

*Widening Participation
through Outreach*

Evaluation

for UCL Museums and Collections



Executive Summary

In 2009, UCL commissioned Culture Unlimited to conduct a summary evaluation of its museum-based outreach work with London primary schools. For some years, this work has formed a key element of UCL's Widening Participation (WP) agenda. This makes UCL distinctive; UCL is one of the few universities in the UK that uses its collections so extensively in its outreach work to engage and inspire young people. This study investigated the extent to which this aspect of UCL's WP work meets its objectives, posing a set of eight questions set out below.

This study focused on outreach work in science subjects, this being an area of current concern nationally. As Sir Mike Tomlinson, former Chief Inspector of Schools, has commented, "The importance of science in our lives has never been more obvious, yet we continue to grapple with the challenge of enthusing students with science at school..." (Collins and Lee, 2006).

Data was collected through semi structured interviewing at 13 workshops in 3 schools, with 353 primary school children, 19 teaching staff and 15 parents and carers. A further 7 interviews were conducted with relevant UCL staff. Results are summarised below.

Q1 To what extent do the outreach sessions assist in developing students' confidence?

Session design and delivery methods support a diversity of learning styles and workshops are conducted in the spirit of inquiry and exploration, with the sensitivity to allow every class member a voice. Teachers commented:

"[child's name] is normally the one that never says a word, especially in front of new people. The confidence she found today was remarkable"

"I'm really impressed by [the outreach educator's] skill at getting the best out of everyone in the group, even those who are usually timid and shy have found the confidence to ask questions and talk with you."

Q2 To what extent, and in what ways, have they affected students' perception of university/higher education?

Only 21% of child participants had any knowledge about universities at the start of the session, with the minority who had describing it along these lines: *"It's like a big school"*, *"It's to get you a job"*, *"It's a long way away"*. For the other children, the outreach sessions were their first encounter with a university in any form that they could recall. After the outreach session, which included a short discussion about university life, children described it quite differently: *"You can go there to learn anything you want"*, *"If I work hard, I can go"*, *"I want to do what [the outreach educator] does!"*

Q3 To what extent and in what ways do they deliver Generic Learning Outcomes?

Generic Learning Outcomes (GLOs) are a framework of measures used by the Museums, Libraries and Archives Council to map the range of learning outcomes from museum-based engagement¹. Of the 33 specific learning outcomes defined by GLOs, the research team observed a significant positive impact in 20 – an impact ratio of 60%. In the experience of the research team, and anecdotally, this is extremely high. The results were particularly high in the generic areas of *Knowledge and Understanding*; *Attitudes and Values*; and *Enjoyment, Inspiration and Creativity*.

Q4 To what extent and in what ways do they engage students with science?

The study found that the sessions introduced children to concepts such as classification, experimentation, repeatability, modelling, prediction, data, and observation in ways directly related to the children's curiosity, and without jargon. The exposure of children to (in this case) a female scientist was also felt by a significant proportion of teachers to be beneficial in challenging stereotypes.

Q5 To what extent and in what ways are they enjoyable?

The study found that the enjoyment that emanates from the sessions for the participating children was almost unanimously registered across the whole sample of the research and was diffused throughout their networks of parents/carers, teachers, and peers, as these comments illustrate: *"Wow! that was brilliant, I'm going to tell my Nan about the Beaver's paw"*; *"Often [child's name] will just say 'not much' when I ask him what he did at school today, but this was totally different. He didn't stop talking about it all night last night."*

Q6 To what extent do they raise aspirations for the specific subjects?

The study found that while the workshops do raise aspirations to discover more about the subject matter of the workshops, this is not strongly connected to a recognisable subject discipline. There is little connection in the primary school curriculum with specialist university subject disciplines, so this objective may well be unrealistic for children of this age.

Q7 To what extent do they raise aspiration for education more broadly?

The evidence from this research suggests that these workshops do raise aspirations for school-based education to be more like the workshops delivered by UCL (typically: exploratory, diverse, informal, inspiring, and fun, using a variety of sensory inputs and with an agenda that is flexible and responsive to children's natural curiosity). The aspiration for more learning of this particular kind manifests itself as a high level of repeat-bookings for the outreach educator.

¹ www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning

Q8 Is it appropriate for the sessions to introduce the concept of higher education and if so how might this best be done?

Based on the evidence from the fieldwork, it *is* appropriate to introduce the concept of higher education to these sessions. While parents and carers tended to have high hopes for their children, the study found the low expectations of some of the teachers disturbing: 3 out of 12 teachers expressed an extremely negative view of the likelihood of even one of their class eventually reaching higher education: “*What from this lot? I really don’t think so. You don’t live round here do you?*” “*No, these kids are going to be builders or cleaners, they might go to a university to do that, but not to be students*”. A motivating workshop delivered by someone who represents higher education may begin to counteract some of these potentially self-fulfilling expectations.

In short, UCL has a high-quality, much-valued, mission-driven programme that merits expansion, rather than reduction or reengineering.

It has been our pleasure to evaluate it.

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Introduction

Only around 40% of the UK population visits museums and galleries (Visit Britain, 2008). Outreach work developed in the 20th Century principally as a technique to try to increase that number, particularly amongst under-represented groups and defined itself as activity that took place outside the physical boundaries of a museum. Early on, this typically meant talks to community groups but the change in museum operations and technology expanded the means to include in-school sessions, travelling exhibitions, community collecting, web-based programmes, and other methods. Nonetheless, the core definition remained (and remains) the same: outreach is museum work that occurs beyond the walls of a museum and it is this definition that we have used for this evaluation. The historical emphasis on giving people a taste of a museum in the belief that they will then visit still survives in UK museums' policy but outreach has also grown to mean engaging museum users in other ways that does not necessarily lead to a visit. For example, many museums consider much of their web presence to be part of their outreach offer; so too their loan box schemes, initial teacher training and continuing professional development. More recently, with the advent of Lottery-funded capital redevelopment, outreach has been used as a substitute for a physical museum during lengthy closures for refurbishment.

Internationally, some of the most notable outreach work is being done in the United States with some extraordinarily well-resourced operations in states like New York, where \$30m has been allocated to museums education with schools, a significant amount of which is committed to outreach (New York State Museum, 2008). Nevertheless, outreach is as much a product of social vision and geography as it is of investment, so some of the other most interesting work is being done in countries where the issues are very close to the surface, by organisations that have the missionary zeal to pursue them, in a geography where there is little alternative: Botswana, Gabon, Australia, Mexico and South Africa are good examples. This international activity demonstrates the worldwide context in which UCL has a significant stake, and in which it can contribute to the development of practice beyond UK borders.

In the UK, many outreach professionals see the aim of generating a museum visit as an addition to their primary purpose of delivering an authentic, engaging, cultural experience for people and communities. Some lament the distortion induced by the counting policies of government and its agencies; loaded in favour of turnstile visitor figures, though it is true to say that this is changing: the British Museum, for example, measures numbers of under-16's involved in outreach activities as part of its funding agreement with the Department for Culture, Media and Sport.

Nonetheless, the tension between mission and measurement often results in the positioning of outreach work somewhere in-between marketing and learning, which, in terms of the UCL case, is perfectly reflected in what it wants to achieve (both a greater profile amongst the local community, and a learning dividend for those under-represented in the higher education intake). However, the same tension sometimes makes outreach work vulnerable because its identity bridges more than one professional boundary.

In higher education (HE) terms, the role of outreach is mirrored by the co-existence of the Open University and site-based HE institutions: one where the university (museum) is brought to the people and is born of a social mission to reach non-traditional groups; and the other where the people go to the university (museum) and has a long pedigree where social missions have historically been viewed with some scepticism.

Indeed, in the museum sector, there is an Open Museum – part of Glasgow museums – that has the same mission as its namesake in the HE sector. The Open Museum represents one end of a spectrum of outreach in the museums sector; the other by simple appearances at external events as a visit-generating marketing operation.

Outreach can be seen as correcting a market failure in museums to connect with a demographic that is most isolated from its mission and its message. It bears the same hallmark challenges as the expansion of higher education that has led to the growth of a widening participation agenda: how to grow the diversity of entrants, not just the head-count of usual suspects; how to support those people less fluent in culture/HE than their peers; how to engage a demographic that perceives HE/museums as exclusionary and not for people like them, and how to fund itself in a climate of declining financial investment per user, yet maintain equitable access for everyone.

This is the landscape of outreach in museums and the context for HE museums' ventures in this arena.

It is to one of these ventures we now turn our attention: UCL Museums and Collections outreach work on zoology and geology in London, using object-based learning linked to the primary school curriculum.

This is currently delivered by an outreach educator employed by UCL; taking museum artefacts into schools in London and conducting workshops of about an hour with a class of up to 30 children – using the artefacts as the inspiration and a focal point from which to discuss curriculum topics.

Each workshop is based on a scripted, curriculum-linked lesson plan developed by UCL and the outreach educator. It is flexible enough, and the educator is skilled enough, to adapt each session to the particular school and individual children in each class.

The outreach sessions include:

With UCL Geology Collections:

- Rocks and Soils (Age 7-8)
- Rocks and Weathering (Age 12-13)
- The Rock Cycle (Age 12-13)

With the Grant Museum of Zoology, UCL:

- Ourselves (Age 5-6)
- Life Cycles and Variation (Ages 6-7 and 9-10)
- Teeth and Eating (Age 7-8)
- Moving and Growing (Age 8-9)
- Habitats and Adaptations (Age 8-9, 10-11, 11-12, GCSE & Post-16)

All the sessions are free of charge to the schools involved, and each takes c. one hour with one class. Typically, the outreach educator visits three classes per day at each school and can also take assemblies or run themed sessions at lunchtime or in after-school clubs.

These particular sessions are part of a wider outreach offer from UCL including other topics like archaeology, linked sessions at the museums including hands-on work with collections, talks and tours with curators, and (for older pupils) tours of the University. There is also a series of 6 loan boxes covering topics as diverse as Ancient Greece and modern Citizenship and Identity. However, it was the geology and zoology outreach sessions in schools that were our subject for this study, offering a snapshot of the efficacy of outreach at UCL museums.

Key Questions and Methodology

In the brief, the UCL team that commissioned this work described eight questions that warranted investigation:

1. To what extent do the outreach sessions assist in developing students' confidence?
2. To what extent, and in what ways, have they affected students' perception of university/higher education
3. To what extent and in what ways do they deliver Generic Learning Outcomes (<http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning>)
4. To what extent and in what ways do they engage students with science?
5. To what extent and in what ways are they enjoyable?
6. To what extent do they raise aspirations for the specific subjects?
7. To what extent do they raise aspiration for education more broadly?
8. Is it appropriate for the sessions to introduce the concept of higher education and if so how might this best be done?

The brief also outlined some suggestions for methodology thus:

- Interviews with the outreach educator and key UCL staff members
- Observation of sessions
- Interviews/ discussion with children
- Interviews with teachers
- Email/ telephone interviews with teachers
- Possibly broader discussion with parents/carers

Our methodology for this commission took its cue from the brief and was presented to the UCL team as follows:

1. **Initial situation review** of political and philosophical drivers, targets and ambitions for UCL's work on this issue. This helped develop working relationships with key personnel whilst identifying the significant organisational and external factors influencing the work – as an axis for refining the remainder of the study. It sharpened the focus on, for example, the emerging policy context for widening participation, other practitioners' work in this field, the constraints and opportunities available, the integration with UCL's other plans, the interest of stakeholder groups, and resource issues. The initial review also allowed discussion of operational issues, including the precise timing of the work, access to networks and contacts, reporting, and any changes proposed to the work plan;

2. ***Desk research and scoping analysis***, initially to capture as many comparative examples as possible from which to distil exemplary practice. This way, we aimed to define some key features to measure UCLs work not only in its own terms and against its own policy objectives, but also against the best in the sector, in the UK and elsewhere (to improve future practice). These examples are discussed in Annex III;
3. ***Site visits, interviews, and observation studies*** during the freelance sessions booked for October 2009 allowed us to interview key stakeholders in context (freelance outreach educator, teachers, children, parents/carers), and to observe sessions in schools to form our own first-hand views. The essence of site visits was to immerse ourselves in the application of UCL's outreach programme, authenticate it, and unravel it with an eye to producing the learning from it;
4. ***Telephone interviews*** with a significant sample of participant staff, pupils and occasionally parents/carers. This trinity of stakeholders was vital to understanding the impact of UCL's outreach programme. This approach helped to capture a more equitable and diverse freeze-frame of impact. Our interviews were unstructured (taking a cue from Grounded Theory: Glaser and Strauss, 1967; Strauss and Corbin, 1990; Glaser, 1992) and semi-structured (to investigate the specific questions in the brief): scripted for consistency but not constrained by it because we needed to use judgment to pursue valuable lines of enquiry. These dimensions are also why we proposed personal interviews and not questionnaires or standardised anonymous techniques (the response rate was likely to be too low, the issue too unfamiliar, and the timescale too short to produce useful results);
5. ***Synthesis and analysis of collected data*** is where we aimed to use Grounded Theory as a guiding framework to give shape to the data from one direction; but compare that with the premise and the empirical answers to the questions in the brief. The personalised interviewing we adopted primarily produced knowledge about the current application of UCL's outreach programme. The value we wanted to add was in intelligent interpretation of the results through the lens of our experience in this field and the theoretical frameworks we describe in more detail later in this report. However, the nature of Culture:Unlimited's work is that it is both analytical *and* predictive. In other words we hoped to be able to say why things are the way they are but also where they might go next and what might be done to create some innovation and exemplary practise in future programmes.

Results and Analysis

Our *desk research and scoping analysis* centred on 30 examples of outreach work nationally and internationally, in museums and higher education institutions, to reveal the key features, objectives, and measures in other organisations' practice and policy. The main findings here were that:

- Museum outreach is a feature of universities in many countries, with particularly significant examples in the USA, Canada, Ireland and England. UCL's museum outreach work is therefore part of an internationally-significant cluster of work in this field
- The qualitative outcomes of UCL's work in this field means it compares favourably against international comparators, particularly for the modest resources committed
- In a UK context, UCL's qualitative outcomes are particularly significant given the relatively small number of universities engaged in similar endeavour
- Comprehensive and diverse outreach in university museums is rare but, where it is deployed, it is a potent technique for achieving strategic goals, including widening participation
- Within, and especially beyond universities, there are some innovative experiments in outreach that offer lessons for UCL's own work, particularly in scale and diversity of what could be offered, given additional resources to build on the quality of the current UCL offer. Examples include: pre- and post-session visits and resources; mobile exhibitions; media channels (radio, web-based); virtual sessions or video-conference workshops; take-away materials for schools to keep; field trips; and summer camps.

The first 15 examples in our desk research were from other universities' cultural outreach programmes. The principal finding here was that there is considerable scope for UCL to build on its own quality by diversifying both the range of interventions, and the range of technology to deliver it. For example, it might consider expanding its work through:

- Lesson plans, and resource packs to enable DIY delivery by confident teaching staff
- Professional development for teachers
- Touring exhibitions available to schools
- A full travelling museum experience (expanding the diversity, and quality, of artefacts and experiences available to schools)
- Virtual outreach sessions delivered via videoconference or webcasting
- The use of other learning techniques, for example, role-play, drama or music, to engage other learning styles and intelligences
- Supporting audio and IT media like MP3 and podcast sessions, Acrobat or PowerPoint versions

- Practical sessions to allow the exploration of the skills of geologists, zoologists, Egyptian archaeologists or artists
- A dedicated media channel for children and teachers to use as their reference-point for UCL museums' outreach (most likely a web channel on, for example, YouTube or another provider, rather than a high cost TV channel)
- Volunteer delivery of live sessions to allow a larger number of children and schools to be accessed

The latter 15 desk research examples were from outside university museums. The lessons from these studies were, similarly, that given sufficient resources, UCL would be able to build on the quality of its outreach sessions by diversifying both methods and media – in order to broaden and deepen the experience for the children involved. For example, through:

- Integrating university-related and UCL-specific experiences beyond the subject matter of geology/zoology/etc. Linking more closely, for example, with introductory tours of the university, or a more fulsome discussion about university life and opportunities during the sessions
- Virtual tours of UCL museums, or the university – similar to the ones available on the current UCL website but with content and commentary suited to primary school children
- On-line professional development for teachers
- Down-loadable ready-packaged lessons
- Web-chat interactivity with staff at UCL museums (to answer queries from children or teaching staff)
- Making sessions school-specific by including some content tailored to target schools (more straightforward with geology sessions but possible with other topics)
- Supporting the creation of school museum collections, created and curated by the children and staff
- Using communications technology to encourage a schools collections area of the UCL museums' website(s) to retain the enthusiasm and the permanence of a link to UCL
- The creation of a schools/pupils museum prize, awarded by UCL with criteria to recognise progress and other dimensions UCL wants to highlight & reward. The prize might be linked to competitions in photography, artwork, science projects, or other aspects linked to UCL's work
- Participation in, or the creation of, a science festival for schools
- A subscription area for teachers on UCL website(s) so that they (and UCL) can develop profiles and be sent material that is tailored to them
- Hosting fieldtrips for pupils from target schools or extended, residential, science camps where pupils can study geology, zoology, etc. in real situations
- Making international links to outreach programmes in, for example, the United States: linking not only professionals to professionals, but also children to children

- Diversifying the scale of exhibitions available to schools, from table-top, to room-sized exhibits
- Using other cultural techniques to reach target children: theatre; story-telling; drama; puppetry; or art workshops to convey the science message as well as hands-on educator-led outreach sessions
- Segmenting the offer to engage acutely under-represented groups even within the widening participation sector, for example, girls, black boys, *et al*
- Extending the idea of loan boxes (for schools) to include back-packs (for individual children) with some artefacts but principally with activities for them to do with their parents and carers outside school – as part of a take-away menu of outreach material
- After-school sessions or lunch-time clubs, or other activity closely linked to the school day but not timetabled lessons

And finally, the desk-based element of our programme re-examined the primary sources from the study of its outreach programme undertaken by UCL in 2007. The vital statistics of which were:

- 75 workshops
- 1477 primary school children
- 61 primary schools

(Bluman 2007)

Site visits, interviews, and observation studies were conducted during October 2009 on fieldwork in London. The dimensions of this fieldwork were as follows:

- 13 workshops; involving...
- 353 primary school children (inc. 78 individual conversational interviews); at...
- 3 primary schools; with...
- 19 teaching staff; and...
- 15 parents and carers; plus interviews with...
- 7 UCL staff

The semi-structured interview scripts used for each group are included at Annex I.

Telephone interviews were conducted in parallel with site visits, during October 2009. In practice, telephone interviews were the only productive method and allowed us to widen the catchment of interviewees, and to re-examine the primary data from workshops completed in 2007-2008 academic year, as well as collect the views of some additional professional staff at UCL and in best-practice museums in the UK.

- 15 supplementary interviews were conducted with:
 - 12 teaching staff
 - 3 museum professionals

Synthesis and analysis of collected data was completed by using inductive content analysis (as part of our use of Grounded Theory as a framework) of the interview transcripts, notes, and observation study data; set in the context of outreach explained in the introduction to this report. This gave us one dimension in which to look at the data, which we hoped to use to verify the questions in the brief by mapping those against the emergent issues. We were able to use a different team member to analyse the same data coded using the questions in the brief – to examine the confluence or divergence of the two. This way, we hoped to develop a balanced picture by using some of the best features of each protocol but without being bound by either. The coding, conceptualising and categorising of the data, is explored more fully in Annex II.

We present the findings of our analysis here as the commission requests: according to the eight questions from the brief. In each case, we have selected comments and quotes that illustrate the majority view or most frequent responses from the data. Full details are available on request from the research team:

1. To what extent do the outreach sessions assist in developing students' confidence?

The response to this question is unequivocal: students' confidence is developed markedly.

The data for this is derived principally from the researchers' observation of the workshops described above.

The outreach educator is enthusiastic, encouraging, and engaging of all the members of a primary class. This is helped by having little or no knowledge of the individuals prior to the workshop, and therefore no preconceptions of children's ability or behaviour. This equitability in the sessions is a particular advantage in classes of mixed ability (most of the classes in the observation studies). The outreach educator takes special care to ask questions and engage even the reticent children in a group and allows them a voice that they are unused to. In almost every case, this led to unprompted comments from class teachers that they were surprised/pleased at the confidence and inquisitiveness this produced:

"[child's name] is normally the one that never says a word, especially in front of new people. The confidence she found today was remarkable"

"I'm really impressed by [the outreach educator's] skill at getting the best out of everyone in the group, even those who are usually timid and shy have found the confidence to ask questions and talk with you."

“This kind of hands-on work shows you that children find their inspiration and confidence from things that engage them in ways that we simply can’t do in a classroom setting.”

“[Outreach educator’s name]’s approach to children’s’ questions and praising their effort rather than their accuracy to be right/wrong has been a joy to watch. It’s terrifying that children as young as this are already feeling pressure to be right or not attempt an answer. You have given them the green light and the confidence to be ‘wrong’ but to enjoy trying.”

“It was a confidence-booster for the girls in the group who don’t normally like creepy crawlies (neither do I) and skeletons. Having a woman as a tutor showed the girls that women can do science as much as men.”

The key feature of these illustrative comments from teaching staff is that the UCL workshops are conducted in the spirit of inquiry and exploration, just as science subjects like geology and zoology are approached in real life situations. Historically, (and currently amongst some educators and scientists), subjects like these were too seldom taught as adventurous or discovery-based and were more vulnerable to fact-based rigidity, especially with primary and secondary children. The historical reaction to this and the associated under-recruitment of scientists in employment and society, were programmes such as the Royal Society’s *Public Understanding of Science* (Royal Society, 1985) and major investments in science centres, museums and elsewhere to make science captivating and popular again; yet there is still much to do. A recent study of natural history museums’ support of science teaching, for example, includes a foreword by Sir Mike Tomlinson, former Chief Inspector of Schools, which confesses:

“The importance of science in our lives has never been more obvious, yet we continue to grapple with the challenge of enthusing students with science at school...” (Collins and Lee, 2006).

It is the UCL educator’s evident enthusiasm for enquiry and discovery that liberates children’s confidence to try. It is no more that vesting her own attention and trust in their ability that produces this. Those hesitant children are unfamiliar with attention being paid to their thoughts, and it is this that helps them find their voice.

The UCL outreach programme is also designed and scripted to be communicative and engaging and outreach educators have been trained in these techniques as part of the delivery of the programme. The UCL museums staff have developed the zoology workshops deliberately to include a diversity of learning styles and techniques too, and this, together with the training on offer, is a contributory factor in the vividness of workshops for children. Nonetheless, it is the researchers’ view that the development of students’ confidence is a function of the educator, at least as much as the programme and is something that UCL would do well to preserve in staffing its future outreach work.

Indeed, evidence from recent work underlines the pre-eminence of choosing the right personnel:

“I think something like this depends on the personality of the scientist. We’ve had people in to talk to kids and in the first five minutes they’ve switched off and they don’t want to be there.”

You’ve got access to scientists who can talk to children. That’s one of the strengths here.”

“I arranged for a scientist to speak to two classes who would probably behave and be focused...I reluctantly got the whole year group in, much against my will, and she held them spellbound for an hour... it was fantastic... and it wasn’t all practical things. She had an interactive data projector and, personality”

(Collins and Lee, 2006, pp6)

The danger for those children that discover adults who do value their thinking (like UCL’s outreach educator does to produce this confidence change), is that their normal cultural setting with parents and teachers may degrade that again unless it is repeated or unless UCL’s practise influences teaching aspirations in the schools involved. We have been unable to test this as part of this research but it warrants further investigation.

2. *To what extent, and in what ways, have the outreach sessions affected students' perception of university/higher education?*

In short, the answer to this question is: by introducing approximately 80% of children from a zero base to a first encounter with university as an idea and an institution; and principally by re-arranging the existing perceptions into positive, achievable, and fun images of university life that is an option for every child.

During the first half of the fieldwork, the research team made no interventions in the workshop delivery, during which only minimal mention was made of UCL in the introduction to each session. In the latter half, with the outreach educator, we introduced a short discussion about what students' knowledge of university/higher education was and what they understood it to be.

There was, unsurprisingly, some difference between the results in each case. Knowledge of HE/university or UCL itself was not tested in the first half of the fieldwork. In the latter half, we were able to test levels of knowledge followed by introducing some simple descriptions of university life linked to the workshops. This markedly affected, in the terms of the question, students' perception of university/higher education.

Interestingly, we also tested students' knowledge of museums and found, consistently, that it exceeded their knowledge of university. The questions we asked were:

“Who knows what a university is; what can you tell me about it?” and *“who knows what a museum is; what can you tell me about it?”*

A short discussion about university life then developed and the outreach educator was typically positive and encouraging about the prospects for all the members of each group to go into higher education.

Quantitatively, we found that of the sessions where we tested knowledge of university and of museums (that is, the latter half of the workshops):

Session No.	Knowledge of University	%	Knowledge of Museums	%
1	4 out of 23 children	17	6 out of 23 children	26
2	5 out of 28 children	18	6 out of 28 children	21
3	7 out of 28 children	25	10 out of 28 children	36
4	8 out of 29 children	28	9 out of 29 children	31
5	7 out of 31 children	23	11 out of 31 children	35
6	2 out of 25 children	8	7 out of 25 children	28
7	8 out of 27 children	30	10 out of 27 children	37
Totals	41 out of 191 children		59 out of 191 children	
Averages		21		31

Quantifying this data was by asking for a show of hands in the classroom and then confirming each responding child's knowledge by asking "what can you tell me about university" (see the discussion below).

This baseline testing was helpful in pursuing the question of students' perceptions of university/higher education. It illustrates several things: firstly, that the targeting of UCL outreach work in the schools concerned was the right one, with relatively low levels of knowledge of university, even amongst older children (up to 10 years old); secondly that knowledge of museums and (as we discuss below) the positive association with them in children's minds, helps connect the university to a memorable experience; and lastly that although not shown in the table, students' knowledge of university was inextricably linked to family experience of siblings or parents studying or working at universities in London – for the other children, *the outreach sessions were their first encounter with a university in any form that they could recall.*

Qualitatively, the researchers collected the comments from children at the start of each session in response to the outreach educator's question: "what can you tell me about [university]" and at the end of each workshop, sample exit-interviewed students in each session above to explore their perceptions after discussion with the outreach educator. These comments are illustrative of those perceptions:

In answer to: "what can you tell me about [university]?":

"You can go there when you're older"
"It's like a big school"
"It's to get you a job"

"Somewhere you go to learn"
"You have to be 18 or 19"
"It's a long way away"

At the end of each session, in response to the same question:

" You can go there to learn anything you want"
"It's fun"
"I'd like to go when I get bigger"
"You can make lots of friends"
"I want to do what [the outreach educator] does!"

"You can do things that you really want to do"
"If I work hard, I can go"
"It's not boring and I'm not scared about it"
"I thought it might be boring but I think it's excellent"

The qualitative difference between the two hardly needs explaining: the second (exit-interview) comments illustrate a positive, enthusiastic, view of university life that is described in terms of a place the children would like to go; the first (initial) comments are more uncertain and circumspect based on thinner knowledge and little discussion amongst families and peers.

This conversion of attitudes is consistent with other data we have reviewed as part of this study. In particular, the evaluation of Aim Higher: The National Primary Project run by the University of Liverpool (Mervyn, 2007) which found that: “HEIs and other partners have received a very positive response from pupils; all the feedback indicates that pupils were highly motivated by the activities...there are also indications that the events have raised their aspirations and affected their attitudes towards HE, and their own chances of going to university.” Comments from the children participating in the Aim Higher project, when asked if the activities had made them think differently about higher education included:

“Yes, because now I know what it is like”

“Yes, it taught that uni is an excellent place to be”

“I was thinking about going, but I don’t feel scared now”

“Yes because I used to think that university was boring and too long, but now I’m really excited to go”

“Yes because I think it’s going to be fun”

“Yes, it has made me look forward to it because now I know that there is nothing to be afraid of”

(Mervyn, 2007, pp25)

3. *To what extent and in what ways do the outreach sessions deliver Generic Learning Outcomes?*
 (<http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/index.html>)

Of the 33 specific learning outcomes defined by GLOs above, the research team observed a significant positive impact in 20 – an impact ratio of 60%. In the experience of the research team, and anecdotally, this is extremely high though the Museums, Libraries and Archives Council does not collect data at this level so we were unable to verify this analytically.

Generic Learning Outcomes (GLOs) were developed by Resource (now the Museums, Libraries and Archives Council, MLA) in the early 21st Century as a means to codifying, collecting, and aggregating museums' learning results across the UK. The goal of this was so that their individual and collective impact could be expressed to government and other policy-makers and funders. To this end, five main areas of learning outcomes were defined, with more fine-grained definitions within that as shown below. (MLA, 2004)

As well as the showing the definitions here, the researchers have highlighted the areas (in grey shading) where UCL museums outreach work is most effective in delivering GLOs to give an indication of the efficacy in regard to this question:

Knowledge and Understanding

- Knowing what or about something
- Learning facts or information
- Making sense of something
- Deepening understanding
- How museums, libraries and archives operate
- Making links and relationships between things

Skills

- Knowing how to do something
- Being able to do new things
- Intellectual skills
- Information management skills
- Social skills
- Communication skills
- Physical skills

Attitudes and Values

- Feelings
- Perceptions
- Opinions about ourselves (eg self esteem)
- Opinions or attitudes towards other people
- Increased capacity for tolerance
- Empathy
- Increased motivation
- Attitudes towards an organisation (eg a museum, archive or library)
- Positive and negative attitudes in relation to an experience

Enjoyment, inspiration, creativity

- Having fun,
- Being surprised
- Innovative thoughts,
- Creativity
- Exploration, experimentation and making.
- Being inspired

Activity, behaviour, progression

- What people do
- What people intend to do
- What people have done
- Reported or observed actions
- A change in the way that people manage their lives

For consistency, scoring and recording this impact was done using the criteria given by the Museums, Libraries and Archives Council in its guidance for using GLOs in museums (MLA 2009)

Many of the areas are self-explanatory, for example in **knowledge and understanding** where a new subject (zoology or geology) was being introduced or consolidated by the outreach educator.

In the **skills** section it was clear, as we express earlier, that the democratic, engaging approach of the outreach educator allowed children to discuss, negotiate and communicate their ideas with one another and with the UCL team; at the same time as testing their intellectual skills in pattern-matching, sorting, describing problems, calculating, and making predictions based on evidence.

Attitudes and feelings outcomes were mostly derived from the lively, exploratory nature of the sessions and the infectious enthusiasm of the outreach educator: the children responded very well to this by expressing feelings about the subject matter (often, for example, discussing their feelings about the zoology specimens having been shot by Victorian collectors) and their own feelings of fear, apprehension, relief and satisfaction at their encounters with skeletons, snake skins, and Tarantula exoskeletons (!) Their perceptions of scientists, university and museums as well as of the subject matter we discuss above; so too the children's (self) confidence and other opinions about themselves. Their increased motivation and positive attitudes to the workshops are typified by the feedback from teachers, for example:

“Is she coming every Monday?(please!), it gave my retiring children such a motivational jump-start”

“The real objects and an expert to ask questions of produced the most extraordinary buzz and inspiration – the children talked about it all week”

“This Thursday was a special day today – it was fantastic”

“Children really enjoyed the session and are keen to discover more.... Thank you.”

Enjoyment, inspiration, and creativity outcomes are, as will be clear by this point in our report, a function of the skills, passionate delivery and approachable personality of the outreach educator, in conjunction with the 3-dimensional engaging nature of the collections and the design of the sessions. However, it is primarily the former that makes these workshops as enjoyable, inspirational and creative as they are for the children concerned: objects, however familiar or interesting, do not have a voice of their own and need a skilled animator to bring their stories to life. In the workshops we observed, this was particularly true of geological artefacts. Many teaching staff were surprised at the engaging way in which geology could be presented and relieved that they had not had to attempt this themselves; often confessing to usually skipping over the topic in a cursory way in the primary curriculum because of a lack of confidence in their own ability to present the subject or answer questions. Collins and Lee (2006) report that the number one activity (ranked out of a list of nine) that teachers of (secondary-level) science wanted was: “Fun science shows with practical demonstrations” (pp5)

The top four in the same ranking demonstrate the demand for the kind of inspirational workshops delivered by UCL. They were:

- “
- 1 Fun science shows with practical demonstrations
 - 2 Debate with scientists engaged in active research
 - 3 Talks/lectures from scientists engaged in active research
 - 4 Focused tasks using museum collections and specimens not normally on display”
- (Op cit, pp5)

Finally, **activity, behaviour, and progression** outcomes were met in respect of the aspiration of children to pursue geology or zoology as a career or, more prosaically, go to the library or the web after the session to look up some more information about an issue that had captured their imagination: “*She really inspired the class, with most of them now wanting to be geologists*”

Perhaps more immediately, some teachers reported much improved behaviour during the sessions than they might typically expect of their classes, and the researchers observed a link between the engagement of the teaching staff and the children in this respect – something we return to later in the report as part of a discussion of the social/cultural context in which many children are immersed.

4. *To what extent and in what ways do the outreach sessions engage students with science?*

In answering this question directly, the research team's observations record that UCL's outreach workshops engage students with science to an exceptional degree at every stage of the session. It is done implicitly and without distracting terminology. This is done through using real artefacts as a curiosity-generating tool from which scientific concepts and methods can be discussed: much like science in higher education, which is curiosity-driven and delivered through systematic knowledge and prediction

It is these most fundamental elements of science that are recreated in miniature in UCL's outreach programme, through fun and participation that preserves the joy of discovery. The stereotype of science as 'hard' and of scientists as introspective boffins is deeply ingrained in popular culture and slow and expensive to change. However, the UCL outreach sessions we observed in this research are nothing like the popular image of science and scientists and therefore not easily recognised by the children as science *per se* if they already have a view (see the discussion below regarding question 6). This introduction of scientific concepts, principles and methods devoid of jargon, acronyms, and esoteric terminology (one of the many ways in which disciplinary boundaries are defined) is fundamentally important to the engaging nature of UCL outreach sessions.

The research team found that the method and style of delivery combined with the planned content of the workshops and the intrinsic attraction of an unusual collection of artefacts that can be touched, engages the students in some of the ways described in the Generic Learning Outcomes (q.3, above). It introduces concepts such as classification, experimentation, repeatability, modelling, prediction, data, and observation in de-coded and relevant ways directly related to the children's curiosity. For example, the outreach sessions encourage observation of zoological specimens and asks the children to make predictions about animals' diet and movement; classify them into groups according to lifecycle, measure their own bodies and record the data, and make hypotheses based on their emerging knowledge.

Interestingly, the scientific literacy that results from these activities is not an explicit objective of the programme (since the programme has no written objectives, as the brief acknowledges) and yet it is inescapable and one of the most compelling and powerful outcomes of the work, anchored in engagement of pupils' interest.

This engagement through UCL's outreach programme is supported by the evaluation of natural history museums' work in this field, which records that:

“The strongest themes to emerge were that natural history museums can effectively support science teachers by providing access to resources not available at school, offering opportunities for students to meet ‘real scientists’, and engendering a sense of awe and wonder about the natural world. Contact with lively and engaging scientists was seen as particularly valuable...” (Collins and Lee, 2006 pp2)

There is a side-effect of having a female outreach educator too: that the children and teaching staff are exposed to a female scientist; beginning to erode the popular cultural view of men in white lab coats. This is not an insubstantial finding and does not go unnoticed by the schools concerned:

“Good to have a female in science (a good role model for the girls)”

“It’s great to have [the outreach educator] here, as a woman in a position of scientific expert in front of the classes and the staff – we don’t see enough of that”

“You have made a big difference to the rigid stereotypes of ‘experts’ that most of our catchment parents (and therefore, their children) grow up with. No wonder girls get put off science with the kind of images they usually see. I hope this helps break that down.”

In terms of widening participation, especially of girls in scientific and mathematical subjects, UCL would do well to consider the gender effect of these workshops and seek to preserve it, especially given the data for women in science in Europe: engineering and technology have particularly weak representation of women in public sector science (27% in engineering and technology) and in natural sciences (35%) but approximately equal representation in medical sciences and humanities. In the higher education sector the figures are similar: 25% in engineering and technology; 32% in natural sciences (EC, 2009). Having a female outreach educator is therefore an asset for UCL in addressing the persistently weak representation of women in science generally.

5. *To what extent and in what ways are the outreach sessions enjoyable?*

This is one of the most unequivocally positive answers to a question in this commission. The enjoyment that emanates from the sessions for the participating children was almost unanimously registered across the whole sample of this research and it was both lasting (with some children recalling sessions from more than a year previously) and diffused throughout their networks of parents/carers, teachers, and peers.

The evidence for the enjoyment of the outreach sessions derives from observation and from our interviews with children, staff and parents/carers. The most significant finding from all the data was that there were *no* instances of negative responses to our questioning about enjoyment. Indeed, the converse was true in the majority of cases: each of our interviewees often spontaneously volunteered their palpable enjoyment of the workshops. This is also manifest in the responses to the Generic Learning Outcomes (question 3, above) and as a foundation for many of the high quality performances of the programme against the other questions in this commission.

Our observation studies record that the students in every one of the 13 workshops enjoyed the experience with only 19 students out of 353 (0.5%) whom we were unable to confirm this with. They were students whom it was difficult to record their emotions during the sessions and we were unable to interview them afterwards. Observation studies revealed that the enjoyment generated by the sessions was more often the source of some minor disruption (principally everyone talking at once) because of the excitement level. Neither was this a short-term phenomenon as some of these illustrative comments testify:

Students' comments included:

"I really enjoyed the workshop and it has left me wanting to learn more"

"I remember doing this when I was in year one. I remember the snake [skin] and how it can make its jaws come apart to eat really big things. It was brilliant. Are we going to do it again?"

"Wow!, that was brilliant, I'm going to tell my Nan about the Beaver's paw"

"That was really fun, especially the volcanoes and dressing up as a rock lady [geologist]"

Teachers' remarks to the researchers included:

"This was the best thing we've done this year!"

"[The outreach educator] has really inspired the children again. They have been very excited about her visit for ages. Please come again."

"[She] was very interesting and managed to interest those children who find it difficult to get motivated"

"The children really enjoyed the workshop because of the quality of the resources and the hands-on experience."

"I'm ashamed to admit that this was much more enjoyable for the children than most of what we're able to deliver in class. The energy and enthusiasm of [the outreach educator] was infectious."

Parents'/carers' views included:

"Often [child's name] will just say 'not much' when I ask him what he did at school today, but this was totally different. He didn't stop talking about it all night last night. He loved it."

"My little girl wants me to take her to a museum now! because she loved what you did in class today"

"Usually, it's always dinosaurs with him, but now it's rocks, rocks, and more rocks"

"[My daughter] wanted us to look at our dog's teeth – so we did – and she told us what they was all for – she obviously enjoyed school yesterday."

The ways in which it was enjoyable for the children is linked to the experiential learning from authentic specimens and the energetic and enthusiastic delivery of the educator who clearly enjoys both her topic(s) and the pleasure of coaching young minds. The educator's learning philosophy is based on inspiration, enjoyment and opportunity for children who have the same dreams and potential as others but neither the resources nor the support to realise them.

Her missionary zeal in helping to correct this kind of iniquity was clear to the research team from many encounters and discussions. The design of the sessions and the philosophy of the educator, both aspects that are the antithesis of industrialised education, are what make the sessions enjoyable for the children. They are: exploratory, diverse, informal, inspiring, and fun, using a variety of sensory inputs and with an agenda that is flexible and responsive to children's natural curiosity.

We would remark that the final aspect of this is something that cannot be done by providing resources alone (loan boxes, for example) but needs human input. It could be argued that teaching staff in the schools could provide this but, as their comments attest, they have neither the time, nor the knowledge, nor the confidence to do this with any likelihood of achieving the same outcomes. We therefore see no sustainable argument for substituting an outreach educator with other delivery given the ambitions of the programme articulated in the questions in this commission. Collins and Lee's evaluation of natural history museums' work corroborates this view (Collins and Lee, 2006, pp6).

To give some crystalline examples, the research team observed sessions where the children used their bodies to count each others' teeth, discuss why their eyes were at the front of their heads by experimenting with putting their hands out of their field of vision, passed animal skulls and other body parts amongst them to feel their structure and examine their evolutionary developments, dressed up in geologists equipment to explore safety, navigation, and fieldwork, and worked as teams to complete experimental tasks with awards at the end. It is this kind of activity that underwrites children's enjoyment.

These sessions captured many of the learning techniques and intelligences described by Howard Gardner in 1983 in his work on multiple intelligences. Our view is that the workshops embrace all but one of Gardner's taxonomy (the exception is musical intelligence – where these particular workshops do not attempt to connect): (Gardner, 1983)

- *Bodily-kinesthetic* – through the integrated use of movement and body measurement/physiology in sessions (particularly zoology)
- *Verbal-linguistic* – through telling stories, taking notes, discussions and debates
- *Logical-mathematical* – connected to the scientific learning described earlier in this report – through reasoning, patterns and classifications, prediction and calculation
- *Interpersonal* – through one-to-one and co-operative team work, communication and negotiation tasks with a purpose
- *Naturalistic* – as a natural consequence of collections-based work – recognising species, considering *homo sapiens* place in nature, collecting and analysing specimens
- *Visual-spatial* – through visualisation of phenomena like volcanoes, hand-eye co-ordination experiments when considering animals' sight; geologists' navigation tools, puzzle-solving
- *Intrapersonal* – through the use of personal, concentrated thinking and reflection on emotions and personal attributes (discussed especially as part of zoological sessions)

This remarkable diversity, observed in the sessions we attended, suggests one reason for such near-unanimity of enjoyment is anchored in the coverage of nearly the whole spectrum of intelligences. Almost every child is therefore likely to be engaged, inspired, and delighted by the UCL outreach sessions and this outreach educator.

6. *To what extent do the outreach sessions raise aspirations for the specific subjects?*

At this age (the sessions we observed and interviewed around were up to age 10 and mainly up to age 7), it is difficult to discern the aspirations of children with any certainty that will have any meaningful durability. We can only report on the snapshot of reported aspirations from the children and teachers, parents and carers. The question we asked was framed in these terms: “have you thought about following-up what we’ve been studying today/zoology/geology afterwards/in future?” with a follow-up discussion about which ways they saw these subjects as part of their future pathways in life (if at all).

The immediate responses were blended with interviewees’ interpretation of the question as career- or interest-based, in part due to the discursive nature of the question. Positive nonetheless but not necessarily focused purely on the subject disciplines:

Children’s sample responses:

“I’d like to work in a museum like [the outreach educator] so I can look after the things like she had”

“When I get bigger, I’d like to collect things like this, so I can work on them”

“I want to find out more about baby crocodiles”

“I’m going to ask my Dad if we can go to see the jumping cats [Servals] at the zoo.”

“I learnt that geologists go all round the world, so I’d like to do that, and look at volcanoes”

“Animals are really interesting and I’m going to find out more about how they catch their food”

Teachers’ sample responses:

“... [it] has left me wanting to learn more about what I thought were ‘just pebbles’”

“She really inspired the class with most of them now wanting to be geologists!”

“Children really enjoyed the session and are keen to discover more...”

“We would appreciate many more sessions of this nature.”

“This session has made me want to know more about geology. I’m not so scared of it as a subject now, even though before I always thought it was hard to teach to year 3, but I’m glad to have [the outreach educator] here – I could never have done this myself”

Parents’ and carers’ interviews did not produce any data on this question.

As the sample responses illustrate, the workshops do raise aspirations to discover more and look in more depth at the subject matter of the workshops but this is not strongly connected to a recognisable subject discipline, although students do begin to associate the subject matter with the *names* geology and/or zoology. The sessions as delivered currently only make glancing references to professions/disciplines as a deliberate policy to maintain everyday relevance to children's experiences and to avoid an academic lexicon or other professional esotericism barring students' engagement.

As a consequence, the association between the subject matter and particular professions/disciplines is not strong and the aspiration for the subjects is difficult to determine with any precision. We can say that the sessions begin the process of association in children's minds between enjoyment, fascination, and the subject matter, which may be developed later in their learning careers (as disciplinary boundaries becomes better defined). Indeed, the idea of drawing tighter disciplinary boundaries around studies at an earlier age is fiercely contested even in 16-19 education because of the associated specialisation. The growth of the International Baccalaureate with its introductory inter-disciplinary thinking is, in part, a result of the rejection of specialisation too early in the 16-19 curriculum. It would be possible to create a greater association with subject disciplines within UCL's outreach programme but we would recommend further discussion given this context.

The currently light connection is also a consequence of the curriculum-linked content of the workshops, which, for children of this age (up to 10 years old) is weakly subject-discipline based. There is therefore little connection in the primary school curriculum at that stage with subject disciplines. For example, geology is approached through rocks and soils, which includes other skills/knowledge/subject-disciplines as well as geology.

These twin reasons are the main cause of a disconnection with geology or zoology. Establishing these connections may be something UCL would wish to consider but we would recommend careful management and monitoring of this change because from the observations and interviews we have made, children of this age (up to 10 years old) are very responsive to subject matter without the boundaries, specialisms, acronyms, and cultures (all of them potential distractions at this stage) that define subject disciplines.

7. *To what extent do the outreach sessions raise aspiration for education more broadly?*

In direct response to this question it is true to say that the evidence from our research would support the fact that these workshops do raise aspiration for education at the study schools to more generally *be like the workshops delivered by UCL*. Whether the orthodox education system is capable of satisfying that, is less clear. The alternative way of expressing this, is that many more workshops of this kind delivered by UCL or other museums would ingrain the thirst for learning that this question implies. Certainly too, the aspiration for more learning of this particular kind manifests itself as a high level of repeat-bookings for the outreach educator both through UCL and beyond it; and as expressions of a desire for the workshops to be repeated.

As we describe in answer to the Generic Learning Outcomes above (please see question 3), the data from this evaluation do support some raising of aspiration for learning *per se*. The extent to which this is the case bears the same warning as the discussion of question 6: the connection with learning more is most strongly associated with the subject matter (geology- or zoology-based in this case) and not learning for its own sake. However, the observational data from the sessions we attended does supplement this by recording that the discovery-based learning does indeed rekindle both the aspiration for and the actualisation of *enjoyable* education.

As might be expected, the vicarious aspiration for children to do better than their parents came exclusively from the parents/carers. The researchers did record some negativity and poverty of ambition from parents and carers but this was surprisingly rare in this research (2 out of 15 interviewees, or 13%). One interesting consequence of this engagement of many parents in their children's future is that UCL may wish to consider extending the outreach programme to include family-based work.

Some of the comments from students, teachers, and parents/carers illustrate these points:

Responses from children:

"I want to know more..."

"I wish every day at school was as good as this."

"Sometimes my school is a bit boring but today has been wicked so I want to go more."

"Animals are really interesting and I'm going to find out more about how they catch their food"

"My friends and me are going to look up more stuff about Tarantulas and do a picture for our class."

"I want to find out more about baby crocodiles"

Responses from Teaching Staff:

“Discovering together and sharing ideas is the most important thing. I do think we need more activities like today.”

“The change in motivation these kinds of presentations create is fantastic. The children are hungry to discover more and this spills over into their other work.”

“[Geology] sometimes can be boring/dull without the expertise of your intervention.”

“She has made what is a very complex subject accessible to the children and they have learnt loads! Thank you. Please come again.”

“We would appreciate many more sessions of this nature.”

Responses from Parents/Carers

“It took ages to walk home from school last night because [she] was wanting to stop and pick up every piece of rock and look at every stone we walked by.”

“We never did anything like that when I was at school. Perhaps if we did, I wouldn’t be where I am now. I want [him] to be different and have a better chance like this.”

“This isn’t a bad school but sometimes they don’t do much exciting stuff. That’s important right? Making it exciting helps them not switch off. I reckon looking at snake skins and elephant’s teeth will do it.”

“You have to do a lot to keep their attention because of all the media stuff they get shoved at them but you certainly done that today and that’s good because I want them to learn more.”

This is consistent with the research done for Creative Partnerships by the National Foundation for Educational Research and the by the British Market Research Bureau, which found that of 510 head teachers interviewed as part of the programme (of very similar inspirational, creative, engaging learning programmes, targeted at educationally under-achieving wards):

- 92% had seen an improvement in pupils’ confidence
- 87% had seen an improvement in pupils’ motivation
- 76% had seen an improvement in pupils’ enjoyment of school

These points are relevant here, as the foundations for raising aspiration.

(BRMB, 2006)

It is also consistent with the findings of the Aim Higher, National Primary Project delivered by the University of Liverpool and evaluated by Mervyn (Mervyn, 2007), which found that:

“[Partners] saw this impact in two ways – initial enjoyment of the activities by the children, and longer term improvement in the level of their aspirations.”(*Op cit* pp9)

“...there are also indications that the events have raised their aspirations and affected their attitudes towards HE, and their own chances of going to university.”(*Op cit* pp24)

“What the National Primary Project has done is to show that primary Aimhigher activity can be:

- Effective in starting the process of aspiration and planning among pupils” (*Op cit* pp29)

8. *Is it appropriate for the outreach sessions to introduce the concept of higher education and if so how might this best be done?*

Introducing higher education at this age (between 5 and 10 years old) was something that the research team directly tested by instigating a short discussion at the beginning of the latter 50% of the workshops, based around the question: “who knows what a university is; can you tell me about it?” This was posed, and the discussion facilitated, by the outreach educator.

What we observed as a result was that for many children this was their first encounter with the idea of a university and that for others, it altered their perceptions of what university was about (please see also question 2 above). In these sessions we did not distinguish between a university (represented by UCL in this case) and higher education in general because it was such an early encounter for many children. The introduction of university at this stage was appropriate because those children had some knowledge already (principally via siblings, parents and carers) had an understandably incomplete and sometimes incorrect image of university.

This is consistent with the evaluation of the Aim Higher project for the University of Liverpool, one comment from which is instructive:

“The low level of knowledge before the events was interesting. For example, many children when asked if they know of any universities, mentioned the NHS or RAC – showing that they have no understanding of what a university is (even though they can see our university clock tower from their school).” (Mervyn, 2007, pp38)

More concerning in our research, however, was the dispiriting attitude of some teaching staff to the potential of their charges to attain university entrance. Of the 19 teaching staff interviewed, we discussed the possibility of children from their classes going to university with 12; three of whom (25%) expressed an extremely negative view of the likelihood of even one of their class eventually reaching higher education. Negativity was recorded where a teacher saw no prospect of their charges reaching HE level. They then went on, with no sense of irony, to cite parental attitudes and social conditions as limiting factors without acknowledging their own lowering of horizons for many of their class.

Comments included:

“What from this lot? I really don’t think so. You don’t live round here do you?”
 “No, these kids are going to be builders or cleaners, they might go to a university to do that, but not to be students”

The remaining 9 interviewees agreed that some (only two interviewees specified approximate numbers) of their class might reach higher education principally due to their family’s current social position and support for their children; or that they didn’t know.

The converse was also true; particularly of one male teacher who participated fully in the session (as one of the students in the circle), experienced the session as a child would and gave it his full attention (demonstrating by example that it mattered). Our observations of this class was that they were much more receptive to the potential of higher education and were more used to praise than criticism, especially for effort. Unsurprisingly, we found that he was equally supportive of their aspirations, however high. We were unable to discuss the notion of higher education with parents/carers in the time available to us so were unable to test negative teachers' hypotheses.

However, even if true, the raising of the idea of higher education as an attainable goal for some/any of the children engaged in these sessions is, we believe, vital to begin to erode the curtailing and potentially self-fulfilling environment of their peers', family and teachers' attitudes. It is also desirable to begin to re-shape the model of university that is developing amongst the minority of children at this age with some knowledge of it. The qualitative difference this can make is evident in question 2, above. Turning to the method of introducing higher education into the outreach sessions, we observed that this was most naturally done as part of the introduction to the sessions, which is why we introduced it there in our own test.

This is when, currently, the educator explains that she is from UCL and explains the privilege of having 5 museums there, some of the treasures therein, and the potential for any of the children to visit the museum(s) free of charge, and the fact that she has brought some of the fascinating artefacts for them to look at and touch.

Our observation studies of the children involved record that they, perhaps unsurprisingly, associate the outreach educator with what people at university/museums are like. In this case, this is a significant advantage for UCL because she is enthusiastic, approachable, and attentive to each child's curiosity – what higher education, or UCL, would seek in an ambassador to primary school children.

This positive association with someone who, to the children, represents and embodies higher education is likely to be memorable, particularly because it is linked to a motivating workshop and this would be sufficient, with a short discussion like the one introduced for this research, to begin to introduce an aspiration and a pathway to higher education in the minds of the children and their teachers. It may be fruitful also to consider a reinforcing reminder of higher education towards the end of each session, as a reminder that the absorbing, exciting, session the children have been part of is a product of HE, of which they can be a future part.

Recommendations

Our recommendations are derived directly from the research and analysis in this report.

The critically important comment to make at the outset of recommending changes, is that the UCL outreach programme is a success by every measure we were asked to investigate. Recommendations, therefore, are made in the context of retaining the vital core of the current programme, augmenting it with some of the excellent practice from other organisations, and aligning it more closely with the Widening Participation strategy of the university.

With these considerations, our recommendations are these:

- Retain the core value of authentic, memorable, hands-on experience as the unique properties of UCL's museum-based outreach work.
- Define the aims and objectives of the programme so that its purpose can be more easily shared and outcomes more easily measured.
- Focus future outreach work more closely on feeder primary schools for the approximately 100 target secondary schools in UCL's strategy. There is a strong case for narrowing the geographical provision – say to selected North London boroughs within a limited travel time of UCL – in order to concentrate on delivering sustained quality of provision and aspiration raising from primary to secondary level, and working more closely with families.
- From the complete target list of schools, prioritise work each year with fewer schools, more intensively. This is designed to develop and maintain more frequent contact between UCL outreach programmes and the target audiences, to strengthen the relationships and sustain the outcomes for the children in particular. The alternative of distributing the effort and resources more widely is likely to lead to fewer students engaging with higher education because their contact time with UCL outreach, however inspirational, will be diluted
- In conjunction with UCL's Outreach Office consider developing CPD programmes for teachers, specifically involving raising aspirations for their pupils.
- As UCL's sponsorship of a new Academy School in Camden progresses, consider the opportunities that this development may present for creating a hub from which museums/collections-focused outreach might operate.
- Diversify the outreach audience by engaging families, parents and carers in particular, but also teaching staff. This recommendation is designed to begin

to affect the *context* the children are growing up in, as well as the children themselves, to increase the likelihood of an enduring outcome.

- Diversify the outreach offer by introducing the most relevant good practice from the comparative study. Examples include: pre- and post-session visits and resources; mobile exhibitions; media channels (radio, web-based); virtual sessions or video-conference workshops; take-away materials for schools to keep; field trips; and summer camps.
- Introduce the idea of university as a place for children to aspire, as part of the sessions, using UCL as an example; maintain the link to the university's museums to make best use of children's greater baseline knowledge of museums and of the memorable association with the outreach sessions.
- Make the UCL brand more visible to schools and teachers and, to a lesser degree, children through pre- and post-session materials, and the introduction of UCL as a place during sessions.
- Consider extending the offer through use of larger numbers of trained students and recent graduates. In doing so, focus on the attributes of the personnel/educators at least as much as the design/content of the programme.
- Research further the needs of target secondary schools with the aim of producing co-ordinated outreach packages that best meet their needs.

Limitations of the Research

The limitations of this piece of work are connected to the methods we deployed and to commonplace practical constraints.

The limitations of our methods are those criticisms of qualitative endeavour generally, and Grounded Theory (GT) in particular:

- The inherent critique of GT as the inverse of orthodox method (choosing a theoretical framework and applying the model to the activity under scrutiny)
- The absence of a literature review (certainly at the beginning)
- Lack of video/audio source data
- Lack of transcription of interviews
- The link to researchers' preconceptions and cultural frames of reference in the models produced
- Scientific weaknesses of qualitative study (including other methods such as Ethnography, narratology and similar) and perceived problems of reliability, and validity
- Limited/no generalisation

Beyond these limitations, there are the more prosaic practical limitations imposed by boundaries of:

- Sample size, data quality and diversity; in turn limited by
- Time; and
- Financial resourcing

Time was constrained by the boundaries between the commissioning meeting for this research on 14th September 2009 and the deadline for draft reporting on 23rd October 2009 (with final reporting by 31st October 2009)

The financial resource constraints determined that, within the time boundaries, it was only possible to commit one research team member to fieldwork in London, which curtailed the interview numbers.

Finally, the amount of UCL's outreach that the team was able to investigate was limited by the delivery schedule – one outreach educator typically completing three outreach sessions per day to a schedule that was pre-determined and booked, and into which the research had to be accommodated. Of the nine potential dates in October, this meant that the research team were able to arrange 5 days on-site for fieldwork.

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