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NEWSLETTER

Visitor Research and Evaluation

What's working, what's not working and what can we do better?

Visitor research does what it says on the tin: it is the study of visitors. The theoretical frameworks governing the research may be ethnographic, psychological or educational. In general, the aim is to understand what is happening currently, and the findings may or may not be used to inform future developments.

An evaluation carried out at FRida and freD - the Graz Children's Museum, Austria

Evaluation, on the other hand, is explicitly aimed at improving the exhibition, event or programmes it studies. It provides opportunities for institutions to reflect and consider the perhaps unanticipated consequences of an initiative. Most importantly, its findings and conclusions point to ways for improvement. In other words, evaluation studies are not to be conducted in isolation and then left on a shelf, they should be used to guide developments and actively inform practice. When planning a project, thinking about how to evaluate its impact can help an institution to set realistic, and concrete goals. Then, throughout the implementation of the project, analysis of the views and preconceptions of visitors (front-end evaluation), initial prototypes (formative evaluation), or the near-final product (remedial evaluation), can identify issues for modification and improvement.

There are a number of evaluation methods that can be adopted. Quantitative approaches are concerned with numbers, and study for instance, the volume of visitors to and length of stay at a particular exhibit. Qualitative approaches seek to explore visitor behaviours and ask what was the reason for the extended stay at an exhibit? What did the visitor gain from a particular experience? Typical methods for qualitative studies include interviews, focus groups, case studies and the analysis of visitor drawings, photos, and written responses.

Experimental studies, which attempt to measure changes in, for example, knowledge or skill before and after a particular experience, have been seen to provide concrete evidence of impact and are often highly regarded by funders. However, studies that identify small changes in visitor behaviour, as indicators of learning and engagement, are increasingly acknowledged as evidence of impact. Whilst evaluation techniques can be simple and need not always involve large numbers, it is important to ensure validity and reliability, or in other words that the methods really are measuring what you aim to measure, and that your findings are consistent or repeatable.

In this newsletter, museum and science centre evaluators write about their professional practice. In her article, Holly Hasted makes the point that greater sharing of evaluation practices and the development of a common 'language' of evaluation amongst European museums and science centres is necessary if institutions are to improve their offer, participate in the science education / engagement research communities, and demonstrate their value to society.

Dr Heather King,
Research Associate, King's College London,
Evaluator of TWIST project and guest editor
of this issue of the Ecsite Newsletter

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European Network of Science Centres and Museums

The Science Museum London, UK, have put together an online resource toolkit for museums and science centres with expert tips and practical advice. We present an extract from this toolkit focusing on testing prototype interactive exhibits with visitors.

What we've learned about evaluating prototype exhibits

When you're developing interactive exhibits...

Plan to prototype test them to identify any barriers to three key criteria:

- Motivation - Does the target audience want to use the exhibit? Do they **enjoy** using it?
- Usability - Can the target audience work out **how to use it**? Do they know what to do with it?
- Content - Does the target audience **understand** what the exhibit is about? Are the key messages conveyed clearly?

For the best result, exhibit developers, makers and budget-holders should agree a process and programme for testing prototypes and making changes, so there are no nasty surprises for anyone. Prioritise exhibits for testing that are the least tried-and-tested, the most innovative or the most complex. Ideally, plan for **three versions of a prototype** in order to check that changes have been successful.

When testing prototypes...

When a prototype has been made and risk-assessed, you can test using these alternative methods:

Cued testing, where you actively recruit visitors to test an exhibit in a gallery or a suitable off-gallery space. This yields more detailed data because visitors have agreed to focus on the exhibit. However, they will behave differently when they know they are being watched.

Uncued testing, where you put a prototype onto gallery and let visitors find it. This can yield realistic data more quickly as the interactions are continuous. But you have to be sure the prototype is positioned where the right target audience finds it and visitors can be less attentive in any following interviews.

The exhibit developer must define **who** the exhibit is for, and **what learning outcomes** they are hoping visitors will gain. The exhibit can then be tested against these criteria. Qualitative methodologies are normally most appropriate for prototype testing. Create an **observation sheet** that lays out evidence for successful interactions, matching these learning outcomes. This also helps identify behaviours you'd like to see but which are missing. **Interview** visitors after you observe them, using questions that identify what they thought the exhibit was about and whether or not they enjoyed it. You can use pictures or other prompts to understand visitors' thoughts.

Get enough data to support findings, but don't gather the same data over and over. For cued testing we found 10-20 observations and interviews yielded good data, taking 3-5 days. For uncued testing, 1-2 hours of observations in a busy gallery yielded enough data to make conclusions.

When reporting back findings...

Document the set-up, taking pictures to record the arrangement of elements of an exhibit which can guide visitor behaviour. Invite the developer to watch visitors using the exhibit - but beware that they often see what they want to see! Provide feedback quickly, offering top-line findings as soon as possible, and possibly face-to-face so the developer can ask you questions. Pictures and quotes from visitors are very effective. Focus on any **underlying issues**, which may include include fundamental problems: the exhibit not having a clear challenge, the activity having too many options so the visitor gets overwhelmed, the interaction not having a clear starting point that indicates what to do and why, the exhibit effect being underwhelming to visitors.

Always include recommendations for improvements, these needn't be design solutions, but should clearly indicate features that need to be improved or should be kept.

Some **good news** goes a long way. If there is a nice quote or example of success, celebrate it.

Image credits: Science Museum London

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What is the definition of a successful interactive?

A successful interactive is one where barriers preventing visitors from engaging have been identified and removed. Barriers can be:

- **Emotional** - visitors are not inspired to use the exhibit, they do not feel confident, delighted, curious or in control.
- **Physical** - visitors are not able to use or understand the exhibit design / interface / controls.
- **Intellectual** - visitors don't understand key messages, or don't feel the exhibit is for them.

Ideally an exhibit needs to have a clear starting point, so visitors aren't overwhelmed with choices, but then develop in an open-ended way to allow exploration. The best interactives are simple to use but lead to more complex outcomes.

How can an interactive most effectively engage and motivate visitors?

Each exhibit should do at least one of the following:

- Encourage open-ended exploration where the visitor in is control, can make choices and hypothesise about of their own interaction.
- Offer a challenge where visitors are enthused to achieve something and this can be a good route in to the content.
- Be surprising or counter-intuitive so visitors are intrigued or curious to find out more.
- Be a visually beautiful demonstration of scientific phenomenon.
- Offer a chance to interact and communicate with other visitors.

How can an exhibit indicate how visitors should use it physically, and understand it intellectually?

The physical arrangement of an interactive helps guide visitors in what to do and expect; where to start; where to stand without interfering if they are just watching. Since visitors often behave differently to how you expect, prototyping is the best way to iron out design flaws. Clear exhibit titles can give the best clues about what to do or what an exhibit is about. As well as good design,

Image credits: Science Museum London

labels are important in helping visitors understand what to do - but they could be picture- or video-led instead of text. Key words (start and stop, for example) may be best placed on the exhibit itself. Text can help adults support children's interactions by offering useful vocabulary and ideas for exploring the exhibit, or how it relates to everyday life. People usually can't follow a long sequence of instructions to get to a result. If the payoff of an interaction is delayed, visitors often think the exhibit is broken. If an exhibit needs a reset mechanism, it's best to make this subtle so that it doesn't become the focus of the interaction.

What about design and accessibility?

Interactive exhibits can look sophisticated while still being robust - and if things look more elegant it can make visitors treat them with greater respect. By making exhibits more accessible to people with different needs (e.g. high visual contrast, easy-to-grasp controls) good general design principles are upheld.

Further resources from the Science Museum London:

- These extracts were taken from the Science Museum's online resource toolkit:

http://www.sciencemuseum.org.uk/about_us/about_the_museum/sharing_expertise.aspx

- The summary on interactive exhibits is based on key findings from a Science Museum Research Report on Launchpad by Sofie Davis. Please contact learning@sciencemuseum.org.uk if you would like more details.
- Contact the Science Museum on learning@sciencemuseum.org.uk for details of their training courses: "Learning in Museums" to find out more about how museums promote informal learning, and "Audience Awareness" to find out how visitors really use museums.
- See a sample evaluation report: www.danacentre.org.uk/aboutus/eventdiy/evaluation_report

For more publications, research reports and 'how-to' guides on evaluating exhibitions, events, on-line and outreach resources on all aspects of museum and science centre practice see:

- Reports and publications from the Exploratorium Visitor Research and Evaluation: http://www.exploratorium.edu/partner/visitor_research/reports.php
- The Australian Museum Audience Research Unit: http://australianmuseum.net.au/Audience-Research/

To study the nature of visitors' cognitive, affective, and social experiences at exhibits, researchers and evaluators use a variety of methods including collecting and analysing real-time observations, video and audio recordings, interviews, and surveys. But, what happens when a phenomenon or content message of an exhibition cannot be directly experienced? Joyce Ma from the Exploratorium, San Francisco, USA, describes an evaluation project exploring the visitor understanding of the nanoscale.

Front-end studies on visual representations of the nanoscale

Many hands-on science exhibits aim to provide opportunities for visitors to directly experience a compelling phenomenon that illustrates a scientific principle. The hope is that through this direct experience, visitors will become excited about the natural and physical world, come to an understanding of the underlying principle, and engage in inquiry about the phenomenon. But, what happens when a phenomenon is too small or too big to be directly experienced? Exhibitry then is much more reliant on visualizations, models, and other forms of representations of the actual phenomenon.

Understanding representations

Physical models have long been a part of the repertoire of exhibits at museums and science centers, and scientific visualizations (i.e., visual representations of science data) are starting to appear more and more in informal learning venues especially with advances in computational technology. Both models and visualizations are representations of something that is not readily accessible, and an understanding of the phenomenon depends on relating the representation to the represented.
Research, however, suggests that understanding representations can be challenging. Studies in child development, for example, show that the very young have trouble seeing a scaled model of a room as representing a larger room (DeLoache, 1987). A study by Hughes (1986) indicates that

STM image of a quantum corral (top view). The corral was created by individually positioning 48 iron atoms on a copper surface. The STM shows the resulting standing-wave patterns.
Credit: D.Eigler, IBM Almaden Research Center

children may not readily see the blocks used in mathematics classrooms as symbolizing numbers; instead, they are simply blocks. I am reminded here of the anecdote Wendy Pollock (2008) tells: After visiting the walk-through model heart at the Franklin Institute in Philadelphia, a boy writes, "I learned that there are stairs in the heart." Even adults can misinterpret representations especially poorly designed ones (Tufte, 1997).
Developing meaningful visualizations and models depends on understanding how people interpret and make sense of representations. Front-end evaluation can be an important step towards this understanding.

Front-End Evaluation - Design and Use

A goal of the Nanoscale Informal Science Education Network's (NISE Net) Visualization Laboratory was to create visualizations of the nanoscale world that are meaningful to the public. To inform this effort, I conducted two front-end studies that looked at how visitors interpret nanoscience representations and how they use visualizations to communicate abstract ideas about the nanoscale. Although none of the methods used were 'new', I hope the descriptions here can serve as examples of how front-end studies can generate useful results about 'representational' exhibits.
A fundamental assumption of the front-end studies described here is that visitors come with their own set of resources, i.e. prior knowledge and skills, by which they may (mis)interpret and (mis)use visualizations. This aligns with a constructivist view of learning that holds that people build their own understanding based on what they already know and what they have experienced. According to this view then, characterizing what visitors know and their current capabilities is foundational in designing visualizations about the nanoscale that are meaningful to visitors, from which they can construct their understanding.

Both front-end studies used semi-structured interviews with randomly selected Exploratorium visitors who matched the target demographic of the NISE project. As with all the interviews we conduct at the Exploratorium, the data collectors and I tried to create a safe context in which visitors could say what was really on their mind without feeling like they were being tested about something they 'should' know. "I don't know" was always an acceptable answer, although we also probed for any reactions a visitor may not have volunteered at first asking. At the same time, we reassured visitors that they were not expected to know the answers and that we were really much more interested in their opinions and what they thought. Because these were front-end studies and no exhibit prototypes had been built yet, it was important that we provided props that visitors could respond to and activities that visitors could partake in, regardless of prior experience. Finding these props and activities was an iterative process onto itself, which required a few rounds of piloting.

Visitors' Interpretations of Scientific Images of the Nanoscale

The first of the front-end studies focused on visitors' interpretation of scientific images of the nanoscale and used visualizations generated by instrumentation[1] commonly used in the field, the Atomic Force Microscope (AFM), the Scanning Tunneling Microscope (STM), and the Scanning Electron Microscope (SEM), as props. (An example of an STM image is shown in Figure 1.)
Ninety visitors were recruited for a short interview, less than 15 minutes, and were asked to look at an AFM, an STM, or an SEM image and to tell us, among other things, what they thought the image was and, more importantly, why they thought that.

Some Intriguing Findings
- Sixty-three (63%) of the visitors reported recognizing familiar objects in the image (e.g., a
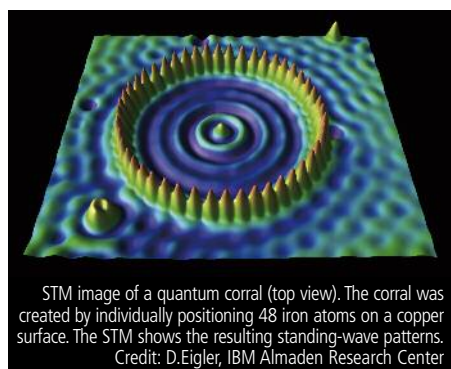
volcano, strands of hair), and to a lesser extent talked about the shapes and patterns, the colors and the instruments they thought were used to create the image. We speculate that images of nanoscale samples that superficially resemble more familiar, typically macroscale, objects require additional interpretation to help visitors see past any surface similarities.

- Color was assigned different meanings, the most frequent (34%), and unintended, meaning being temperature. This suggests that color should be used with discretion, and selecting color maps requires careful consideration of the possible (mis)interpretations they foster. We may also need to inform visitors that the colors does not 'exist' on the nanoscale and provide guidance on how to read the false colors that are artificially applied.
- Most (73%) visitors reported never having seen images similar to the ones we showed them in this study, further underscoring the need for interpretative supports.

Such findings have helped us develop guidelines for the use of scientific images in exhibits and programs about the nanoscale.

Visitors' Drawings of Small

The second study looked at how visitors themselves would convey size and scale, an important concept in nanoscale science education. As part of this study, we asked visitors to name the smallest thing they could think of and to describe both verbally and with a drawing how they would communicate how small that object is. Asking visitors to draw capitalized on people's capacity to not only interpret but invent representations. Furthermore, their drawings could point us to promising representations that may be meaningful to other visitors. In total, we collected descriptions of 'small' from 121 visitors.

Some Intriguing Findings

- About a quarter of the drawings included a small pencil mark, or dot, that was used to convey small, either in a comparison or simply to note that the small is invisible. This suggests that objects that are on the border between the visible and invisible could be useful in introducing the nanoscale world.
- Visitors used macroscale objects to convey the magnitude of the size difference between familiar objects and the very small. Since people tend to be more facile at judging the size of large as opposed to small objects (Tretter, Jones, & Minogue, 2006), analogies that use familiar macroscale objects may be particularly helpful in visualizing the magnitude of the size difference between the nanoscale and other size scales.
- Less than 10% of the drawings included the human body, although it is commonly used in

exhibitions to communicate size and scale. This leads us to suspect that the human body is too big an object to serve as the main size reference to convey how very small something is, and other smaller, but familiar, objects may be more useful in visualizations.

Final Thoughts

In general, front-end evaluations are useful in giving us an initial take on visitors' familiarity with and preconceptions about a subject. In the case of representations, they provide the first pointers to productive avenues in creating visualizations and other types of representational exhibits and resources that are meaningful to visitors. While each representation may have its own particular set of challenges to be identified through subsequent formative evaluations, front-end studies are critical in seeding ideas for the representations that we make to help visitors construct meaning, appropriately map the representation to the represented, and thus 'see' the invisible and access the inaccessible.

The full details of the two studies including additional results and implications can be found at www.exploratorium.edu/partner/pdf/afm_rp_03.pdf and www.exploratorium.edu/partner/pdf/drawing_rp _05.pdf.

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[1] These instruments do not capture a visible image but instead rely on measured data, such as force, that are then visually represented.
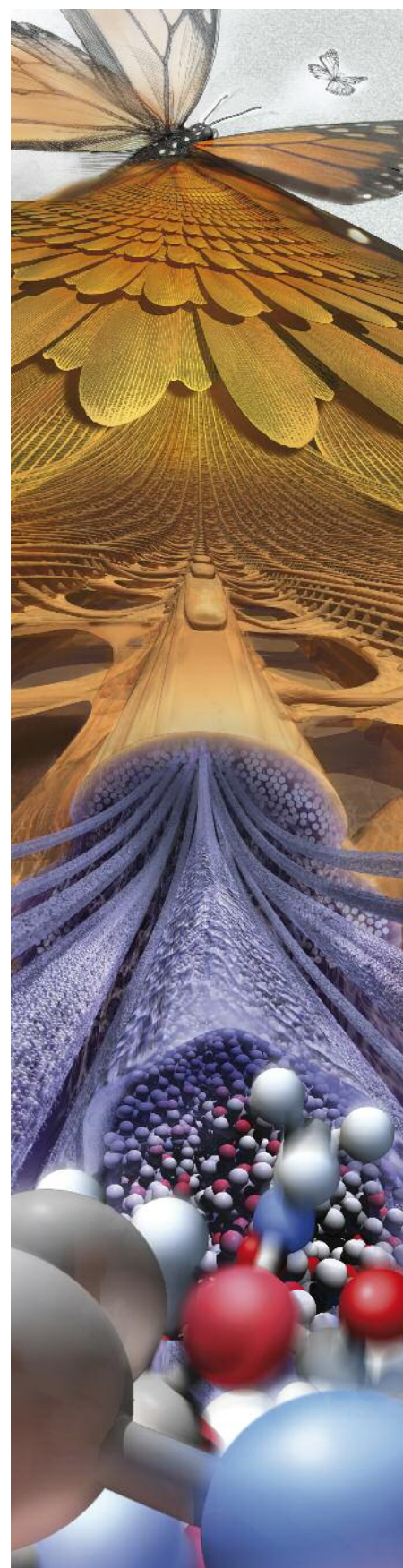
This illustration from the NISE Net Visualization Laboratory shows a butterfly's wing across ten orders of magnitude, from the butterfly to the atoms of which it is made. Credit: Exploratorium

How can a museum combine the creative ideas of all its staff with the findings from a robust analysis of visitor use and engagement? Dr Anne Kahr from the Viking Ship Museum in Denmark recommends using the evaluation framework X-mod.

Facilitating change by evaluating the visitor experience

The Viking Ship Museum in Roskilde (30 minutes outside Copenhagen) is the Danish museum for ships, seafaring and boatbuilding culture in ancient and medieval times. It consists of the Viking Ship Hall, Museum Island and the Museum Harbour. The Viking Ship Hall, a concrete building classified as a unique example of "japanese brutalism", is literally crumbling away. Budgets are limited but we know something has to be done in order to save the building and its precious content. We are thus planning to use this opportunity to "shuffle the cards" and re-think the ideas and practice of communication at the museum. In order to save money and time and in order to get the best results, we plan to adopt a strong evaluation perspective to guide and inform our development of a new interpretation concept at the museum.

The oldest part of the museum, The Viking Ship Hall, which opened in 1969, was designed as a large display case for the wrecks of five Viking Ships (called the Skuldelev Finds) found in Roskilde Fjord. Despite its modern architecture the Viking Ship Hall uses a traditional mode of communciation - the display case. By contrast, the Museum Island, developed as a supplementary exhibition area in 1997, provides experiences with a high degree of interactivity. On the island we offer different kinds of workshops where visitors can learn, for example, how to make their own rope or coin. There is also an opportunity to watch shipwrights and marine archaeologists. Visitors can embark on boat trips on the fjord in reconstructed historic boats, whilst the Museum harbour is also the home for reconstructions of the Skuldelev finds as well as other types of Nordic boat. In all, the museum today already provides a broad range of experiences from traditional exhibition to interactive learning for both adults and children. We feel, there is no easy answer to what is missing to attract more visitors.

Holding three stars in the Michelin guide the museum already has a good reputation but we want to improve our product. Our goal is to attract more visitors, in particular residents of the region (70 % of our visitors come from abroad), and to provide a unique and also educational experience for our guests. In line with a modern conception of museums as places for learning we are keen to respond to the needs of our complex target group. In other words: we want to improve the museum as a learning setting and we want to optimize our profit performance. Within the museum team we have developed a number of ideas that we believe would meet these goals. But which ideas are the best and most effective? How can we avoid frustration in the team if ideas are not picked up or developed properly?

To solve such conundrums, we decided to look for an evaluation tool which will provide us with objective measures of how visitors experience the museum today. What works well today may not necessarily attract people in the future - so we also want to find out how to improve the Viking Ship museum in the future.

Key questions guiding our reflection
- Visitors have different ways of picking up information - do we meet their needs?
- Interactive exhibits are high maintenance and low capacity - so how many do we really need?
- Are we touching peoples emotions?
- How can we make them come back every year?
- Should our activity workshops last longer to provide more in depth learning or should we shorten them to provide higher capacity?
- Do people get the best experience at the end or at the beginning of their visit?

- How can we extend the time people spend on site?
- What should our entrance price be?
- Would it be cost-effective to create a digital platform on the Museum Island?
- Or do we meet a larger part of our target audience by offering more boat rides?
- Should we add a new entrance, more catering facilities, more shops?

X-Mod - the tool for us?
At the evaluation workshop at this year's Ecsite Pre-Conference workshop in Dortmund led by Steve Pizzey and Elin Simonsson, we learned about X-Mod™ (EXperience Modelling) as a management tool to facilitate this strategy development process and to provide us with answers.

X-Mod™ evaluation has been used to develop forward strategies in more than 100 attractions worldwide including the London Natural History Museum, Blenheim Palace (UK), internationally rewarded zoos and visitor attractions like Legoland. Visitor interactions on site are analysed by a set of 70 key parameters, including individual learning styles, emotions, skills & senses, motion, action & activities, use of space, active time in the attraction, key capacities and budgets. They are then compared to statistically relevant population preferences in 8 age groups with a sophisticated software tool. This comparison results in a framework of criteria of visitors (including those who don't yet come).
The data collection will be carried out by an X-Mod™ consultant in about two days on site. A visitor tracking study on busy days will provide additional insights on how people move around the island, harbour, and museum. The visitor tracking can be done by students, after being trained by the consultant in a half day workshop.

All data are collected, inputted and processed by the consultancy. A results presentation approximately four weeks after completion of the data collection will highlight the issues and development opportunities.

The analysis provides a list of various parameters underrepresented in the current museum. This builds the platform for a brain storming session on ideas to close the gaps and better meet the needs of the visitors. I.e. a result could be that 6-10 year olds would appreciate more laughter, fantasy and contact with water. The museum team together with the consultant can develop ideas which address these current deficits and are in line with the Viking Ship Museum's mission and content.

Based on these objective measures we can test all our ideas as a team and identify those with the greatest impact before spending time and money on planning and building them. As Mike Bruton, director at MTN ScienCenter in Cape Town, who has previously used the x-mod tool puts it: "The research findings have been extremely useful to us. These findings have *enabled us to plan a complete restructuring of our presentation that will ultimately benefit all of our stakeholders*".

The results from the data analysis will be used in planning exhibitions as well as adjusting ticketing and pricing and visitor moverment (e.g. - are there places which experience visitor congestion or places where we could introduce exhibits that slow people down?) As everyone can understand the measures, we hope to win a strong buy-in from all museum team members and external stakeholders. This evaluation tool is not meant to provide us with creative ideas - we have plenty of these already - rather it will help us making the most of our limited budgets by prioritizing and systemizing the many ideas and initiatives being generated by our creative staff. In this way we plan to use the evaluation tool in order to provide the best possible experience for our visitors.

Viking Ship Museum in Roskilde, Denmark. Credit: www.flickr.com/photos/jeaneeem

Earlier this month, Anne Kahr (Viking Ship Museum, Denmark) conducted an interview with Holly Hasted (FRida & freD - the Graz Children's Museum) about the challenges and rewards of practising evaluation. Having conducted evaluation for several years, both professionally and as part of her doctoral thesis, Anne was interested to find out what relative newcomer Holly, had to say about her experiences in the sector and her vision for its future.

Evaluating exhibits: the need for a European approach

Anne Kahr: Let's begin! For how long have you been involved in evaluation? When did you get started?

Holly Hasted: If someone had told me 18 months ago that I would be contributing to an Ecsite newsletter on Evaluation and Visitor Studies Research, I would have been taken by surprise! At that time, I was employed as a consultant for a museum project in rural Austria and my knowledge of evaluation theory and practice was limited to information conveyed by colleagues, conference sessions and courses at University. Fast forward to November 2011 and I am getting to the end of my first 12 months in the newly created position of Evaluation and Visitor Studies Manager at FRida & freD - The Graz Children's Museum.

AK: Your position is new to FRida & freD? What inspired the director to employ someone to work in this field?

HH: Joerg Ehtreiber has been the Director of FRida & freD since its opening in 2003. The museum receives around 50,000 visitors per year. Quite impressive considering it's located in Graz - which has a population of less than 300,000. The museum has established an excellent reputation in the region, and I think there was a desire on Joerg's part to find concrete evidence of what was working well, but at the same time to reflect upon the museum's performance, to find ways to refine our practices and perhaps uncover new strategies or approaches that will improve our offer. In other words: we've been doing this well for seven years but let's find out what can be done better. It takes a lot of self-assuredness for an institution that has never conducted or participated in evaluation to dive in head first. Austria, like most states in central Europe, does not have as long a history of evaluation - unlike the often cited examples of the United States or the United Kingdom. Luckily, an organisation like the Science Center Netzwerk in Vienna, is leading the way by helping to promote

evaluation and research in Austria through national large scale projects. I hope too, that our modest first steps might be a source of inspiration for other small to medium sized museums that would like to take a leap of faith.

AK: Can you describe your first steps? What are you evaluating?

HH: My primary task is a summative evaluation of our two current exhibitions. "blubb blubb blubb" is an exhibition about water that was conceptualised and designed in-house and is aimed towards preschoolers. "Tell me something about death" is on loan from FEZ-Berlin and is an interactive exhibition about death for children ages seven and up. One of the first things I did was to organise meetings with all museum departments that contributed in some way to the development of the exhibitions. This included the heads of education, marketing and visitor services. I wanted the teams to brainstorm evaluative questions - things they wanted to know about our visitors and their experiences. I ended up with over seven pages of questions from colleagues! Does the colour scheme of an exhibition influence a child's mood and the perception of his/her visit? Is the holding power of an interactive multimedia exhibit influenced by the age of the narrator? The questions were fascinating but I had to narrow them down by at least 80% to what was practical in the first instance. So, we included some basic quantitative questions (eg., length of stay) but also attempted more qualitative analysis looking at evidence for visitor learning. I hope that keen MA and PhD students might be interested in taking on some of these complex questions with us in the future! Forming productive relationships with research institutions in the region is part of our next challenge.

The exhibition Tell Me Something About Death takes on a controversial topic for children.
Credit: FRida & freD, photographer: Hannes Loske

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AK: What are some of the challenges you have faced so far?

I can definitely think of a few! For the summative evaluation our methods include a combination of basic observations, tracking & timing studies, exit interviews and questionnaires. It became clear fairly early, that in order to collect and input the necessary data in addition to carrying out other tasks in the museum, I would need to enlist the support of others. Visitors typically spend between 30 minutes to over two hours in our exhibition "blubb blubb blubb" so collecting just five tracking & timing studies can take anywhere from 2.5 to ten hours. Several explainers received special training in conducting tracking & timing studies and visitor interviews. Thanks to their hard work and a student intern who joined us for eight weeks over the summer we have conducted 50 tracking & timing studies and about 50 interviews. Harnessing human resources has been a challenge and we will definitely extend opportunities for evaluation interns next year.

Another challenge has been the time lag between collecting and assessing the results and getting them to the relevant staff members on time for the next programme or exhibition. This internal process is something that we need to think about and work towards improving for next year. The difficulties associated with putting evaluative results into practice, whether owing to lack of communication or structural issues, is something that I think needs to be considerably addressed across the sector.

Also, familiarising myself with the evaluation field has been both rewarding and challenging. I found a number of websites useful (see box)

Exploratorium Visitor Research and Evaluation www.exploratorium.edu/ partner/evaluation.html Informal Science http://informalscience.org FORUM - Research and resources for museum education http://forum.mccastle.co m Inspiring Learning www.inspiringlearningfor all.org

"blubb blubb blubb" is aimed at pre-schoolers.
Credit: FRida & freD, photographer: Hannes Loske

Once I had familiarised myself more with the sector, I wanted to adopt a framework or at least use a vocabulary in my evaluation that would be internationally recognisable. I thought for a long time about adopting the framework for evaluating impacts of informal science education projects, spearheaded by the National Science Foundation in 2008 but opted instead to use Generic Learning Outcomes, developed in the United Kingdom by the Museum, Libraries and Archives Council. Our visitor exit interviews are for example coded according to the five generic learning outcomes. The most disappointing discovery on this journey has been the lack of a common European "language" or approach to evaluation. Even a European handbook, dealing with less controversial administrative processes on implementing evaluation and forming partnerships with research institutions, is unfortunately to this date not available. I had to learn a lot on the fly.

AK: Would you say there is a need for European museums and science centres to communicate more about evaluation?

HH: Absolutely. But let's not forget those conversations are already happening. In 2010, the Ecsite Conference tapped into the rich patchwork of skills and expertise across Europe and held no less than thirteen research related sessions. This year, a two-day pre-conference workshop on evaluation allowed participants to explore the topic in greater detail and another will be held in 2011. I think there is an

exceptional degree of enthusiasm and interest in the subject. What is fascinating is that the approaches and frameworks used to carry out these studies vary depending on many factors including the resources available to the institution, its work culture, and the governmental framework in which it is operating. The Generic Learning Outcome approach piloted in the United Kingdom is now the de facto evaluative method for many small- and medium-sized British museums and science centres. Throughout Europe some larger institutions, such as the Deutsches Museum in Munich or the Cité des Sciences in Paris have been conducting evaluative studies for years, whereas smaller science centres and museums are just beginning to embark on their own evaluative programmes. In the Netherlands, the Curious Minds programme supported by the Dutch Ministry of Education has created a unique relationship between the Science Centre NEMO and regional Universities. They have moved beyond the scope of evaluation and are conducting research in areas such as science education and developmental psychology. The possibilities are endless.

AK: So what would be your advice to museums and science centres considering the benefits of evaluation?

HH: There is no such thing as a perfect exhibition, interactive or workshop. But by studying the reactions of visitors and by conducting evaluation we can learn how to make them better!

This forum will remain open in the months leading up to the Conference for selected sessions to continue to share information and develop their session online.
Registration for the Conference will open in February.

The Copernicus Science Centre opened in early November 2010 to great acclaim

ANNUAL CONFERENCE: BUSINESS BISTRO REGISTRATION NOW OPEN

Registration to hold a stand at the Business Bistro of the Ecsite Annual Conference 2011 is now open. The Business Bistro brings together the most inspiring new projects, exhibitions, techniques, products and services on the market for Ecsite institutions. 2011 will be no exception. This is the place to present innovative ideas, to meet new clients and to discuss future collaboration. Just like last year, on Friday afternoon the Business Bistro holds its Happy Hour, when participants are invited for drinks and canapés, providing a relaxed atmosphere for networking. Spaces are limited so we invite you to book early.

Please see the Conference website at
http://conference.ecsite.eu or contact Ecsite Business Bistro Assistant, Donald Goedheid, for more information: dgoedheid@ecsite.eu

NEW ECSITE WEBSITE

The new Ecsite website has now been launched at www.ecsite.eu. It features a fresh new design, a more intuitive interface and a new, easier way to upload members' news and events. It is now fully integrated with the Conference site. The visibility for the members and Corporate Partners has also been greatly enhanced, with members' news and events appearing on the homepage. Upload yours now!

Contact info@ecsite.eu for more information.

APPLY NOW FOR EUROPEAN FUNDING TO ATTEND ECSITE ANNUAL CONFERENCE

Ecsite is pleased to announce that once again Grundtvig funding will be available to attend the five days of Ecsite Pre-Conference and Conference in Warsaw, 24-28 May 2011. Applications can be made through Grundtvig national agencies.
Successful applicants receive funding which covers travel, accommodation and Conference fees.

For more information see
http://conference.ecsite.eu or contact Aliki Giannakopoulou: agiannakopoulou@ecsite.eu

ANNUAL CONFERENCE UPDATE

The Annual Conference Programme Committee received over 150 session proposals this year. The Programme Committee then meets for three days to work with these proposals, selecting an eventual 75 sessions which make up the three days of the Conference. The Committee were delighted with the high standard of the content, and the ways in which session proposals addressed the theme of Freedom.
This year the Session Ideas forum was particularly successful, with Conference participants discussing potential proposals in around 40 threads.

For more information, see the Conference website
at http://conference.ecsite.eu or contact Aliki Giannakopoulou at agiannakopoulou@ecsite.eu

TIME FOR NANO

Partners are busy preparing the second edition of the TIME for NANO online video competition. Cash prizes are available for the first prize winners of the national contests, plus there will be a European prize awarded by Ecsite.
The TIME for NANO video competition aims to stimulate the curiosity and engagement of young people in Europe on benefits and risks related to nanoscale research, engineering and technology, in particular with relation to products connected to daily life.
The TIME for NANO project also involves the production of a nano-kit including educational activities on nanotechnology and the organisation of nano-days, comprising events and debates in the participating science centres.
The theme for the TIME for NANO competition is nanotechnology and its applications. Participants are invited to learn more about the basics of nanosciences and nanotechnology and reflect on

the issues involved at the website www.timefornano.eu, and the entries must be built around the following main themes:

- Health
- Divide
- Privacy
- Human enhancements
- Environment

The competition is open to youngsters living in Europe, including Turkey, between 14 and 20 years of age. Participation can take place either individually or in groups. Videos can be made with any device excluding professional equipment: a mobile phone, a digital camera, or a sequence of images or slides put together to give a coherent whole are all acceptable.

To participate, the young participants - either individually or in groups - connect to the TIME for NANO channel on YouTube or Vimeo, and upload their entry, filling out the entry form. To find out how, see www.timefornano.eu.

The deadline for submission in all countries is June 30th, 2011.

Two videos will be awarded a prize in each country and will be able to compete for the European prize. Additional videos can be chosen on the national level for other prizes but will not be eligible to compete for the European prize. The winners will be selected according to the following criteria:

- Scientific and educational quality of the work
- Originality from the artistic point of view
- Consideration of the societal implications of nanotechnology and connection with the killer question(s)
- Clarity of the message

European level

Once all national winners have been chosen, the European winner will be selected among the national winners. Winners will be notified by July 20th, 2011.

The national winners each win €700 (or £500 in the UK) and they are suggested to buy

educational materials to help further their knowledge in nanotechnology and its applications to daily life.

The European winner will be awarded a further €900 with the same objective.

For more information and the full rules and regulations, see
www.timefornano.eu
or contact Jennifer Palumbo,
jpalumbo@ecsite.eu.

OPEN SCIENCE RESOURCES SUMMER COURSE

Open Science Resources project is pleased to announce the workshop DISCOVER OPEN SCIENCE RESOURCES: Technology Enhanced Science Education and Science Content Organisation, from 3rd to 8th July 2011, in Crete, Greece, for which participants can attend with travel, accommodation and fees all paid for by a Grundtvig grant from the European Commission.

The summer school aims to bring together practitioners from the areas of science education and science communication, and especially school teachers and science museum/centre educators, into a lively community of practice, so that they learn about state-of-the-art concepts and methods for organizing and enhancing digital science learning content, and share ideas about how

these could be applied in the context of formal and informal learning synergies.

Participants will be familiarized with and use tools and processes that have been specifically designed for this purpose following current international standards: they will be searching for and sharing science learning resources, characterizing them with standardized educational metadata and social tags, and using them to design comprehensive learning experiences for their audiences (students, museum visitors, etc.).

Alongside the practical workshops, the programme will also include inspiring keynote talks and lectures, educational field visits to the Natural History Museum of Crete and the Skinakas Observatory on the top of one of Crete's legendary mountains - as well as, of course, time reserved for exploring the beauties of the Cretan nature and local culture.

The course is organised in a five-star hotel with excellent conference facilities, as a collaboration between Ellinogermaniki Agogi and the University of Crete.

The two institutions have collaborated in the past for the organization of a number of very successful training events and summer schools in Crete.

For more information,
including how to apply for the Grundtvig grant to attend, please contact Jennifer Palumbo, Ecsite Projects Coordinator, jpalumbo@ecsite.eu

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6th Science Centre World Congress, Cape Town, South Africa, 4-8 September 2011 - Call for posters: deadline extended to March 30th 2011

The 6SCWC Call for Posters submission deadline has been extended to 30 March 2011.
Poster proposals differ from session proposals, as individuals can submit posters and do not require international collaboration from three different continents. You are invited to propose a poster topic relating to one of the congress sub-themes, available in the Call for Sessions guidelines and to submit a poster proposal online. The Congress Secretariat is also available to answer your questions regarding the Call for Posters.
The 6th Science Centre World Congress will be held in Cape Town, South Africa, 4-8 September 2011. Enjoy stimulating congress sessions, challenging workshops and lively debates. And enjoy all that Cape Town and South Africa have to offer - whale watching, wine tasting, a unique floral kingdom, big game safaris, beautiful beaches, unparalleled scenic beauty, and a friendly and diverse culture. Your hosts the Cape Town Science Centre, the Southern African Association of Science and Technology Centres, and the North Africa and Middle East Science Centers Network look forward to welcoming you to Cape Town.
6SCWC registration is now open, with discounts for early registrations and delegates from countries with a low gross national income (GNI). Accommodation at the designated congress hotels can also be booked through the registration process.

More information on registration fees and accommodation rates can be found at **www.6scwc.org**.

XIth Scenography Colloquium, 26 - 28 January 2011, DASA, Dortmund, Germany

Moving Spaces: In all exhibitions the spatial experience unfurls as one moves physically within the space. This is the Colloquium's basic premise. There has been little study of what this means for the design of publicly accessible space.

For more information, please contact **besucherdienst-dasa@baua.bund.de**

British Science Association Science Communication Conference 2011, London, UK, 25-26 May 2011

The British Science Association is working in partnership with the Wellcome Trust to organise this annual event. The Conference addresses the key issues facing science communicators in the UK. The call for proposals is now open. This year's programme will include a variety of subjects however it also features a themed strand of 'Online Engagement' which aims to discuss the developing, evolving world of online science communication. We will, of course, welcome other suggestions for the conference to debate, consider and celebrate the diverse community.

For more information, contact Alice Taylor-Gee at **alice.taylor-gee@britishscienceassociation.org**

Nanoforum, Turin, Italy, September 14-15 2011

The next edition of nanoforum, the Italian expo-conference dedicated to micro and nanotechnologies, will take place in Turin the 14th and 15th September 2011, hosted by the Polytechnic. By showing the promising aspects of the innovation at molecular scale, nanoforum aims to foster the process of technological transfer from the world of research to the entrepreneurial world.
A two-day conference and an exhibition area make nanoforum an important meeting for all in the field of nanotechnology.

For more information, see **www.nanoforum.it**

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Ecsite wishes to thank its Corporate Partners, who support Ecsite network activities. In return, the Partner gains prominence in the Ecsite Newsletter, on the website, and at the Annual Conference.

If you wish to receive information about the Corporate Partnership programme, please contact the Ecsite Executive Office in Brussels: info@ecsite.eu • www.ecsite.eu