor and academic activities. Each day was time-tabled so that students had two physical activities in the morning followed by formal one-hour-long English and mathematics sessions. The outdoor activities, led by the residential centre instructors, included kayaking, sailing, cycling, rock-climbing and problem-solving, such as building a bridge using barrels.

These activities and the different environment of the residential were designed to offer a springboard and context for developing students' skills of descriptive writing:

*'When at school, students' writing about a place is dry and unimaginative. We thought that writing about what happened to them would help them do much better'.* (English

teacher, Canterbury)

During break times between activities, students captured their experiences of outdoor adventures, noted their feelings and ideas. The students then used their notes to plan their descriptive pieces of writing during the formal English sessions. Having each received feedback from their teacher, the students continued working on their pieces of writing during the following English sessions, virtually completing – apart from typing up – their coursework during the residential.

Canterbury students also attended formal one-hour mathematics sessions, but they particularly enjoyed applying and practising their mathematics skills during outdoor activities (using their knowledge of trigonometry when sailing or rock-climbing for example).

Unlike Canterbury, there were no outdoor or adventurous activities in the Thomas Tallis residential programme. Instead, the students attended differentiated workshops in English, mathematics and science.

The specific foci of the workshops that students from Thomas Tallis attended during their residential included:

- reading and writing skills, particularly analysis of language and composition of non-fiction writing (English)
- number and algebra (mathematics), and
- rates of reaction (science).

When exploring the latter, for example, the students took part in a practical experiment and then wrote it up as a report in which they analysed the factors that can influence the rate of reaction and drew their conclusions.

The uniqueness of the Thomas Tallis programme and its difference from what the students experienced at school lay in its dual focus on the core curriculum (English, mathematics and science) and on active student engagement in making choices and decisions, and developing the young people's ability to live as part of a community. Student involvement in decision making and the life of the community was structured through the use of different groups (home, council and community), which were particularly active in determining the evening 'leisure' activities and sorting out disagreements and disputes.

### **Common features in the clusters' approaches to boosting GCSE attainment through residential learning**

The approaches to residential learning developed by the two clusters had several common features, which the cluster leaders, staff and students believed contributed to their success:

- identifying specific achievement goals
- tailoring learning, and
- developing relationships between staff and students.

*Identifying specific achievement goals*

Both clusters paid careful attention to selecting the curriculum content, knowledge and skills for the residential which would boost the students' achievement. Thomas Tallis for example selected Number and Algebra for their mathematics workshops, the area with the '*greatest weighting in KS3 assessment framework – thus improving it [provided] the greatest opportunity to improve the overall level*' (Thomas Tallis cluster leader). Similarly, Canterbury cluster leaders believed that it was important for the students to do some concrete work that would help them with improving their results or directly contribute to better grades. They therefore selected a descriptive writing piece of coursework, which could count as 40% of students' GCSE grades and at the same time was rooted in the students' experiences of outdoors.

#### *Tailoring learning*

Although both clusters tailored the learning experiences to the needs of individual learners, they did so in different ways. Thomas Tallis staff made sure all the workshops were differentiated; Canterbury staff provided individualised feedback e.g. on the students' drafts of writing pieces, and small group and one-to-one support from the subject teacher. One student summed up the difference that the feedback made:

*'I understood much better what I needed to work on and how; I learnt how to improve my own work without help'.*

Canterbury staff felt that involving youth workers and having a generally high staff to student ratio during their residential helped to ease the practicalities of personalising learning.

#### *Developing relationships between staff and students*

Both clusters described the relationships between staff and students during the residential as 'informal' and 'equal'. Examples of this included staff from Canterbury taking on new challenges alongside their students, and students and staff from Thomas Tallis being equal in making decisions affecting their life on the residential.

### **Summary of the common and unique features in the two clusters' approaches**

	Canterbury	Thomas Tallis
Unique features	<ul style="list-style-type: none"> <li>• Mix of core subject learning and adventure activities</li> <li>• Feedback</li> <li>• Context-based learning</li> <li>• High staff-student ratio</li> </ul>	<ul style="list-style-type: none"> <li>• Active student engagement through making choices and decisions about their communal life during the residential</li> <li>• Practical experiments (science)</li> <li>• Differentiation</li> </ul>
Common features	<ul style="list-style-type: none"> <li>• Core GCSE subjects</li> <li>• Identifying specific achievement goals</li> <li>• Tailored learning</li> <li>• Developing relationships between staff and students</li> <li>• Collaborative learning</li> </ul>	

### **Possible explanations for the outcomes**

*Personalisation*

Both clusters tailored learning to their students' needs either through differentiation or through individualised formative feedback. Research<sup>2</sup> shows that whether teachers differentiate content, process, products or the learning environment, the use of ongoing assessment and flexible grouping makes this a successful teaching approach. Research also shows that personalised, specific and formative feedback is one of the most significant influences on learning, having an effect size of 0.73<sup>3</sup>, equivalent to raising achievement by as much as two GCSE grades and possibly three grades for the lowest attainers<sup>4</sup>.

### *Relationships*

Both clusters also developed more informal, equal relationships between staff and students during the residential. Research<sup>5</sup> shows that such relationships provide students with an opportunity to influence and control the pace as well as the content of their learning and develop a greater ownership of the learning experience, which fosters both student engagement and achievement.

### *Contextualisation*

Students in both clusters were involved in practical, context-based learning activities that were directly related to the course content – for example, Canterbury students wrote descriptive pieces about some of their outdoor activities and used their knowledge of trigonometry when sailing or rock-climbing, while Thomas Tallis students took part in a practical experiment about rates of reaction. Research<sup>6</sup> has shown that when learning was context-based (i.e. dealing with ideas and phenomena in real or simulated practical situations) learners were more positive about the subject, more engaged with the learning and improved their achievement.

### *Collaboration*

The clusters specifically promoted collaborative learning and problem-solving during workshops and outdoor activities. Collaborative learning is also linked to improved attainment, particularly in mathematics and science<sup>7</sup> because it supports students' understanding and enables students to take

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<sup>2</sup> Tomlinson, C. A. (2000) *Differentiation of Instruction in the Elementary Grades*. ERIC Digest. ERIC Clearinghouse on Elementary and Early Childhood Education: [www.eric.ed.gov/PDFS/ED443572.pdf](http://www.eric.ed.gov/PDFS/ED443572.pdf)

<sup>3</sup> Hattie J. (2009) *Visible learning: A synthesis of over 800 meta-analyses related to achievement*, Routledge, London

<sup>4</sup> Black, P. & Wiliam, D. (1998) *Inside the Black Box: raising standards through classroom assessment* London: School of Education, King's College

<sup>5</sup> Rogers, C. and Freiberg, H.J.(1993) *Freedom to learn*. (3rd edn.) New York: Merrill. Summary available at: [www.gtce.org.uk/tla/rft/rogers1008/](http://www.gtce.org.uk/tla/rft/rogers1008/)

<sup>5</sup> Hattie, J. (2009) *Visible Learning: a synthesis of over 800 meta-analyses relating to achievement*. London: Routledge Taylor and Francis

<sup>6</sup> CUREE (2008) *Review of individual studies from research reviews*: <http://www.stla.org.uk/resources/publications/review-individual-studies-systematic-research-reviews>

<sup>7</sup> Bennett, J., Lubben, F., Hogarth, S., Campbell, B., & Robinson, A., (2005) *A systematic review of the nature of small-group discussions aimed at improving students' understanding of evidence in science* In: Research Evidence in Education Library. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London

Hogarth, S., Bennett, J., Campbell, B., Lubben, F., & Robinson, A., (2005) *A systematic review of the use of small-group discussions in science teaching with students aged 11-18* In: Research Evidence in Education Library. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London

Swan, M. (2006) Learning GCSE mathematics through discussion: what are the effects on students? *Journal of Further and Higher Education*, Volume 30, Issue 3 August 2006, pp. 229 – 241

control of their learning. One study<sup>8</sup> of low attaining mathematics students for example, showed that using collaborative, discussion based approaches to learning during workshops resulted in improved student scores in algebra tests, increases in student motivation and engagement, and reduced anxiety around mathematics. This was a particularly noteworthy outcome as the student group comprised re-take students who had previously gained a D grade or lower at GCSE.

## **Conclusions**

Two clusters focused on improving attainment at GCSE in the core subjects particularly for C/D borderline students, both with considerable success. The reason they were so successful seemed to hinge on the teaching and learning approaches they used, which research has shown to be effective and which were largely different to those experienced by the students at school. They included:

- context-based learning
- learning tailored to students' needs, including extensive individualised formative feedback
- equal relationships between staff and students that promoted student ownership of learning, and
- an emphasis on collaborative problem-solving and decision making.

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<sup>8</sup> Swan, M. (2006) *Collaborative learning in mathematics: A challenge to our beliefs and practices* National Research and Development Centre for adult literacy and numeracy (NRDC) and the National Institute of Adult Continuing Education (NIACE) Summary available at: [www.gtce.org.uk/tla/rft/collabmaths/study/](http://www.gtce.org.uk/tla/rft/collabmaths/study/)