

# **Assessing learning in museum environment**

**A practical guide for museum evaluators**

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## 1 Background

To answer the question “are visitors learning in museums?” requires complex and lengthy longitudinal studies lasting months or even years. Such studies are invaluable for museum professionals in planning and developing new exhibitions, events etc but are nearly always beyond the means of most institutions. Most museum projects are run over much shorter periods of time and require data on visitors’ learning far more quickly than can be provided by academic research.

The aim of this paper is to provide a practical guide to quickly but reliably assessing the educational value of an exhibit, exhibition, event, web-based resources etc within the constraints of time, money and staff faced by most museums. Rather than trying to assess learning we focus upon the process of learning. In other words rather than asking, “Has learning taken place?” we ask “Is learning taking place?” Or more specifically ...

- Is there a potential for visitors to have learnt from this experience?
- What barriers are there to visitors’ learning?

The objectives of this paper are to define

- what we mean by ‘learning in museums’
- indicators that learning is taking place and how they would be assessed
- indicators that barriers to learning are present and how these would be identified

To put it another way;

- What should we hear and see if visitors are having a learning experience?
- What would we hear and see if visitors are experiencing a barrier to learning?

These experiences do not, of course, encompass all of the possible outcomes of a museum visit. Other cultural and social outcomes exist and are just as valid (see appendix 1). However, the aim of this system is specifically to address the question of whether the educational outcomes of an exhibition have been met.

## 2 What do we mean by learning in museums?

Learning is a process of active engagement with experience. It is what people do when they want to make sense of the world. It may involve increases in skills, knowledge, understanding, feelings and capacity to reflect. It may involve challenging values, attitudes and beliefs. Effective learning leads to change, development and the desire to learn more.

(Modified version of the Campaign for Learning's definition of learning).

The model of learning set out in this paper draws upon the work of many researchers from around the world in particular Minda Borun, George Hein, Michael Alt and Nicky Hayes. Examples of their work can be found in the reference section at the end of this paper.

Learning experiences can occur when visitors use any of the media provided by the museum e.g.

Objects and labels	Interactive exhibits
Audio-visual displays	Works of art
Drama presentations	Workshops
Talks, debates, shows	Web-sites
Activity boxes or packs	

A visitor in a museum can experience three types of learning: formal, self-directed or informal (non-formal).

**Formal** is characterised by teacher or tutor-led structured sequences of learning activity and by external assessment (whether the qualification is nationally-recognised or not).

**Self-directed** is characterised by learner-led activities that use resources (books, exhibitions, web sites etc.) according to a broad or specific educational aim of the learner, whether for general personal development or for a specific subject interest or vocational aim.

**Informal/non-formal** happens frequently in cultural institutions and is the unplanned casual encounter with e.g. an exhibition or person that leads to a new insight, idea or conversation.

Each of these three modes of engagement can take place onsite (in the physical space of the Museum), physically offsite (outreach/community) and electronically. Each may be mediated by people (e.g. teacher, Explainer) or not.

Our model of learning draws upon the constructivist models developed by George Hein (see reference section).

- The learner is assumed to be an active participant in the process not a passive recipient
- The learner constructs their own understanding of the world in by reflecting on their experiences and interpreting what they see, hear and feel

- Learning, therefore, is adapting our mental models to accommodate new experiences and new information

By ‘learning in museums’ we mean more than just the acquisition of new knowledge. In terms of learning in a museum an ‘educational experience’<sup>1</sup> can fall under one or more of five categories; Cognitive, Affective, Social, Developing mental or physical skills, Personal. Each category is described in more detail in Table 1.

**Table 1: Learning in museums**

Cognitive	Acquire new knowledge; reinforce prior knowledge through repetition/direct concrete experience; accommodate/assimilate new knowledge into existing schemas; set prior knowledge into context; learn how to apply existing knowledge e.g. experimenting, problem solving, finding creative solutions; connect concepts; draw analogies
Affective	Challenge beliefs attitudes and values; increase understanding and empathy with other people’s view-points
Social	Develop skills of co-operation, communication, helping others to learn; developing social capital
Developing skills [mental and physical]	Prediction, deduction, problem solving, investigation, observation, measuring, classification, making telling stories, decision making Physical skills e.g. manual dexterity, craft skills etc Skills of artistic appreciation and criticism Skills of numeracy, literacy, use of Information Technology Skills of research and science process – designing experiments and fair tests, data collection, testing theories data analysis, drawing conclusions, assessing evidence
Personal	increase self-confidence and self-efficacy; motivate to investigate further; associate curiosity and thinking with enjoyable experiences; inspire interest and curiosity; inspire awe and wonder; increased sense of identity and self-worth

<sup>1</sup> By ‘experience’ we include – a visit to an exhibition; a visit to a museum web-site; attending an event at a museum e.g. drama presentation, debate, workshop. The experience may involve; viewing an object, reading text, using an interactive exhibit, participating in a workshop, watching a drama or audio-visual presentation

### 3 Defining indicators of learning

In developing these indicators we have followed the process used by the New Economics Foundation. This system, known as AIM, recommends that indicators are:

- **Action focused** – data collected must directly lead to practical recommendations for improvement
- **Important** – indicators are meaningful and important to the stakeholders i.e. in this case visitors, the exhibit developers, museum managers, front-of-house staff
- **Measurable** – must be possible to collect data within the expected constraints of time, money and staff available
- **Simple** – data can be easily collected and the findings can be widely understood

The indicators were drawn from research conducted in various museums around the world plus our own studies at the Science Museum in London. Examples of such work and of the underlying theories of learning are listed in the reference section at the end of this paper (see in particular Alt & Shaw 1984; Borun et al. 1998 and Griffin 1999 for examples of other attempts at defining indicators of learning).

When discussing indicators of learning we have used the terms '**exhibits**' and '**activities**' to cover all the possible media by which visitors can learn (both actual in the museum and virtual visitors on the Internet).

**Exhibits** include collections of, or individual objects, art-works, videos or photographs plus their accompanying labels, text panels and other interpretative media

**Activities** include activity participation in a workshop, use of an interactive exhibit, seeking information from an on-line resource, handling an object, answering a quiz or worksheet, talking to /asking questions of a member of staff, attending a lecture, going on a guided tour

#### **4 Assessing evidence for learning in museum settings**

When assessing the evidence for learning (or for the presence of barriers to learning) we use a 'quasi-judicial approach to data analysis (see Robson 1993 pp 375-381). This is an approach to analysing data based on jurisprudence and is similar to the process used by an examining magistrates in France or by judges in England when conducting public enquiries. The following steps are followed when assessing the learning potential of an exhibition, event, web-resource etc.

1. The key issues, questions and problems are stated as clearly as possible
2. Data is collected and quickly reviewed
3. An initial explanation of the data is developed
4. The data is analysed in detail to determine whether it supports or refutes the initial explanation
5. Alternative or modified explanation are developed in the light of the data
6. New or modified explanation are then tested against the data
7. The sources and quality of the data are also examined to check for reliability and consistency
8. Eventually an explanation of the data is produced that is supported by most of the available data and is contradicted by little or none of it i.e. select the interpretation most compatible with the evidence

## **5 Indicators of learning in museum settings**

1. The following tables set out a list of indicators that learning is taking place in museum settings. These indicators refer to what the researcher observes visitors doing, what visitors say about they have or are experiencing and what they say about the experience of those visiting with them.
2. Indicators of learning are graded weak, medium and strong depending on the reliability of the evidence that the indicator provides. For example a parent reporting upon the feelings of their child or an observer drawing inferences about the learning of that child are considered to be weaker evidence than the response of the child herself. Similarly people who agree with a statement that they have found something inspiring is considered to be weaker data than people who spontaneously describe an experience as inspiring.
3. When assessing evidence for learning (or the presence of barriers to learning) account is taken of the age and gender of the visitor.
4. Some indicators are common to all five categories of learning. For example cognitive, affective, skill-based, social and personal learning is unlikely to be taking place if visitors completely ignore key exhibits, cannot understand the terminology used in the text etc.

### All types of learning

Type of learning	Weak indicator	Medium indicator	Strong indicator
Attract and hold attention	<p>Pay attention to exhibit, activity etc. – stop and look at [for how long?]</p> <p>Point to or ask question about [how many?]</p> <p>Successfully complete activity at least once [difficulty of activity]</p>	<p>Focus attention for enough time to complete activity / read text</p> <p>Listen attentively</p> <p>Join in activity</p> <p>Handling exhibit / perform activity carefully and purposefully</p> <p>Call others over to see exhibit/join in activity</p> <p>Express interest in exhibit, activity</p> <p>Describe activity as enjoyable, entertaining</p> <p>Complete activity and stay afterwards to ask further questions</p> <p>Write <u>brief</u> notes, take <u>a</u> photo</p>	<p>Pay attention for more time than is require to complete activity, read text</p> <p>Stop, look at and discuss at length, ask series of related questions about,</p> <p>Repeat activity several times</p> <p>Leave and return to exhibit, activity etc.</p> <p>Say that they felt absorbed, fascinated, involving, inspired by the experience</p> <p>Take <u>extensive</u> notes, draw, take <u>several</u> photos</p> <p>Children engage in extensive exploratory, imaginative or role-play.</p>



**All types of learning**

Type of learning	Weak indicator	Medium indicator	Strong indicator
Comprehend content	<p>Say that the exhibit, activity had something for all ages/everyone</p> <p>Can describe in general terms the theme and content of exhibition / activity</p>	<p>Say that they felt that the activity or content was pitched at the right level for them</p> <p>Feel that activity was challenging but achievable for their children / their companions</p> <p>Can describe in detail the theme and content of the exhibition / activity</p>	<p>Feel that activity was challenging but achievable <u>for them</u></p> <p>Say that exhibit / activity made a difficult subject easy to understand</p> <p>Can do more than merely describe the individual elements of the experience or activity. Can describe in detail the theme and content of the exhibition / activity and demonstrate a good understanding of the underlying reasons for this choice of content i.e. what the museum was trying to achieve.</p>

## Cognitive

Type of learning	Weak indicator	Medium indicator	Strong indicator
Increase or consolidate knowledge	<p>Read text / listen to information</p> <p>Generally feel that they have 'learnt something' – i.e. non-specific</p> <p>Describe exhibit / activity as 'educational', 'learning'</p> <p>Can describe exhibit / activity in general terms – hours / days later</p> <p>Ask questions and listen to answers about exhibit, activity</p> <p>Describe exhibit / activity to someone else</p>	<p>State specific things that they have learnt</p> <p>Describe content of exhibit / activity surprising / shocking</p> <p>State that they saw / did something they had never seen / done before</p> <p>State specific things that their children / companions have learnt something new – with specific examples [How many?]</p> <p>Can describe exhibit / activity in some detail hours / days / weeks later</p> <p>Reflect the language used in the exhibit / activity in their own descriptions</p>	<p>Ask sequence of related questions – clarifying, probing, challenging questions</p> <p>Discuss content of exhibit / activity supporting arguments with evidence</p> <p>Answer series of open-ended questions about the exhibit / activity</p> <p>State specific things that they have learnt and be able to give specific examples [How many?]</p> <p>Can describe exhibit / activity in considerable detail days / weeks later</p> <p>Demonstrate increased knowledge after visit to exhibit / activity – e.g. by pre- post testing; increased, more detailed description</p>

## Cognitive

Type of learning	Weak indicator	Medium indicator	Strong indicator
Link to prior knowledge/experience	<p>Can relate content of exhibit / activity to their everyday lives</p> <p>Can identify importance or relevance of content</p>	<p>Spontaneous relate content of exhibit / activity to their everyday lives / past experience to a limited extent e.g. association of ideas</p> <p>To a limited extent, spontaneous relate content of exhibit / activity to the lives of their relatives or other people in their community</p> <p>Demonstrate some increase in number of associated ideas and concepts (e.g. through the use of personal meaning mapping)</p> <p>Can relate content of exhibit / activity with what they have learnt / are learning in formal education</p>	<p>Spontaneous relate content of exhibit / activity to their everyday lives / past experience in considerable detail e.g. detailed reminiscence, specific examples</p> <p>Spontaneous relate content of exhibit / activity to the lives of their relatives or other people in their community in considerable detail e.g. specific detailed examples</p> <p>Demonstrate large increase in number of associated ideas and concepts (e.g. through the use of personal meaning mapping)</p>

## Cognitive

Type of learning	Weak indicator	Medium indicator	Strong indicator
Process and apply information	Ability to repeat activity e.g. through imitation or modelling behaviours observed; by assessing their own performance	<p>Can identify relevant themes / comparisons in content of exhibit / activity</p> <p>Can associate content of exhibit / activity with some of underlying scientific principles</p> <p>Can back-up ideas about exhibit / activity with limited amount of evidence</p> <p>Say that the exhibit /activity has provided them with a new perspective on the subject</p> <p>Ability to demonstrate and / or explain exhibit / activity to others e.g. imitation or modelling behaviours observed</p>	<p>Demonstrate ability to use information from exhibit / activity e.g. to complete a task, solve relevant problems, draw conclusions, make decisions</p> <p>Can engaged in prolonged relevant discussion about content of exhibit / activity. Can describe experience or activity in detail <u>in their own words</u></p> <p>Demonstrate ability to use information from exhibit / activity to develop stories, new ideas</p> <p>Can engage in self assessment of how well they have done in an activity</p> <p>Can associate content of exhibit / activity with most of the underlying scientific principles</p> <p>Can draw analogies to describe / interpret content of exhibit / activity</p> <p>Can back-up ideas about exhibit / activity with considerable evidence</p> <p>Children engaged in prolonged symbolic or fantasy play related to content of exhibit / activity</p>

### Affective

Type of learning	Weak indicator	Medium indicator	Strong indicator
Challenge beliefs, attitudes, values	<p>Agree that their / their children or companions' beliefs, attitudes, values have been <u>challenged</u></p> <p>Engage in discussion about the content of the exhibit / activity</p>	<p>Spontaneously state that their beliefs, attitudes, values have been <u>challenged</u></p> <p>Spontaneously state that the beliefs, attitudes, values of their children / companions have been challenged or changed</p> <p>Demonstrate or spontaneously mention increased <u>awareness</u> of the various moral issues associated with the subject of the exhibit / activity</p>	<p>Spontaneously state that their beliefs, attitudes, values have been <u>changed</u></p> <p>Spontaneously state that the exhibit /activity has provided them with a new perspective on the subject</p> <p>Demonstrate increased <u>understanding</u> of the various moral issues associated with the subject of the exhibit / activity</p>
Inspire strong emotional reactions	<p>Agree that they have an emotional reaction to the exhibit / activity</p>	<p>Spontaneously express emotional response to exhibit / activity e.g. using emotive language</p> <p>Describe that the exhibit / activity was though-provoking</p> <p>Body language e.g. facial express indicates strong emotional response</p>	<p>Spontaneously express strong emotional response to exhibit / activity e.g. using very emotive language</p> <p>Describe the exhibit / activity was controversial / provocative / shocking / moving</p>

**Affective**

Type of learning	Weak indicator	Medium indicator	Strong indicator
<p>Increase awareness of other people's beliefs, attitudes and values</p>	<p>Agree that their awareness of other people's beliefs, attitudes and values has increased</p> <p>Children engage in relevant role play</p>	<p>Spontaneously mention that their awareness of other people's beliefs, attitudes and values has increased</p>	<p>Spontaneously mention that their awareness of <u>and respect</u> for other people's beliefs, attitudes and values has increased <u>and</u> be able to describe how in some detail.</p> <p>Demonstrate increased tolerance towards the beliefs, attitudes and values of other people that differ from their own beliefs, attitudes and values.</p>
<p>Increase empathy with other people's beliefs, attitudes and values</p>	<p>Agree that their empathy with other people's beliefs, attitudes and values has increased</p> <p>Agree that they can better empathise with the experiences of others</p> <p>Children engage in role play related to the content of the exhibit / activity</p>	<p>Content of discussion indicates an increased empathy with other people's beliefs, attitudes and values</p> <p>Spontaneously mention that they empathy with other people's beliefs, attitudes and values has increased</p> <p>Spontaneously mention that they can better empathise with the experiences of others</p>	<p>Spontaneously mention that their empathy with other people's beliefs, attitudes and values has increased <u>and</u> describe how in some detail.</p>

## Social

Type of learning	Weak indicator	Medium indicator	Strong indicator
Develop skills of co-operation	Say that they or their companions / children engaged in co-operative activities	Show some co-operation during activity e.g. *Assign roles, *Share information, *Give advice and guidance, *Listen to and act upon advice and guidance, *Discuss possible actions and outcomes, *Agree goals of activity, *Share tasks and work together to achieve agreed goals  [how much, for how long, with how many people]	Show sustained co-operation throughout activity e.g. *Assign roles, *Share information, *Give advice and guidance, *Listen to and act upon advice and guidance, *Discuss possible actions and outcomes, *Agree goals of activity, *Share tasks and work together to achieve agreed goals
Develop skills of communication	Conversation observed between visitors	Share relevant information during some part of activity e.g. *Ask questions *Seek guidance *Listen to others *Answer questions *Give advice / guidance *Provide background information *Discuss possible actions and outcomes	Share relevant information throughout activity e.g. *Ask questions *Seek guidance *Listen to others *Answer questions *Give advice / guidance *Provide background information *Discuss possible actions and outcomes  Children engage in story-telling activities related to content of exhibit / activity

**Personal**

Type of learning	Weak indicator	Medium indicator	Strong indicator
Increase sense of self-confidence & self efficacy	<p>Agree that they feel more confident</p> <p>Agree that they feel a sense of achievement after completing activity</p> <p>Say that their children / companion feel more confident</p> <p>Increased willingness to engage in activity</p> <p>Increased willingness to engage in a discussion about the exhibit / activity</p>	<p>Spontaneously state that they feel more confident about particular subjects / activities</p> <p>Spontaneously express a sense of achievement after completing activity</p>	<p>Spontaneously state that they feel more confident about particular subjects / activities <u>and</u> can describe how in some detail</p>
Increased sense of identity and self-worth		<p>Spontaneously state an increased sense of self-worth</p> <p>Spontaneously express sense of increased identity with other people / communities / places / times</p>	<p>Spontaneously state an increased sense of self-worth and can give specific examples</p> <p>Spontaneously express sense of increased identity with other people / communities / places / times and can give specific examples</p>



## Personal

Type of learning	Weak indicator	Medium indicator	Strong indicator
<p>Inspire interest and curiosity</p> <p>Motivate to investigate further</p>	<p>Agree that they or their children / companions feel more interested in the subject matter of the exhibit / activity</p> <p>State that they or their children / companions are inspired to learn more about subject</p>	<p>Spontaneously demonstrate increased interest in the subject matter e.g. ask questions that suggest they are motivated to investigate further [how many?]</p>	<p>State that they or their children / companion <u>have</u> since investigated further [how much, how often?]</p>
<p>Associate experience with positive feelings</p>	<p>Body language, verbal and non-verbal responses during experience is indicative that they are having a positive experience</p> <p>Say that children / companions had a positive experience</p>	<p>Express positive views about exhibit / activity</p> <p>Say that their children / companions feel more positive about the museum</p>	<p>Spontaneously express positive views about the exhibit / activity</p> <p>Spontaneously say that they feel more positive about the museum</p>

### Skill-based

Type of learning	Weak indicator	Medium indicator	Strong indicator
Developing / practising thinking skills *Prediction *Deduction *Problem solving *Investigation *Experimentation *Developing and testing theories *Observation *Measurement *Classification and identification *Making and telling stories *Decision making *Planning *Spatial manipulation *Lateral and creative thinking	Say that they / their children or companions used relevant skills  Say that their children or companions have improved relevant skills	Observed to use relevant skills [for how long; how often]  Say that they have improved relevant skills	Demonstrate that they have improved skills  Observed to improve their performance [to what extent]
*Numeracy skills *Literacy skills  *Information Technology skills  *Musical skills	Say that they / their children or companions used relevant skills  Say that their children or companions have developed relevant skills	Observed to use relevant skills [for how long; how often]  Say that they have improved relevant skills	Demonstrate that they have improved skills  Observed to improve their performance [to what extent]

**Skill-based**

Type of learning	Weak indicator	Medium indicator	Strong indicator
Developing / practising skills of ... Manual dexterity Construction and making Design and aesthetics	Say that they / their children or companions used relevant skills  Say that their children or companions have developed relevant skills	Observed engaged in constructive play related to content of exhibit / activity  Observed to use relevant skills [for how long; how often]  Say that they have developed relevant skills	Demonstrate that they have improved skills  Observed to improve their performance [to what extent]  Production of high quality output e.g. picture, vase, etc.
Artistic appreciation and criticism	Say that they / their children or companions used relevant skills  Say that their children or companions have developed relevant skills	Engage in some discussion about the artistic merits / meaning of exhibit	Engage in sustained discussion about the artistic merits / meaning of exhibit supporting arguments with evidence

## 6 Barriers to learning

When assessing learning in museums we also look for potential barriers to learning i.e. things shown to inhibit learning and undermine visitors' self-confidence. These are things that prevent visitors from using, understanding or enjoying an exhibit, event, web-resource. Barriers to learning can be caused by physical design, the content, or the way in which the content is presented. As such we have classified barriers to learning as physical, intellectual or motivational.

A detailed description of barriers to learning can be found in table 2. These have been identified from our own evaluation of exhibitions and events and by the research of Alt and Shaw at the Natural History Museum (Alt & Shaw 1984)

**Table 2: Barriers to learning**

Physical	<ul style="list-style-type: none"><li>* Interactive exhibits that are physically difficult to operate e.g. size of active area on screen is too small, controls that are difficult to move; web-resources that are slow to down-load or require high-grade hardware or software</li><li>* Interactive exhibits where visitors cannot see the controls or the feedback from the exhibit</li><li>* Experiences or activities that only allow one person to use or see them at a time</li><li>* Exhibits that are positioned so that they cannot be easily seen e.g. too high, badly lit</li><li>* Information that is difficult to read / hear e.g. bad choice of font size, colour contrast, too quiet</li><li>* Important elements of an experience/activity that are difficult to find / see</li><li>* Environment that is physically uncomfortable – e.g. noisy, crowded, too dark, not enough seating</li><li>* Things that distract visitors' attention from the activity e.g. difficulty in seeing or hearing presenters, uncomfortable seating</li><li>* Exhibition layouts that are confusing and difficult for visitors to find their way around</li></ul>
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**Table 2: Barriers to learning (continued ... )**

Intellectual	<ul style="list-style-type: none"><li>* Terminology that is unfamiliar to visitor - visitors do not understand words, do not know how to pronounce them</li><li>* Text that is badly written i.e. difficult to understand, double negatives, complex compound sentences</li><li>* Text that is overly long – repetitive, wordy, contains irrelevant and unhelpful information</li><li>* Information is too basic for the target audience – uninformative, patronising, does not provide any new information</li><li>* Lack of information – not enough interpretation or explanation of exhibits</li><li>* Information is too complex for the target audience leading visitors to feel ignorant – assumes knowledge that visitors do not have</li><li>* Activities or information that visitors cannot relate to their prior knowledge or everyday world</li><li>* Activities that are difficult to understand – require complex, lengthy or confusing instructions, produce complex feedback that visitors cannot understand, where the point of the activity is unclear, where there is no obvious conclusion</li><li>* Activities that are too basic for the target audience – trivial, mundane, too brief, uninspiring</li><li>* Exhibitions or interactive exhibits that have a confusing or poorly explained layout so that visitors cannot recognise the main themes and organising principles behind the display, what routes would be best to follow etc</li><li>* Activities that do not allow or encourage interaction between visitors e.g. adults and children</li></ul>
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**Table 2: Barriers to learning (continued ... )**

<p>Motivational</p>	<ul style="list-style-type: none"> <li>* Information that is not relevant to the visitor's everyday world, their family, their culture</li> <li>* Information that is not linked to visitors' prior knowledge</li> <li>* Exhibitions, exhibits or objects that are unattractive and fails to capture or hold visitors' attention - lack of colour, light, size, movement; objects displayed too far away from visitors behind glass, lack of images on web-pages, large blocks of text</li> <li>* Poor choice of media e.g. low tech exhibits to convey contemporary science</li> <li>* Poor quality of media e.g. low quality props for a show, poor quality software for a computer exhibit</li> <li>* Exhibitions that provide little or no opportunity for physical interaction i.e. wholly passive experience where visitors feel they have little or no control over the learning process</li> <li>* Activities that are too slow - instructions take too long; transition from one stage to another is too slow, repetitive, long-winded descriptions, whole activity lasts too long, web-resources that take a long time to down-load or run</li> <li>* Activities where there is no obvious reward or motivation for carrying out the task e.g. very mundane experiences that could be, or have been, done or seen elsewhere, exhibits that lack sufficient interpretation, do not provide adequate feedback on the visitor's performance</li> <li>* Activities poorly matched to the abilities of the target audience i.e. too simple so are boring; too complex so cannot be achieved</li> <li>* Activities or exhibits that are mundane i.e. things that could be seen or done elsewhere</li> <li>* Activities that make visitors look stupid or foolish in front of other people e.g. that require social interaction but where visitors feel too awkward and inhibited to communicate or participate; where there are unclear rules of engagement</li> <li>* Activities where visitors feel unwelcome, out of place, excluded</li> <li>* Activities that preclude social interaction – activities that can only be done by one person at a time; activities that require people to wear head-phones or where parents cannot effectively communicate with their children while they are using an exhibit</li> <li>* Text that is poorly written – complex compound sentences</li> <li>* Unfriendly / unhelpful staff</li> </ul>
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## 7 Methodology

Evidence for learning experiences will come from both direct questions asked of visitors and from detailed content analysis of visitors' conversations during the experience i.e. either responses to specific questions or things spontaneously mentioned. In addition evidence is gained from observing visitors' behaviour. Visitors have a very narrow view of what 'education' and 'learning' encompass. Therefore asking visitors if they have learnt something will only be one form of evidence taken.

A mixture of quantitative and qualitative measures will be used.

### *Interview techniques*

- face-to-face interviews
- focus groups discussions

Interview techniques will involve the use of both closed and open-ended questions.

Visitors may also be asked to complete 'personal meaning maps'. Visitors are asked to write any words or phrases that come to mind about a subject and indicate links between the ideas mentioned. The visitors are then prompted to explain what they meant and their responses are recorded.

Other sources of evidence will include the use of drawings, written responses, visitors selecting images for 'mood boards'.

### *Observation techniques*

- detailed observation at specific exhibits or events
- tracking visitors through an exhibition

Observation will involve recording the conversations and body language of the visitors; how they interact with each other, museum staff and the exhibits; length and quality of the experience.

Such observations may involve the use of video and / or audio recording. When such techniques are used appropriate safeguards will be applied to ensure that the research is conducted in an ethical and sensitive manner.

Where possible, visitors' level of understanding, their attitudes and behaviour should be examined before and after the experience. However pre and post visit testing of *the same individuals* should be avoided whenever possible since the pre visit test will mean that these particular visitors will not think and act like typical visitors.

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## Appendix 1

### Other measures of satisfaction / motivation

The above paper seeks to develop a practical method for assessing the degree to which visitors learn in museum environments. The opportunity to learn is of course only one motivation for visiting a museum, science centre or other visitor attractions. Other factors are often as, if not more, important. Many other taxonomies have been developed that attempt to cover the entire range of motivations of visitors. The following outlines some of the more significant examples.

Andrew Pekarik, Zahava Doering and David Karns devised four categories of what visitors are looking for from a visit (Pekarik, Doering & Karns 1999):

A: Object experiences – something outside the visitor

- seeing the real thing
- seeing rare/uncommon/valuable things
- being moved by beauty
- thinking what it would be like to own such things

B: Social experiences – interaction with someone else

- spending time with friends and family
- seeing my children learning new things/enjoying themselves

C: Cognitive experiences – interpretative or intellectual aspects of an experience

- gaining information/knowledge
- enriching understanding

D: Introspective experiences – reflecting on private feelings, memories

- imagining other times or places
- reflecting on the meaning of exhibit
- recalling childhood experiences/memories
- feeling spiritually connected
- feeling a sense of belonging, identity

Categories C and D overlap to a large extent with our taxonomy of learning experiences. Categories A and B cover other, very important, motivations.

Molly Hood identified six attributes that people use to differing degrees when selecting leisure activities (Hood 1989);

- Having the opportunity to be with people (social interaction)
- Doing something worthwhile
- Feeling comfortable and at ease in one's surroundings
- Having a challenge of new experiences
- Opportunity to learn
- Opportunity to participate actively

Sharon Macdonald proposed that the motivations of visitors to museums can be explained in terms of cultural itineraries (Macdonald 1992). This model was further expanded by Theano Moussouri in her study of families in three different venues (Moussouri 1997). Taking these two models together five cultural itineraries are suggested to be significant for museum visitors;

- Education – both specific interest in subject matter presented and general interest in learning and increasing one's understanding/awareness
- Life cycle – i.e. museum visiting is something you do at particular stages in your life
- Entertainment – an enjoyable experience
- Family event – something to do together as a family; chance to spend time together
- Place – a high-light of visiting a city; one of the sites

Combining these three taxonomies I suggest that **in addition to educational outcomes** a visit to a museum can led to and be motivated by the following.

- Social experience – chance to spend enjoyable time and share experiences with friends / family / other people
- Entertainment / relaxation – light relief, relaxation or physical exercise, a chance to forget about everyday cares and concerns
- Unique experience – chance to see rare / beautiful / real things
- Personal identification – inducing feelings of nostalgia, stimulating memories, promoting a sense of belonging or connection to other people
- Parenting – strengthening relationships between family members, a chance to inculcate values in children / grand-children e.g. museum visiting, art appreciation, learning about history science
- Experiencing a place – part of the experience a place e.g. doing the London museums