NEWSLETTER

February 2007

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Nordisk Science Center Forbund

Annual Conference 2006 in December-Stockholm!

Dear colleagues, Mariana Back writes.....

It was a great pleasure to meet you in Stockholm in December. We were over 80 delegates in total and this made it one of the most well attended meetings in the history of the Nordic Science Centre organisation. I believe everyone went home again full of inspiration, with new friends met as well as some new "Strategies, Methods and Tools" to try at home.

Although winter had not yet quite arrived, we gathered for the "Science Season," which emphasized the Christmas holiday spirit. Everyone had the chance to make a tiny little Christmas hat to make it easier to sort out who was a conference delegate among the visitors at the Museum of Science and Technology.

We started out in the evening with an informal social get-together in the Science and Technology tavern in the Media Studio. This is also when the one-minute presentation of each representative to the Nordic Science Centre meeting was produced.

Those of you that work at a Swedish science centre already have access to the DVD as they were handed out at the FSSC (Föreningen Svenska Science Centre) meeting, also held at the Museum of Science and Technology, in January 2007. The other participating science centres will get theirs as soon as we have made up more copies.

The following morning professor Ilan Chabay from the Hasselblad Foundation addressed questions concerning public learning and the understanding of science. This was much appreciated and led to a number of questions to discuss both now and in the future.

After Ilan, Nils Hornstrup guided an Aquarium discussion about the Mission of the science centers, referred later in this newsletter. This lecture was followed by a "real time" experience of science in everyday life. We had a traditional Swedish Christmas lunch in the exhibit "Julens Kemi," the "Chemistry of Christmas." I would have never guessed in all my life that so many people in this line of work would be so enthusias-

tic over rice porridge! We ran out of it before the last two, or three, people had any at all! I hope that this problem was solved as soon as the kitchen was alerted to make more.

Thursday afternoon was spent on the issue of space. We had a very nice presentation of a virtual system produced by SCISS, a local company that has gone international. We saw the most fascinating visualizations of comets and asteroids in their orbits, plus more.

Ilan Chabay receives a small gift after his very inspiring lecture

During the afternoon several interesting workshops were conducted. A report from each could possibly be included in a future NSCF Newsletter.

I know one really appreciated section of the meeting was the science tavern we had arranged in collaboration with British Council and Vetenskap och Allmänhet (Science and Society). The issue in these discussions also concerned space. That theme fit in especially well since this was the day originally scheduled for the launch of the first Swedish astronaut, Christer Fuglesang, into space onboard the NASA space shuttle, Discovery. As it turned out, this was delayed until a few days later due to (among other things) weather conditions at the emergency landing sites.

On the evening of 8 December we climbed on board a huge double decker bus from the 1960s and drove off from the museum. We did not go very far, but that was just as well since the bus couldn't go any faster then 30 km/ h. For those of you that had never seen our Museum's surroundings before, this was a nice opportunity, yes? A boat then took us to the island of Vaxholm where we had an exclusive, yet traditional Christmas dinner ("julbord") at Kastellet, a castle-like fort that was once part of Stockholm's sea defence. Thanks to everyone for this nice evening together!

Friday, the last day of the conference, we started out with a very interesting lecture on tools for experiencial learning, such as simulations, role-plays and live role playing games. Carl Heath, at GR Education in Göteborg also told us about several methods to build a collaborative environment with the external groups we are working with.

Then it was time to try the new CINO^4 out! The Nordic Science Centre Förbund became our first visitors. We saw the presentation, "Universe," and got to experience all the special 4D effects that had been installed earlier that same day!

We at the Museum of Science and Technology were glad that you all came here and we hope to see you again very soon. Whenever you have the chance you are most welcome to stop by and see the inaugural show in CINO^4, "Learning to Fly."

With warm regards,
Mariana Back

Museum Director Anne Louise Kemdal and Chairman Lotta Johansson at the opening of the NSCF-2006 Conference

Chairman's notes

I hope that the year has started well for you all!
Many of us met at Tekniska Museet in Stockholm before Christmas. A big thank you to Tekniska Museet in Stockholm and their staff for their hospitality and their efforts in creating a very interesting conference. Also thanks to all of you who participated in the conference.

2007 will be a year of many NSCF meetings!
In the autumn - 3-5 October 2007 - we will ALL meet at the new "Vitensenteret Innlandet" in Gjövik, Norway for our next NSCF Annual Conference. "Vitensenteret Innlandet" is to open its doors to the public in February this year.
If you have anything fun, exciting or interesting to the rest of us please tell us about it so can we meet and experience it together.
Nils at Experimentarium is the first to bring us together in 'Dialogue in the Dark'. I hope many of you can come.
At Heureka , Helsinki, we are all invited for two days of 'The Ultimate Science Show Discussion". It will take place at 9-10 March, 2007.

I also want to remind you all about the next Ecsite conference in Lisbon. It would be great if there are a lot of us from the Nordic countries who meet there. The conference takes place from 31 May to 2 June.

At the Annual Meeting in Stockholm we decided that we would invite small science centers to apply for grants so that they can travel and visit other places. The application forms will be available on the NSCF website in March.
The website is going to be developed during the spring by our colleague Jan Sjökvist. We will let people know when the 'first edition' is ready.

Five science centres gathered at Navet in Borås and put together a dramatisation on the theme of 'Sustainable Development with the help of Carl von Linné'. If there are others who would like the script, get in touch with Navet.

If you have any ideas for future collaboration projects, please feel free to contact a member of the NSCF Board.

I wish you a wonderful spring with many new projects and meetings with plenty of enthusiastic visitors.

Sincerely
Lotta Johansson ■

NSCF Member's Day Monday, May 7, 2007 at Experimentarium

On Monday, May 7 from 11.00 to 17.00 hours we invite all the NSCF colleagues to visit Experimentarium for an informal member's gathering and try out our DIALOGUE IN THE DARK.

Participation is free and Experimentarium will serve sandwiches and soft drinks for lunch. In order to arrange the meeting please register by contacting Nils Hornstrup by mail: nilsh@experimentarium.dk not later than April 16, 2007.

An exciting attraction that no-one has ever seen!
The idea behind Dialogue in the Dark is fifteen years old, and the exhibition has already been presented to more than four million people in 17 countries, and in more than 100 cities. Now it is being recreated for the first time in Denmark.
The exhibition employs people who are blind or partially sighted, as well as persons with cerebral palsy, all of whom are given an opportunity to show the many resources they possess. Dialogue in the Dark also contributes to helping disabled people to enter the labour market.

The exhibition will be open at the Experimentarium until the end of the year, and is suitable for all adults and children aged 9 and over. The concept and design of Dialogue in the Dark is by **Andreas Heinecke**, Consens, Germany.

Dialogue in the Dark represents a unique opportunity to gain insight into a world which is otherwise inaccessible to us.
The exhibition is a meeting between the sighted and the blind, mainly on the terms of the blind. Many people find after visiting the exhibition that the experience triggers new ideas, feelings and even a new sense of self. The whole experience lasts just over 50 minutes.

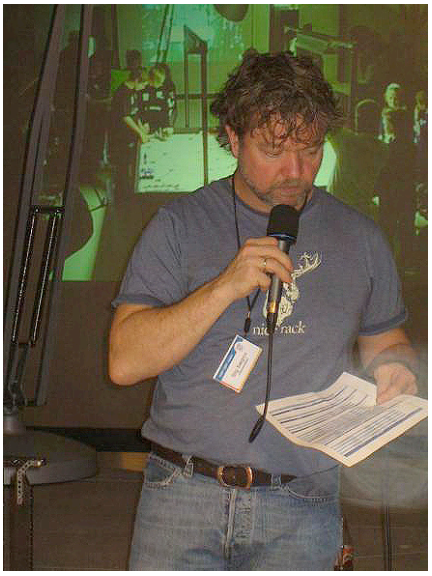
Detailed information in Danish on our web-site:
http://www.experimentarium.dk/dk/udstillinger/dialog_i_moerket/index.html

Nils Hornstrup ■

Nå åpner Vitensenteret Innlandet Tillykke !!

Den 27. februar - midt i vinterferien - vil kunnskapsminister Øystein Djupedal offisielt åpne Vitensenteret Innlandet.
Åpningstidene er 11 - 17.
Øvrige åpningstider og priser finner du under besøgsinfo på http://www2.vitensenteret.no/
Vitensenteret åpner dørene for besøk lørdag den 17. februar 2007

vitensenteret
INNLANDET



Stig Sægrov med sved på panna !

REGISTRATION FEES

Members
Before March 01: 415 Euro
March 01 to April 15: 465 Euro
April 16 to May 26: 495 Euro
After May 26 and on site: 630 Euro

Non Members
Before May 26: 550 Euro
After May 26 and on site: 630 Euro

Newcomer member
For an institution attending an Ecsite Annual Conference for the first time. Registration before April 16: 360 Euro including one year associate membership and one free registration at the Annual Conference. New Full members also benefit from this opportunity.

Newcomer institution
For an institution attending an Ecsite Annual Conference for the first time, who does not wish to benefit from the Newcomer member opportunity mentioned above. Also applies to the professionals of newcomer members beyond the first free registration.
Registration before April 16: 280 Euro

Students
Before May 26: 200 Euro
Please fax or send by e-mail a copy of student card.

One day registration
Before May 26: 235 Euro

If you want to register and/or if you are interested in forthcoming announcements, contact the Ecsite Executive Office at info@ecsite.net or at

Ecsite Executive Office
70 Coudenberg 5th floor
B-1000 Brussels, Belgium
Tel: +32 2 649 73 83
Fax: +32 2 647 50 98
info@ecsite.net
www.ecsite.net
For any questions or comments on the programme please contact Aliki Giannakopoulou, Ecsite Conference and Communications Coordinator agiannakopoulou@ecsite.net ■

THE ASTC-ECSITE RAP SESSION - an invitation!
The Ultimate Science Show Discussion
Heureka, Finland, March 9-10, 2007.

RAP = Roundtable for Advancing the Professions.

What is this?
Science centres produce exhibitions and trade them. We need to do the same for our science shows. They are products in the same way as exhibits: they have taken years to develop, and often they cannot be just adopted by reading a recipe. The Ultimate Science Show Discussion is about how to develop shows into products and what rules the game should have.

Purpose:
To discuss and if possible determine what are the elements of the science show (science demonstration) as a product that can be sold and exchanged in the same way as exhibits, and to discuss how the trade of science shows should be arranged in the science centre field.

Working method:
All participants bring their examples and challenges to the table for open discussion. If someone wants to present a show as a part of the discussion, Heureka will be prepared for that. We work in roundtable discussions, if needed in smaller groups.

Audience:
Science show performers and writers, senior management people.

Programme

March 8, 2007:	Arrival
March 9, 2007:	
09.15-10.00	Dr. Michael Gore, Australian National University, Canberra What makes a science show successful? A look at history, evolution and research data
10.00-10.30	Dr. Michael Gore: An exemplary show
10.30-11.00	Mr. Juuso Kekkonen, Drama Explainer, Heureka Use of drama in Heureka's shows: The MeGames Case
11.00-11.30	Coffee
11.30-12.00	Mr. Luca Vidic, Activities Editor, Hisa Experimentov: An exemplary show
12.00-12.30	Safety issues in science shows
12.30-13.30	Lunch
13.30-14.30	Intellectual rights: who created what?
14.30-15.00	Coffee
15.00-16.30	Intellectual rights: who stole what?
16.30-17.30	Tour of Heureka behind the scenes
19.00-	Dinner/Party
March 10, 2007:	
09.15-10.00	Mr. Harri Montonen., Senior Explainer, Heureka It's a Gas!, the Heureka Gas Show
10.00-10.45	Production costs of a show I
10.45-11.15	Coffee
11.15-12.45	Production costs of a show II
12.45-14.00	Lunch
14.00-15.30	How do we arrange the trade of shows?
15.30-16.00	Coffee
16.00-17.00	Rapping it up: our recommendations

Further information:
Ms. Lea Tuuli, Director of Communication, lea.tuuli@heureka.fi
Practical arrangements of shows:
Mr. Harri Montonen, Senior Explainer, heko@heureka.fi
Registration and booking of a hotel room:
http://www.heureka.fi/portal/englanti/about_heureka/projects/astc-ecsite_rap_session/

WELCOME TO HEUREKA!

Minutes from the NSCF Annual Meeting at Tekniska Museet, Stockholm on December 8, 2006.

■ Referee Anna Gunnarsson, Navet.

Re 1. Election of chairman and referee for the meeting
Lotta Johansson, Navet, was elected as chairman for the meeting and Anna Gunnarsson, Navet, was elected referee.

Re 2. Approval of Agenda
The agenda for the annual meting of NSCF 2006 was approved.

Re 3. Recording of voting members
16 members of NSCF had representatives present during the meeting.

Re 4. Report from period 2005-2006
During the period NSCF has had:
2 board meetings, one on September 1 at Experimentarium, and the other a telephone meeting on April 11
A cooperation project about the important issue of Sustainable Development – was started at NAVET in October. The participants were creating a drama about climate change – with a little help from Carl von Linné (those who didn´t participate can join in at another time; contact Navet for further information)
The newsletter has been distributed three times during the year.

Re 5. Accounts
Accounts for the operational time 2005-2006 were presented. The balance is SEK 253.915

Re 6. Approval of new members
There are no new members this year. We have lost contact to Drop-inn in Hälsingborg.

Re 6. Next Annual conference
The next annual conference will take place at Innlandet Vitensenter in Gjøvik. The next NSCF conference is going to be in the first week of October in 2007. The best weekdays are during the week (Wednesday to Friday).

Re 8. Newsletter
The Newsletter is going to continue and the meeting discussed its form. There have been some problems when sending it only by e-mail. The meeting decided to send next News letter printed and also by e-mail. The next newsletter will state the exact information about when and where the next conference will be. Deadline for the next issue is on February 1.

Re 9. NSCF - an association for the future?
The website must show that NSCF is an active association.
Jan Sjökvist in Växjö is responsible for the website and Lotta has been discussing changes in the looks and functions of it; the page needs time if it´s going to be updated regularly (Jan Sjökvist now has the time and can get payed by the NSCF to work with it), .
The web-page should be updated with older newsletters as soon as possible.
The meeting suggested that it should be possible to have a sell and buy function where you can show what you have to sell and search for what you need to buy, the possibility of posting common topics to work with, foundation of exhibitions – get them for free inside the NSCF. A completely common project. educational or other issues can be discussed with colleagues in the Nordic countries
More suggestions can be sent to Lotta by e-mail
(lotta.johansson@navet.com

Re 10. Other matters
The board has been experiencing the "dialog in darkness" at Experimentarium. If possible it could be a good idea to arrange an inspiring day for everyone who wishes to come to Experimentarium and do the same thing. More of an informal gathering that doesn´t need too much planning.
The possibility of scholarships in the NSCF was discussed; maybe for exchanges- teachers or other functions in the Science center world.
The discussion included ideas about: If a one way exchange is preferable (in that way all science centers can benefit from exchanges at convenient times, not only when they can both send and take a participant).
Encourage exchange of young people, maybe according to certain criteria

The possibility of having an identification-card (to use when visiting other science centers) in the NSCF was discussed; there might be more problems and costs connected to this than benefits. It was also suggested that it´s better to get in touch personally before the visit; it´ll probably make the visit even better.

Cooperation projects; perhaps women exhibitions and Sara is informing about the CERN laboratory; is it possible to explain this in the science center? Heureka has an idea about how to expose CERN-work; connected to development and history.
What can we work with in the NSCF?

Anna Gunnarsson
2006-12-22 ■

Taikonauts and the cosmic cycle

■ Lotta Johansson, Navet

What is the origin of the atoms in your body?
How are the elements formed?
How do we fit in in the great cosmic cycle?
These are questions raised in the new astronomy theme at NAVET.

The new astronomy theme at NAVET puts the visitors in a larger perspective. It raises questions about one of the great connections in Universe – the cosmic cycle. It starts much more down-to-earth, though. The main character in the theme is Ting Li, a Chinese alchemist from the 11th century with a dream – to be able to make gold. When she meets the pupils, she is convinced to have reached her goal, and she invites them to witness the experiment.

Ting Li is convinced that she has the ability to make gold. Mrs Oak, who is very interested in astronomy, can be seen behind her, in front of the Sun.

Fortunately mrs Oak, the very old and wise tree, sees the experiment, and together with the pupils she can convince Ting Li that the result is not gold, but the golden alloy brass. Mrs Oak offers the pupils and Ting Li to learn more about how the elements are formed in the astronomy part of NAVET. The experiments in the exhibit invites the visitors to investigate these issues. There is, for example, an experimental setup where visitors can find out how it is possible to know what elements there are in a star thousands of light years from us. The theme also includes a planetarium show focused on the birth, life and death of the stars.

The starting point in developing the new astronomy theme, was to offer it mainly to older pupils. As it has turned out, though, it works well for younger pupils as well – with a certain amount of adjustment.

The cosmic cycle

The idea behind the content of the theme was to convey the fascination for the smallest and the largest in Universe, and our part in that picture. We believe that understanding of the cosmic cycle can give that fascination. The cosmic cycle is the large connection in Universe, including the forming of both elements and stars. The lightest elements, Hydrogen and Helium, were formed shortly after the beginning of everything – the Big Bang. All the other elements have been formed in other processes since then. Inside the stars, in the process giving the vast amount of radiation we can see as light spots in the night sky, some of the elements are formed. This occurs during their lifetime and in this way elements, heavier than Hydrogen and lighter than Iron, can be formed. The even heavier elements are formed during so called supernovae (stellar explosions). That is the dying process of certain, massive stars. The remainder of such a violent event is a nebula, a huge cloud of gas and dust containing all elements formed in the star and in the supernova, and from such a cloud new stars and planets can be born. In this way, the Sun and the surrounding planets were once born, and that is how all the matter consisting of different elements ended up here on Earth. So when you come to think about it – we are all stardust!

Taikonauts and alchemists

The setting of the astronomy theme at NAVET is inspired by China. This is reflected, not only by the main character Ting Li, but also by the interior of the room. That this is the context here is due to the early interest in astronomy in the Chinese culture, which for example resulted in the observation of a supernova in the year 1054.

The context and connections to other parts of life, such as history, is always an important issue when new themes are developed at NAVET. For that reason, beginning the theme with a Chinese alchemist is a way of combining history and science. The idea is also to begin with something which is possible to relate to. Astronomical objects are by nature quite difficult to relate to, but gold is something that everyone has some relation to.

So what about taikonauts then? When Ting Li realizes that she somehow has made a time-travel to the 21st century,

her interest shifts from dreaming of making gold to a dream of going out in space. Mrs Oak tells her that it is possible, although it requires hard work, for her to become a taikonaut (which means a Chinese space traveller).

Important connections

This part of the discussion in the theme is not just an interesting and fascinating part of astronomy and space science. It also enables us to lead the discussion into environmental issues and sustainable development. This is a connection we try to make in all different themes at NAVET. Astronomy and space travelling has had an important role in the environmental movement. It has been said that the picture below, taken by astronauts during the first manned journey to the Moon (they did not land on the Moon during this trip), is the most important environmental picture. It is called Earth-rise, and has served as a wake up call that we need to take care of this planet, our home.

This connection between the two areas astronomy and sustainable development is the beginning of a future development of the theme, when also the light theme will be incorporated or connected to this part.

Teacher training

A large part of the work at NAVET is teachers training. Concerning astronomy, we have gotten the opportunity to be part of Hands-On Universe, Europe (EU-HOU). This is a European project with the purpose of enhancing the interest in astronomy and science. Within the framework for this project, we will invite teachers to a training class on using web-cameras to make simple observations along with their pupils.

For more information contact
lotta.johansson@navet.com

Earth-rise – a picture taken 29 December 1968 during the Apollo 8 mission. This view of the rising Earth greeted the astronauts as they came from behind the Moon after the lunar orbit.

Nordisk Science Center Forbund

NSCF Annual Conference 2007 at Vitensenteret Innlandet in Gjøvik, Norway October 3-5, 2007

The next NSCF Annual Conference will take place in Vitensenteret Innlandet i Gjøvik in Norway.

Reserve the dates already now in your Calendar.
We look forward to meet all our Nordic Colleagues and if you have ideas of topics to discuss and enlightened on the conference or ideas of interesting speakers to invite, please send a message to our Chairman Lotta Johansson at lotta.johansson@navet.com

Nordisk Science Center Forbund

Advanced communication between exhibits and individual pupils

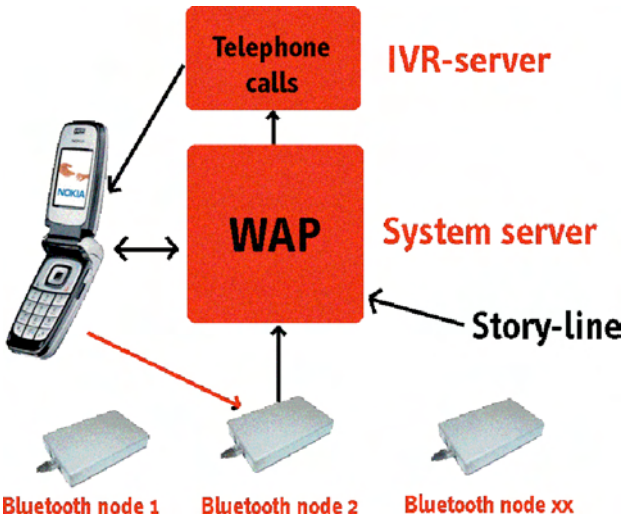
■ **Poul Kattler, Experimentarium.**

On January 31, 2007, we opened the first version of a complete new science center experience called EGO-TRAP. It is hard to describe something which is a complete new media platform, but I will try anyway. We want to:

• Increase the individual's level of interest and engagement in the exhibition to schoolchildren of the age 14–17 years.
• Increase the level of reflection at individual exhibits, and thereby help to optimise the learning benefit gained from the scientific and technical points communicated by these exhibits.

Augmented reality
Through one of our Experimentarium projects "The Personal Exhibition", we have developed a mobile phone-controlled interactive story, which will help to add a sense of structure to the exhibition sequence. By interactive we mean that the structure must be not too rigid: it should be open to be influenced by the individual users; consequently, the story that is created will be individual.
The interactive story, which forms the cornerstone of The Personal Exhibition, could be compared with a computer game. The individual users play a role (in most cases as themselves), the user is directed by a game master (in this case a voice), and there are three levels in the story/game through which the user can move. We call it for augmented reality.

The story is:
• Personal, i.e. each user experiences the story as being his or her own story. The idea of creating a personal story is that it has a motivating effect on the individual. Motivation is vital to the learning process; by increasing the motivation, we also increase the learning potential.
• Interactive, i.e. the story must alter, depending on how the user responds/acts in the exhibition. This creates a semi-closed structure, which is intended to form a secure environment for the user, while not removing the user's sense of being able to act freely.
• Socially/outwardly-oriented, i.e. in the process, the story will encourage the users to team up (on the basis of the idea that two users together will enhance the reflective space around the individual display, and thereby optimise their learning benefit).
• Meta-narrative, i.e. the story will along the way make (both indirect and direct) reference to itself as a story – thereby stimulating the user's critical reflection. Who is behind the story? Who is asking? Who are we talking to? Who can we believe? Can we always believe scientific points/messages?



The story
The individual users will work with many aspects of themselves: their physiology, their senses, their logical intelligence, their social skills, their habits, their appearance, their psychological aspects (e.g. prejudices), etc.
The story (game) functions best with 6 to 30 users at one time.
It is not necessary for the participants to know each other in advance.

If you complete all three levels in the story, the anticipated duration will be approximately one and a half hour. It will be possible to quit at any time, and the story has been constructed in such a way as to make it meaningful to take part in just the first one-half of the story.

The technology is:
• Under the control of the users in terms of both possession and use (their own mobile phones).
• Tried out and tested back-end technology, so that we do not need to reinvent the wheel to reach our goal, but merely combine existing technologies.

There are more information about EGO-TRAP on our web-site (p.t. in Danish only) at:
http://www.experimentarium.dk/dk/udstillinger/ego-trap/index.html

Or you can contact Poul Kattler by mail:
poulk@experimentarium.dk
or by phone: +45 3927 3333.

Report from the Aquarium discussion at the NSCF Conference 2006.

■ Nils Hornstrup, Experimentarium.

After Professor Ilan Chabay's very interesting and inspiring lecture on "Strategies, Tools and Methods for Engaging the Public with Science" I guided a 30 minutes Aquarium discussion on the quality of our science center business: Do we reach our goals?, Do we reach our visitors?.

Four persons at a time discussed my questions put up on the screen. The participants were exchanged one by one with other persons from the audience and new questions for discussion were put up from time to time. The whole session was recorded on a tape-recorder and from the transcript of the recording I have summarized a number of – what I find - important statements on how we should improve our work and develop our centers.

The participants were: Ilan Chabay, Mikko Myllykoski, Atle Kjärvik, Eva Johnsson, Staffan Rådelius, Lotta Johansson, Mariana Back, Agnes Conradi, and Nils Hornstrup.

Bringing the joy of discovery to everyone!
On the question "Do we reach our goal in raising interest and understanding of science and technology?" there were several interesting remarks:

'The most important mission for the science center must be to bring the joy of discovery to everyone. Naturally the platform for this discovery is science and technology. To discover is a personal experience and therefore we invite people to do and to work with things. In this way the science center has an active role in raising interest.

People have always been playing – the playing human! – and children learn from playing from the first day. Therefore we should let people play in the science centers and not care so much if they learn something or not. The discovery process is in focus.

We don't know enough about, what people do come away with by playing or what they are doing in the science center, so in a sense we are in the dark. But playing is an important process, and getting people to engage is also important. But the ways in which you engage people can be quite different depending on the people – play may be a part of that – more formal learning may be central.

There isn't a coherent idea of what you would like to communicate. Of course we do want to communicate what science and technology is, but we do not teach the visitors, we can provide an engaging platform for this communication and well knowing that people will do different things with it.

Changing the way people think about science and technology!
On the question on how to measure the success of the science center mission the answers were:

If the question is: Are we teaching science? – the answer is NO.
If the question is: Are we engaging people in what science is – the answer is YES.
But a much more important question to raise is: Are we able to affect the way people think about the science? – actually we don't know. Therefore the science centers should emphasize on research to enlighten this question: Do we change the way people think about science and uses that information? That's what understanding means. Understanding is not a long list of facts and information.

Therefore our mission is more about motivation than about teaching. We know that the visitors are interested in science because the visited us, but its what happens when they leave the science center that is important. And you can never measure the success by the visitor numbers. The focus of the research must be to study what people really walk away with, when they walk out of the science center. What are they thinking now? Do we give the right impact?

What the science center environement can do as opposed to the television, to a dialogue and even to the schools is that science centers are unique ressources. They offer experiences that you cannot have elsewhere Though personal experiences the science center can build up a vocabulary for the visitor – its how things feels, how things sounds, how things looks and smells - and in that engagement you build up a sort of intuition. The personal intuition comes from personal experiences and mostly people don't know how to verbalize it – especially not children. Therefore you have to observe your visitors more than just asking questions in order to find out whether you reach your goals.

A human problem need a human solution!
The next question raised were the pupils behaviour during class visits.

Observations shows that the pupils uses the science center activities very different from just playing randomly around, over "scratching the surface" here and there to serious work taking notes and making reports. And this is just the way it should be. This is a normal behaviour of human beings and this is a normal part of the discovery process.

An important element in our science center activities is that they are open-ended. There are many ways of using the elements and there are not just one answer. When we allow that and when we want that to happen, we have to have tolerance to human behaviour like this, well knowing that the open-ended approach can also create frustration by the visitors. This will be an eternal challenge that we have to compete with all the time and therefore running adjust our offers.

Science centers have created environments that triggers the playing process in order to reach serious education. But the science center is not doing the formal teaching. The science center can only provide the opportunities to start a dialogue. If the science center succeeds in setting the story by provoking the questions that can be followed up in the school back home, then the science center can make a very important contribution to serious education.

When we come to direct misuse of the exhibits and bad social behaviour and even sometime vandalism in the exhibitions then we have missed to meet the young people who is coming to us the right way. We must start some sort of dialogue when they arrives. And if you succeed to really meet them, then they behave well. So are we guards or storytellers? It is really important to meet the young people where they are. To really get a contact, to start their visit for one or two hours.

Misuse and vandalism is a human problem - – and it needs a human solution. This is needed from our colleagues – to meet in person face to face and that will solve most problems. Of course this is also a question about ressources, but we know that it works.

Another way of preventing the misuse is to give your museum open and friendly atmosphere and to secure the premises always to be clean and beautiful. This is an indirect way of telling that "this is

for you" and that "you are welcome" and this confidence creates good behaviour.

Create a continued contact to the teachers!
The last question to discuss were the teacher attitude and behaviour during class visit.

We should emphasize to all our school users that the science center should be regarded as an important educational ressource for the schools and that it is the schools that are the experts in using this ressource the best way in their curriculum work. But we see very different attitudes from "going to coffee and leaving the pupils at the entrance on their own" to "seriously following their pupils and taking part in the discovery process". Therefore it is important to build some sort of bridge to the teachers.

The thousands of teachers are very different like all other visitors. We will meet very different types of personalities and backgrounds and some of the teachers are even frightened about science. That is maybe the worst case. To have some sort of communication before the visit will be important. And maybe even more important in the future we should build in communication after the visit to encourage the ongoing exchange between the student group and the science center, so the visit is not just an atomistic single event.

In order to improve the teachers expectations and also getting the teacher aware of his or hers obligations it is really necessary to communicate with them before they visit us, to write a letter and tell them what is going to happen and what we expect from them. But we also need to have staff on the floor that meets the teacher and the class, so the teacher have someone available to enrich his own visit as well. It is important in this communication to emphasize that the teacher is not expected to be the guard of the class only, but also to enjoy and enrich their own visit.

Finally following up on the teacher is important. Some teachers don't feel comfortable with science, maybe they are not graduated in science, maybe they don't know how and where to integrate the science center visit in their curriculum. But if you can create a contact to the teachers in such a way that they feel that they can turn to the science center after the visit – by phone, by email or by personal contact – even if they never do it, they feel better, because they feel they have some support, and they are willing to take a greater risk of what they are presenting back home in the school, because they feel they have some backup.

Sintra Ciencia Viva

- Portugals new science center

In December 2006 the newest science center in Portugal opened the doors to the public. It is equipped with 25 brand new exhibits developed and build by Experimentarium. The activities also include a well equipped laboratory for chemistry and biology activities and a cybercafé for free public access to the internet.

The center is installed in a beautiful old tramway workshop building in the famous Sintra with the Royal Summer Palace in the mountains about 30 kilometer from Lisbon.

For more information consult the new web-site at:
http://sintra.cienciaviva.pt/

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