Blackpool City Learning Centre
‘The Big Experiment’

An Independent Evaluation Review
Acknowledgements
Any evaluation study depends on the goodwill and co-operation of all those involved; in that respect this study has been no exception. The author would like to thank sincerely all the students, teachers and mentors involved in ‘The Big Experiment’, for their patience and willingness when answering many questions and being observed. Particular thanks to Ian Riley, Centre Manager at Blackpool CLC, for his unstinting support and kindness. The author would also like to extend a special thank you to Rachel Hope, who stood in at short notice to undertake the field work, observing and interviewing those involved throughout the entire two week event, and offering valuable comment on various drafts of the report; without Rachel’s involvement, this evaluation study and report would not have been possible.
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1. Introduction

The role of learning experiments
There is a long history of educational and learning experimentation within schools and by teachers in England. It can be argued that the development of open schools in the 1960s, the development of comprehensive schools in the 1970s, the introduction of pedagogies detailed within the National Strategies, have all been experiments, and have been a part of an ongoing concern to develop and shape practice that allows learners to achieve as much as possible, and to succeed within a wider framework of educational and national concern.

Learning experiments have a great deal to offer. What they can achieve depends, of course, on the reasons and implementation that determines their structure and practice, as much as the involvement of students. When there are educational questions arising without clear answers, then learning experiments are a worthy part of educational endeavour.

Contexts shift; our society today is not the society of 40 years ago (students can gain access to much wider knowledge bases, and experience aspects of globalisation to much greater extents). Student experiences shift; students have access to wider and different experiences from those 40 years ago (uses of information and communication technologies means that they can approach a wide range of potential realms of skill and interest). Schools are changing and being rebuilt; schools have a social and societal purpose that is shifted from that 40 years ago (there is a greater concern with certain aspects of societal care, for example). Curriculum change is possible; educational practitioners should be aware of what opportunities that might bring, and how they might be fulfilled (shifts in curriculum practice offer opportunities for pedagogical shifts). Future needs are shifting; we need to develop a thorough awareness in the present to cope with the potential needs of the future (even though we know the future will be different from our present, it is still better to offer ways to consider the future through our present and past rather than just through our past). Experiments have a part to play in looking at all of these aspects (and other aspects too).

The focus of learning experiments
From a learning point of view, experiments are worthy. The knowledge we have now about learning and learning effectiveness is greater and deeper than it was even 10 years ago. We should constantly be seeking to engage practice that accommodates what we now know, as well as what we knew previously. What the research says about effective learning needs to be applied to practice, so that it can be disseminated further, for others to benefit from trials that have been undertaken.

The contexts are such that we should explore ideas that take shifts in learning environment into account, as well as a focus upon the aspects that we recognise to be limiting the potential outcomes and attainment for students. We need to identify what can support effective learning, and how immediate practice can learn from it.

Current research findings concerned with effective aspects of learning and teaching
Current research gives us key leads in terms of considering effective aspects for learning. There are five domains that we should consider:

- Megacognitive (a term used here to describe those elements becoming recognised as fundamental to developing ‘expert learners’, deep learning, and wider learning, concerned with learning that goes beyond the ability to learn, that enables learners to transfer their learning both within and across subject or interest domains). Such elements are described in the work of Bransford et al. (2000), and Vygotsky (1978).
- Cognitive (aspects concerned with the impact of information or external stimuli on the internal mind, the forms of sensory stimuli used to engage learners, the ways in which information is handled within an existing internal information context, and the ways in which a learner can demonstrate or use the learning that has been acquired). Cognitive elements are described in the work of Bloom (1956), Child (1973), Gardner (1991), and the DfES (2006).
• Metacognitive (aspects that are concerned with the ways that the learner learns to learn, and uses those elements within a learning environment to allow learning strategies to be identified, adopted, or chosen, or for information or knowledge to be transferred from one scenario or situation to another). Elements are described in the work of Presseisen (2001).

• Motivational (aspects that are concerned with the ways in which information is perceived, and the feedback that a learner gains in order to recognise that learning is useful, worthwhile, or leading in directions of personal and appropriate choice). Elements are described in the work of Passey and Rogers (2004).

• Social (aspects concerned with the ways in which the learner interacts with others, within classroom environments as well as in home or other external environments, and the forms of interaction that allow a learner to access or use information, as well as to share it, or to work co-operatively with others). Elements are described in the work of Vygotsky (1978), Lave and Wenger (1991), and Twining et al. (1999).

• Societal (aspects concerned with the ways in which purposes of learning are perceived, the reason that certain information might be selected and recognised as being more fundamentally interesting or useful than other information, perhaps because it can be used within a particular societal, cultural or wider environmental context). Elements are described in the work of Lipman (1995), McFarlane (1997), and Moseley et al. (2005).

Learning domains and learning experiments
Current research into these five learning domains gives strong pointers about the types of practice that are worthy of experiment (or at least identifying in terms of their being covered in practice). In terms of learning experiments of the type reported here, some key aspects to consider are:

• In megacognitive terms, whether students are able to gain ‘Big Pictures’ of what they are doing and why they are learning particular skills or knowledge, whether they are able to work from their existing points of capability to new points, and whether they are encouraged and able to transfer their learning from other places and asked to consider where they would use it beyond.

• In cognitive terms, whether students are able to internalise ideas and knowledge, through a variety of sensory routes, whether they are able to process subject knowledge and skills, handle knowledge at a variety of different levels, work creatively, use different thought processes, form concepts, reconstruct ideas, retain, recall and memorise knowledge, and make others aware of their new levels of understanding and skills.

• In metacognitive terms, whether students are able to monitor their task performance, and select and understand appropriate strategies to use.

• In motivational terms, whether students are able to recognise and achieve learning goals, know they have the abilities to draw on, recognise the value of the work they are doing, have interest in what they are doing, work in collaborative ways, and not avoid trying ideas and strategies.

• In social terms, whether students are able to gain from instruction, explanation, illustration, direction, engage in discussion, have work scaffolded appropriately for them, be able to question, speculate, consolidate, summarise, and explore.

• In societal terms, whether students are able to consider the purpose of the work they are doing, in terms of future educational, citizenship, work, or recreational needs, or whether they are concerned with developing practice that has caring purpose, or offers them wider caring understanding.

It was the purpose of this research and evaluation study, therefore, to consider this particular learning experiment in the context of our current understanding of effective learning and teaching practice.

How this report is structured
The remaining sections of this report cover, in section order:

• An overview summary of findings and conclusions (Section 2).

• An introduction to the design and aims of ‘The Big Experiment’ (Section 3).

• Details about the educational focus and evaluation design (Section 4).

• Findings arising from the study (Section 5).

• Issues raised by the findings (Section 6).

• Conclusions drawn and suggestions offered (Section 7).
2. Executive summary and recommendations

Opportunities
City Learning Centres (CLCs) were established as centres of learning innovation, placing them at the forefront of educational exploration using technology to support learning. The ‘Big Experiment’ has met this intention fully; the ‘Big Experiment’ initiative has provided a unique opportunity for schools and young people in the locality to be involved in using information and communication technologies (ICT) to support learning (what is currently defined as e-learning) in settings that contrast strongly with those normally accessible within schools. The CLC has enabled a range of students to work within a large work area, in a variety of rooms with a range of facilities, offering space to explore and to think, enabling group and collaborative approaches to be adopted in ways that a school might not be able to easily provide.

The students involved (forty year 9 students from across eight schools), reported positively, overall, on their experiences across the two week initiative. Although some approaches, sessions and activities worked more successfully than did others, it was clear from responses that many students welcomed this opportunity and felt they gained as a consequence.

Overarching achievement
From student reports and reports from teachers and tutors, it was apparent that the initiative succeeded in providing what could be called a ‘real’ experience. Students valued being able to work in ‘real’ ways (as they might in a work environment), using ‘real’ tools (as they might in a work environment), on ‘real’ tasks (as they might for work or for recreation), for ‘real’ purpose (as they might do to fulfil their interests, ambitions or social desires), in ‘real’ areas (where a great deal of space to work and think was provided), and using ‘real’ approaches (discussing and negotiating work plans and outcomes as they might in a work or social environment). The event offered students more choice than they might encounter in a school environment; choice of activities, where to work, and how to work, were all possible on a range of occasions across the two week event.

Contributions of ICT
The variety of forms of ICT used throughout the event (including personal laptop computers, a video and audio recording studio, and wireless internet access), according to reports and observations, supported a range of aspects of learning. The ICT enabled students to:

- Work in a Zone of Proximal Development, being able to relate to skills and approaches already known, and to develop skills further, supported by both tutor and peer practices.
- Transfer their learning into an environment that enabled them to structure and present outcomes for other audiences.
- Engage through media that were of interest to them, and to be receptive to those ideas.
- Provide access to knowledge and ideas through visual, auditory, kinaesthetic, emotional, and social routes.
- Search for information, and to generate and develop ideas according to their interests and choices.
- Imagine possibilities that could be realised through the uses of the media.
- Gain skills and understanding concerned with the ICT and a range of other topics.
- Apply knowledge and ideas within a different medium, and to reconstruct them into different forms.
- Analyse and evaluate outcomes, supported by ease of sharing and review with peers and others.
- Synthesise ideas by bringing them together through forms offered by the media.
- Act creatively, by being able to review, amend, and consider purpose and audience when constructing individualised outcomes.
- Make enquiries easily of others, through a range of different communication facilities.
- Conceptualise through forms of direct visualisation rather than transferred visualisation.
- Compare outcomes easily with others.
- Produce outcomes in written and visual forms, as well as in forms concerned with reporting to others, and presenting to audiences.
In common with other ICT-based projects, the ICT has supported students involved in project and simulation work by supporting access to ‘real-life’ and ‘real-world’ environments. The importance of this form of support was highlighted by both Bonnett and McFarlane (1997), who talk about the role of ICT in supporting ‘authentic’ learning. They describe this as a ‘subjective’ aspect of learning that engenders educative emotion or empathy, an integration of aspects such as bringing ‘real-life’ feeling to learning, bringing ideas of undertaking learning directly to the learner experience, offering experiential learning and an ownership of learning together.

Motivations arising
Investigation of the motivational characteristics of the students before and after the experimental intervention revealed a number of outcomes. At the outset, the group of students as a whole were characterised as having positive forms of motivation with a strong mastery of motivational goals, good levels of self efficacy, low levels of the maladaptive performance avoidance goals and with a reasonably strong commitment to the internal regulation of their behaviour. As the short intervention progressed, these patterns, not surprisingly, showed relatively slight change overall, but those changes that were detected were of a positive nature. In particular, students came to see the CLC environment as being relatively more encouraging of mastery goals at the end of the intervention (primarily through a decrease in perceived teacher performance goals) and they reported higher levels of intrinsic motivation leading to further strengthening of the tendency to internally regulate their behaviour.

It is of course an open question as to whether these effects will be sustained, further strengthened, or indeed reduced by a longer period of intervention and a greater time period between assessments of the students’ motivational characteristics.

Particular successes
The sessions which were most successful, judged by student involvement, teacher reports and independent observation, and which could be run again without major amendment were:

- Introductory sessions on video camera work, the Garage Band, photography and publishing, and animation.
- The Blackpool geography task.
- Plate tectonics.
- ‘A different life’.
- Music development.
- ‘Stardome’ (space).
- Nintendo ‘Wii’ in sport.
- The emergency planning simulation.
- The Montserrat simulation.
- The fair-trade game.

The sessions which could be run with some amendments are:

- The Golden Record task.
- The alien project.
- The history of Blackpool.

Providing students with a ‘Big Picture’
The ‘Big Experiment’ was established with the intention of seeing what outcomes might arise, and, as a consequence, students were not offered specific goals, targets, or given a ‘Big Picture’ of overall
intentions, what was intended, or what might be gained across the period of the event. The consequences of not providing a ‘Big Picture’ became more apparent across the two week period. A lack of monitoring of learning gains, a lack of tracking of what had been achieved and what else might be achieved, a lack of focus on completion of work items, and a lack of reflective opportunity, all became increasingly apparent. To address limitations arising from the lack of these elements within the programme, and to increase the range and quality of outcomes and achievements for students involved, it is recommended that these elements be included in any further events of this nature.

There are two different aspects to consider: the first is the need for an event of this nature to provide challenge and for expectations to be high; the second is the need for students to be able to know why they are involved, and how to monitor their own expectations and achievements. A ‘Big Picture’ provides for the latter of these two aspects, and could be constructed in a number of ways:

- A list of aims or identification of purpose that is always obvious and accessible to students.
- A spider diagram or mind map to show features of intentions and linkages that students could plot and review as time goes on.
- A pictorial diagram with items that students can check at various times and points.

Three web-based examples (Figures 1 to 3 following) are offered as ways that this form of provision might be approached. These examples do not include the forms of audio and moving imagery that are found on the sites themselves, but they do indicate how intention, purpose, and what is likely to be involved for a user, can be shown in an accessible form. As the user progresses further into each of the three environments shown, so the level of detail becomes finer, the user is introduced to the ‘Big Picture’ in layers, and can move backwards and forwards between those layers to achieve particular outcomes, to gather ideas or skills, and to review overall participation and achievement.

Figure 1: Example 1 of approaches to offer a ‘Big Picture’. (Source: http://geoterra.ecomagination.com/indexFlash.html#Homepage)
Figure 2: Example 2 of approaches to offer a ‘Big Picture’. (Source: http://www.honoloko.org/Honoloko.html)

Figure 3: Example 3 of approaches to offer a ‘Big Picture’. (Source: http://www.sciencemuseum.org.uk/exhibitions/energy/index.asp)
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It is recommended that this form of ‘Big Picture’ be created for students involved in future events of this nature. Having a ‘Big Picture’ in web-based form would enable students to be involved directly in self-review and monitoring, as well as enabling teachers and tutors to access these details to support at individual and group levels.

Recommendations
The CLC facility has the potential to offer further opportunities for schools and students to benefit from this form of initiative. It is recommended that:

• Such initiatives are run regularly for groups of students from across schools, but for 3 weeks rather than 2 weeks.
• An event is run every half term, either for students in year 8 or in year 9 (dependant upon the time of the year that students would most easily be able to attend in terms of other commitments).
• The selection of students for each event be specifically considered, so that activities and practices can be tailored to the specific needs of the group where deemed appropriate.
• The events include higher levels of professional support to develop group work by students. Opportunities might be needed to allow more fluid movement of students at certain times.
• The events provide students with a ‘Big Picture’, showing what is being covered, why, and allowing them to monitor their movement, progress and successes during the period of the event.
• Activities focus more on the need for students to identify existing knowledge and skills, and to consider how they might use the knowledge and skills they gain in the future.
• More time and opportunity is allowed to reflect on learning, and the achievements that have arisen at different times. More encouragement to use the video diary would fulfil elements of this need.
• More time is provided and more focus is maintained on the completion of outcomes.
• Opportunity for students to teach others is encouraged more.
• Activities concerned with art, dance, drama, design and photography are encouraged more, with a focus on the uses of ICT to support creative dimensions.
3. Background to ‘The Big Experiment’

Background
Blackpool City Learning Centre (CLC) established ‘The Big Experiment’ because of its concern that a number of key current innovative developments in educational practice across England should be adequately supported by access to sufficient examples of practice, ideas for implementation, and that those examples should be supported by research and evaluation findings and outcomes. In the context of building new schools, innovating in terms of curriculum models, and developing teaching and learning practice using information and communication technologies (ICT) in the context of home and school learning, Blackpool CLC set up an innovative development to explore needs and outcomes.

Aims and intentions of the project
As stated on their web-site, from June 25th to July 6th 2007 Blackpool CLC: “will be turning the CLC into the school of the future. Using the best of current modern technology we will be experimenting with how it can affect learning and teaching (if at all!) by combining it with innovative curriculum models, timetable design and current best practice” (Blackpool CLC, 2007). This initiative was called ‘The Big Experiment’.

The stated aims of ‘The Big Experiment’ (Blackpool CLC, 2007) were to:
- “Explore a variety of curricular models using ICT if necessary and appropriate.
- “Remove barriers to learning that might be found in:
  o the curriculum.
  o lesson time constraints.
  o shortage of resources.
  o addressing learning styles.
- “Provide learning activities and opportunities that allow:
  o students and teachers to work collaboratively.
  o students to make creative choices on learning outcomes.
  o learning and teaching activities to be co-constructed to provide students with a sense of shared ownership of their learning.
  o challenge – let’s take risks!
  o flexibility – a curriculum model that responds and adapts as needs arise and become apparent.
- “Develop thinking skills to
  o allow students to understand how they are learning (metacognitive reflection).
  o apply Bloom's taxonomy as a consistent template across the scheme and encourage the development of higher level thinking skills”.

The structure of the project
The overall theme for the 2 week event was ‘Life’. Sub-themes for the 2 week initiative initially considered were (Blackpool CLC, 2007):
- “My life:
  o Video diary, or digital record.
  o A day in the life of.
  o Discovering ourselves (surveys, design).
  o Our bodies - transforming using digital morphing techniques (Morph?).
  o Design a building using Google ‘Sketchup’ and place it in Google Earth.
  o Threats to my world (substance misuse - alcohol, cannabis, tobacco, STI’s, unplanned pregnancy).
- “World Life:
  o Links to another country?
  o 3D Warehouse- houses in different cultures.
  o Google Earth.
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- “Future Life:
  o Life on an alien world (Anim8or, Terra Gen and Chromakey background, Poser 5 etc).
  o Star Lab.
- “Past Life:
  o Blackpool in the past.
  o War and life.”

Initial thoughts about activities for the 2 week initiative were (Blackpool CLC, 2007):
- Science Challenge Day.
- Montserrat volcano video conference.
- Space (‘Stardome’).
- Video Diary.
- Guardian Newsmaker/ Channel 4 Breaking the News.
- Sporting Activity (Nintendo ‘Wii’, Dance mats).
- Art based activity - animation/ photography.
- Use of video archive (Pathe?) D-day landings etc.
- Preparing the school presentation.
- Local focus - a simulation of coastal flooding emergency/ J3 relief road.

It was envisaged that the first 2 days would be more structured than the remaining 8 days. The activities across the 2 week period might have been run as taught sessions, exploratory sessions, or discovery sessions, and for different lengths of time (from 10 minutes to 4 hours). ‘The Big Experiment’ focused on a number of project-based activities, without a specific timetable on certain occasions. Student work at home was supported, so that students could decide for some activities or elements of activities to work at home or elsewhere, rather than in the Blackpool CLC directly.

The final timetable of activities for the 2 weeks is detailed below.

<table>
<thead>
<tr>
<th>Day 1</th>
<th>9.00-9.30</th>
<th>Introduction</th>
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<tbody>
<tr>
<td>9.30-9.45</td>
<td>Tour of the CLC</td>
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<tr>
<td>9.45-10.15</td>
<td>4 parallel sessions:</td>
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<td></td>
<td>Video camera work</td>
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<td></td>
<td>Garage Band</td>
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<td></td>
<td>Photography and publishing</td>
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<td></td>
<td>Animation</td>
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<td>10.15-10.45</td>
<td>4 parallel sessions:</td>
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<td></td>
<td>Video camera work</td>
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<td>Garage Band</td>
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<td>Photography and publishing</td>
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<td>Animation</td>
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<tr>
<td>10.45-11.00</td>
<td>Coffee break</td>
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<tr>
<td>11.00-11.30</td>
<td>4 parallel sessions:</td>
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<td></td>
<td>Video camera work</td>
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<td></td>
<td>Garage Band</td>
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<td></td>
<td>Photography and publishing</td>
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<td>Animation</td>
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<tr>
<td>11.30-12.00</td>
<td>4 parallel sessions:</td>
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<tr>
<td></td>
<td>Video camera work</td>
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<td></td>
<td>Garage Band</td>
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<td>Photography and publishing</td>
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<td></td>
<td>Animation</td>
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<tr>
<td>12.00-1.00</td>
<td>Lunch</td>
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<tr>
<td>1.00-3.00</td>
<td>The Golden Record Task</td>
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<thead>
<tr>
<th>Day 2</th>
<th>9.00-12.00</th>
<th>Alien project (part 1)</th>
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<tbody>
<tr>
<td>12.00-1.00</td>
<td>Lunch</td>
<td></td>
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<tr>
<td>1.00-3.00</td>
<td>Blackpool Geography task</td>
<td></td>
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</tbody>
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### Table 1: Timetable of events

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>Day 3</td>
<td>9.00</td>
<td>12.00 5 options where students choose the order they attend:</td>
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<tr>
<td></td>
<td></td>
<td>• Aliens task (part 2)</td>
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<td></td>
<td></td>
<td>• Plate tectonics</td>
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<td></td>
<td></td>
<td>• Study time</td>
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<tr>
<td></td>
<td></td>
<td>• ‘A Different Life’</td>
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<td></td>
<td></td>
<td>• Music development</td>
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<td></td>
<td>12.00</td>
<td>Lunch</td>
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<td></td>
<td>1.00</td>
<td>3.00 5 options where students choose the order they attend:</td>
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<td></td>
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<td>• Aliens task (part 2)</td>
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<td>• Plate tectonics</td>
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<td>• Study time</td>
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<td></td>
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<td>• ‘A Different Life’</td>
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<td></td>
<td></td>
<td>• Music development</td>
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<tr>
<td>Day 4</td>
<td>9.00</td>
<td>1.00 Working from home</td>
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<td></td>
<td>1.00</td>
<td>2.10 3 parallel sessions:</td>
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<tr>
<td></td>
<td></td>
<td>• ‘Stardome’ (space)</td>
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<td></td>
<td></td>
<td>• Alien project (part 3)</td>
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<td></td>
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<td>• History of Blackpool</td>
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<td></td>
<td>2.10</td>
<td>3.20 3 parallel sessions:</td>
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<td>• ‘Stardome’ (space)</td>
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<td>• History of Blackpool</td>
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<td>3.20</td>
<td>4.30 3 parallel sessions:</td>
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<td>• Alien project (part 3)</td>
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<td>• History of Blackpool</td>
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<td>4.30</td>
<td>5.00 Working meal</td>
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<td>5.00</td>
<td>6.00 Preparation for presentations</td>
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<td>6.00</td>
<td>7.00 Presentations for parents and carers</td>
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<tr>
<td>Day 5</td>
<td>9.00</td>
<td>10.15 2 parallel sessions:</td>
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<tr>
<td></td>
<td></td>
<td>• Nintendo ‘Wii’ in sport</td>
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<td></td>
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<td>• Global warming</td>
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<td></td>
<td>10.15</td>
<td>11.30 2 parallel sessions:</td>
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<td>• Nintendo ‘Wii’ in sport</td>
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<td>• Global warming</td>
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<td>11.30</td>
<td>12.30 Lunch</td>
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<tr>
<td></td>
<td>12.30</td>
<td>1.30 Study time</td>
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<tr>
<td></td>
<td>1.30</td>
<td>3.00 ‘The Day after Tomorrow’</td>
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<tr>
<td>Day 6</td>
<td>9.00</td>
<td>12.00 Emergency planning preparation and research session</td>
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<td>12.00</td>
<td>1.00 Lunch</td>
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<td></td>
<td>1.00</td>
<td>5.00 Emergency planning simulation</td>
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<td>Day 7</td>
<td>9.00</td>
<td>12.30 2 parallel sessions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Montserrat simulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Making an interactive computer game</td>
</tr>
<tr>
<td></td>
<td>12.30</td>
<td>3.00 Working from home on set task – ‘A day in the life of’ using ‘Comic Life’ software</td>
</tr>
<tr>
<td>Day 8</td>
<td>9.00</td>
<td>3.00 Science day at a local school</td>
</tr>
<tr>
<td>Day 9</td>
<td>9.10</td>
<td>9.40 ‘A Guide to the Best way to Teach Me’</td>
</tr>
<tr>
<td></td>
<td>10.00</td>
<td>3.00 Preparation for presentations</td>
</tr>
<tr>
<td>Day 10</td>
<td>9.00</td>
<td>12.00 Preparation for presentations</td>
</tr>
<tr>
<td></td>
<td>12.00</td>
<td>1.00 Lunch</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>3.00 Presentations and finish</td>
</tr>
</tbody>
</table>

Department of Educational Research, Lancaster University
Managing and running the project
The initiative was managed and run by the Blackpool CLC manager and three of the centre’s teaching staff, together with two teachers seconded from two of the secondary schools involved in the project (although for personal reasons one of these teachers was not able to attend beyond the first week and was not replaced). ‘The Big Experiment’ was run in collaboration with 8 high schools in Blackpool, with 5 students from each school. Students in year 9 (post-SATs) were selected by interview, and were not selected on the basis of any designated criteria concerned specifically or solely with academic performance or attainment. It was recognised that students from different schools might need support in finding out how to work together.

Key personnel met initially with students during May 2007. The group of 5 students in each school discussed curriculum plans with key personnel, and had the opportunity to provide ideas about envisaged lesson outcomes. Key personnel devised the objectives. A number of local authority (LA) colleagues in the Learning and Achievement team were involved in the planning. When the technology (laptops) was distributed to students, all students and key personnel met together. Not all the students had home broadband access (although it was anticipated that this could be arranged).

Blackpool CLC set up a wiki specifically to support the initiative. This allowed those involved to work and construct ideas collaboratively and co-operatively, as well as providing a useful source of information and contact. Students were involved in a team building session prior to the 2 week event, and they were all given a ‘Big Experiment’ t-shirt to wear (to help to develop team spirit).

The Blackpool CLC manager described the technological background of the event as follows: “From a week before the event, and for the duration of the event, each of the 40 students were loaned a wireless-enabled Mac Book laptop which they could use at home. Every laptop was pre-loaded with the following software:

- iMovie - a video capture and editing program.
- iTunes - a music and sound file management and playback program.
- iPhoto - an image manipulation program.
- Google ‘Sketchup’ – a basic architectural design program that allowed users to design buildings.
- ‘Skype’ - a communications program that allowed users to contact each other through text, instant messaging, voice and video.

“In addition, students were able to book access to digital cameras, DV camcorders, sound recorders, PC laptops, a radio studio and a television studio for projects they were working on. They were able to use their own mobile telephone at any time, and students were allowed to take portable equipment home if they wished to. The CLC building had a robust wireless network covering all parts of every room, and every student could access a shared drive, monochrome and colour printers.

“It was planned that those students without home internet access would have it provided through the use of a 3G USB wireless modem from Vodafone for the duration of the project. However, this proved difficult to set up in practice, and did not in the end take place.”
4. Educational focus and evaluation design

Key educational features of the project
‘The Big Experiment’ was intentionally designed to integrate a number of key features. Some key elements of the initiative were:

- The work undertaken by students would be project-based.
- Home or outside-centre work would be involved as well as work undertaken within the centre.
- Outcomes would be focused on creativity and presentation, rather than just content.
- Content was a starting point rather than an end point.
- Student voice would be integrated across the initiative.
- Students would be able to develop a video diary by recording elements in a video diary room.
- Each student would be provided with a laptop and mobile telephone (ultimately only the laptop was able to be provided).

The thinking behind the initiative, and the intentions considered, related strongly to a number of key aspects highlighted by authors in the research literature concerned with expert and higher order thinking and learning. The key aspects of particular interest in this project were (as highlighted by Bransford et al., 2005; Vygotsky, 1978; Bloom, 1956):

- Students should gain a ‘Big Picture’ of approaches to learning, using and developing content, associated with project-based work and presentation of learning for the benefit of others.
- Students would be encouraged to transfer learning, identifying existing learning that could be brought to bear, and considering how to transfer learning for other purposes.
- Students would be provided with opportunities to develop their knowledge, skills and practices from their own starting positions, to more developed positions.
- Students would be asked to focus on higher order, as well as lower order, thinking skills.

Evaluation and research design
An issue for the evaluation was to identify what would change over time, and what impact it might have. Elements that the evaluation agreed to cover were:

- The selection of students.
- Questionnaires to identify student interests, learning styles, and their perceptions of current learning barriers.
- The form and outcomes of planning meetings, their intentions and aims.
- How participation was set up.
- How activities were run.
- Ideas of involvement, before, during, and after the 2 week event.
- Identification of outcomes, including surprises and disappointments.

Using these elements, the evaluation and research study was designed to gather evidence about:

- How students were selected, their interests, their perceptions of their abilities in certain subject or topic areas, learning styles, and their perceptions of current learning barriers (this evidence was gathered through questionnaires prior to the 2 week event).
- The form and outcomes of planning meetings, their intentions and aims (this evidence was gathered through discussions with key personnel).
- How activities were run (this evidence was gathered through direct observation, video capture, and discussion with students and key personnel).
- Ideas of involvement, before, during, and after the 2 week event (this evidence was gathered through direct observation, short daily questionnaires during the 2 week event, and discussion with students and key personnel).
- Identification of outcomes, including use, influence and application of subject content within project outcomes, outcomes at levels of analysis and synthesis, surprises and disappointments (this evidence was gathered through direct observation and discussion with students and key personnel).
Evidence was gathered at different times in a range of ways:

- Discussion with key personnel.
- Reviews of the web site resources and wiki.
- Short questionnaires completed by students on each of eight days of the event.
- Motivation questionnaires completed by students prior to the event and immediately afterwards.
- Observation throughout the entire event.
- Interviews with a range of students.
- Interviews with a range of teachers and mentors.

Key issues were identified, and a focus on these was afforded through different forms of evidence gathering techniques. Specific questions were identified to capture evidence to inform each key aspect. The relationship of key questions, forms of evidence gathering, and key issues are shown in the table following.

<table>
<thead>
<tr>
<th>Key points and sub-topics</th>
<th>Points to consider within the observation schedule</th>
<th>Questions to ask when interviewing teachers and advisers</th>
<th>Questions to ask when interviewing students</th>
<th>Questions to ask of students in end-of-day questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Implications for buildings</strong></td>
<td>When does the activity start and end? What is the purpose of the activity?</td>
<td>How do you think the session (the project) has gone (is going)? What do you think is the purpose of the session (the project)?</td>
<td>What do you think was the purpose of this session (activity)?</td>
<td>-</td>
</tr>
<tr>
<td>How participation is set up</td>
<td>How do students participate? For what lengths of times are students involved in listening, watching, writing, or developing ideas?</td>
<td>Do you think that students are being encouraged to participate? If so, how do you think this is being done?</td>
<td>Do you feel you are able to participate enough in the activity?</td>
<td>-</td>
</tr>
<tr>
<td><strong>Implications in the context of building schools</strong></td>
<td>What types of room or rooms are used? Could this activity be done in a standard classroom?</td>
<td>Do you think this session (this project) could be run in standard classrooms or school rooms?</td>
<td>-</td>
<td>Do you think this session (project) could be run in standard classrooms or school rooms?</td>
</tr>
<tr>
<td>How student voice is integrated across the initiative</td>
<td>How are students being listened to? How much focus is on student voice?</td>
<td>Do you think that student voice is being encouraged sufficiently?</td>
<td>-</td>
<td>Do you feel your views and ideas are being listened to enough?</td>
</tr>
<tr>
<td>Students to develop a video diary by recording elements in a video diary room</td>
<td>Do students use the video diary room in this session? Could this be done in a standard classroom?</td>
<td>Do you think the video diary room is a useful idea?</td>
<td>What are you using the video diary for? How is it helping your learning?</td>
<td>Do you think the use of the video diary is a good idea?</td>
</tr>
<tr>
<td>Each student to be provided with a laptop and mobile telephone</td>
<td>How much space does a laptop and mobile take up? Could this equipment be housed in a</td>
<td>Do you think the laptop and mobile are being used to support learning effectively?</td>
<td>How is the laptop helping your learning? How is the mobile helping your learning?</td>
<td>-</td>
</tr>
<tr>
<td>Key points and sub-topics</td>
<td>Points to consider within the observation schedule</td>
<td>Questions to ask when interviewing teachers and advisers</td>
<td>Questions to ask when interviewing students</td>
<td>Questions to ask of students in end-of-day questionnaires</td>
</tr>
<tr>
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<td>-------------------------------------------------</td>
</tr>
<tr>
<td>How to construct and include ICT so that schools can operate effectively in the context of revised curriculum and working opportunities</td>
<td>How is ICT included in the session? What is ICT being used for?</td>
<td>How do you think ICT is being used to support teaching?</td>
<td>Do you use ICT much to help you?</td>
<td>-</td>
</tr>
<tr>
<td>Ideas of levels of forms of involvement during the 2 week event</td>
<td>Do students appear to be involved? If so, what gives this impression?</td>
<td>-</td>
<td>Do you feel involved sufficiently?</td>
<td>Do you feel involved sufficiently?</td>
</tr>
<tr>
<td>Implications for the curriculum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The selection of students</td>
<td>-</td>
<td>Do you think the selection of students has helped this pilot?</td>
<td>How were you selected for this project?</td>
<td>-</td>
</tr>
<tr>
<td>Students to be involved in a team building session prior to the 2 week event</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Did the team building session prior to this event help you?</td>
</tr>
<tr>
<td>It is hoped to develop team spirit</td>
<td>Do students appear to be working as a team?</td>
<td>Do you think students are working as a team?</td>
<td>-</td>
<td>Do you feel you are working in a team?</td>
</tr>
<tr>
<td>Innovating in curriculum models</td>
<td>Did anything set it apart from being able to run in a standard school curriculum?</td>
<td>Does anything set this session (or project) apart in curriculum terms?</td>
<td>How is this session (project) different from school based lessons and activities?</td>
<td>Is this session (project) different from school based lessons and activities?</td>
</tr>
<tr>
<td>Innovating in the context of home and school learning</td>
<td>Did all students attend the session? Were some students at home or elsewhere during this session?</td>
<td>How do you think home or out-of-school learning works in the context of this session (project)?</td>
<td>How does time at home help you to work on the project more effectively?</td>
<td>Are you using time at home to work on this project?</td>
</tr>
<tr>
<td>Innovative timetable design</td>
<td>-</td>
<td>Do you think that the timetable of this project sets its apart from a standard school context?</td>
<td>What makes the timetable different from that in school?</td>
<td>Does the timetable work for you?</td>
</tr>
<tr>
<td>Removing barriers to learning that might be found in the curriculum</td>
<td>-</td>
<td>Do you think this session (project) removes barriers in curriculum terms in any ways?</td>
<td>Why do you think this project is different from subject lessons in schools?</td>
<td>Is this project different from subject lessons in school?</td>
</tr>
<tr>
<td>Removing barriers to learning that might be found in lesson time constraints</td>
<td>Did students appear to have enough time to gain anticipated learning outcomes?</td>
<td>Do you think this session (project) removes barriers that lesson time constraints might offer?</td>
<td>How does the timing of sessions in this project help you to learn better?</td>
<td>Do lessons in schools give you enough time to learn?</td>
</tr>
<tr>
<td>Removing barriers to learning that might be found in shortage of resources</td>
<td>Did students appear to have sufficient resource to gain anticipated learning outcomes?</td>
<td>Do you think this session (project) provides sufficient resources to support anticipated learning outcomes?</td>
<td>What resources do you have that you would not normally have in lessons or activities in schools?</td>
<td>Do you feel you have sufficient resources to learn?</td>
</tr>
<tr>
<td>Key points and sub-topics</td>
<td>Points to consider within the observation schedule</td>
<td>Questions to ask when interviewing teachers and advisers</td>
<td>Questions to ask when interviewing students</td>
<td>Questions to ask of students in end-of-day questionnaires</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>---------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>The overall theme for the 2 week event is ‘Life’</td>
<td>Was the topic of the session appropriate and reflected in student interest?</td>
<td>Do you think that the topic of the session (project) is appropriate and is reflected in student interest?</td>
<td>How does the overall theme of the project engage you in learning?</td>
<td>Is the overall theme of the project interesting and useful?</td>
</tr>
<tr>
<td>It is envisaged that the first 2 days will be more structured than the remaining 8 days</td>
<td>To what extent was this session structured?</td>
<td>Do you think this session was sufficiently structured?</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>These activities might be run as taught sessions, exploratory sessions, or discovery sessions</td>
<td>What type of session was it – taught, exploratory, discovery, other?</td>
<td>-</td>
<td>Have sessions taken approaches to teaching that you would not normally encounter in school?</td>
<td>Have you felt that you have been taught enough in sessions?</td>
</tr>
<tr>
<td>They are likely to run for different lengths of time (from 10 minutes to 4 hours)</td>
<td>How long did the session run?</td>
<td>-</td>
<td>Was this session long enough?</td>
<td>Did you have enough time to do what you needed to do?</td>
</tr>
<tr>
<td>The initiative is being managed and run by the Blackpool CLC manager and three centre staff, together with two teachers seconded from two of the participating secondary schools</td>
<td>How many staff were present? Were they all teachers, or were some observers?</td>
<td>-</td>
<td>How have teachers helped you in sessions or activities?</td>
<td>Have teachers given sufficient help in sessions or activities?</td>
</tr>
<tr>
<td>Student work at home will be supported</td>
<td>-</td>
<td>-</td>
<td>How has work at home been supported?</td>
<td>Has work at home been supported enough?</td>
</tr>
<tr>
<td>Students could decide for some activities or elements of activities to work at home or elsewhere, rather than in the Blackpool CLC directly</td>
<td>-</td>
<td>-</td>
<td>How has working at home helped you?</td>
<td>Have you been able to decide which sessions or activities you would do at home?</td>
</tr>
<tr>
<td>The work being undertaken by students will be project-based</td>
<td>-</td>
<td>-</td>
<td>What do you think a project-based approach offers you that a school curriculum does not?</td>
<td>-</td>
</tr>
</tbody>
</table>

**Implications for teaching and learning**

<p>| Current best practice | Did the session appear to be founded on best practice? If so, what gave this impression? | - | - | - |
| Remove barriers to learning that might be found in addressing learning styles | Did the session cover a range of learning styles – textual, visual, auditory, kinaesthetic, social, other? | Did the session (project) appear to cover an adequate range of learning styles? | How do you think your learning style has been accommodated? | Do you feel your learning style is being accommodated? |</p>
<table>
<thead>
<tr>
<th>Key points and sub-topics</th>
<th>Points to consider within the observation schedule</th>
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<th>Questions to ask when interviewing students</th>
<th>Questions to ask of students in end-of-day questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide learning activities and opportunities that allow students and teachers to work collaboratively</td>
<td>Did students and teachers work collaboratively? If so, for how long?</td>
<td>Do students and teachers appear to be working collaboratively?</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Provide learning activities and opportunities that allow students to make creative choices on learning outcomes</td>
<td>Were students encouraged to take creative approaches? If so, how was this done?</td>
<td>Do you think that students are being encouraged to be creative?</td>
<td>How do you feel you are being asked to be creative?</td>
<td>Do you feel you are being asked to be creative?</td>
</tr>
<tr>
<td>Provide learning activities and opportunities that allow learning and teaching activities to be co-constructed to provide students with a sense of shared ownership of their learning</td>
<td>Did students appear to own their learning and the learning outcomes?</td>
<td>Do you think students are gaining ownership of their learning?</td>
<td>Why do you feel you enjoy doing the work on this project?</td>
<td>Do you enjoy doing the work on this project?</td>
</tr>
<tr>
<td>Provide learning activities and opportunities that allow challenge</td>
<td>Did students appear to be challenged?</td>
<td>Do you think students are being adequately challenged?</td>
<td>What is it that makes you feel you are being challenged?</td>
<td>Do you feel challenged?</td>
</tr>
<tr>
<td>Provide learning activities and opportunities that allow flexibility</td>
<td>Did the session allow flexibility? If so, in what ways?</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Develop thinking skills to allow students to understand how they are learning (metacognitive reflection)</td>
<td>Did students gain understanding about how they were learning? If so, in what ways?</td>
<td>Do you think students are learning how to learn?</td>
<td>How do you feel you are learning how to learn better?</td>
<td>Do you feel you are learning more about how to learn as well as what to learn?</td>
</tr>
<tr>
<td>Develop thinking skills to allow students to apply Bloom's taxonomy as a consistent template across the scheme and encourage the development of higher level thinking skills</td>
<td>Did students need to analyse, synthesise or evaluate? If so, to what extent and for what?</td>
<td>Do you think students are working at levels of higher order thinking and learning?</td>
<td>Can you give an example of something that you have been asked to analyse? Can you give an example of ideas that you have been asked to bring together?</td>
<td>-</td>
</tr>
<tr>
<td>Developing teaching and learning practice with information and communication technologies (ICT)</td>
<td>-</td>
<td>-</td>
<td>How have you used ICT to help you?</td>
<td>Do you think you have been asked to use ICT sufficiently?</td>
</tr>
<tr>
<td>Content is a starting point rather than an end point</td>
<td>Was content used as an end point, or as a starting point in this session?</td>
<td>Do you think students are learning sufficient content?</td>
<td>-</td>
<td>Do you feel you are learning enough content? Are you being asked to use content in other places?</td>
</tr>
<tr>
<td>The DfES interest is focused on aspects of e-learning and the personalisation of</td>
<td>Did ICT support certain aspects of learning?</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
## Blackpool CLC 'The Big Experiment' Evaluation

<table>
<thead>
<tr>
<th>Key points and sub-topics</th>
<th>Points to consider within the observation schedule</th>
<th>Questions to ask when interviewing teachers and advisers</th>
<th>Questions to ask when interviewing students</th>
<th>Questions to ask of students in end-of-day questionnaires</th>
</tr>
</thead>
<tbody>
<tr>
<td>learning</td>
<td>What do you think were the most successful aspects of this session?</td>
<td>What do you think is the most successful aspect of this session (project)?</td>
<td>What do you think has been the most successful aspect of this project?</td>
<td>-</td>
</tr>
<tr>
<td>Blackpool CLC will extend aspects of the project (perhaps the most successful aspects of the initiative)</td>
<td>Were students given a 'Big Picture' of what they were doing?</td>
<td>Do you think students are gaining a 'Big Picture' of what they are doing?</td>
<td>What do you think you are doing in this project?</td>
<td>Do you have a 'Big Picture' of what you are doing?</td>
</tr>
<tr>
<td>Learning outcomes</td>
<td>Were students encouraged to transfer their learning? If so, in what ways?</td>
<td>Do you think students are transferring their learning from other places and to other situations?</td>
<td>Can you give an example of how your are being asked to transfer your learning from one place to another?</td>
<td>Are you being asked to transfer your learning from one place to another?</td>
</tr>
<tr>
<td>Students will be encouraged to transfer learning, identifying existing learning that can be brought to bear, and considering how to transfer learning for other purposes</td>
<td>Were students encouraged to develop their knowledge, skills and practices?</td>
<td>-</td>
<td>-</td>
<td>Do you feel your learning has developed? Do you feel your learning has moved on from when you started?</td>
</tr>
<tr>
<td>Students will be provided with opportunities to develop their knowledge, skills and practices from their own starting positions, to more developed positions</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Do you feel you have to present your findings enough?</td>
</tr>
<tr>
<td>Students will be asked to focus on higher order, as well as lower order, thinking skills</td>
<td>Outcomes will be focused on creativity and presentation, rather than just content</td>
<td>Did students need to present findings and learning to others?</td>
<td>Does it help when you are asked to present your findings and your learning?</td>
<td>Do you feel you have to present your findings enough?</td>
</tr>
<tr>
<td>Each group of 5 students will have an obligation to produce a 20 minute presentation when they reflect on their experiences during the 2 weeks</td>
<td>Did learners need to reflect on their learning?</td>
<td>Do you think that students need to reflect on their learning adequately?</td>
<td>How difficult was it to create a presentation of your learning experiences?</td>
<td>-</td>
</tr>
<tr>
<td>Identification of outcomes, including surprises and disappointments</td>
<td>What would you say were the main outcomes of this session?</td>
<td>-</td>
<td>What do you think you have learned most from this experience?</td>
<td>Would you want to repeat this experience?</td>
</tr>
</tbody>
</table>

Table 2: Forms of evidence gathering through key questions to inform key issues
5. Findings

The learning environments
Students worked in three different learning environments during the course of this project; they used the entire array of rooms and facilities across the Blackpool City Learning Centre, their homes, and two school laboratories in a local secondary school. Each learning environment clearly had potentially widely different features:

- It was difficult to know the exact features that homes provided, but some feedback was gained from some students that provided some details about this aspect.
- The school laboratory environments provided specific environments where 40 students and a number of staff worked. Other students and staff were using other school facilities, and the external school grounds.
- The City Learning Centre offered students a very large working area, providing a number of rooms for 40 students and staff to work in. There are 12 listed rooms in the CLC, some with specific technological equipment, but all capable of enabling some level of group work. The spaciousness of the CLC was paralleled with large, open green spaces outside. For the duration of the project, general public access was limited to the computers in the cyber cafe, and the library. There was a large, open reception area, where staff could control access to certain corridor areas of the building.

There are implications in terms of how students used each of these environments, and how they worked in and adapted to each one. How easy it would be for students to move back to a school-based environment after having a large area of learning space accessible to them is a real question in itself, worthy of some level of exploration beyond the period of the two week event.

Student perceptions of outcomes each day
In order to gain student perceptions regularly about a range of issues that were felt to be pertinent at specific times during the two week period, students were asked to complete a short questionnaire (consisting of ten questions with only ‘yes’, ‘not sure’ or ‘no’ responses). Students were asked to complete one of these questionnaires each day, starting on the second day, and ending on the ninth day of the project. The purpose was to gain frequent feedback about their perceptions of what had happened, and what they had learned. It should be noted that these questionnaires were not designed in ways to provide a balanced set of questions from a methodological point of view; they were designed to capture wider perceptions about issues where evidence was being gathered in other ways (independent observation of sessions, student interviews, and teacher interviews). The collated responses from the questionnaires were intended to highlight those aspects that were reported with lower levels of certainty by the entire student population, rather than providing accurate indicators of student perceptions. The results of the questionnaire responses from each day are provided in this section.
From the responses to questions on day 2, it is clear that there were few ‘no’ responses offered. Questions where there were many ‘yes’ responses suggested that students felt:

- Sufficiently involved in the project.
- That this project was different from subject lessons in school.
- That the work was visual enough.
- The work stimulated the imagination.
- They were able to draw or create diagrams enough.
- They were gaining enough explanation and illustration.
- They would be able to use what they had learned in the future.
- The space available for working was important.

Students were not sure whether they had:

- Enough time to do what they needed to do.
- To give reasons for the work stimulating their imagination when they were doing this work.

From the latter responses, it seemed that students were not sure about their abilities with regards to time planning and organisational skills. It also seemed that students were not sure whether they were being asked about how they were being stimulated or how the activities were supporting their learning.
### Day 3 (n=39)

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of ‘yes’ responses</th>
<th>Number of ‘not sure’ responses</th>
<th>Number of ‘no’ responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you feel you are working in a team</td>
<td>35</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Does the timetable work well for you</td>
<td>35</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Have teachers given you sufficient help in sessions of activities</td>
<td>37</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Do you feel you are learning enough content</td>
<td>34</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Do you find that the work involves a lot of discussion with others</td>
<td>34</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Do you have to think about new ideas and concepts when you work on this project</td>
<td>33</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Do you feel you are writing enough</td>
<td>17</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Does this style of work hold you attention well</td>
<td>36</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Do you feel you are gaining enough instruction</td>
<td>35</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Do you think this experience will be useful in terms of your future recreation</td>
<td>32</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

**Table 4: Student responses to short questionnaire on Day 3**

Questions where there were many ‘yes’ responses from day 3 suggested that students felt:
- They were working in a team.
- The timetable worked well for them.
- Teachers had given sufficient help in sessions of activities.
- They were learning enough content.
- That the work involved a lot of discussion with others.
- They had to think about new ideas and concepts when they worked on this project.
- This style of work held their attention well.
- They were gaining enough instruction.
- This experience would be useful in terms of their future recreation.

Students were not sure whether they were writing enough. This could have been a comment that related to their expectation of what ‘learning work’ was about, rather than providing a view that they felt that writing would have helped them even more.

### Day 4 (n=39)

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of ‘yes’ responses</th>
<th>Number of ‘not sure’ responses</th>
<th>Number of ‘no’ responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you enjoyed the work you have done on this project today</td>
<td>38</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Do you feel your views and ideas are being listened to enough</td>
<td>32</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Do you think the use of the video diary is a good idea</td>
<td>31</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Do you think you have been asked to use ICT equipment sufficiently</td>
<td>37</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Do you find that the work involved enough direct activity</td>
<td>34</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Do you think you do enough searching for detail and information</td>
<td>31</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Does the work stimulate you to enquire about things</td>
<td>30</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Do you think this style of work helps you to memorise things better</td>
<td>32</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Do you get involved in a great deal of discussion</td>
<td>31</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Are you looking forward to tomorrow’s work</td>
<td>38</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Table 5: Student responses to short questionnaire on Day 4**
Questions where there were many ‘yes’ responses on day 4 suggested that students felt:
- They enjoyed the work they had done on that project day.
- Their views and ideas were being listened to enough.
- The use of the video diary was a good idea.
- They had been asked to use ICT equipment sufficiently.
- The work involved enough direct activity.
- They had done enough searching for detail and information.
- The work stimulated them to enquire about things.
- This style of work helped them to memorise things better.
- They got involved in a great deal of discussion.
- They were looking forward to the following day’s work.

There were no aspects where students displayed uncertainty as measured by levels of their responses.

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of ‘yes’ responses</th>
<th>Number of ‘not sure’ responses</th>
<th>Number of ‘no’ responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you feel sufficiently involved in the project</td>
<td>37</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Do you feel your own approaches to learning are being supported well</td>
<td>35</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Do you feel you are being asked to be creative</td>
<td>33</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Are you being asked to use the content you learn to do other things</td>
<td>29</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Do you find that there are enough resources using music or sound</td>
<td>30</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Do you ask more questions of other people than you would in other lessons</td>
<td>22</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Do you find you have to recall ideas and information more when you are doing this work</td>
<td>28</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Are you able to keep you place in this form of project work</td>
<td>32</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Do you have to speculate about possible ideas or ways forward</td>
<td>26</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Do you feel you know what you have learned today</td>
<td>34</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 6: Student responses to short questionnaire on Day 5

Questions where there were many ‘yes’ responses from day 5 suggested that students felt:
- Sufficiently involved in the project.
- Their own approaches to learning were being supported well.
- They were being asked to be creative.
- They were being asked to use the content they had learned to do other things.
- There were enough resources using music or sound.
- They had to recall ideas and information more when they were doing this work.
- They were able to keep their place in this form of project work.
- They know what they have learned that day.

Students were not sure whether:
- They asked more questions of other people than they would in other lessons.
- They had to speculate about possible ideas or ways forward.

From the latter responses, it seemed that students were not sure about the levels of discussion with other people where they were asking questions, rather than being involved in other forms of discussion perhaps. Students also indicated uncertainty as to whether they were speculating about ways forward,
which might have suggested they were undertaking trial and error approaches without thinking through implications or planning needs in advance.

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of ‘yes’ responses</th>
<th>Number of ‘not sure’ responses</th>
<th>Number of ‘no’ responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the timetable work well for you</td>
<td>30</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Is the overall theme of the project interesting and useful</td>
<td>27</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Have you felt that you have been taught enough in sessions today</td>
<td>30</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Do you feel challenged by what you are asked to do</td>
<td>27</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Do you think you have been asked to use the laptop sufficiently</td>
<td>26</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Do you feel your learning has developed well</td>
<td>28</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Do you enjoy being able to discuss things when you work</td>
<td>34</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Do you have to compare ideas and information a lot</td>
<td>23</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Do you find and correct errors in your work easily</td>
<td>21</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Is there enough time to consolidate your knowledge and skills</td>
<td>22</td>
<td>11</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 7: Student responses to short questionnaire on Day 6

Questions where there were many ‘yes’ responses from day 6 suggested that students felt:
- The timetable worked well for them.
- The overall theme of the project was interesting and useful.
- They had been taught enough in sessions that day.
- Challenged by what they were asked to do.
- They had been asked to use the laptop sufficiently.
- Their learning had developed well.
- They enjoyed being able to discuss things when they worked.

Students were not sure whether:
- They had to compare ideas and information a lot.
- They found and corrected errors in their work easily.
- There was enough time to consolidate their knowledge and skills.

From the latter responses, it seemed that students were not sure about some of the levels of knowledge handling involved, and that some higher order thinking and learning levels might not be involved sufficiently. Students also indicated that they felt they were not working necessarily at a metacognitive level, finding and correcting errors, and identifying sufficient time to reflect on and consolidate knowledge and skills.
Blackpool CLC 'The Big Experiment' Evaluation

Day 7 (n=38)

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of ‘yes’ responses</th>
<th>Number of ‘not sure’ responses</th>
<th>Number of ‘no’ responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you using time at home to work on this project</td>
<td>32</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Is this project different from subject lessons in school</td>
<td>38</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Do you have enough time to do what you need to do</td>
<td>32</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Do you feel you are learning more about how to learn as well as what to learn</td>
<td>32</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Do you think you have been asked to use the mobile sufficiently</td>
<td>12</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Do you have enough space around you to work on all the different aspects</td>
<td>35</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Is there enough reading and writing in the work you are doing</td>
<td>28</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Are you involved in analysis of details in this project</td>
<td>31</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Do you feel you can pace your work between now and the end of the event</td>
<td>32</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Do you have to summarise things as you go</td>
<td>26</td>
<td>10</td>
<td>2</td>
</tr>
</tbody>
</table>

### Table 8: Student responses to short questionnaire on Day 7

Questions where there were many ‘yes’ responses from day 7 suggested that students felt:
- They were using time at home to work on this project.
- This project was different from subject lessons in school.
- They had enough time to do what they needed to do.
- They were learning more about how to learn as well as what to learn.
- They had enough space around them to work on all the different aspects.
- There was enough reading and writing in the work they were doing.
- They were involved in analysis of details in this project.
- They could pace their work between then and the end of the event.

Students were not sure whether:
- They had to summarise things as they went.

From the latter responses, it seemed that students were not sure about ways that they were being asked to reflect on their learning, or the regularity of these types of activities within the programme of the event.
## Table 9: Student responses to short questionnaire on Day 8

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of ‘yes’ responses</th>
<th>Number of ‘not sure’ responses</th>
<th>Number of ‘no’ responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you enjoyed the work you have done on this project today</td>
<td>32</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Do you feel your views and ideas are being listened to enough</td>
<td>31</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Do you think the use of the video diary is a good idea</td>
<td>32</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Have teachers given you sufficient help in sessions or activities</td>
<td>35</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Have you been able to decide which sessions or activities you would do at home</td>
<td>29</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Do you think this work has a long-term purpose</td>
<td>23</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Do you have to bring ideas and information together from different sources to do this work</td>
<td>30</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Does this style of work encourage you to speak more</td>
<td>27</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>In this form of work do you find that you think about how correct an approach is</td>
<td>30</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Do you think this experience will help your future education</td>
<td>27</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

Questions where there were many ‘yes’ responses from day 8 suggested that students felt:
- They had enjoyed the work they had done on the project that day.
- Their views and ideas were being listened to enough.
- The use of the video diary was a good idea.
- Teachers had given them sufficient help in sessions or activities.
- They had been able to decide which sessions or activities they would do at home.
- They had to bring ideas and information together from different sources to do this work.
- This style of work encouraged them to speak more.
- This form of work made them think about how correct an approach was.
- This experience would help their future education.

Students were not sure whether:
- This work had a long-term purpose.

From the latter responses, it seemed that students were not sure about the long term purpose of the work they were doing, and how it might be applied or used beyond the event itself.
Blackpool CLC 'The Big Experiment' Evaluation

Day 9 (n=31)

<table>
<thead>
<tr>
<th>Question</th>
<th>Number of ‘yes’ responses</th>
<th>Number of ‘not sure’ responses</th>
<th>Number of ‘no’ responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think this project could be run in standard classrooms or school rooms</td>
<td>15</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Do you think lessons in schools give you enough time to learn</td>
<td>14</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Are you being asked to transfer the learning you have from one place to develop ideas in another place</td>
<td>24</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Do you find that presenting your ideas is helping you to learn about them</td>
<td>29</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Do you think you have to present your findings or your learning enough to teachers and others</td>
<td>25</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Do you think your ICT skills have improved since you started the project</td>
<td>28</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Are you involved in evaluating ideas and information</td>
<td>28</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Do you think this work will help with future citizenship</td>
<td>24</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Do you think all subject content could be learned through this style of working</td>
<td>23</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Do you think an event like this each term in each subject would be a good idea</td>
<td>28</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 10: Student responses to short questionnaire on Day 9

Questions where there were many ‘yes’ responses suggested that students felt:
- They were being asked to transfer the learning from one place to develop ideas in another place.
- That presenting their ideas was helping them to learn about them.
- They had to present their findings or their learning enough to teachers and others.
- Their ICT skills had improved since they started the project.
- They were involved in evaluating ideas and information.
- This work would help with future citizenship.
- All subject content could be learned through this style of working.
- An event like this each term in each subject would be a good idea.

Students were not sure whether:
- This project could be run in standard classrooms or school rooms.
- Lessons in schools give enough time to learn.

From the latter responses, it seemed that students were not sure about the way that this form of event might operate in schools. Students also indicated that lessons in schools might not give enough time to learn, and that a different model might have benefits in this respect.

Student motivation before and after the event

Students were asked prior to the event, and immediately following the event, to complete a questionnaire that would enable a profile of their motivations to be examined in some detail. The outcomes of those questionnaires are explored here.

Current approaches to the psychological study of motivation envisage motivation as a multifaceted construct in which an individual’s self and other perceptions play a crucial role. These conceptions cover a range of subsidiary constructs and a full account of them is well beyond the present remit. However, within the present study assessments were made of a number of the most important of these constructs and a brief description of them is provided here, before a summary presentation of the results of a comparison of the before and after scores on each is offered. The data for each of the motivational variables considered was also examined to see if any of the observed trains interacted as
a function of student gender. While gender variations have frequently been identified in other motivational research, in this case there were no instances of gender operating as a significant interaction with any of the other variables which were explored. All of the findings presented below are, therefore, shown in relation to the entire student sample (for whom full data sets are available).

A broad distinction is made in this analysis between self perceptions and perceptions of key aspects of the learning environment (the teacher’s aims and purposes within the classroom). In respect to self-perceptions the analysis focuses on three different learning goals (reasons for engaging in academic work) and one perception of competence. The learning goals are termed Mastery, Performance Approach and Performance Avoidance.

A Mastery goal involves the desire to learn and master key aspects of the task in hand. As a Mastery goal becomes stronger, so the individual becomes more concerned with gaining a sense of satisfaction and accomplishment from the development of their own knowledge. Success is seen primarily in terms of gains in understanding; failure tends to be understood as a setback on the route to understanding. Crucially, mastery goals involve a focus on the task itself and not upon the individual. Students with strong mastery goals are therefore less concerned with how their performance reflects upon themselves and their own sense of self-worth. For this reason, many researchers and theorists prefer to label this type of goal as a Task goal.

In contrast, this analysis also assesses Performance Goals, where the self is much more the focus of attention. As performance goals increase in strength, so the individual becomes relatively more concerned with the implications of their performance for themselves and for their sense of self-worth. Success, under such a goal, is important as it suggests that self-worth is high, while failure is clearly likely to be threatening to an established self image. Research has identified two types of performance goals and has shown that the implications and operations of them are crucially different. Performance approach goals focus upon the aspirations of the individual to take advantage of opportunities to demonstrate to themselves and others present what they are capable of doing. Success opportunities are welcome as they provide an opportunity for public self validation. Performance avoidance goals, on the other hand, focus upon the negative aspects of any success opportunity, namely the possibility that one might be unsuccessful and therefore demonstrate to oneself and others a given level of incompetence. As performance avoidance goals strengthen, so individuals will become more anxious and fearful in their approaches to learning. Research has indicated that learning, especially deep learning, is most effectively gained when individuals have strong mastery goals in relation to others. However performance approach goals, particularly when working alongside relatively strong mastery goals, can also act as an aid to effective learning. Performance avoidance goals are least likely to produce effective learning and most likely to lead to the development of a series of maladaptive self defensive strategies which can interfere with effective mastery of the task in hand.

The final self-perception to be measured in the context of this study is that of self-efficacy. Self efficacy is concerned with the degree to which an individual believes that he or she has the ability to carry out the activities necessary to achieve a given level of desired performance. One’s self-efficacy beliefs are specific to the task in hand and the context within which an individual is working. An individual may have a high level of self efficacy in relation to some tasks whilst simultaneously having a low level of self efficacy in relation to others. It should not be confused with concern with self-esteem which, though related, is concerned with the degree to which an individual values the self in relation to certain spheres of activity. Higher levels of self-efficacy have been clearly demonstrated to lead to more effective learning and higher levels of performance.

In addition to self-perceptions, motivation theorists have also concerned themselves with the importance of perceptions of key aspects of the environment within which an individual engages with the task in hand. In some approaches these have been conceptualised in a way which closely parallels the self-perceptions discussed above. Two such aspects of an individual's perceptions of their working environment were included in the present study. The first of these is labelled teacher mastery, and concerns the degree to which a student perceives the teacher as valuing and encouraging learning for its own sake. Previous research has illustrated that when students perceive teachers to be encouraging
mastery goals they are more likely to adopt such learning goals for themselves. The perception of relatively high levels of teacher mastery therefore tends to be associated with more effective learning.

In addition we assess the degree to which students perceive the teacher as encouraging performance goals, using a variety of techniques to encourage effectively a more competitive approach in which students will be compared and contrasted with each other in relation to their performance. Again prior research indicates that the perception of teacher performance goals encourages performance goals within the students and is therefore somewhat less likely to lead to effective learning.

While certain relationships will exist between these six individual measures, the underlying theory suggests that they have a marked degree of independence from each other so that it is possible, for example, for a student to have a high level of mastery goals while having low levels of performance goals, while other students may have high levels of all goals or indeed low levels of all goals. It is the overall combination, or profile of relevant learning goals, that is likely in the end to exercise an influence upon the way in which the student works within a given classroom situation.

Before moving on to present the findings, an example of one of the scale items used to assess each individual motivational characteristic is presented below.

Mastery goal: “I like work that I'll learn from, even if I make a lot of mistakes”.

Performance approach goals: “I would feel really good if I were the only one who could answer the teacher’s questions in class”.

Performance avoidance goals: “It's very important to me that I don't look stupid in class”.

Self efficacy: “I can do even the hardest work in this class if I try”.

Teacher mastery: “Our teacher really wants us to enjoy learning new things”.

Teacher performance: “Our teacher points out those students who get good grades as an example to all of us”.

Assessment of these motivational characteristics was carried out by the use of questionnaires which were developed and validated in prior research. Each dimension was assessed by scales consisting of approximately six items and a check on the reliabilities of these scales indicated that they were operating as designed and intended.

Assessment of these motivational characteristics was carried out prior to the experimental phase getting underway within the CLC, and again immediately at the end of the experimental period. Given the relatively short time period involved it would not be reasonable to expect change on a large-scale, and any short-term changes cannot be considered as reliable evidence of long-term changes in the approaches adopted by students to their work. Nevertheless, increases in the relative strength of, mastery goals in particular, and to some extent performance approach goals, together with self-efficacy, would be indicative of beneficial outcomes. Conversely, should self-efficacy decrease and performance avoidance goals increase, for example, this might be indicative of a less helpful impact. The means for each goal at the ‘Before’ and ‘After’ stages are presented below.
Table 11: Means and standard deviations of types of motivational goals

<table>
<thead>
<tr>
<th></th>
<th>Mastery</th>
<th>Approach</th>
<th>Avoidance</th>
<th>Efficacy</th>
<th>Teacher Mastery</th>
<th>Teacher Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Before</td>
<td>4.0</td>
<td>3.3</td>
<td>2.7</td>
<td>3.8</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>4.2</td>
<td>2.9</td>
<td>2.4</td>
<td>3.8</td>
<td>4.1</td>
</tr>
<tr>
<td>N</td>
<td>Before</td>
<td>39</td>
<td>37</td>
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<td>38</td>
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<tr>
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<td>36</td>
<td>37</td>
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<td>37</td>
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<tr>
<td>Std. Deviation</td>
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<td>.57</td>
<td>.91</td>
<td>.96</td>
<td>.47</td>
<td>.49</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>.51</td>
<td>.93</td>
<td>.67</td>
<td>.46</td>
<td>.55</td>
</tr>
</tbody>
</table>

These means are presented in graphical form below:

Figure 4: Graphical representation of means of types of motivational goals

From the graph we can see that the motivational profile of the students involved in the study was positive overall before the experimental period got underway. The average level of mastery goals is high and importantly higher than performance approach and particularly higher than performance avoidance goals. Students also reported having relatively high levels of self efficacy. As far as perceptions of the classroom environment are concerned, again the ‘before’ picture is a positive one in that teacher mastery goals are perceived as high and higher than teacher approach goals. When comparisons are made with the ‘After’ profiles there are relatively slight changes in the absolute level of each motivational characteristic. However it is worth noting that the gap between mastery goals and performance goals (of both kinds) has widened and that this is reflected in a similar widening of the perceived gap between teacher mastery and teacher approach goals. This is indicative of a positive motivational climate for the students prior to the experimental period getting underway, and evidence of further improvements as a result of the experimental interventions. The statistical analysis of the ‘before’ and ‘after’ means indicate no significant differences for the students’ self perceptions but also
showed that there is a statistically significant decrease in the perception of teacher performance goals. As indicated above, slight changes in the students’ own motivational characteristics would be unlikely to be secured over such a short time. However the evidence presented here is consistent with the claim that the interventions have served to enhance an already positive student motivational profile. The most likely mechanism for this is a change in teacher behaviour leading to students perceiving teachers to be relatively less concerned with performance goals and, by contrast, more concerned with mastery goals. Should such a change be maintained over a longer period of time, one would expect positive motivational effects at the level of the individual students to be observed.

In addition to conceptions of motivation based upon various types of learning goals, it is possible to explore further aspects of motivation by considering the distinction between intrinsic and extrinsic motivational forms. The basic distinction between intrinsic and extrinsic motivation is one that is widely understood. When people are intrinsically motivated they are believed to be engaged in the activity "for its own sake" whereas extrinsic motivation reveals that the work is being engaged in for some other purpose, for example to satisfy the requirements of somebody else or to obtain an eventual qualification. The widely made assumption, for which there is good empirical support, is that intrinsic motivation leads to the exertion of greater effort, greater concentration and enhanced learning. However it has been argued that the simple bipolar distinction between intrinsic and extrinsic is less helpful than regarding these motivational forms as representing the ends of a dimension. This latter approach was adopted for the present study. Drawing again upon well-established motivational scales, an assessment was made of the extent to which each of four motivational forms was held by the student to be responsible for their behaviour. These four forms can be briefly defined as follows:

Intrinsic motivation: the individual student is likely to agree strongly that they engage in the relevant activity because it is interesting, pleasant, and enjoyable.

Identified motivation: the individual may be aware that the work is not intrinsically enjoyable but nonetheless claims to be engaging in it for reasons with which they would closely associate, for example they are doing the work for their own good, as result of their personal decision or because the activity in question was believed to be important for them.

External motivation: here the individual recognises that one of the prime reasons for their engaging in the relevant behaviour is to satisfy the requirement of somebody else, for example they claim to be doing the work because they were supposed to be doing it, because it was something that they had to do or because they didn't have any choice in the matter.

Amotivation: the individual really has little idea at all as to why the activity is being engaged in or what the point of it might be, for example they recognise that there may be good reasons for doing the work but they couldn't see what these might be or why they were doing the activity and were unclear why it might be a good thing to pursue.

Theorists have argued that the first two motivational forms, intrinsic and identified motivation, are both representative of internal forms of behavioural regulation. The individual recognises that they have been responsible for the decision to engage in the behaviour for one reason or another. The latter two motivational forms, external motivation and amotivation, are held to be representative of external forms of regulation where the individual recognises that the control over their behaviour comes from some external agency. Theoretical and empirical work supports the view that the stronger internal regulation is in comparison to the external regulation, the more effective learning is likely to be. Again as with the approach based upon motivational goals, it is possible for each motivational form to be in operation simultaneously and it is therefore the relative strengths of these forms that are the focus of interest. Means scores on the four motivational forms are presented below.
Table 12: Mean levels of intrinsic-extrinsic motivation before and after interventions

<table>
<thead>
<tr>
<th>Survey</th>
<th>Intrinsic</th>
<th>Identified</th>
<th>External</th>
<th>Amotivation</th>
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<tr>
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<td>3.8</td>
<td>3.8</td>
<td>3.0</td>
<td>2.3</td>
</tr>
<tr>
<td>N</td>
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<td>36</td>
</tr>
<tr>
<td>Std. Deviation</td>
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<td>After</td>
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<td>2.8</td>
<td>2.5</td>
</tr>
<tr>
<td>N</td>
<td>37</td>
<td>38</td>
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<td>38</td>
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<tr>
<td>Std. Deviation</td>
<td>.71</td>
<td>.66</td>
<td>1.06</td>
<td>.89</td>
</tr>
</tbody>
</table>

The same data is represented in graphical format below.

Figure 5: Graphical representation of mean levels of intrinsic-extrinsic motivation before and after interventions

As is to be expected, for the reasons discussed above in relation to motivational goals, the changes from the “before” to “after” assessment for each individual motivational form are relatively slight. However there is evidence of a statistically significant increase in the level of intrinsic motivation in the after condition. Some researchers have tested for motivational variation within this theoretical approach by calculating an index of the difference between the strength of intrinsic and identified motivation on the one hand and external and amotivation on the other. These indices will be referred to as internal and external forms of regulation. There is an increase in levels of internal regulation as we move from the before to the after condition however this difference is not sufficient to reach statistical significance. There is a trend however, in line with that found with motivational goals, for students to display more positive forms of motivation at the end of the experimental period than they did at the beginning.
One final approach to the assessment of motivation was adopted for this evaluation. Central to many theoretical approaches concerned with the conceptualisation of motivation is the claim that individuals will vary in the way in which they understand the nature of their own intelligence. As exemplified by the writings of Carol Dweck (1999), this distinction contrasts those with an entity view of intelligence with those who hold an incremental view. An entity view assumes that intelligence (or ability) is relatively stable, fixed and unchangeable. By contrast, an incremental view holds that intelligence can be increased through the application of focussed and appropriately applied effort. The research employing this distinction carried out to date, which has been extensive, gives a clear indication that students with incremental views of their intelligence are likely to show more effective approaches to learning. In the evaluation here the overall sample of students shows a mean position that is approximately halfway between a strong entity and a strong incremental view. There is no notable or statistically significant change in these beliefs over the duration of the study.

In conclusion, investigation of motivational characteristics of the students engaged in the evaluation both before and after the experimental intervention reveals a number of outcomes. At the outset, the group of students as a whole are characterised as having positive forms of motivation with strong mastery motivational goals, good levels of self efficacy, low levels of the maladaptive performance avoidance goals and with a reasonably strong commitment to the internal regulation of their behaviour. As the short intervention progressed, these patterns, not surprisingly, showed relatively slight change overall, but those changes that were detected were of a positive nature. In particular, students came to see the CLC environment as being relatively more encouraging of mastery goals at the end of the intervention (primarily through a decrease in perceived teacher performance goals) and they reported higher levels of intrinsic motivation leading to further strengthening of the tendency to internally regulate their behaviour.

It is of course an open question as to whether these effects will be sustained, further strengthened, or indeed reduced by a longer period of intervention and a greater time period between assessments of the students’ motivational characteristics.

What students said about their experiences
Students were interviewed during the event. Comments from 14 students interviewed individually about their experiences are offered in this section. It should be noted that these responses were gathered across the two week period, rather than across a narrower time slot.

Students were asked why they thought they were selected for this project:
- Did not know (8 students).
- Did not get in too much trouble (3 students).
- Randomly picked (3 students).
- Because of being in the AimHigher group (2 students).
- One of the best at IT in the year (2 students).
- Had an average CAT score (1 student).

Students were asked whether they were enjoying the project. Their responses (and those in questionnaires) indicated that most students were enjoying the project:
- Yes (13 students).
- A bit (1 student).

Students were asked whether this project was different from subject lessons and activities in school. Their responses were:
- Yes (13 students).
- A lot different and a lot better (8 students).
- Use laptops and more technology (8 students).
- Not all writing (5 students).
- Get to choose whom we work with in teams (3 students).
- Have to work independently and more involved (2 students).
Responses indicated that students felt certain aspects were better, and potentially enhancing their learning. The aspects they highlighted were uses of technologies, not having to write all the time, choosing and working in teams, working more independently, and collaborating more with teachers. These aspects would suggest that kinaesthetic and social routes to engagement have been supported, that student choice and responsibility have been enhanced, and that social interactions have been shifted from an instructional to a greater collaborative involvement.

Students were asked whether the timetable was different from that in school, and whether this was important. Their responses were:
- Yes (12 students)
- Not sure (2 students).
- Length of lessons is different, some are longer (4 students).
- To do project work rather than school subjects (3 students).
- Having access to more technology, using a television recording room (2 students).
- Learning more about certain topics (1 student).
- Not doing something you don’t like as long (1 student).
- Can choose the order of lessons (1 student).
- It’s better when it changes (1 student).

Students highlighted the differences that project work made. They indicated that length of lessons, choosing the order of lessons, learning more about certain topics, and not doing things that were not liked for as long were all different. However, this did place a potentially greater onus on tutors to ensure that topics and activities met student interests to greater extents.

Students were asked whether the timing of sessions in this project helped them to learn better. Their responses were:
- When you are interested in something you can spend longer on it and learn more (5 students).
- No it doesn't help my learning (2 students).
- Sometimes a bit rushed to finish off projects (1 student).
- You get more breaks and more time to do work yourself (1 student).
- No one is talking for a long time, like in school, to confuse me (1 student).
- In a shorter time you get longer concentration (1 student).

Many students indicated that heightened interest allowed them to spend more time on certain topics, and to learn more effectively as a consequence. The responsibility for undertaking work being in the hands of the students was also mentioned as being important. The impact of too great an emphasis on the use of the auditory route for engagement was also highlighted (students might well have felt that a greater balance with other sensory routes to engagement was being achieved in this project).

Students were asked what resources they had that they would not normally have had in lessons or activities in school. Their responses were:
- Laptop (13 students).
- Television studio (7 students).
- Video cameras and recorders (4 students).
- Radio studio (4 students).
- Chill-out room (“that's really important - we can go in there and sit or work if we're stressed”) (3 students).
- Different programs such as Garage Band and Animation software (3 students).
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- PCs (2 students).
- More rooms with free access to them (2 students).
- Café (2 students).
- Mobile telephones (1 student).
- Interactive whiteboards (1 student).
- Musical instruments such as guitars (1 student).
- Web cams (1 student).
- Digital cameras (1 student).

Students highlighted the importance of certain resources. Those most commonly highlighted were the laptops (which they clearly used for a range of purposes as and when they chose), the television studio, video cameras and recorders, and radio studio (all concerned with recording aspects, potentially focusing on social and societal aspects of learning to greater extents), the chill-out room (as one student said, to use when stressed), and access to certain programs (focusing on music and imagery manipulation particularly).

Students were asked whether the overall theme of the project was interesting, and in what ways. Their responses were:
- I don't know what it is (6 students).
- I like trying out new teaching and learning methods (4 students).
- I like using more technology (4 students).
- Lots of things are different from school work or routine (3 students).
- I like learning about the earth or global warming (1 student).
- I like space and aliens (1 student).
- I like meeting new people (1 student).

Not many students appeared to be aware of what the overall theme of the project was. Those who did, felt that their interest was generated through different teaching and learning approaches, use of more technology, having variety with regard to routine, the social aspects concerned with meeting new people, and topic focus that appealed to them.

Students were asked whether a project-based approach offered them something that a school curriculum did not, and if so, what. Their responses were:
- Yes (12 students).
- You have choices (4 students).
- You can work at the project more continuously (4 students).
- You can return to things and learn more in depth (3 students).
- You can work in a group (1 student).
- You can talk more (1 student).
- You get help for it here (1 student).
- You can be creative (1 student).
- Don’t have to do a great deal of listening (1 student).
- You can take responsibility for your learning (1 student).
- Not really (1 student).

Students highlighted a range of reasons why project-based approaches were offering them something more. These revolved around student choice and voice, being able to work more continuously, being able to return and do things in more depth, working in groups with more social flexibility, support provided through collaboration rather than instruction, having creative opportunity, and being able to take greater responsibility.

Students were asked whether this project was better for their approaches to learning, and in what ways. Their responses were:
- Yes (12 students).
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- Not sure (2 students).
- Easier to take in (2 students).
- More based around ‘us’ than ‘them’ choosing what we do and who we work with (2 students).
- Longer to do it and more time to research (2 students).
- I learn better when I'm actually involved - not just sitting and reading (2 students).
- It’s more hands on - if I get stuck I can find programs to help me out (2 students).
- More fun (1 student).
- More varied and there are more opportunities (1 student).

The responses from students echo earlier aspects of importance. Students indicated in these responses and elsewhere the importance of student voice, choice and responsibility, having longer periods of time to work on things more continuously and in greater depth, being actively involved, and having facilities accessible that could be chosen strategically to support specific learning needs. The importance of these types of factors relate strongly to the discussion of Galton et al. (2003), when they said about students involved in moving through secondary school: “Pupils want - and expect – to be treated more like adults and to have more autonomy and trust; disappointment can lead to disengagement”. If the issue of disengagement does arise, it is unfortunate if the response to cope with such situations leads to some students being placed in circumstances where responsibility is taken from them, so that control becomes firmly placed in the hands of the teacher. In this initiative, autonomy and trust have been placed (and have been retained as far as possible) in the hands of the students.

Students were asked what they thought had been the most successful aspect of this project at that time. Their responses were:
- Working in groups (3 students).
- The Golden Record activity (3 students).
- Getting to know people (2 students).
- Learning with the technology (2 students).
- Work on Global Warming (1 student).
- Being able to listen to each other and divide the work up (1 student).
- Sport (1 student).
- The parents coming in to see what we'd done (1 student).
- Giving us a task to do and letting us go off and do it how we want (1 student).
- Communicating with everyone on ‘Skype’ (1 student).
- Team building day (1 student).
- Animation session (1 student).
- The day started at 12.30, so you're more awake and feel like getting involved more (1 student).
- The TV and radio studios (1 student).

Students raised a wide range of aspects that they felt were most successful. These successful elements tended to group into forms of social interaction, team and group work, creative activity areas such as music and design, topics of specific interest, presenting to external audiences with purpose, and greater levels of responsibility and choice. It is possible that some of the details of these responses were dependent upon when students were interviewed (at earlier or later times across the event).

Students were asked what they thought the purpose of the last session was that they had attended. Responses were concerned with:
- Content of the sessions (3 students).
- Future needs and techniques to use at later times (3 students).
- Developing thinking approaches (2 students).
- Using ICT to support specific learning needs (3 students).
- Group working approaches (3 students).
- To see if we would do as well without laptops? (1 student in the science challenge day).
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It is clear that many students felt that the purpose of sessions was concerned with development of thinking and working approaches, as well as subject content or techniques. The interesting last comment suggests that students might well feel that resources might have been sometimes removed in order to test their abilities without them.

Students were asked whether they felt sufficiently involved in the previous session. Their responses were:
- Yes (12 students).
- I'm more involved when I work with others (2 students).
- We discussed in the group what we were doing and got on with it (2 students).
- The morning session was a bit boring just listening to people talking (1 student).
- In the group 8 people were working on their own rather than as a group (1 student).
- I was doing everything even though I hate sport at school (1 student).
- Not really (1 student).

Most students indicated that they felt they were involved. Some responses indicated that students regarded involvement in terms of social and group work involvement, while others regarded involvement as being focused on and willing to work with the subject content or activity.

Students were asked whether teachers helped them in the previous session, and in what ways. Their responses were:
- Yes (11 students).
- No (2 students).
- Only when we were stuck or asked (4 students).
- Showed us what to do (3 students).
- By telling me what to do and say when interviewing people (1 student).
- It was more of a listening session and taking notes (1 student).
- He got involved with us and actually helped us (1 student).

Students suggested in some cases that teachers were taking a supportive role, rather than a directive role. Some students were perhaps beginning to recognise that teachers could work collaboratively as well as instructively. For some students this might well have generated a form of ‘culture shock’, which might not have been fully rationalised in the minds of the student within a two week period.

Students were asked whether teachers took approaches that they would not normally encounter in school. Their responses were:
- Left to research or work rather than giving questions set by the teacher (4 students).
- Working with us like part of the group (3 students).
- Didn't shout! (1 student).
- More teachers walking around to help (1 student).
- They've been less strict (1 student).

Students indicated greater collaboration and support from teachers through their responses. However, their responses did not indicate how they felt with regard to respect for others, whether they might have been students or teachers.

Students were asked whether they were being asked to be creative, and in what ways. Their responses were:
- Yes (10 students).
- No (3 students).
- Because we had to use our imagination (“such as what we might do as journalists”) (2 students).
- By designing (2 students).
- In the way we chose to tackle the task (1 student).
- Having to put music together (1 student).
Students raised a number of points about creative aspects of their work. They highlighted the importance of how to tackle tasks, being able to think imaginatively, use of application and synthesis, and forms of presentation of work outcomes.

Students were asked whether they were being challenged, and in what ways. Their responses were:
- Yes (9 students).
- No or not too much (5 students).
- Needed to think about it (4 students).
- By competing against each other (1 student).
- To see how we learn better (1 student).
- In everything we did (1 student).
- Don't do many experiments in science now (1 student).
- Only had a limited amount of time and the situation was changing quickly (1 student).

Although many students felt they were being challenged, they were fairly non-specific in terms of highlighting what this meant and how they recognised it. It appeared that students lacked the vocabulary of learning to be able to discuss this issue clearly; this suggested that reflection about learning was not being focused on a great deal.

Students were asked whether the laptop was helping their learning, and in what ways. Their responses were:
- Yes (8 students).
- No (5 students).
- For research (4 students).
- For designing (1 student).
- For communicating (1 student).

Student responses were quite clear. However, not all students felt that the laptops were helping them, but those that did felt that research, design and communication were key aspects of support arising.

Some questions were asked of students only in the latter part of the event. In the questions that follow, 5 student responses are represented. Students were asked whether it helped when they needed to present their findings and their learning to others. Their responses were:
- Yes (4 students).
- But I don't like doing it - I get scared but it does boost confidence (1 student).
- Quite hard if you have writing and video to bring it all together (1 student).

Students indicated that presenting their findings to others was helping them to learn. They also indicated the challenges that this offered, both in terms of self-confidence and in terms of synthesis of ideas and outcomes.

Students were asked how difficult it was to create a presentation of their learning experiences. Their responses were:
- Quite difficult (3 students).
- Not difficult (1 student).
- I needed to practise at home to be able to use the new software (1 student).
- It took me hours to get a 1 minute presentation for the Golden Record (1 student).
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Students indicated that creating presentations was not necessarily an easy task. The need for practice and technique was clearly reported. Students were asked what they thought they were learning most from this experience. Their responses were:

- How to use the new technology (3 students).
- Working in a group and thinking more (1 student).
- I'm more focused probably because we're in small groups (1 student).
- How to learn - if you're doing hands-on stuff you can't just sit back (1 student).

The learning reported by students was clearly important in terms of a wider picture (if the successes could be applied in other places). Being able to use new technology, working in groups, being more focused, and applying themselves when they had hands-on work to do, were all clearly potentially important in terms of enhancing engagement and outcomes in learning.

Students were asked whether they had created a video diary, and if so, whether they thought this was helping their learning. All 5 students indicated that they had not used this facility. Although students felt that this facility was a good idea, it was not clear that many students used it.

Students were asked whether time at home helped them to work on the project more effectively. Their responses were:

- I haven't worked at home except to do my diary most days (1 student).
- I had a lie in so I was more focused in the afternoon (1 student).
- It's given me more time and I can practise things at home (1 student).
- You can work for a while and go off and relax; there are less distractions at home (1 student).
- No (1 student).

It was not clear from student responses that many students had worked to any great extent at home. However, it was clear from other responses that some students used time at home to practise techniques using specific software programs on the laptops, and that in doing this, they might not associate this with work and report it as such. Responses to the next question asked of students tended to support this idea. Students were asked what they could do at home that they could not do at the CLC or in school as effectively. Their responses were:

- You can work on the laptop and finish any incomplete work (1 student).
- Spend more time on the things you've been doing in the CLC (1 student).
- My parents could look at some things on my laptop (1 student).

It was clear that working at home was not an easy aspect for tutors to support. This form of project in the future might benefit from a greater focus on how greater levels of interaction between teachers and students at home might be provided. Students were asked how working at home had been supported. Their responses indicated the low levels of support that were possible at that time (but also indicated the potential that it might have in the future, given the fact that teachers involved in the CLC were heavily involved and not easily able to provide additional time to support via the technology when laptops were at home):

- Someone at home was interested and wanted to see what I was doing (2 students).
- Communicating with others (1 student).

Students were asked overall, from their experiences at that time, whether they thought they were learning how to learn better, and in what ways. Two students answered positively, and one said that learning how to learn better had been achieved by working in groups, and that a lot of confidence had been gained. It appeared from student responses overall that they largely felt they were involved in different ways of working, and were learning effectively, but were not involved in processes that would help them reflect directly on how they were learning to learn.

What teachers and mentors said about their experiences of sessions
Students indicated their perceptions through questionnaire and interview responses (reported and discussed in the section above). It was important to know whether the perceptions of teachers and
mentors were similar to those of students. A range of teachers and mentors were interviewed during the event. Comments from 8 teachers and mentors about their experiences from running or supporting sessions are given here. The comments were provided by teachers and mentors with ICT experience, and their comments were given at times that followed sessions on a range of subject and topic areas (sport, history, ICT, social sciences, music, geography, design, and science).

Teachers and mentors were asked how they thought individual sessions had gone. Five teachers and mentors reported that the session had gone ‘really’ or ‘very’ well, while the remaining 3 indicated that the session had gone ‘quite’ well. They commented that:

- Students were obviously enjoying it (2 teachers).
- Children were on task (1 teacher).
- The group was not the most communicative group and probably suffered from its being the end of the day (1 teacher).
- The activity had the right balance - not too rigid to stifle creativity but structured enough to reach an outcome (1 teacher).

Teachers and mentors were asked whether the students were being encouraged to participate, and what the key factors were in bringing this about. Seven teachers and mentors said that students did participate, while one indicated the activity was an essential skills training session. Teachers commented that they felt key factors were:

- Probably having an adult on each station kept them on task and focused and encouraged.
- It was a hands-on session.
- Had to solve history component and then demonstrate their knowledge using control technology to control a robot.
- Direct questioning and using technology they normally use.
- Captured their interest.
- Use of an ‘envoy’ sent to other groups to report back.
- Giving responsibility - emphasising it was a group effort.
- Ensuring task had enough depth to involve them all otherwise some will watch others work.

Teachers reported that participation was supported, in their views, by the presence of adults who encouraged them, the session providing a hands-on activity, its being problem solving and application based, using technology in appropriate ways, the need for students to interact with other audiences for a ‘real’ purpose, having responsibility within a group, and having activities that required all group members to participate. Teachers and mentors were asked whether students were working as a team. Six teachers and mentors reported that groups were working as a team for the whole, or as part, of the activities. Two teachers commented on lower levels of working together as a team in some cases.

Teachers and mentors were asked whether anything set the sessions apart in curriculum terms. Four teachers commented that what set the sessions apart was:

- ICT equipment for sport hardly existing in schools.
- Unique experiment in the delivery of history.
- More of an open discussion, not closed questions.
- It was a linked task using one group's work from the previous day, so students had to complete the task for another group the following day, unlike a task being done ‘because the teacher said so’.

Teachers indicated that these sessions were different in terms of using technology in novel ways to support specific subjects or topics, using open rather than closed questions, and students needing to develop outcomes that would be used by another student audience. Teachers and mentors were asked whether sessions removed barriers in curriculum terms. All eight teachers and mentors said that they did, and gave some specific reasons:

- Integrating different curriculum areas; merging ICT and history in an integrated task showed how one area could impact on another and vice-versa (3 teachers).
- Taught them a new skill.
- In that there is no definite outcome.
Mobility was encouraged with the ‘envoy’, and students could work where, with whom and when they wanted.

In terms of the student-teacher ratio, staff expertise and availability of equipment.

Teachers felt that curriculum barriers were removed through having integrated cross-curricular activities, there being no definite outcome but a range of possible outcomes that students could develop, developing social interaction between student groups for purposes concerned with needs of the activity, and having a higher level of teacher and equipment access. Teachers and mentors were asked whether sessions removed barriers that lesson time constraints might offer. Only one teacher indicated that this was the case.

Teachers and mentors were asked whether sessions provided sufficient resources to support learning outcomes. Seven teachers and mentors said that they did have sufficient resource (although dependency on some staff expertise or some rooms with specific purposes might have been limiting).

Teachers and mentors were asked whether the topics of the sessions were appropriate and were reflected in student interest. All teachers and mentors felt that the topics were appropriate, and some teachers commented on the local nature of the topic being of particular relevance, the fact that the topic would match boys’ interests, and the width of possibility offered by some topics.

Teachers and mentors were asked whether sessions were sufficiently structured. All teachers and mentors said that sessions were structured sufficiently, particularly in terms of time or sequence. Teachers and mentors were asked whether sessions covered an adequate range of learning styles. Six teachers and mentors felt that sessions did cover a range of learning styles, but the lack of auditory involvement was mentioned in one case.

Teachers and mentors were asked whether students and teachers were working collaboratively. Due to the nature of the sessions, this was confirmed in five rather than all cases.

Teachers and mentors were asked whether students were being encouraged to be creative. This was confirmed in four cases. Teachers and mentors were asked whether students were gaining ownership of their learning. This was confirmed in six cases. Teachers commented that:

- Exerstation and Nintendo ‘Wii’ caused them to think ‘a bit more’.
- They were in control of the learning but this didn’t naturally constitute ownership as there was no chance for them to revisit.
- In the choosing of the technology method.
- They were asking questions to develop ideas.
- They were driving the pace, and the only restriction was the time deadline.
- They took charge and made decisions, although they still needed prompting, encouragement and direction.

Teacher comments suggested that some levels of ownership were being identified in some sessions, but not all. It was clear that certain activities, and approaches taken within those activities, appeared to be driving ownership to greater extents. Teachers and mentors were asked whether students were being adequately challenged. Seven teachers and mentors said that they were.

Teachers and mentors were asked whether students were learning how to learn. Four teachers and mentors indicated that students were learning how to learn, and commented further:

- Not as much as I would have liked.
- They had to revisit, refine and modify the robot in order for it to reach a desired goal.
- Other groups more than this one.
- At different levels.
- Learning by stealth, and students are not aware of it.
- Students will naturally go to their own strengths, but they are being challenged to learn new ways of learning through media.
Teacher comments suggested that learning how to learn was not definitely identified in many instances. However, teachers were not themselves focusing on approaches to encourage thinking and reflection at a metacognitive level. Teachers and mentors were asked whether students were working at levels of higher order thinking and learning. Three teachers and mentors gave examples of instances where higher order thinking and learning was involved:

- Several areas within application. Very few within analysis except investigate and order and sequence. Within synthesis they were using modify, plan, organise.
- They were evaluating and analysing.
- They were analysing and synthesising in part 1 and using application in part 2.

Teachers comments indicated that students were involved in higher order thinking and learning in some activities, but not all. Clearly the focus of the activities, and the approaches taken had a great deal of potential impact upon these levels of student engagement. Teachers and mentors were asked whether students were learning sufficient content. Six teachers and mentors indicated that they were, while two indicated that this was not the case, or that content was not a main focus for the session.

Teachers and mentors were asked what the most successful aspects of the sessions were:

- Worked well together on complicated task (4 teachers).
- Level of engagement and fun experienced by the students (3 teachers).
- Students appreciating the possibilities of a useful tool (2 teachers).
- Everyone was able to generate an outcome (2 teachers).
- Strength of commitment to precision and willingness to go back and modify and improve previous planning (1 teacher).
- Outcomes and knowledge that can be carried on (1 teacher).

Teachers and mentors were asked whether students gained a 'Big Picture' of what they were doing. Two teachers indicated that they felt that students did, and two teachers gave indicators of how a ‘Big Picture’ might have been gained. In four cases, teachers did not feel that this was being provided.

Teachers and mentors were asked whether students were transferring their learning from other places or encouraged to think about how to transfer learning to other situations. Seven teachers and mentors indicated that they did, and some provided examples:

- They did transfer skills from prior learning but we did not emphasise that.
- Had basic knowledge of places in Blackpool.
- The use of technology.
- Several students brought issues important to them to their work (such as global warming).
- Transfer of numerical skills.
- Science creeping in when thinking of the physical make up of the aliens.

Teachers indicated that transfer of learning was happening in some instances, but observations suggested that there was not a clear focus on approaches to encourage or emphasise the ideas of transfer of learning. Teachers and mentors were asked whether students needed to reflect on their learning adequately. Only one teacher felt that this had been accommodated sufficiently, while five indicated that time pressures had limited a specific focus on this area.

Teachers and mentors were asked whether this project could be run in standard classrooms or school rooms. Six teachers and mentors indicated that their sessions could be run in standard classrooms (given the equipment provided), but in two cases the spaces required would have needed to be larger and more rooms would have been needed (including a television recording studio).

Teachers and mentors were asked whether student voice was being encouraged sufficiently. Four teachers and mentors indicated that they had encouraged student voice.
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Teachers and mentors were asked whether the laptop was being used to support learning effectively. In six cases, teachers and mentors referred to use of the laptops (being essential in three cases).
What teachers and mentors said about their experiences of the project

Teachers and mentors were interviewed during the event, and asked to comment about their experiences of the project as a whole, rather than just individual sessions. Comments from 5 teachers and mentors about the project as a whole are given here (three teachers and mentors had specialist ICT responsibility, and one had a specialist remit in the area of learning and thinking skills).

Teachers and mentors were asked how they thought the project had gone. They commented:

- Well in terms of doing things differently, with some interesting things coming out. The project has been easier than anticipated in terms of reaction and co-operation from students, and the quality of work some of them are producing.
- Very well. There have been no failures or disasters. Students are taking on board the skills they learned earlier and are applying technology, so it is now becoming less of a novelty, more of a skill, and is being used more appropriately.
- I think we have learned quite a lot. Experiences have shown what students enjoy and don't enjoy. Not sure how adaptable it is for a school environment.
- Really, really well. We've had to make some amendments as we've seen how quickly the students have got to grips with ICT.
- It's going well so far. Most students are engaged and responding well to the structure.

Teachers and mentors were asked whether the selection of students had worked for this project. Although there was general agreement on this point, there was also some variation in describing the constitution of the groups:

- By no means are these model students.
- Not as good as I'd thought we were getting. There have been motivational and behavioural problems.
- It would have been nice to have had more students of average ability.
- It helps not having children with behaviour problems.

Teachers and mentors were asked whether students were being encouraged to participate, and what the key factors were in bringing this about. All agreed that students were encouraged to participate, and comments about factors involved were:

- The staffing ratio can only be described as luxurious so there is always someone to keep them on task (2 teachers).
- An acceptance that we think they have something useful to contribute and a knowledge that what they say will be acted upon.
- Teachers here have IT expertise – that is not always so in school.
- Their group work and practical work has given them the ownership of choice - which lessons, and which package to choose for a task.
- As the time has gone on, it has moved from teacher to peer pressure to do the group work.
- Helps that students enjoy the task set.

Concepts of collaboration between students and teachers were highlighted as being important factors in terms of participation. Students knowing that they had something to contribute, being heard, and being involved in group and practical work were all highlighted as factors. Teachers and mentors were asked whether students were working as a team. Different levels of working as a team were reported. Comments reported were:

- There is a lot more emphasis on teamwork than in school.
- Students worked as a team most successfully when teams were self-selected.
- A few students haven't accepted group responsibility and some have been over dominant.
- Sometimes students have not joined in with the group they were in.
- Some students are not natural group workers.
- Some groups choose not to work well.

Teacher comments suggested that there was more use of group work than happened in schools normally. Other comments suggested that further time might need to be taken with some students in
order to encourage a more positive approach to group work, and the skills to be able to participate effectively with others. Teachers and mentors were asked whether the topic of the project was appropriate and was reflected in student interest. Teachers and mentors agreed that the topic was appropriate and reflected in student interest. They highlighted a number of specific cases where interest had been particularly high, such as Golden Record, and Aliens.

Teachers and mentors were asked whether the project covered an adequate range of learning styles. They all agreed it did, and highlighted the importance of doing rather than listening, and the introduction of writing for publishing purposes in the second week.

Teachers and mentors were asked whether students and teachers were working collaboratively. Overall, teachers and mentors felt that collaborative work had been involved. They offered some specific comments also:

- As time's gone on there's been much more discussion.
- Collaborating and helping.
- The majority of time the teachers have been reacting to student demands, needs and requirements.
- It would have been nice to have involved the students in the planning - to have built in a topic or theme of their choice.

Teachers and mentors were asked whether students were being encouraged to be creative. All agreed that they were being encouraged to be creative, but one teacher felt it was not happening to the extent intended, due to lack of time. Teachers and mentors were asked whether students were gaining ownership of their learning. Overall, teachers and mentors agreed that there was an ownership of learning happening, and that students were more self-reliant than they were at school. Teachers and mentors were asked whether students were being adequately challenged. Teachers and mentors agreed, but only some of the time, and sometimes with some students only. One teacher felt it was important to reflect also. Teachers and mentors were asked whether students were learning how to learn. It was felt that this might be happening. One teacher pointed to some specific examples where this had occurred: “In group work they've learned who they want to learn with. They've learned which package to use for the required outcome”. Teachers and mentors were asked whether students were working at levels of higher order thinking and learning. Teachers and mentors overall reported that this depended on the activity, with some tasks having higher levels of learning built into them. Teachers and mentors were asked whether students were learning sufficient content. Three teachers and mentors felt that students were learning sufficient content, one felt they were not, and one felt it was too early to say. Teachers and mentors were asked whether students were gaining a 'Big Picture' of what they were doing. Teachers and mentors indicated uncertainty in their responses. Teachers and mentors indicated that this was an aspect that was down to the students, rather than being covered and provided in an explicit way:

- I'm hoping at the end this will emerge when they're asked "How do I like to learn?".
- We'll see at the end.
- I think they are beginning to realise it's not just about these 2 weeks but schools' futures.
- I think they understand the idea of the event and are enjoying theme-based work rather than subject.
- They understand the sessions individually but 'haven't yet seen the picture on the cover of the jigsaw box'.

It was clear that the lack of emphasis on a ‘Big Picture’ potentially limited the experiences for students, both in terms of their experiences during the event, and their experiences beyond the event. Teachers and mentors were asked whether students were transferring their learning from other places and to other situations. Examples were reported in four cases:

- They're transferring skills learnt in the first few days with ICT and using these as the project progresses.
- Some have come with knowledge from school and home (ICT and more general knowledge).
- It's evident in their presentations.
- Some were definitely heard drawing on knowledge of planets from science lessons.
A limited focus on actively encouraging the transfer of learning could also have impacted on short-term and long-term potential value of these experiences. Teachers and mentors were asked whether students needed to reflect on their learning adequately. The importance of this aspect was highlighted by teachers and mentors, but they were unclear as to whether this was adequately covered across the event:

- They need to and we haven't had enough time to do that.
- They should be doing that daily in their WIKI.
- They haven't unless forced to.
- I think some are struggling with it as seen in blogs.
- We're now building that into the day.

Teachers and mentors were asked whether anything set this project apart in curriculum terms. They felt it did in a number of different respects:

- The opportunity to work in a truly cross-curricular way with as much ICT as the students can cope with.
- It's been very focused on application and it's been largely group work.
- Themes rather than individual lessons.
- The removal of subject boundaries, location and rooms - having access to room and resources.
- Space, flexibility, resources, and time.

Teachers and mentors were asked whether this project removed barriers in curriculum terms in any ways. All agreed that it did, and they highlighted the removal of barriers such as resource levels, subject-specific boundaries, choosing how to produce finished work, and collaborative approaches. Teachers and mentors were asked whether this project removed barriers that lesson time constraints might offer. Although three teachers and mentors agreed that it had, comments suggested that time constraints could still be an issue for an event of this nature:

- There were constraints of an organisational and practicality nature.
- We've still had time constraints. Some things need longer than an hour or you have to constantly come back and nothing is accomplished. There is an important sense of completion which may not exist if a lesson has to be revisited a week later.

Teachers and mentors were asked whether the timetable of this project made it difficult to contemplate as an element for use in a school. Teachers and mentors gave different views, although the idea of introducing elements of the project into the school was highlighted by a number of teachers:

- It doesn't need to stand as a whole.
- There are difficulties but these are not insurmountable – it depends on the school.
- I think this kind of project is not transferable to school – due to factors concerned with staffing, student numbers, choices, rooms, equipment.
- There are issues with staffing and resource levels but not with actual timetabling.

Teachers and mentors were asked whether this project provided sufficient resources to support learning outcomes. All agreed that sufficient resources had been provided.

Teachers and mentors were asked whether this project could be run in standard classrooms or school rooms. It was felt that aspects could be run in standard classrooms, given support, and resources.

Teachers and mentors were asked whether student voice was being encouraged sufficiently. Teachers and mentors felt that this had been possible through the wiki, blogs and the video diary, but that formal ways had not been put in place to provide for its potential within a 2 week period. Teachers and mentors were asked whether the video diary room was a useful idea. All teachers and mentors agreed that it had been a useful idea. However, observations suggested that the resource had been used only to a limited extent.
Teachers and mentors were asked whether the laptop was being used to support learning effectively. All teachers and mentors agreed that it had been used effectively.

Teachers and mentors were asked whether home or out-of-school learning worked in the context of this project. Teacher and mentor comments and reports varied, but indicated that there had not been a particular focus on this aspect, which could have limited encouragement and potential use:

- I'm not sure it's totally worked – students have not been focused in terms of completing tasks.
- I'm surprised how many students have taken it upon themselves to finish things at home - not because they have had to, but because they have wanted to.
- I think there's been a lot of support from home and parents have responded to their children being chosen.

Teachers and mentors were asked what the most successful aspects of this project were. Comments varied, but the success of students working together was highlighted by a number of teachers and mentors:

- The way students have worked together (3 teachers).
- Willingness to take on new learning situations (2 teachers).
- Opening their eyes to what's possible using available tools (1 teacher).
- Opening out possibilities to achieve work creatively (1 teacher).

Independent observations
An independent researcher observed sessions throughout the event. Comments arising from those observations are provided here, offered in chronological order. The timetable of the event provides an overview of the structure on a day by day basis (see Section 3, pages 12 and 13).

Day 1
On the first day students were placed in groups by the staff. Five sessions were observed in total, four running in the morning, and one in the afternoon. There were 10 students in each of the morning sessions, and all 40 in the afternoon session. There was one member of staff in each of the morning sessions, and 6 members of staff in the afternoon session. The purpose of the morning sessions was to introduce students to specific ICT-based techniques: animation; video editing and use of iMovie; use of Paintshop; and use of garage band software. These sessions were run in rooms with appropriate levels of resource. The purpose of the afternoon session was to use these techniques, to produce a CD-ROM which could be sent into space, to inform any life beyond the Earth, through images, sounds and text to portray the diversity of life on Earth. The CD-ROM had to be about 1 minute in length. This session was introduced within a lecture room, then students could use the entire CLC facilities.

Within these sessions, students were not given a ‘Big Picture’ to give an idea of how activities were integrated within a wider or longer term aim or goal. They were given an idea of how the afternoon session fitted into the overall topic of ‘Life’. However, students appeared to be involved throughout the day. The activities appeared to be appropriate, and generated student interest (sometimes through their engagement with presentations on the interactive whiteboards, or using them as a focus for showing how to shoot and edit video, or using techniques they had learned about for specific purposes). Although students worked individually in the morning sessions, they worked as teams in the afternoon session (one group was particularly successful in finding and exploring their strengths).

The morning sessions were both taught (some 47 minutes in total), and had some exploratory time (some 50 minutes in total). During the afternoon session, the amount of taught time (25 minutes) was less than the exploratory time available (65 minutes). Engagement by students, and their abilities to show that they could use and apply techniques, suggested that sessions were founded on best practice, working from the level of the students to higher levels. Students were able to explore in their own ways, and they could introduce their interests. Students were engaging and using visual and auditory routes strongly throughout the day, together with kinaesthetic routes in handling equipment from the middle of the morning. During the afternoon they were engaged in social ways. Textual forms of engagement were not evident to any great extent (although the option was there for them to use that route).
As the day progressed, students began to work with teachers more, and to seek their advice and guidance as needed. Students were engaged in listening and watching to a great extent during the morning, with some time to practise techniques, while in the afternoon, discussion and development of ideas were involved to a much greater extent. During the afternoon, students were given the freedom to be creative, to use the techniques and technology in ways to fulfil specific aims. The introduction of new techniques, new skills, and new working groups were challenging in themselves, but finding ways to fulfil the aims of the afternoon activity were also challenging. During the afternoon students were able to gain some ideas about how they were learning. However, higher order thinking, in terms of analysis, synthesis or evaluation, was not an essential element of the needs of the activities.

In many sessions content was used as a starting point; students needed to use content, with the activities being concerned with how to work with content and create outcomes for audiences. Although students could have transferred their learning across the day, this happened to limited extents only. The activities focused on the presentation of outcomes to the group, and not to any wider audience. Students were not asked to reflect on their learning specifically. But, students were beginning by the end of the day to own the learning, with this being associated with their abilities to use the technology to handle the work.

The morning activities provided sufficient time for students to reach learning outcomes, but this was not achieved by the majority in the afternoon session. ICT was integrated throughout the sessions, for demonstration purposes, for capturing imagery and audio, for presentation of ideas, to create music, research, and for writing texts. There was adequate technology to support the students in resource terms, but during the afternoon, limited social interaction arose in some cases due to lack of familiarity amongst the students, whilst others struggled with a new freedom and lack of teacher direction.

The main outcomes of the sessions were acquisition of knowledge concerned with uses of the technologies, and the excitement of using techniques and facilities for creative purposes. The fact that students could explore these techniques and technologies within a short period of time was a major success, as was the fact that students could complete tasks using these technologies. Finding ways of how to work together was also an important element of success arising during the afternoon.

These sessions could have been run (given the technology) as a part of a standard school curriculum, and in standard classrooms. Similarly, a video diary room could have been set up in a standard classroom (and this was used to a small extent during the afternoon session). Student voice was an important element, and students were listened to throughout the day.

Some students explored the technologies during the day, and all were able to exploit facilities in a variety of ways. Over lunch, for example, some of the students discovered how to by-pass a block and to access ‘Skype’. Some of the students used ‘Skype’ as well as their ‘G-mail’ accounts during the afternoon session to communicate with members of their team who were working in another room.

**Day 2**

Students were placed in groups by the staff (but in different groups to those on the previous day). The day was divided into two main sessions (a morning and an afternoon session). The morning session ran for 3 hours, with students working in groups of 5, to create their own planet, which could support life and be a holiday destination. They had to produce their work on CD-ROMs by lunchtime. The afternoon sessions ran for 2 hours, and were in two parts. Part 1 was to redesign Blackpool after a disaster, while Part 2 was concerned with the use of ‘Sketchup’ (a 3D design package) to design a new building for the town. There were 5 members of staff in each session. After introductions in the lecture theatre, students could work throughout the CLC. Student laptops operated throughout the CLC.

Students were not given a ‘Big Picture’ of what they were doing; what they worked with was the need to undertake and complete specific activities. Students appeared to be fully engaged throughout the day, and the topics appeared to be appropriate and reflected in student interest. Although some students worked well together in a group, others clearly found this harder, and chose to work
individually. The morning session was both exploratory and discovery in nature, rather than being taught, while the afternoon elements had short taught periods (20 minutes in total) followed by exploratory time (50 minutes in total). The activities engaged students in a variety of ways, through textual, visual, auditory, kinaesthetic and social routes.

Teachers tended to offer advice and guidance, although collaboration was a feature of the work in the television and broadcasting studio. As students were not restricted in terms of their ways of engaging with work needs, they varied in terms of forms of participation. A feature of the session was that each group would use a student as an ‘envoy’, to go and find out specific things, and then to bring these back to the group as a whole.

To produce outcomes, students generally had to take creative approaches. Students appeared to be challenged; they had to think, discuss and at times transfer knowledge from other areas like mathematics and geography, as well as working in new groups. Students did not appear to gain an understanding of how they were learning; it was not evident that this was happening explicitly. Some students were engaged in processes of analysis and synthesis, although more time to consider this in plenary sessions would have potentially helped more students to consider how to work at higher order levels. Transfer of learning was not explicitly recognised in sessions, and content was as much an end point as a starting point in these sessions. The need to present findings to others was being developed in the sessions. Learners did not need to reflect on their learning, however. Ownership of learning by students was not entirely apparent at that stage. During the morning session most groups had accomplished their learning goals, but students appeared to need much more time in the afternoon session to accomplish the learning goals they had been set. Students integrated the uses of ICT as and when they felt it was appropriate, to create end points from the activities they were set. For most students, the resources were entirely sufficient; however, for perhaps 1 in 10 of students, considerable teacher support and direction was needed.

In terms of outcomes of these sessions, students were gaining familiarity with the ICT, and the importance of group work was developing. The most successful elements of the sessions were felt to be: the short times in which some of the students organised themselves and were able to work effectively with people they did not know, to share ideas and tasks, to complete assignments on time and to work together at levels of higher order thinking; and the persistence of some students when work was extremely challenging.

It was felt that these activities could be run as a part of a standard school curriculum, that they could have been run in a standard classroom (but there was a need for a broadcasting and recording studio), and that the ICT equipment could have been housed in a standard classroom. There was limited use of the video diary room, although this could have been set up in a standard classroom. Students were listened to during the afternoon feedback sessions.

Day 3
Students were able to sign up for the group they wanted to be in during the previous day. They could also choose the order in which they took the sessions as these were run as a carousel. Students failing to sign up in time forfeited their choice of group and order of session, and were then placed in groups and sessions by the staff.

Four sessions were observed, each with a specific group of 8 students. In three cases there was one member of staff with the group, and in the other case, 2 members of staff were present. The purposes of the sessions (roughly each one hour long) were to create a piece of music interpreting their world, to create an alien to live on an imaginary planet in purely descriptive form, to understand the causes of some natural phenomena (for example, hurricanes, and volcanic activity) and to think about life in a less developed country and how it might differ from their own. Students worked in different rooms in the CLC, and all had space for laptops (although sometimes a keyboard needed to be moved out of the way to provide access).
Students were not given a ‘Big Picture’ of what they were doing or attempting to achieve, other than how activities linked to the overall topic of the event. Students were engaged when teachers were giving presentations or introductions, but observation in one group indicated that although some students were involved, others remained on the periphery. Activities appeared to engage many students (although some showed limited interest). While the music activity might have been undertaken by students at a rather superficial level, that appeared not to be the case. Although the focus of the activity concerned with life in another country was somewhat different from the other activities, it did provide opportunity for learners to engage with a topic that contributed to the breadth of contexts covered.

Team work appeared to be rather limited, and somewhat fragmented across the day. In some groups, division of the group happened and then some individuals appeared to be engaged. Much of the sessions was of an exploratory nature (some 134 minutes in total), compared to about 40 minutes of taught time, some 40 minutes of discovery time, 12 minutes of discussion, and 8 minutes sharing feelings and work. Considerable teacher effort was involved in motivating some students in one of the sessions. The sessions involved auditory routes to engagement (in all cases), kinaesthetic in 1 case, visual in 2 cases, and social in 3 cases. Some of the differences identified in terms of levels of group working could possibly have related to individual student responses, or they could have related to a heightened discernment for particular modes of working. Observation in one group suggested that group dynamics were having a marked impact. In one case one student became dominant, and another was largely uninvolved; dividing the group into 2 appeared to help.

There were examples of collaborative working between students and staff in 2 sessions (of about 40 minutes in each case). Overall amounts of listening and watching were limited (45 minutes in total), while the amount of time involved in developing ideas was higher (97 minutes). The amount of time in producing outcomes was some 60 minutes, with discussion amounting to some 45 minutes, and feedback of some 8 minutes. Some elements of creative approaches were observed in some sessions (in 2 out of the 4). In the best examples, students were owning the facilities and opportunities, and creating outcomes using the width at their disposal. In 2 of the 4 sessions, students appeared to be challenged by the activity, but they were challenged by group dynamics in another session. Students did not appear to be gaining any understanding of how they were learning. Analysis, synthesis and evaluation were involved in 3 of the 4 sessions; interestingly, the session where these higher order learning levels was not involved, was the session where students engaged least. Content was used differently in different sessions; in three sessions it was an end point, while in two sessions it was a starting point (being both a starting and end point in one session). In only one session were students encouraged to transfer their learning by recalling aspects of a topic they had covered previously (but they did transfer their learning without being stimulated to do so in another activity). Students did share their outcomes with others, and this was particularly the case where groups divided into smaller units to undertake separate or different tasks. Time for reflection and direct encouragement to do so was limited, particularly in some sessions (however, some students clearly used the blog to reflect on their learning at a later stage). In two sessions students appeared to own their learning, and to take a personal direction with some of the activity. In these cases, students were seen to engage with the work far more. Overall, learners appeared to have sufficient time to reach their learning goals in all sessions.

Overall, teachers introduced sessions using interactive whiteboards, while students used laptops to undertake activities. The television studio was also used to create a news report, and a video camera was used to capture an outside report. Internet access was used for research purposes, laptops were used to compose music, and ‘G-mail’ and ‘Skype’ were used to maintain contact and communication between members of the groups. Overall the levels of resource were sufficient for students to reach their learning goals. However, in some cases their efficiency and facilities might have been improved, and in other cases, there was a need for teachers to maintain a focus on higher order thinking and learning.

Main outcomes of these sessions were the production of specified descriptions, an understanding of why certain phenomena occurred, the creation of a piece of music, and awareness of lives parallel to
their own. The most successful aspects of the sessions were decisions about dividing groups so that everyone became involved, use of the internet to support research, focused writing by a student who said he did not like writing in school, the use of a musical medium to express feelings of sadness and anger that could not have been done otherwise, and students being led into levels of higher order thinking.

It appeared that these activities could run within a standard school curriculum (although one session would need to fit at a cross-curricular level). Activities could have been run in a standard classroom, but students would have needed access to a television studio and a video camera to undertake outside recording. The video diary was not used in any of these sessions. Students were listened to throughout the day, and this formed a significant part of the activities in some cases (up to three-fifths of the time of the session).

Day 4

The morning session allowed students to study at home, without any specific tasks being set. Students were able to sign up the day before for the group they wanted to be in. They could also choose the order in which they took the sessions as these were run in a carousel. Students failing to sign up in time forfeited their choice of group and order of session, and were then placed in sessions and groups by the staff.

As students were producing presentations for parents and other guests arriving that evening, sessions did not start until after lunch. Three sessions were observed, as well as the presentation time and the evening event itself. Students worked in a range of locations around the CLC, so sessions observed involved 12 students with 1 or 2 members of staff. The purposes of the sessions reported (those prior to the preparatations and presentations themselves) were: to match a number of photographs of historical buildings in Blackpool with a recorded date and facts from a sheet, then using logo software on a PC to program a logo robot to visit each of these places in chronological order; to look at stars or constellations and link stories from the past and today; and to create an alien of choice from a description of the previous day (students were given a CD-ROM to work with for this activity). For one activity, ‘Stardome’ was set up in the interactive learning theatre, while the other activities were run in the professional development area and the Apple learning room. All rooms allowed students sufficient space to work, although in the Apple learning room the keyboards needed to be moved to one side to allow space for students to place their laptops.

No particular emphasis was placed on giving students ideas of how these activities would link into a ‘Big Picture’, although mention was made of the ‘Blue Card’, and the need for students to think about analysis and synthesis of ideas. Engagement in the sessions was varied. In the first session, students were warned that the task would be difficult and they were encouraged to take notes (which one student did) whilst others listened, and some appeared to be quiet but not engaging. In the second session, initial excitement was followed by engagement. In the third session, engagement appeared to be surprisingly low. The topics appeared to fit with the overall theme, and students appeared to gain interest through either the activity itself, or with the use of technologies such as robots or animation. Students worked in various groupings in these activities, and in some cases chose to work in groups of two or three, while in other cases they worked on their own.

The first session was highly structured (but with exploratory and discovery elements), the second session provided taught elements followed by exploratory time, while the third session was unstructured and allowed students to exercise creativity. Teachers were responsible for the high levels of engagement of students in the first two activities (and it is notable that the second activity might not have been as appealing had the structure not been strongly provided by the teacher). Engagement in the third session was very varied, and the lack of structure appeared to provide a challenge that some students could not tackle at that point. All sessions provided engagement through visual, auditory and social routes (and textual and kinaesthetic in the first of the sessions). Collaboration between students and teacher was observed in the third session (and lasted for some 45 minutes in this session). Extents of different types of interaction varied across the sessions: in the first session, 10 minutes of listening was followed by 50 minutes of discussing and developing ideas (the near 100% student involvement,
interest and enjoyment in this session was felt to have been generated through the use of the robot and interestingly, the students were not put off by the challenges of this session); in the second session, listening, watching and discussing amounted to some 45 minutes, followed by writing and developing ideas for 20 minutes; in the third session, listening for 5 minutes was followed by discussion and developing ideas that varied from 5 minutes in length to 55 minutes in length (depending on levels of interest and engagement). In terms of creativity, students were asked to take a creative approach to writing, could choose alternative forms to research, and used ICT techniques in creative ways to develop a moving alien. The challenge for students appeared to vary; in one session they were clearly challenged, in another they were not challenged as much but were interested, while in the third they were not challenged and only some were engaged. Students did not appear to be gaining ideas of how they were learning from any of the sessions. Students were certainly involved in analysis and synthesis in the session which required them to move a robot to an exact position, and they could have been involved in higher order learning levels in the second session (analysis and synthesis of ideas). In all sessions, content was used as a starting point rather than an end point. Some transfer of prior knowledge was possible (for those who had some knowledge of Blackpool’s history, or of constellations, or of animation techniques). Students needed to present their findings in certain ways (reading their stories to others, or resolving the problem in paired work). Students were encouraged to reflect on their learning in two sessions, but time limitations were an issue. The ownership of learning appeared to vary greatly across the day, but the use of the robot appeared to engender ownership, as did the use of animation (for those who chose to use it). There was time to complete work generally, but space was a problem in one session (because of the space taken up by the 'Stardome'), and the robot was capturing interest which meant that time on a previous task element was limited. ICT was available for use in sessions for students (laptops with image capture facilities, and animation software, or PC access to software to program a robot, for example).

The main outcomes of the sessions were felt to be the high levels of student focus (in the first two sessions and for boys in the third session), levels of success achieved even though activities were challenging, and completing the challenges of an assignment that involved work across parts of three days. The most successful elements of the sessions were felt to be: student enjoyment and participation (except for some girls in the third session); students being on task and achieving outcomes even when tasks were not fully completed; pairs of students working well together and not being put off by setbacks and challenge; student flexibility and choice of alternative approaches; and the application of some boys to the use of the animation program.

It was felt that the activities could be run as a part of a standard school curriculum (given that a cross-curricular approach could be taken to some elements). The ‘Stardome’ activity could not have been run in a standard classroom, but the other activities could have been (as long as the requisite technology and staff support were available). The video diary room was not used throughout the day, although this could have been set up within a standard classroom. Students were listened to at relevant times, especially during the latter part of the day.

Preparation for presentations was undertaken in the evening, in a one hour session. All students (except one) were present, and 6 staff accompanied them. The purpose of the session was to complete any outstanding work, ready for presentation to parents at 6p.m. All rooms were used in the CLC. Individual groups worked on different aspects of their presentations, and it was clear that some students had spent considerable time at home in preparing certain items (one girl reported spending 4 hours working on her Golden Record CD-ROM (this length of time being partly due to lack of internet communication with other members of the group). With about one quarter of the students not having internet access at home, this could have limited outside involvement if students wanted to use the internet for any specific purposes (particularly when groups collaborated at home through this medium). It appeared at that point that many students were taking ownership of their learning (the potential importance of completing items for external audience and purpose should be noted in this context). Students and teachers were working together, but still the emphasis was on guidance rather than collaboration.
The presentation to parents took place in the Interactive Learning Theatre. There was a high parental turn-out, which was a measure of both parent interest and support for the project. Unfortunately technical problems prevented direct presentations of students’ work, so tutors were asked to go with their tutees (8 in each group) to show some of their group’s work to parents. Technical problems prevented work on CD-ROMs being shown on the interactive whiteboard in at least one room, and in that case, apart from one piece of work, all work had to be shown on students’ laptops (which was not easy for group viewing). Students talked about their work and parents were then free to walk around, looking at the students’ work and talking to them about it.

Day 5

Students were able to sign up the day before for the group they wanted to be in. They could also choose the order in which they took the two sessions as the numbers were equal for both. Students failing to sign up in time forfeited their choice of group and order of session, and were then placed in groups by the staff.

There were two morning sessions observed. Half the total number of students was present in each session (each session was repeated), with 4 or 5 members of staff in each. The purpose of the first session was to write an argued article on the issue of global warming, supported with evidence, as an article for a newspaper or magazine (run in a PC learning room, where students could use their laptops). The purpose of the second session was to experience the use of Nintendo ‘Wii’ in sport (run in the interactive lecture theatre). The first session did not provide students with a ‘Big Picture’ of what they were doing, while the second session was introduced with a discussion about how the activity related to Public Service Agreement targets.

The first session gained interest from students initially, but this was not consistently maintained by all students. In the second session, all students were fully interested and participating. The topic of the first session was one that students were very familiar with already (although it was covered in a way that allowed creative aspects to be explored, partly due to the opportunities the laptops provided, and it involved higher order thinking); the appropriateness of the topic of the second session was reflected in student interest (with a variety of tasks available at different levels, using the technology in purposeful ways). In the first session students mostly worked independently whilst in the second session students were involved in games as a team, but mostly as individuals and in a competitive way. The taught element of the first session lasted 20 minutes (followed by 65 minutes of exploration), while the second session offered a carousel of five activities, with students involved in each one for some 10 minutes. The first session focused on textual, visual, auditory and social routes of engagement, while the second session focused on auditory, kinaesthetic and social routes.

In the first session students and teachers worked collaboratively for some 60 minutes (with some students needing considerable support), while students and teachers worked collaboratively throughout the second session. The first session involved students in listening for 15 minutes, watching a film for 5 minutes, then 55 minutes of writing, discussion and developing ideas (although some students were not engaged during the latter elements for some considerable periods of time). In the second session students were physically active for 50 minutes. In the first session students were encouraged to take creative approaches (with some approaches being offered to them), and some students used a ‘Comic Life’ programme very successfully. Students in the first session appeared to be challenged to a limited extent, and some students produced work in ways that were of limited relevance. In the second session, students appeared to be challenged throughout. In neither session did students find out anything directly about how they were learning. In the first session students did need to use analysis, synthesis and evaluation techniques to arrive at final conclusions and to answer the question posed; in the second session these techniques were not involved directly. In the first session content was used as a starting point, while in the second session it was used as an end point. Students were encouraged to draw on existing knowledge in the first session; no encouragement for transfer of learning was noted in the second session. Students did not need to present their findings or learning to others in either session. Students did not need to reflect on their learning in the first session, but did need to do so in the second session. Ownership of learning varied in the first session, but was generally noticeable in the second session. In both sessions there was time to reach their learning goals (although some students in the first session did not choose to use the time to reach a learning goal).
An interactive whiteboard was used in the first session to show a film, then students used their laptops. ICT was used in 3 of the 5 activities in the second session (dance mats, a racing game, and Nintendo ‘Wii’ bowling). The resources were sufficient to allow students to reach their learning goals. The main outcomes of the first session were some well produced pieces of work, undertaken in a variety of ways, using a considerable degree of creativity in approach, with some students attempting to argue and evaluate at high levels (after a slow start for some, there was ultimately a high degree of motivation and interest). In the second session the main outcomes were that students were well exercised, had enjoyed themselves, and some did not want to leave at the end of the lesson (all students were involved, which has been found by teacher experience not always to be the case in sports lessons generally).

The activities could have been run as a part of a standard school curriculum. The first session could have been run in a standard classroom, and the second session in a gym or sports hall. The ICT equipment could have been housed in a standard classroom, gym or sports hall. The video diary room was not used throughout the sessions, but students were listened to throughout the sessions.

In the afternoon session, students were given a choice of watching a film in the interactive learning theatre (The Day after Tomorrow), or working on ‘Sketchup’ designing their school of the future (and an i-pod was to be given to the student with the best design on the last day). Twenty-two students chose to watch the film. Students were observed using ‘Sketchup’ during the afternoon (and appeared to be very focused), while another student was observed finishing other work, and yet others were observed using animation and experimenting with ‘Lego Robo’. On the whole, students were very quiet and absorbed (and this was a Friday afternoon).

Day 6
The morning was run as a continuous session of activity lasting for 3 hours and 40 minutes. Students were organised into groups (5 tables with 8 students in a group), each group supported by a member of staff. (The afternoon session was run similarly, but with slightly different groups.)

The purpose of the sessions was to consider emergency planning for floods and disasters, to understand the causes and effects of flooding, and to undertake an emergency planning simulation. Activities were run in the interactive learning theatre. An introductory talk on the 1953 floods on the East Coast was followed by the playing of a DVD showing archive footage (with poor sound) of the 1953 coastal flooding. Most groups on tables were focused at this point, with one group paying less attention than the others (talking and looking at leaflets). The 10 minute film was followed by a short question and answer session. At 9.45, a pack was put on each table, students needed to read the information and put pictures on a time line. Groups were slow to organise themselves, not reading the information. Only one group out of the 5 was working together as a group. Overall there was a lack of group involvement, and a lack of apparent motivation. After 20 minutes, students were ‘bribed’ to complete the task (Nintendo ‘Wii’ would not be set up at lunchtime if they did not complete the task). One group (all girls) finished the task first, and they had worked as a team. At 10.10 the answers were considered, and these were presented from each group through a group spokesperson. Sweets were given out to every spokesperson and to members of the best group. At 10.15 there was a talk and presentation by one of the council employees who volunteers for RNLI. Students were asked to put on their laptops and to find the RNLI via Google. Some students subsequently used their laptops to make notes, while others accessed ‘Skype’. Once the speaker showed a DVD, students were again focused (although at least 4 students were still working on Apple Macs). At 10.40 there was more DVD footage shown on RNLI training, and students were again focused. At 10.45 attention began to drift until the speaker invited a student to dress up in his RNLI uniform.

Following a short break there was a 13 minute video showing floods in Boscastle (during which 7 students had laptops open, some made notes, 9 students seemed not to be focused, one boy was using a mobile, one boy had his head down on the table, and one boy and girl were chatting). At 11.35 there was a further question and answer session (and by that time more of the speakers had arrived). At 11.40 a spokesman from the Meteorological Office gave a lively talk, which changed the tempo.
somewhat. Students were asked to use Google to find the Meteorological Office and the Environment Agency. At 12.00 there was a police presentation, and a DVD was shown of news clips of major incidents from the last 20 years. All students were by this time back on task, with just one student using a laptop. At 12.15 there was a question and answer session, then tables were pushed aside for the introduction to ‘Coping with a disaster’. The kinaesthetic element introduced was an obvious relief for the students. The morning session ended at 12.45, with groups being given props for the afternoon session; the press hats were particularly popular.

Students were not given a ‘Big Picture’ of how these activities linked into a wider picture. However, connection was made between the life skills used by the RNLI and those being learned by students in ‘The Big Experiment’ (team work, communication skills and co-operation). Although some students were identified as not engaging at certain times, the morning session set off to an unfortunate start (several guest speakers were caught in an emergency - a chemical spillage near Preston), so two employees from the Blackpool Emergency Planning Department stood in until other speakers could arrive. Overall it was felt that some 4 out of 5 students were listening and engaging. The morning session was a mixture of taught, exploratory and discovery elements, but was not well structured (which may have been in part due to late arrival of speakers). Although the intention of the morning session was well founded, the speakers were not trained to talk to students. Many students found it hard to follow and to focus, and their attention tended to wander unless there was an activity to undertake or something to watch. There was a far higher degree of engagement during the afternoon session.

The session began with a 30 minute taught element, followed by 2 hours and 30 minutes of exploration and discovery, and finished with a 30 minute quiz. This session involved students far more - the task was built on sound group work concepts, and allowed them to respond at their own level. The sessions used visual, auditory, kinaesthetic and social routes to engage students, whilst the morning had concentrated on the textual and auditory routes. The morning session was not structured around students and teachers working collaboratively, while the afternoon session was, with teachers and students giving advice and helping with the technology when necessary. The morning session involved listening and watching for 1 hour and 30 minutes, and some 35 minutes of discussion and was passive by comparison to the afternoon, which involved only 30 minutes of listening and watching, and 3 hours of writing, discussing and developing ideas. In the afternoon session students had to watch a short mock-up video of an emergency, listen to a speaker from the community team at the council talking about how she had to deal with the media, and then received a radio broadcast setting an incident so that the 5 groups had to adopt their group role (media, police, fire crew, council and paramedics). In the morning session there was no scope for students to take a creative approach; whilst in the afternoon session they were required to do so. Students were not challenged in the morning session, but the afternoon session offered a demanding exercise requiring good team work (3 groups worked well together, while the other 2 needed some encouragement and support). Students did not appear to be gaining understanding of how they were learning, and this was not a focus of discussion in the sessions. Students were not involved in higher order learning levels in the morning session, but in the afternoon session higher order thinking was very much a part of the exercise (receiving and assessing information, analysing consequences, and evaluating a rapidly changing situation). In the morning, content was focused on throughout the session, whereas content was the starting point in the afternoon session. Transfer of learning was not encouraged or emphasised in the morning session, but was needed in the afternoon session. Presentation of findings to others was limited in the morning session, but was happening constantly during the afternoon session (as the emergency developed, students needed to pass on findings to other groups who in their turn needed to act upon that knowledge). Reflection on learning appeared to be limited, although at the end of the afternoon session students were congratulated and the importance of communication, team work and co-operation was stressed. Although students did not appear to own their learning in the morning session, some did own the learning in the afternoon session, and this aspect developed throughout that session. Learning goals or outcomes were not clear in the morning session, but these were clear in the afternoon, and three fifths of the groups had sufficient time to complete the work. ICT was included in the morning session as a presentational tool (and for students to access specific internet sites), while students used the ICT themselves when working in ‘emergency groups’ in the afternoon (for internet
searches, writing reports, and recording themselves on iMovie). Resources were sufficient for the needs of the sessions.

The main outcome of the morning session was the recognition that a long session of this nature needs to be very tightly structured with a variety of activities. The main outcome of the afternoon session was that the majority of students were able to think and act resourcefully and creatively under pressure. Successful aspects were not identified in the morning session, but were clear in the afternoon when students recovered from a difficult morning session and applied themselves well in a pressured and demanding situation. Some effective work was observed from all the groups, especially from the media crew.

These sessions could have been included as a part of a standard school curriculum, but both activities would have needed large amounts of space available (a hall for the morning session, and a number of rooms for the afternoon session). ICT equipment included the use of a television studio during the afternoon. The video diary room was not used throughout the day. Students were listened to extensively during the afternoon session (for some three quarters of the session).

Day 7

The morning session was run as two parallel activities. In one of those activities, the Montserrat simulation, 20 students (self-selected the previous day), were organised in 5 groups of 4, supported by 3 members of staff. The 3 hour session was run in the interactive learning theatre. Students were not given ideas of a ‘Big Picture’ at the outset or end of the session. This group was self-selected, and although they were given an initial sheet the previous day, many appeared not to have read it. The topic appeared to be relevant to the overall theme, and judging by interest and engagement in the afternoon session the previous day, was likely to engage student interest. One group worked well together from the outset (all girls), while other teams had more problems organising themselves and deciding how to tackle the task. The session was entirely exploratory and discovery based. The structure came from the simulation, provided through the NASA Space Centre, and involved an unfolding disaster. The session was very hands-on, and appeared to be exciting, engaging students once they were connected to Mission Control. The activity engaged students through textual, auditory, kinaesthetic and social routes. Students and teachers worked collaboratively throughout the session. Students were involved in listening, watching, writing, discussing, and developing ideas for the entire 3 hours (activities overlapped and ran into each other). This was a fast moving and intense session; students were analysing data as they received them, responding to them and informing the data officer every 5 minutes, when they were ‘live’. Students were left to consider their own creative approaches, and students were challenged by the session. Students were not gaining specific understanding of how they were learning (but were likely to have understood that they had learned from what they had done). Students needed to undertake analysis, synthesis, and evaluation throughout the session. For some of the groups these levels of learning were concerned with mathematical data (volcano and hurricane groups), but all were receiving rapidly changing information and had to analyse and evaluate its effect before making decisions. Content was very much a starting point in this activity. Students did need to transfer learning from other places, but this was not specifically mentioned or drawn out in any way. Students needed to present their findings and outcomes to the data officer every 5 minutes. Reflection on learning was limited, with this being covered through a congratulatory element rather than through a reflective element. Many students appeared to own their learning (some more than others), and there was sufficient time to reach learning outcomes.

ICT was used in an integral way in the session. The laptop was used by some groups to receive, record and analyse data, for others to email mission control, and others used a video camera to record interviews. There was sufficient resource available for students to reach their learning outcomes.

The main outcomes of the session were felt to be that the five teams together succeeded in a very challenging task, and clearly enjoyed the experience. The most successful elements were felt to be that all teams came through with individual members playing their part (some girls were strongly involved through this form of work). The activity was expensive to run, so would need commitment of a school
management team, and would need space provided by a large hall to be run effectively. The video diary was not used throughout the session. All students were listened to in this session.

Those students who did not sign up to take part in the Montserrat simulation followed a tutorial to make an interactive computer game in a PC learning room (19 students with 2 teachers). They also worked with the Caspia Q-Cognition Blooms linked software. They started at level 1 with an option to do all levels, but no-one got beyond level 3. It was reported that not many sustained the effort and all went back to the interactive games. Students indicated their liking of the sessions although they found it a ‘quite challenging’ session. Some students said they would like to become games designers (so students were beginning to identify a focal point for a ‘Big Picture’ for themselves).

**Day 8**

Activities for this day were run in a local secondary school, using specialist science laboratories. Students were divided into two large groups (one in each of two laboratories), and the group in each laboratory was split further into four groups (on this day students worked in their school groups). Nine members of staff were present.

Students were given a ‘Big Picture’ of what they were doing, and how it connected to ‘The Big Experiment’. Students were shown the overall scientific question that they were tackling. Students were also shown the skills needed by employers in the area, and how they had been working on these for the duration of the event. After a 10 minute taught element, students were given 4 practical experiments to do during the day. These were all hands-on experiments. They also had a written challenge booklet to complete by the end of the day.

In the morning session students in one laboratory needed to tackle two challenges – the creation of an air buggy, and a challenge concerned with wind power. The four groups in this laboratory were involved in quite different ways:

- **Group A** needed to be instructed about the division of tasks initially. Only one girl appeared to be motivated to any great extent. There appeared to be a general lack of team work and application for much of the morning.
- **Group B** was involved more rapidly. One boy was initially not involved, but became involved within an hour. The group divided their efforts, and had completed all assignments within the allotted time.
- **Group C** was involved as a group, and divided their efforts appropriately. However, they did not approach tasks systematically or with logical or ordered thinking, so their evidence was not collected in ways that were useful to them. A lack of immediate apparent outcome was also dispiriting to them.
- **Group D** worked initially as a team but did not divide efforts across the tasks. Some students found the tasks challenging, and went off task for periods of time across the morning.

During the afternoon, the groups needed to tackle challenges concerned with a diver, and with a one second timer. The same groups that were observed in the morning were also observed in the afternoon:

- **Group A** were not working as a team. Some students did not easily engage with the tasks, and only two students engaged across the period of the session.
- **Group B** divided tasks, but not all students engaged with them all of the time. Only one challenge was completed in the session.
- **Group C** did not engage well with the tasks, and did not appear to be enjoying the activities.
- **Group D** did not engage well with the tasks, and some students did not appear to be enjoying the activities.

By comparison, groups in the other room seemed much calmer and more focused. By mid-afternoon one of the groups in the other laboratory had generated all their results and were preparing their presentation on laptops. Only two students in the laboratory appeared not to be on task.
Towards the end of the afternoon, all students were brought together for a plenary. One boy felt that having ‘no technology’ in the challenges was a disadvantage; he clearly did not equate the experiments with ‘technology’ (and certainly the type of ‘technology’ in the experiments was not leading edge ICT). One girl commented that team work was: ‘better with people you don’t know’. Certainly some of the school teams did not work well together. All groups were asked to rate themselves on a scale from 1 to 10 for group co-operation during the day. Of the groups observed above, Group A rated themselves as 7, Group B as 8, Group C as 4, and Group D as 5. Staff agreed that Group A’s self assessment was unrealistically high.

Overall, activities involved textual, visual, kinaesthetic and social routes of engagement. Teachers and students worked together for 6 hours. Although there were often 2 teachers for each group, some students appeared to need even higher levels of support, although teachers were giving help and advice. Students were involved in listening and observing for some 30 minutes in the morning and in the afternoon, while they were writing, discussing and developing ideas for some 4 hours. Students were encouraged to take creative approaches, to use their individual strengths, to share ideas within the group, and to think creatively, but how they did this was left up to them. Some students were challenged, but others disengaged throughout the day. It was not clear that students gained an understanding of how they were learning in any of the activities. Students did need to undertake analysis, synthesis and evaluation in all 4 experiments. Content was used as a starting point in these activities, and students were encouraged to draw on scientific knowledge to solve the challenges. Students needed to put a presentation together that they would present at the CLC the following day. Students did reflect on their learning, but there was no time built into the day to do this formally. Some students appeared to own their learning (but not the majority). Students had sufficient time to reach their learning goals, but not all did so.

An interactive whiteboard was used to present the initial ‘Big Picture’, and visual questions for the written challenge. During the challenges, some students used laptops to record data, some made an iMovie of their experiments, and others researched topics for their presentations. Only about half the students appeared to have sufficient resource to achieve their learning goals. It was clear that certain students reacted totally differently in this environment, given a much more structured school-based task and no need for ICT (although it could be used effectively to support learning - and was by some). A greater gulf between the students appeared; some had knowledge and skills, which others did not seem to have. The groups were very different in a range of respects; some students were sufficiently motivated, but others not so. Some staff appeared to be unsure as to how much help they should give the students. Team work skills which had been developed over the previous 7 days appeared to have limited impact when teams were school-based.

The activities could have been run as a part of a standard school curriculum, although numbers of staff involved were considerably higher than the standard ratio in schools. The activities and ICT involved could have been run in a standard classroom. The video diary was not used in these sessions, and could not have been set up in the laboratories. Student voice was not involved in the same way in these activities as it had been in previous activities.

The day was long, and overall it was a long time for students to be indoors; there was no break at all, and only 40 minutes for lunch that was taken in the laboratories. There was some very focused and dedicated work by some students, but a seeming lack of application and motivation by about half the students in groups observed. Some students seemed to have forgotten knowledge about fair tests. Engagement times for many students appeared to be very short, and students needed considerable help from staff. Competitive elements did not seem to motivate students, unlike the motivation that arose from the sports activities run on a previous day. It is difficult to know whether student reaction and effort might have been different in a more ‘comfortable’ environment (although it appeared not to affect some of the groups).

**Day 9**
The day was set aside for preparation of presentations. In total, 39 students were present, and 5 members of staff. The purpose of the session was to prepare a 20 minute presentation, for the head
teacher and senior management team of respective schools when students returned. The day began
with an introduction in the interactive learning theatre. Each student had been emailed a copy of
questions to answer in the course of the presentation. All questions referred to the students’ learning
experiences during the 2 week event. Students were reminded of the width of material they had
produced in the form of video clips, photos, radio broadcasts, television broadcasts, iMovies,
Garage Band music, and Comic Life animations. It was the remit of the students to edit and put
together material of their choice. They needed to work in school groups, to plan and share
responsibility in groups, working in any area they chose in the CLC. They were reminded that if they
wanted to use the television studio that they must think ahead, as others might also want to use it (and
not to go in without a prepared script).

Students dispersed to work in rooms across the CLC; some worked in the Cyber Café and used laptops
there, while others sat and chatted. There was some confusion as to whether students had to do a
science presentation for later in the morning. Some group members began concentrating on that task.
Within an hour, one school group had discussed what had to be done and had divided the tasks; 2
students would work on the science presentation, while others would work on the final presentation.
This group was highly organised, working together and prioritising tasks. The group was aware of
what their goals were for later that morning. They used laptops to prepare for the science presentation
(which they chose to create as a poster). In all other groups there appeared to be a clear divide between
the girls and the boys; the girls with few exceptions settled to work, while the boys were less sure of
purpose and focus (they were either not focused or wandered off to do something they considered to
be more fun, such as playing drums or the keyboard, or Nintendo ‘Wii’). Some of the girls were very
frustrated by the boys’ lack of commitment and help.

All met at the professional development area for judging of the air buggies from the previous day’s
science challenge. Students were reminded that most had not emailed work (studying at home) entitled
‘a day in the life of …’, a personal piece of work produced using ‘Comic Life’ software (only 5 out of
39 had at that time handed something in). All students were at the air buggy judging session, although
it was not easy for all to see the buggies as tables were in the way. Presentation of all the results from
the science challenge was given in the interactive lecture theatre. Those schools not involved carried
on with their own final presentations. Three schools gave presentations. All knew the criteria on which
they would be judged. The lead teacher indicated that he was impressed with students’ work,
particularly the school group which presented their work as a video (they had filmed themselves while
conducting the experiments). The presentation involved a great deal of team work, and high levels of
organisational skills. The students demonstrated increased confidence and used a creative approach.
All the work had been done on an Apple Mac (a clear demonstration of how this particular group had
gained ownership of their learning during the previous days). There was no speaking on the video, but
the work they produced (including graphs) showed evidence of higher order thinking and transfer of
learning. The school which was awarded the science challenge trophy presented their work on a flip
chart with posters, with one of the students talking through the work and findings. All three groups
had to answer questions about their experiments and results.

After lunch the students carried on with final presentations. It was becoming clear that some students
were not on task, or that work was not being planned in advance. There were complaints from staff
and students about some students (one had to be threatened with being thrown off the experiment if he
did not get down to work within the next ½ hour) By the end of the day, 5 groups had used the
television recording studio with limited success (recordings of 2 of the 5 had been unplanned and they
needed to redo their recordings). All groups had more work to do on content and presentation before
re-recording their material the following day.

By the end of the afternoon there was a general recognition that the day had not gone well (the science
presentations apart). Students had been given complete responsibility, and more than a half of them
had not known what to do with their work or their time. Whereas students had been able to engage
with a specific task in the past for a more limited period of time, a whole day of unstructured activity
seemed to be difficult for the students to handle effectively. Whilst ‘The Big Experiment’ had been
impressive in its use of technology, this session possibly underlined areas of weakness in terms of low
engagement with reflection and insufficient focus on higher order thinking. For most students the higher order learning skills appeared not to be coming into play. The students were using all the technology available to them in this session, but largely without focus. After the students left, a member of staff commented: “[the building’s] been left like a youth club”; cameras not in cases were left lying around, drink cans, bottles, cups and wrappers were all left in the rooms, and in one room a rubbish bin and door stop had been broken. It was decided that the following day each member of staff would take responsibility for 2 schools. Without some structured support it appeared likely that the majority of teams would not get their presentations done on time.

Day 10
The final day of ‘The Big Experiment’ involved 38 students and 5 members of staff. All students were working in school groups to complete their presentations. Students were given full access to all rooms in the CLC, but Nintendo ‘Wii’, drums and keyboard had been removed to reduce potential time wasting and to remove temptation. Some students were not happy about the instruments being removed, and maintained they had spent the previous day composing a piece for their presentation (although there appeared to be no evidence of that having happened). Teachers were much more in evidence, sitting down with groups, assessing what they had done at that point in time, and moving them forward. All students in one group were physically in the room, but not all were on task. Another group was struggling to work as a team; two boys who did not contribute the previous day were back with the girls, but did not appear to be motivated.

The work during the day was focused around the key questions e-mailed to all the students the previous day (but these appeared to be largely ignored). One school group was seen to be very focused and their team work was exemplary; they knew exactly what they were doing and the direction in which they were going. They worked very efficiently as a team. They talked through the key questions together, wrote a script and included answers. They intended to film a conversation in the television studio, interspersed with examples of their work, to demonstrate the breadth of their ICT experiences. Break and lunch times went unnoticed, as teachers strongly encouraged students to focus on their work. In the case of some groups and some teachers, the work appeared to be very teacher led, in an effort to reach outcomes. In some cases teachers seemed to resort to doing the work for the students. Two groups chose to create a radio broadcast and to interview in the television studio. By the end of the morning all group members were involved and those who could not work together were on task in another room.

Students went to the interactive lecture theatre half an hour before the end of the day, to see who had won the i-pod for the best design for a new school using ‘Sketchup’. Ten students presented their work for consideration, and one boy and one girl each won an i-pod. Students were shown a DVD of the footage compiled by the camera crew of events of the two weeks, and the day and event were drawn to a close by the organiser. By the end of the session, it appeared that 2 groups had completed their presentations; others seemed close to doing so.
6. Issues arising

Educational issues
A range of issues will be considered here, arising from the evidence of students, teachers and mentors, and independent observers. A number of key issues arose, and one of these was the differences identified in levels of engagement at certain times across the two week event. There were certainly differences in terms of engagement and involvement by students in different activities that could be fairly easily identified. These differences indicated the different nature and approaches of different activities. There was a clear need for all activities to integrate a range of essential features:

- Good planning.
- Effective teaching and presentation.
- An emphasis on collaboration between teachers and students.
- Sufficient kinaesthetic focus.
- A focus on caring aspects.
- High levels of challenge and higher order learning built into activities with which each student within a group must engage.

From responses across the two week period, it appeared that at least half of the activities included sufficient of these features to be accepted and welcomed by students. At the beginning of the event, what was being covered was often ‘informational’, while important aspects concerned with ‘communicational’ needs developed rapidly. Activities then clearly needed to allow learning to be developed through channels of communication (and some activities were exemplars in this respect).

The extent of sound group work practice was clearly important. How group work techniques and approaches were developed or focused on, rather than these arising through trial and error, was not always clear. Group dynamics appeared to be developed at certain points by groups being defined in particular ways. Groups were chosen by alphabetical order of names in one instance, for example, with the use of no other criteria. Groups could often work in different places to produce outcomes at specific times, but by different chosen routes. However, groups did find ways to work effectively. For example, one group split into 2 elements – 2 students did the first task and the other 3 students did the other task. One student said it was quite hard to meet and do a task immediately – students did not know how others thought and some young people were shy in putting their ideas forward. How ‘shy’ individuals were handled by ‘the group’ was not always clear, but some students appeared to be accounting for this (and some tutors were considering this also). Within group activities, students had options and needed to make choices about what to do and how to explore ideas and approaches. It is clear that developing an entire curriculum on the basis of how young people could opt to work in these ways, or in more idealistic ways would raise implications. However, there was an overall commitment to concepts of group work and collaboration, and important features of both of these emerged during the two week event.

Even after only one day had lapsed, group dynamics were clearly seen to be important. The fact that students were being given responsibility (and that the young people were able to feel it), being able to move around and seek help and ask others as and when needed, was clearly important in itself. By the fourth day of the event, young people were much more at ease with each other and they seemed to be ‘owning the space’ to a far greater extent.

The learning environment had impact. Use of laptops, of a ‘chill out room’, and a cafeteria all supported concepts of responsibility and ‘adult ways of operating and working’.

Some important aspects of learning were not as highly emphasised as they might have been. How students gained any form of ‘Big Picture, of what they were doing, what it would lead to, and what they should be aiming for, were not explicit in many instances. The ‘Big Picture’ is clearly of importance to students. One student said, for example, that she opted to take part because she wants school to change.
However, levels of support by young people were high, not always, and not universally, but nevertheless high, almost without exception when the key features of effective activities were in place. Engagement appeared high at key points across the two week event although at points fragility appeared. Groups appeared to be fairly fragile one day when there were only 1.5 hours to go to complete a task. It is at these times that staff focus to support and collaborate was particularly needed, while at other times a wider monitoring function was more appropriate. At the appearance of ‘frailty’, there needed to be a way for staff (and students) to make their fragility known, so that the learning focus could be tailored more readily - a ‘fragile’ notice, that staff could respond to, for example.

The amount of space and facilities accessible to young people was an important factor in terms of their working practices. However, other features could still have provided further refinement. For example, the sound system was not always used in the theatre which meant that the teachers sometimes sounded as though they were shouting. There was a lot of space in the CLC, and how schools could logistically run such an event on their own premises would need to be considered carefully.

The fact that students needed to prepare presentations for external audiences was in itself a potentially important dimension. Parents were invited into the CLC on the evening of the fourth day, with the intention that the students could enable them to understand more of what had been happening and how they had been learning. In tutor groups, in preparation for the presentations, they were asked to highlight in a 2 to 5 minute presentation what they had done that they were proud of. Both radio and video footage was able to be developed by students for presentation for this purpose. A presentation was an end point to the learning in this event (rather than content being the end point). Audience and purpose meant that the content had to be reconstructed, reflected upon, and that creative ways to produce it could have been used. Although the presentation was itself downplayed, this was an important event: it offered the potential for reflection (picking out the best things); it emphasised a ‘Big Picture’ (giving an overview to others); it focused on audience and purpose (created for parents); and it demanded reconstruction of ideas (of existing content). All of these factors are key learning features associated with expert learners and higher order thinking and learning. For this activity, students only had about 90 minutes (and this included a working meal) to create a presentation, and they were totally on task. Students prepared presentations in time.

The importance of a key range of factors in engaging students positively was highlighted by differences arising when students attended a local secondary school for the science challenge day:

- Some students were less engaged – they were engaged by other students in the school outside the room (they were distracted through elements of their surrounding environment).
- The importance of teacher-approach is highlighted. Directed learning is not easy for students when they have been used to self-directed learning. Listening to the teacher is more difficult when they have been used to limited periods of listening.
- Engagement in the practical was reasonable, but there was less informal 'activity' arising. The challenges were not as engaging, perhaps because they were perceived as not being so sophisticated, not as socially focused perhaps, or not as societal focused.
- Space available was limited.
- The fact that the activities were science oriented might not have been enough - they might not have been perceived as being sufficiently ‘real’ or as ‘playing with toys’.
- Working in school groups did lead to negative outcomes for some students.
- The purpose of the activities was different. Its purpose could easily be perceived as solving a puzzle, rather than having a real life application.
- The audience for outcomes could have been perceived as being teachers, rather than parents or other students or a wider external group.
- Lunch was provided in the science laboratories.
- Students tended to engage for certain times in a focused way, then disengaged, and after another period of time, returned to the task. Perhaps they needed time to recognise interim end-points and to work towards those, to judge their success, and then to disengage when successful. If so,
perhaps this was an indicator of working practices more generally, seeing a point to reach, finding a way to get there, testing it, seeing success, then disengaging.

By the last day of the two week event, it was clear that students had managed to work together (often), work in an ‘adult environment’, use a range of ICT, and create outcomes using ICT.

ICT was not shown to have had any negative effect (although it could be used as a distractor, but not necessarily to any greater extent than any other distractor). In places it was having a positive impact. Communication was enabled in a range of ways in supporting learning. Skype, although sometimes used as a distractor, was also frequently used as a positive tool. For example it was used by one student to contact another to request an element for a presentation, ‘Sketchup’ was used to model buildings and learning environments.

**Technological outcomes**
The Blackpool CLC manager highlighted outcomes from a technological perspective: “Technically, students were able to use a wide variety of the equipment available to them, and they particularly enjoyed using the laptops which were quickly ‘personalised’ with screen savers, music and video clips. All the laptops worked faultlessly for the duration of the experiment as did the wireless network, shared drive and printers.

“About eight of the students were disadvantaged by not being able to access the internet at home. When the experiment was being planned a number of options were studied to provide home internet access, but these proved too complex to set up without taking out a number of annual contracts.

“Over the course of the experiment, the usage patterns of equipment changed. There was an initial burst of activity on ‘Skype’ and mobile telephones, particularly as students set up social networks. However, many students disabled these features later as they were interfering with their work.”
7. Conclusions

Summary of key points emerging

Many students reported positively about their experiences over the two week event. These reports were often substantiated by those from teachers and mentors, and the independent observations highlighted those aspects of work where differences arose.

Students felt there were key aspects associated with the event that were supporting their learning. The aspects they highlighted were uses of technologies, not having to write all the time, choosing and working in teams, working more independently, and collaborating more with teachers. These aspects would suggest that kinaesthetic and social routes to engagement were being supported, that student choice and responsibility had been enhanced, and that social interactions had been shifted from instructional to a greater collaborative involvement (although it was seen that the less confident and less motivated students still relied on teacher guidance quite significantly at times). They indicated that length of lessons, choosing the order of lessons, learning more about certain topics, and not doing things that were not liked for as long, were all different from the experiences they had in schools.

Students indicated that heightened interest allowed them to spend more time on certain topics, and to learn more effectively as a consequence. The responsibility for undertaking work being in the hands of the students was also mentioned as being important.

Students highlighted the importance of certain resources. Those most commonly highlighted were the laptops (which they clearly used for a range of purposes, as and when they chose), the television studio, video cameras and recorders, and radio studio (all concerned with recording aspects, potentially focusing upon the social and societal aspects of learning to greater extents), the chill-out room (as one student said, to use when stressed), and the access to certain programs (focusing on music and imagery manipulation particularly).

Students highlighted a range of reasons why project-based approaches were offering them something more. These revolved around student choice and voice, being able to work more continuously, being able to return and do things in more depth, working in groups with more social flexibility, support provided through collaboration rather than instruction, having creative opportunity, and being able to take greater responsibility. Students indicated the importance of student voice, choice and responsibility, having longer periods of time to work on things more continuously and in greater depth, being actively involved, and having facilities accessible that one can choose strategically to support specific learning needs.

Students raised a wide range of aspects that they felt were most successful. These successful elements tended to group into forms of social interaction, team and group work, creative activity areas such as music and design, topics of specific interest, presenting to external audiences with purpose, and greater levels of responsibility and choice.

The event showed that students from different schools could collaborate and work together as teams. However, when they were put back into school groups, school ‘baggage’ appeared to raise its head and interfere with progress, thereby negating some of the positive skills which the students might have gained from the 2 week experience. Teachers reported that participation was encouraged, in their views, by: the presence of encouraging adults, the hands-on activities, in sessions (clearly observed in the history –robot session, which was both problem solving and application based) using technology in appropriate ways, needing to interact with other audiences for a ‘real’ purpose, having responsibility within a group, and having activities that required all group members to participate.

The event showed that students could engage with higher order thinking and learning, but not in all cases where they might apply techniques of these forms. It appeared that the learning context (the form of activity and identification of learning outcomes) and the pedagogic context (the teaching approach and learning approaches involved) were likely to be important and significant.
Collaboration between teachers and students was a key feature of the two week event. Concepts of collaboration between students and teachers were highlighted by teachers as being important factors in terms of participation. Students knowing that they had something to contribute, being heard, and being involved in group and practical work were all highlighted as factors. Collaboration was a key feature of many of the activities run in the CLC over the two weeks, but was not a core feature of the science challenge work, or of the approach to the work undertaken at home. This difference alone could have influenced approaches, perceptions and outcomes arising from work in these three venues in a major way.

At an early stage, students identified their lack of time planning and organisational skills. These aspects because issues for some sessions as the two week event progressed. Students by the end of the first week indicated uncertainty as to whether they were speculating sufficiently about considering appropriate ways forward in terms of learning tasks; this suggested they might well have been undertaking trial and error approaches without thinking through implications or planning needs in advance (independent observations supported this view).

Students were not sure at early stages about the amount of writing they were doing. This could have been a comment that related to their expectation of what ‘learning work’ was about, rather than providing a view that they felt that writing would have helped them more. Teachers and mentors were asked whether the project covered an adequate range of learning styles. They all agreed it did, and highlighted the importance of doing rather than listening, and the introduction of writing for publishing purposes in the second week.

In the second week, students were not sure about some of the levels of knowledge-handling involved, and whether some higher order thinking and learning levels had been involved sufficiently. Students also indicated that they felt they were not working necessarily at a metacognitive level, finding and correcting errors, and identifying sufficient time to reflect on and consolidate knowledge and skills. This view was supported by teacher comments, and from independent observations. Students were not sure about ways that they were being asked to reflect on their learning, or the regularity of these types of activities within the programme of the event.

Towards the end of the second week, students indicated that they were not sure about the long term purpose of the work they were doing, and how it might be applied or used beyond the event itself.

**Conclusions drawn**

The curriculum in schools is generally subject orientated. It provides an atomistic view of subject content. Who provides the holistic view for students is potentially largely teachers, but it might also be older students, and parents. Some primary teachers, at the end of the day or the beginning of the day, discuss an overview of what will be learned or what has been covered, which considers purpose, aim, intention, understanding of what needs to be done, what has been done and why certain aspects have been covered. These forms of ‘Big Picture’ are potentially important, and appear often to be missing in secondary schools, and left up to the students to identify themselves. ICT offers ways to compartmentalise and structure learning, it can help students to engage and see end points, it can focus on purpose and audience, it can allow creativity to be expressed. These aspects have been covered to greater or lesser extents within the two week event. This experiment has been to do with shifting educational practice from ATOMISTIC to HOLISTIC endeavour.

Teachers who undertook sessions in this event felt that curriculum barriers were removed through having integrated cross-curricular activities, there being no definite outcome but a range of possible outcomes that students could develop, developing social interaction between student groups for purposes concerned with needs of the activity, and having a higher level of teacher and equipment access. Teachers and mentors were asked whether the topics of the sessions were appropriate and were reflected in student interest. All teachers and mentors felt that the topics were appropriate, and some teachers commented on the local nature of the topic being of particular relevance, the fact that the topic would match boys’ interests, and the width of possibility offered by some topics.
However, holistic endeavour does not imply unstructured, unplanned and unsupported activity. There is a need for adults to monitor and check and help students to focus. Across the two week event it can be argued that there was a greater need for students to be encouraged to think about their learning. Some students thought they had learned a lot – but what had been learned was not necessarily explored sufficiently with them for them to realise the longer term implications. In that respect, a three week event would have been potentially more valuable, if more of a focus on the ‘Big Picture’, the transfer of learning, and reflections on learning could have been included.

It can be argued that lessons are intended to provide support to pass examinations; this compares quite dramatically with the focus and outcomes arising from this two week event. Choice was an important aspect and was recognised as being liked by students. Responsibility can be offered in different ways, and this is clearly one way in which that can happen.

But how can schools manage this form of event, or its implications? Will students be allowed to work any differently? Will students be able to choose lessons when they want to work? Will schools teach use of content, rather than just content? Teachers and mentors were asked whether this project could be run in standard classrooms or school rooms. Six teachers and mentors indicated that their sessions could be run in standard classrooms (given the equipment provided), but in two cases the spaces required would have needed to be larger and more rooms would have been needed (including a television recording studio).
References


