UCL MUSEUMS AND COLLECTIONS

LESSONS IN LEARNING

Primary schools, universities and museums
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A best-practice guide produced by University College London
UCL Museums & Collections
in association with Culture:Unlimited
INTRODUCTION

This publication is the result of an evaluation study into the Primary schools outreach programme offered by UCL Museums & Collections. It will be of interest to universities, museums and other institutions that engage in outreach programmes with schools.

We present a good practice guide for working with Primary school children, including the strategic background to such projects. The key to outreach that is effective and engaging is discovery-based learning, developed from an exploratory model. Concepts of Higher Education (HE) are poorly understood among Primary-aged children but it is both possible and appropriate for universities or museums to introduce such concepts at this level through hands-on interactive workshops in schools.

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Why should universities and museums work with Primary school children?

Outreach programmes for school children are delivered by the majority of UK universities, but fewer engage with Primary-aged children and fewer still use their museums to do it. Outreach is also well practised in the museum sector, meaning there is potential for Higher Education institutions (HEIs) to work with local museums to engage young children.

Museums experience the same challenges as HEIs do in widening participation: how to increase the diversity of entrants; 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 themselves in a climate of declining financial investment per user, yet maintain equitable access for everyone.

Such aspirations are inherent in the university-wide Outreach Strategy at UCL, which states this vision:

To support UCL’s development as a 21st Century university, engaged with society, transforming through education the lives of people drawn from all sections of the community by remaining true to its core academic values, central to which is the pursuit of excellence.

In the wider field, the Department for Children, Schools and Families’ National Council for Educational Excellence made recommendations for HEIs that impact on university outreach activities:

Recommendation 2
Every Primary school should devote time to work on raising student aspirations to take up a place in higher education. Schools and HEIs should try to ensure that every pupil visits a higher education campus either during Primary or early Secondary education, concentrating initially on schools in low participation or deprived areas.

Recommendation 3
…Schools should continue to develop dedicated activities to promote participation in STEM subjects and modern foreign languages and HEI links with schools and colleges should support this.

There are many benefits of working with Primary-aged children. By introducing young children to the HE sector early, perceptions of it as exclusive and forbidding can be addressed before they are formed or solidified. The curriculum is less confined at the Primary level, allowing for more interdisciplinarity and development of activities more closely aligned to the specialisms of the deliverer. Starting to raise aspirations early can only have a positive effect on the pupils’ opinions and ambitions.
What is UCL Museums & Collections outreach?

UCL Museums & Collections is a resource that supports teaching and learning at UCL. Our outreach work around zoology and geology, using object-based learning linked to the Primary school curriculum, is the focus of this guide. It is largely delivered by an outreach educator employed by UCL, who takes museum artefacts into schools and delivers workshops of about an hour with a class of up to thirty children. The artefacts are used as inspirational focal points around which curriculum topics are discussed, along with discussion of university life.

Each workshop is based on a curriculum-linked lesson plan developed by UCL Museums 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.

All the sessions are currently free of charge to the schools involved. 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. Activity is targeted at schools comprised of pupils from lower socio-economic backgrounds which also have low rates of participation in HE.

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**
- Ourselves (age 5–6)
- Life Cycles and Variation (age 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)

These particular sessions are part of a wider learning and access offer from UCL Museums including other topics like archaeology and art; sessions at the museums with hands-on use of the collections; talks and tours with curators; and tours of the University. There are also six loan boxes covering topics as diverse as Citizenship and Identity and Ancient Greece.

For some years museum outreach 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.
Evaluating our outreach work

In autumn 2009, UCL Museums & Collections commissioned Culture:Unlimited to conduct a summary evaluation of its museum outreach work with London Primary schools. Culture:Unlimited is a think-tank for the cultural sector with a strong background in evaluation of projects in museums across the country. Their study investigated the extent to which the museums part of UCL’s WP work meets its objectives.

The evaluation 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). The geology and zoology outreach sessions in schools offer a snapshot of the effectiveness of outreach at UCL Museums.

Data was collected through semi-structured interviews 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.

Culture:Unlimited investigated eight questions:

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? (see 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 aspiration 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 study was framed in this way as these questions reflect the aims and objectives of the outreach programme and sections of the University which support it. It should be noted that this form of outreach is not considered to be a recruitment activity for UCL. Instead the workshops aim broadly to raise aspirations for education, particularly HE from a young age, promoting a positive and enjoyable learning environment in which pupils strive to reach their potential and are aware of their future options.

Such goals are reflected in UCL Museums & Collections' Learning and Access Policy, which lists the following aims:

- To support a wide range of learners, including UCL staff and students, local schools and communities and learners at all stages from London and further afield.
- To provide stimulating learning environments and resources.
- To open up access to the University and its cultural assets.
- To raise aspirations and widen participation in Higher Education.
- To work in partnership with other organisations for the mutual benefit of those involved.
- To be a user-focused organisation and to evaluate the learning experiences of our users, measuring learning using the generic learning outcomes from the Inspiring Learning for All framework.

These objectives are typical of WP activities across the HE sector, as well as learning programmes in museums beyond the university sector.

**Summary of outcomes**

The study undertaken by Culture:Unlimited has proved very valuable to the work of UCL Museums, not just because the answers to each of the eight questions in the study were positive, but also through the crystallisation of successful strategies and methodologies, and providing suggestions for ways in which the service can develop.

In short, the study found that the sessions are successful in raising students’ confidence, enjoyment and aspirations to learn and engage. This is due to the exploratory and investigative nature of the workshops, the inclusivity of the educators and the diversity of learning styles employed.

The study began with research into practices in place at other institutions, including universities and museums. It found that 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.

See [www.ucl.ac.uk/museums](http://www.ucl.ac.uk/museums) for details of our museums and collections and the work we do.
LESSONS LEARNT

What is university?

Primary schools students’ knowledge of universities is very poor. Any outreach practitioners will need to be aware that they are likely to be starting from scratch with regard to the pupils’ comprehension of their institutions.

For the London state Primary school children involved in UCL Museums’ outreach sessions, only 21% recalled any information about universities. For the remaining 79% the workshops were the first encounter that they could remember. It is crucial, therefore, that their experience is a positive one.

Of the minority that did have knowledge of university, their perceptions were often not positive. Before the session, students were asked “what can you tell me about [university]?”.

These are typical responses:

“You can go there when you’re older”
“It’s like a big school”
“It’s to get you a job”
“You have to be 18 or 19”
“It’s a long way away”

These answers illustrate a rather uninspired attitude. As part of the hands-on sessions a discussion of what universities are like is led by the educator, who needs to be positive and encouraging about the prospects for all the members of each group to go into higher education.

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”
A useful point to note is that pupils' knowledge and experience of museums is much better. An enjoyable museum interaction, such as that in UCL Museums' outreach, functioning as the students’ first contact with Higher Education, creates the positive association in children's minds, and helps connect the university to a memorable experience. In short, aligning something that children do not know – a university – with something that they are more familiar with and enjoy – museums or object-handling – works to create a positive perception of the former.

**Good practice guide**

The three sections below give details of the lessons learnt during the evaluation study and are designed for programme developers and educators at other institutions to use in a practical way. Rather than reporting on what the answers to the questions were for UCL Museums, we present the analysis from the evaluation study, discussing why the goals of the outreach programme were successfully met. Although the second and third topics discuss HE and science specifically, practitioners in other fields can draw inspiration in a broader context.

The quotes are taken from the evaluation study and are from children, teachers, and parents and carers.

**Enjoyment, confidence and aspirations**

While the content and design of the workshops is crucial to its success, the session’s atmosphere and the way the facilitator interacts with the students is also important.

**Creating an atmosphere for confident engagement**

Enthusiasm is infectious. Facilitators who are genuinely passionate about their subjects are easily spotted – if the educator doesn’t seem to find the content interesting, neither will the participants. Students are quick to pick up on whether someone is reciting from a learnt script compared to someone who can expand on topics and respond to questions. The specific learning outcomes of the session shouldn’t be the limit of the deliverer’s knowledge. Questions from the class should be encouraged. Maintaining the students’ interest by following their (related) divergences in conversation can be a very good thing, enabling a deeper interaction. While it is important for sessions to have structure, with certain essential areas to be covered, the flexibility to follow students’ interests in topics that arise makes a big difference.

Pupils do not respond well to being talked at for extended periods. Opportunities to interact should be the norm rather than the exception in the workshop's structure, especially with smaller groups (one class of thirty, for example). Rather than stating a fact, it is more engaging to find a way of asking the students to discover it themselves.

Educators will quickly learn which students in a class are happy to answer the most questions. It is easy to miss those students who never raise their hand to answer, but educators must engage all members of the class. The key to including the quieter students is in raising their confidence. 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.

The outreach educator should take special care to ask questions and engage even the reticent children in a group, giving them a voice that they are unused to.
In almost every case in the UCL Museums study, such behaviour led to unprompted comments from class teachers that they were surprised/pleased at the confidence and inquisitiveness this produced:

“This child is normally the one that never says a word, especially in front of new people. The confidence she found today was remarkable”

“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.”

“[The outreach educator]’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.”

The key feature of these 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 school children.

It is an educator’s enthusiasm for discovery that liberates children’s confidence to try, giving their attention and trusting in the pupils’ abilities. Those hesitant children are unfamiliar with attention being paid to their thoughts and it is this that can help them find their voice.

**Dress down**

The view of academia as stuffy and elitist is easy to avoid by dressing casually in the classroom. A relaxed and informal educator can put the participants at ease and make engagement with the subject matter more comfortable.

**Set the rules of engagement**

While informality is important, the students must be aware of how they are expected to behave. A new person in the classroom can be a distraction to the children and the ground rules should be set at once. With museum objects, the smooth-running of the workshop isn’t the only consideration as the materials in the class are fragile and must be treated carefully. Explaining to the children the rules of engagement for the session (e.g. that they must remain fully seated, that they must raise their hand to speak, that they must listen to whomever is speaking, exactly how materials should be handled or used) and why these rules exist will allow the children to know what is expected of them. A useful tactic is to ask the class to set the rules for how the objects should be handled, for example (but ensuring they cover them fully).
Discovery-based learning

Building the sessions around opportunities for exploration and discovery makes for a successful learning experience. In the UCL Museums sessions, such environments are readily created through the use of museum objects as a focus for discussion. Students are given a few points to note, or questions to ask of an object, before being asked to determine some specific fact about it. For example when students are given animals skulls and asked to discover their diets, they are first engaged in a discussion about what features of the skull they should look at, and what would they predict those features would be like in a carnivore, herbivore and omnivore skull. This investigative, discovery-based learning is how science is conducted in the real world.

Creating enjoyable sessions

Enjoyment is a function of the way a workshop is developed and delivered. In the case of the UCL Museums evaluation, enjoyment was almost unanimously registered across the sample, and diffused across the network of parents/carers, teachers and peers, as illustrated by this teacher’s remark, which was typical: “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.” No instances of negative responses were recorded.

The ways in which these sessions were enjoyable for the children are linked to the experiential learning from authentic museum specimens and the energetic and enthusiastic delivery of the educator. The design of these sessions and the philosophy of the UCL 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.
Engaging multiple intelligences

The evaluation team measured the UCL Museums sessions against the application of different learning techniques. These sessions captured many of the learning intelligences described by Howard Gardner in 1983 in his work on multiple intelligences. They concluded that the UCL Museums workshops embrace all but one of Gardner’s taxonomy (the exception is musical intelligence):

- **Bodily-kinesthetic**
  through the integrated use of movement and body measurement/physiology in sessions

- **Verbal-linguistic**
  through telling stories, taking notes, discussions and debates

- **Logical-mathematical**
  connected to the scientific learning strategies – 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

This remarkable diversity observed in the sessions suggests that 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 Museums outreach sessions.
Raising aspirations and working with parents

Discovery-based learning does rekindle both the aspiration for and the actualisation of enjoyable education. Sessions like those described here raise aspirations for education at the schools to be like the workshops delivered by UCL Museums.

Possible ways of tackling this are for the institutions to run teacher training in object-based or discovery-based learning; and engaging in family learning activities within the schools. This can help raise the aspirations of the whole family, thereby giving confidence to explore and discover learning at home.

Some schools run programmes with both parents and children, or just with parents, and these can be excellent ways for institutions with outreach programmes to engage with families. Similar sessions can be run for both, and those which give children opportunities to perform a learning activity alone, and then re-enact it with the parents, with the children facilitating their parents are very valuable and effective learning methods.

Questions of gender

There is a side-effect of having a female outreach educator: 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 aspect of the UCL Museums outreach 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”

Given that the fields of geology and zoology do not report a strong gender bias at HE this issue is not straightforward. Certainly science as a whole has perceptions of being male-dominated as demonstrated by the teachers’ comments above.

Another side to consider is that there are relatively few male educators in Primary schools, so exposure to male outreach educators could also be argued to be positive.
Engagement with Higher Education

Introducing universities

As noted above, Primary school children's knowledge of universities is very poor, and where they do have any, their perceptions are often not constructive or positive. There can also be a dispiriting attitude of some teaching staff to the potential of their charges to attain university entrance. 25% of teachers in our evaluation study expressed an extremely negative view of the likelihood of even one of their class eventually reaching higher education.

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 raising of the idea of higher education as an attainable goal for some/any of the children engaged in such sessions is vital to begin to erode the potentially self-fulfilling environment of their peers', family and teachers' attitudes. It is also desirable to begin to reshape the model of university that is developing amongst the minority of children at this age with some knowledge of it.

Using the format of curriculum-linked outreach sessions, HEIs can address this situation by introducing a brief discussion about their institution, or HEIs as a whole, as part of the workshop. The outreach educator presents the idea of going to university as exciting and student-based and not only in terms of academic education – pupils respond well to hearing about the social and independent living aspects of going to university.

The UCL Museums educators found that this was most naturally done as part of the introduction to the sessions. This is when the educator explains that they are from UCL and explains the privilege of having 4 museums there, some of the treasures therein, and the potential for any of the children to visit the museum(s) free of charge.

The observation studies of the children involved show that they, perhaps unsurprisingly, associate the outreach educator with what people at university/museums are like.

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. This would be sufficient, with a short discussion 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 use 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.
Raising aspirations for specific subjects

One of the questions asked in the UCL Museums evaluation was “To what extent do the outreach sessions raise aspirations for the specific subjects?” HEIs that run outreach programmes with the aims specifically along these lines should perhaps proceed with caution. Unsurprisingly the evaluators concluded that it is difficult to discern the aspirations of Primary-aged children with any certainty that will have any meaningful durability. During interviews children were asked “have you thought about following-up what we’ve been studying today/zooology/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 [serval]s 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…”

“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”
A parent’s response:

“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.”

As the sample responses illustrate, workshops like these 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 UCL Museums sessions 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. 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 become 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.

The currently light connection is also a consequence of the curriculum-linked content of the workshops, which, for children of this age 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.

Children of this age 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.
Engagement with science

Although improving engagement with and aspirations for specific disciplines within the sciences, such as zoology and geology, is hard to measure, as discussed above, this is not the case for science as a whole.

Methodologically and conceptually scientific workshops

UCL Museum’s outreach evaluators were asked to report “To what extent and in what ways do the outreach sessions engage students with science?” The research team’s observations recorded that the outreach workshops engage students with science to an exceptional degree, and the methods could prove useful to other institutions developing similar sessions.

The evaluation showed that scientific engagement is successfully done implicitly and without distracting terminology. In the case of UCL Museums this is done by 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. 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 outreach sessions.

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, 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 ask 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 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).
Opportunities for geology

Institutions with expertise in the earth sciences could benefit by supplying the desire among school teachers for outreach in these subjects. In the UCL Museums study, 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.

Supplying the market

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 Museums.

They are:

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)
MORE IDEAS FOR ENGAGEMENT

Here we present some of the alternatives or additions to delivering classroom-based workshops like those offered by UCL Museums. The intention is that this will prove a useful list of options to other institutions engaging in outreach activity, or thinking of doing so. However, while these other methods can augment an outreach service, there is no substitute for live object-based workshops in schools, facilitated by an educator.

- 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 a variety of learning styles
- Supporting audio and IT media like MP3 and podcast sessions, Acrobat or PowerPoint versions
- Practical sessions to allow the exploration of the skills of e.g. geologists, zoologists, archaeologists or artists
- A dedicated media channel for children and teachers to use as their reference-point for the institutions’ outreach (a web channel on, for example, YouTube, rather than a high cost TV channel)
- Volunteer delivery of live sessions to allow a larger number of children and schools to be accessed
- Virtual tours of the institution with content and commentary suited to Primary school children
- On-line professional development for teachers
- Downloadable ready-packaged lessons
• Web-chat interactivity with staff at the institution (to answer queries from
children or teaching staff)

• 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 institution's website(s) to retain the enthusiasm and the permanence of
a link to the institution

• The creation of a schools/pupils museum prize, awarded by the institution with
criteria to recognise. The prize might be linked to competitions in photography,
artwork, and science projects

• Participation in, or the creation of, a science festival for schools

• A subscription area for teachers on the institution's website(s) so that they 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

• 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
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UCL, Outreach Strategy, 2007-2011 (available at www.ucl.ac.uk/prospective-students/widening-participation/wp-strategy/)
APPENDIX: HOW ARE UCL MUSEUMS RESPONDING TO THE EVALUATION STUDY?

The evaluation study by Culture:Unlimited produced a series of recommendations for UCL Museums. Below are some of the ways in which the service is being developed in light of this study.

- Primary school outreach is being targeted at the feeder Primary schools of the Secondary schools identified by UCL Outreach (formerly UCL’s widening participation unit) as having low participation levels in HE, and also which contain high proportions of pupils from low socio-economic backgrounds.

- Opportunities to work more closely with families are being explored, with the aim of diversifying 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.

- The option of prioritising work each year with fewer schools, more intensively is being explored. 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.

- Branded downloadable lesson plans are now available for use by teachers themselves before or after outreach sessions, as this can increase the impact of the engagement. These are also available to schools not involved in live outreach sessions, allowing the geographic area which can be covered to be expanded without reallocation of resources away from the targeted schools. See [www.ucl.ac.uk/museums/learning/lessons](http://www.ucl.ac.uk/museums/learning/lessons)

- The capacity of the programme is being increased by training UCL students already involved in long-term volunteering projects in schools to run sessions.
LESSONS IN LEARNING
Primary schools, universities and museums

www.ucl.ac.uk/museums