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FROM DARWIN TO NANO WORKSHOP



SciFest - something for everyone



While the basic idea of the SciFest festival is to familiarise young people with the natural sciences and technology and to interest them in these subjects and sectors, the event itself is bursting with workshops that cover the whole range of subjects in comprehensive and general upper secondary school.

Teachers need not worry that a school day (or preferably two) spent at SciFest will have nothing but "hard" science to offer. A quick count reveals that this year's programme contains not only mathematics, physics, computer science and technology but also music, PE, history, Finnish, self-expression, geography, nutritional science, environmental studies and health sciences. This is why I am sure that each teacher and student will find here a way of approaching science and research from an angle that they find personally interesting. At the same time, they will have a chance to broaden their perspectives regarding the current state of science and the opportunities and challenges offered by research.

The only requirement for taking part in SciFest is to come without prejudices and with your senses wide open. Next year's theme, chemistry, will again offer immense possibilities to make science and research better known and bring it close to the every-day life of pupils and students. After all, chemistry is relevant to each cell in our bodies, as well as cans of paint, rising dough, a birch leaf, a petrol tank, communication between nerve cells, an outdoor toilet and a bottle of home brew.

We would also like to welcome you to SciFest 2011!

Pauliina Korhonen

The SciFest team



Erkki Sutinen, Ritva Kareinen, Ilkka Jormanainen, Pauliina Korhonen and Kirsi Karjalainen comprise the core of the SciFest team. The SciFest team would also like to welcome visitors old and new to SciFest 2011!

Travels with Darwin

The work of Charles Darwin, a scientist and the father of evolutionary theory, could be presented either in a dead boring way, or in a manner which will inspire people, titillating both the imagination and the brain cells of your listeners. The workshop by Niinivaara Upper Secondary School from Joensuu, titled "Travels with Charles Darwin", resorted to imagination and stimulating the participants. The workshop was a hectic place at times, as the pupils from Karsikko and Noljakka Schools entered the world of Darwin, and especially his marathon voyage which took him to the Galapagos Islands.

- Our aim was to familiarise ourselves with a scientist's life and attitude to life, sums up drama teacher Kirsi Jaatinen, leader of the workshop.

The workshop was based on a musical play about Darwin produced by Niinivaara Upper Secondary School

in 2009. The duration of the play was 2.5 hours, so the 90-minute workshop represented only a sample. Upper secondary students Aki Mustonen played Charles Darwin, Pirita Koivu played the ship rat and Ines Kakkonen played Darwin's wife.

Between the drama sections, the pupils could immerse themselves in the life of Darwin through play, movement and mental images. After a moment of shyness at the beginning, the room was bursting with activity, as ships, sailors, foxes, hares, blue-footed boobies and many other creatures swayed in the wind, ran away from each other and listened to the sounds of nature.

First of all, the group members introduced themselves, clapping their hands to the rhythm: Minttu, Iines, Tiia, Jonna, Iivo, Rasmus, Elina, Orvokki, Tuukka...



Evolutionary theory as a game.



Where did Darwin sail again?



Captain Fitzroy described the voyage.



Pirita Roivas, teacher Kirsi Jaatinen, Ines Kakkonen (back left) and Aki Mustonen.



...and Darwin sailed on...



Our cousin the monkey?

The Nano School imparts research information to the general public

The time it takes for science to make its way from the laboratory to national awareness must be shortened. This, in a nutshell, is the reason for setting up the Nano School, explained Lecturer Anssi Lindell, who observed the goings-on in the Nano Workshop organised by Jyväskylä University. The workshop was run by trainee teachers from the university's Department of Teacher Education, while Lindell said he was just "hovering in the background".

- When the Nano School was being set up, I realised that it offers excellent opportunities for trainee teachers to practice in real-life situations.

And the customers are demanding, beams Lindell, whose doctoral thesis

dealt with nanosciences. Every year, the Nano School organises a tour titled "The Seven Wonders", which visits 5-10 schools over one or two weeks. Lindell is responsible for the budget, while the trainee teachers do everything else from start to finish. Getting prepared for the tour is done with the help of a theatre director among others.

The director paces the "show" and helps to animate it, Lindell explains. This gives ordinary people an opportunity to familiarise themselves with the outlooks of a discipline that is making headlines and that studies bioscientific, physical and chemical phenomena. One example of nanotechnology "products" is thin film technology. One nanometre

” - When the Nano School was being set up, I realised that it offers excellent opportunities for trainee teachers to practice in real-life situations.



The leader of the Nano School, Lecturer Anssi Lindell "just looked on" while trainee teachers assumed responsibility for the practical running of the workshop.

equals 0.000 000 001 metres, which is why the phenomena studied by the nanosciences cannot be seen by the naked eye!

Lindell coaches the Finnish team preparing for the Science Olympics in physics. Thus, he also ran a workshop at SciFest that helped upper secondary students in solving physics problems. Some "gems" picked from the practical tasks of the physics olympics were on the offer.

Lindell, who is dedicated to the popularisation of science, liked what he saw at SciFest: A wonderful event.

A cool event. And it is great that SciFest is organised in Joensuu. Not everything needs to take place in Helsinki.

Arppe School combined SciFest and Botania

The pupils of Arppe School from Kitee made good use of their trip to SciFest: they spent half the day taking part in SciFest workshops, while the remaining hours were spent in the botanical gardens of Botania.

- We asked the pupils what they wanted to do and booked workshops at SciFest accordingly. The group included 8th and 9th class pupils and a few from the upper secondary. We came here because we find this international event exciting. Visits of this type are also part of the curriculum of our optional subject (nature), explained biology and geography teacher Jatta Matero, who led the group.

Matero says that the pupils were

She finds the workshops offered information that would have been impossible to impart to pupils in the course of a normal school day.

"The reaction of many students is, "Wow, so things like this really do exist!"

What she liked in particular was the focus on activities in the event. She felt that a more "educational approach" might have been needed in some of the workshops. She believes that in the future, specifying the age limits for workshops more accurately would be useful. Some of the offerings intended for upper secondary students were too difficult for comprehensive school pupils.

” “The reaction of many students is, "Wow, so things like this really do exist!"

"happy" with their experiences, but the unclear descriptions of workshops led to some bewilderment. They were too general and confused the pupils. - It would be a good idea to describe the contents of the workshops more clearly, Matero suggests.

- We will be back next year, Jatta Matero promised.



Jatta Matero

Karjalainen's school for journalists

The newspaper Karjalainen's school for journalists gives the students a chance to try out the jobs of a reporter and photographer in practice. The budding journalists write stories and take photos for Karjalainen's SciFest pages. The workshop takes place in Arena, and its leaders are journalists working for Karjalainen. Supervised by their teacher Johanna Alpia, students of Joensuu Normaalikoulu upper secondary school act as "junior leaders". They produce some of the stories while also guiding younger pupils on outings to cover various workshops.

Normaalikoulu students Anni Kinnunen, Pia Heinänen, Henni Sorola and Vilma Flinkman covered the InFotonics Center workshop of Joensuu University, which led the students into the world of colours.

- My dream is to become a professional photographer. This is a super opportunity to practice, said Vilma Flinkman with a professional system camera around her neck. Vilma already has her own system camera,

too, which she has used to shoot such things as weddings and bands.

Anni Kinnunen and Pia Heinänen tried out the job of a writing journalist. Henni Sorola worked as the assistant photographer.

- Our teacher Johanna asked us to come along, and as we got good feedback from our friends who had been here before, we decided to come. It has been unexpectedly interesting and easy, too. It gives you a good idea of what this work can be like, said Anni and Pia, describing their experiences as reporters.

The two friends have also had time to guide younger pupils. - A lot of them did not have much initiative.

We had to help them think about how things could be done. The upper secondary students promised to write a story for the SciFest publication about what they had seen and experienced in the InFotonics Center. Many thanks!

Fake or real

Two men in peaked caps and uniforms are strutting around the turn on the running track in Arena. To one side, a group of men and women dressed in early 20th century styles are standing around. They are waiting to enter a passage fringed with dark metal pipes, at the end of which the men in uniforms are arrogantly standing.

The workshop on cartoons about immigrant life organised by trainee teachers at Joensuu Normaalikoulu School is about to begin. It begins with scenes from Ellis Island in New York, where a group of Finnish immigrants has just arrived.

- That looks pretty phoney, was the critical assessment of the Ellis Island scene from a pupil taking part in the workshop.

The faces of a couple of pupils pulled in for a thorough Customs inspection told a different story: the situation they unexpectedly faced may have felt only too real...

At the end of the workshop, the participants drew or produced by various methods a cartoon, for which the Ellis Island scene and other teaching material in the workshop offered background information.



The school for journalists in practice: Anni Kinnunen (left) and Pia Heinänen were reporting while Vilma Flinkman was shooting.



Customs inspection at Ellis Island was a tough one for many.



The workshop concluded with a creative section: based on what they had heard, seen and experienced, the pupils drew a cartoon describing their own feelings.

Effective colours

Each one of us sees colours in our own way. The lighting and the object we are looking at have a great impact on how we see colours.

In daylight, for example, colours look quite different from how they look under a fluorescent light.

This was something the participants could test in the "Does the Colour Matter" workshop at the InFotonics Center with researchers **Tuija Jetsu, Jussi Kinnunen** and **Jukka Antikainen**.

The workshop participants were testing a thermal camera, which uses colours to indicate the temperature of objects. With the aid of spectacles

produced in Japan, they could also experience the way in which a person with red-green colour blindness sees colours.

Grey?

Visual perception is created when light is reflected from an object to the eye and through receptor cells in the fundus to the vision area of the brain. The human eye has three different kinds of cone cells, which sense blue, red and green light.

Colour blindness, then, is caused by an insufficiency in these colour receptor cells. The world of colour-blind people does not appear

completely grey, however.

People affected by red-green colour blindness can name and partly see colours, as their brain is used to seeing colours differently, explains researcher Jetsu.

Colour applications

Certain materials can be made to reflect UV radiation, which has low visibility. This phenomenon is called fluorescence.

Fluorescence applications are used for example at supermarket checkout stands to detect the authenticity of bank notes in large denominations, as the security features in the notes



reflect visible light as UV radiation hits them. Fluorescence is also used in ambulance paints to give them high visibility in traffic.

Pia Heinänen Anni Kinnunen

First-year students from Joensuun Normaalikoulu upper secondary school worked in SciFest at the journalist workshop jointly organised by the newspaper Karjalainen and Joensuun Normaalikoulu.

Gallup

- Name and school?
- What was the best workshop/thing at SciFest?
- How did you find SciFest?



Seija Kolehmainen

1. Textile work and arts teacher Seija Kolehmainen from Valtimo School
2. All workshops are more or less equally prominent, which is why none of them caught my eye in particular.
3. In general, the workshop leaders were able to engage their audience. But the workshops could do with a recommended age limit. At the moment, the age range of the participants is very wide. I also think that they could give the pupils more demanding assignments, as this is after all a school day.



Busola Kalejaiye

1. Busola Kalejaiye from Joensuun Normaalikoulu.
2. The best thing was the origami. All you need is a bit of paper to fold them, and the finished ones are super.
3. SciFest is a fun event. It's free, and you can do all sorts of fun stuff. I wouldn't mind coming again.



Hanna Lahtinen

1. Hanna Lahtinen from Joensuu Steiner School.
2. The spider game, which you could program on a computer and then put on your own mobile phone.
3. This is fun. You learn all sorts of things here. This is my third time at SciFest!



Janita Turunen

1. Janita Turunen from Karsikko School, Joensuu
2. The microscope workshop. It was really interesting.
3. SciFest is great. It has all sorts of good things.



Riku Jako

1. Riku Jako from Pataluoto School, Joensuu.
2. Robots. They were the most exciting.
3. A cool event. I wouldn't mind coming again.



Essi Ollonqvist

1. Essi Ollonqvist from Niittylahti School in Pyhäselkä.
2. Origamis. I like arts and crafts, which is why I enjoyed doing origami.
3. SciFest is really great and versatile. I will come again next year. This time I came with my friend, as my school did not bring us.

Professor Ilkka Hanski: Down with urban lawns!



Professor Ilkka Hanski gave a lecture in a training seminar for biology teachers.

Dull and sterile urban lawns, which favour few species, should be turned into ecological oases, in which many declining species could find new habitats. So replace the lawns with, for example, wild meadows, urges professor Ilkka Hanski from Helsinki University. He lectured at SciFest on the effects of habitat fragmentation on the ecology of

species.

- The area of traditional rural biotopes has been reduced to only a small percentage of what it used to be, and there is no going back. But today's habitats, such as gardens around bungalows and holiday houses, are becoming new types of traditional biotopes. If, instead of just lawns, we started valuing more versatile biotopes, these would have an immense potential for offering habitats to many species, Ilkka Hanski reflects. He points out that, in principle, this also applies to forest owners, who play a vital role in preserving diversity. New ways of using forests may in the future provide better possibilities for maintaining biodiversity.

Hanski reminds us that habitat fragmentation has a direct impact on biotic communities' possibilities of survival - in a negative sense. The change, however, is so slow that it is often difficult to see. Once the deteriorated situation is observed, it may already be too late:

- A species may survive for a long time, while many processes are continuously undermining its condition. When the threat of extinction is detected, it may already be too late. For example, the loss of genetic diversity may mean that an organism's ability to adapt to climate change is jeopardised.

Hanski cites a study in which the diversity of the living environment was also found to have positive effects on human health.

- Professor Tarja Haahtela has studied childhood allergies, such as atopic dermatitis, in Russia and here in Joensuu, Finland. She found that children's immediate surroundings in Finland are excessively sterile, which is why children here are more prone to these problems than their Russian counterparts. The immune systems of Finnish children stop developing, and this causes problems.



Professor Jari Kouki: Forest biodiversity still endangered

The SciFest 2010 programme included not only workshops but also lectures. Professor of forest ecology at the University of Eastern Finland, Jari Kouki, discussed the diversity of Finnish forests in his lecture. The picture he painted of the diversity of our forests was not very comforting, however.

- The majority of the biotopes in our forests are still endangered. This information is based on an assessment conducted in 2008. This concerns, in particular, young virgin burned clearings, herb-rich forests and barren heath forests in the north, noted Jari Kouki.

Kouki believes that the area of protected forests should be increased further, "as much as this is still possible". This is the only way to safeguard the diversity of species.

The lecturer also brought up another perspective:

- It also increasingly appears to be the case that rare species also include species of economic value. So far, this has not been understood. These species of economic value include certain species of polyp.

Kouki says that a certain polypore species of



polypores may bring energy savings amounting to 20% when used in the pulp manufacturing process. These savings are obtained by the fungus separating the cellulose at the start of the process; in other words, the fungus is used as a bioprocessor in pulp production. It has also been noted that for example bark beetles may carry new antibiotics that may be significant to human medicine.

The debate on forest diversity is closely associated with the recent revelation that old-growth forests are "surprisingly good carbon sinks". For an extended

period of time, the opposite has been held true.

- We have not studied old-growth forests of more than a hundred years in age, as we do not have them. But recent studies in Russia and elsewhere in the world have now revealed the value of old virgin forests in this sense, Professor Jari Kouki explained.

A fly or a horsefly?

- Could it be a fly or a horsefly, wonders fourth-class pupil Jaana Jeskanen when examining an insect of about one centimetre in length under the microscope. Jaana was studying creepy crawlies in the microscope workshop organised by the University of Eastern Finland's School of Forest Sciences. There was no shortage of subjects to study, as many types of insects were on display: big and small ones, those that live under water, ones that fly, sting, buzz and have a great variety of colours, and those with wings or legs.

- Some of them look really cool, and this one is quite large, too, Jaana noted as she zoomed in on it.

Under the microscope on the table next to Jaana, another type of subject was being scrutinized:

- Look at my finger, second-class pupil Johannes Jeskanen commanded his father, Jehki Jeskanen. And his father looked...

- This workshop was a good choice, the kids are really happy, Jeskanen beamed.

Jehki Jeskanen brought his children to Arena on Thursday evening, since Jaana and Johannes' classes did not visit SciFest. Jeskanen himself was already familiar with the festival, as he had visited it with his pupils from Itä-Suomi School.

As a teacher, Jeskanen values SciFest highly:

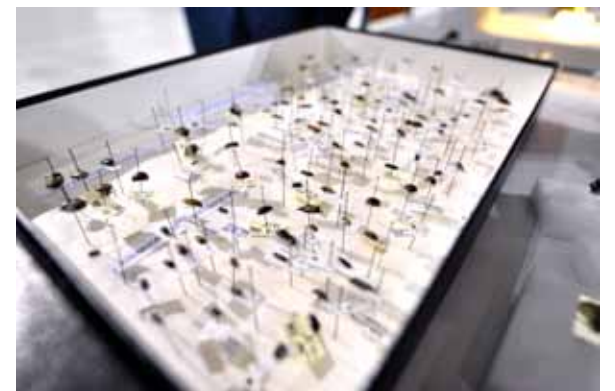
- Absolutely great! And doing stuff yourself is super. The pupils get enough lecturing at school. I came here today with my fifth-class pupils. They had no problems at the stand run by South Africans, even if the working language was English. Normally in class they would have gotten restless, but here there was plenty to do.



A strange bug under the microscope.



Jaana Jeskanen was fascinated by insects.



A wide range of insect species.

Weather and climate are two different things

Weather and climate are two different things, even if people often get them mixed up. The winter of 2009-2010 was cold in Finland compared to some of the preceding ones, but this was only a question of a slightly unusual weather pattern. When we talk about the climate, we have to look at a period of 20 - 30 years at least. So stated Senior Research Scientist Kirsti Jylhä from the Finnish Meteorological Institute in her Studia Generalia lecture, which was organised "on the side" of SciFest.

Kirsti Jylhä claims the Finnish climate has clearly started getting warmer. The thermal spring, for example, already set in at the end of March in

Northern Karelia, when it has started more than a week later on average during the preceding 30 years. This phenomenon is associated with the shortening of the winter, which has been observable for an extended period.

- The climate zones are moving north. Within the next century, the boundary of the permanent snow zone will have crept up to around Central Finland, Kirsti Jylhä predicts.

In Jylhä's opinion, we cannot prevent climate change - but we can slow it down.



Classes at SciFest

Erkko Saviaro, physics teacher in Luciana Hagman upper secondary school in Kokkola, brought his students to SciFest to take part in workshops, but they also had a curricular physics lesson in Joensuu. This arrangement ensured that they were not behind their timetable, and the programme offered by SciFest was a bonus.

- The nasty thing about general upper secondary schools is that the teachers are particular about their classes. If you are able to agree that such and such a lesson will be held in a certain place, that's the end of the story!

As an extension to Erkko Saviaro's idea, the thought of a class bank emerged. This would be a system for which SciFest would provide a number of "proper" classes. That would make participation in the event easier.

Saviaro had already visited SciFest the year before. He was impressed by the event:

- I strongly feel that this is what we need. The world in which young people live is so experience-centred that they will not get something like this on the Internet. I think it is part of a teacher's professional skill to understand that the SciFest is "the" place to be, both for himself and the students. It is the very place to broaden your horizons.

- Learning results are improved by the very fact that we are not in a classroom but in less formal surroundings.

Erkko Saviaro also ran his own workshop at SciFest, which introduced the participants to such things as microcontrollers.



Teacher Erkko Saviaro brought his students to SciFest from Kouvola.



Plans for a class clinic at SciFest

The "father" of SciFest, Professor Erkki Sutinen, finds the idea put forward by Erkko Saviaro from Kokkola of a class bank or clinic for students taking part in SciFest to be excellent.

- They would be offered a few classes in essential subjects which are part of the upper secondary school curriculum. The idea is that the students could take the classes at SciFest and then get credit for what they have missed at school. The class clinic could operate in the evenings, giving the students time to take part in SciFest workshops during the daytime. We will take the idea further with teachers and see how it could be implemented, said Erkki Sutinen while he had a bit of time off from his SciFest duties.

Sutinen thinks the class clinic could even prepare the students for their final exams. Other innovations can also be expected as early as at SciFest 2011.

- In a way, this year marked a breakthrough for SciFest. We have now established good operating methods, and the event has been embraced by a large community of supporters. Voluntary work and co-operation are important elements in SciFest, Sutinen confirms.

”Here you can meet both schoolchildren and Finland's most prominent scientists”

Eeva Kaunismaa, Ministry of Education: Science education is vital!

Senior Adviser Eeva Kaunismaa from the Ministry of Education visited SciFest in the role of the largest sponsor. Support granted by the Ministry of Education has made possible the long-term development of SciFest: while SciFest 2010 was still up and running, arrangements for the 2011 event were already under way.

- Education and science play a key role in building the future. Science education and its promotion are important, emphasised Senior Adviser Eeva Kaunismaa while touring the stands in Arena.

- Internationality is another vital aspect. Experiences and international interaction are essential even at a young age. And SciFest offers opportunities for both, said Kaunismaa.

Kaunismaa feels that SciFest and other events organised in the same spirit "give hope" to Finland being the home of high-class scientists even in the future. One prerequisite for the continuity of high quality scientific research is working internal connections within the educational system: this connection must link all levels from general education to leading edge research.

- Here you can meet both schoolchildren and Finland's most prominent scientists, said Kaunismaa, praising the event.



Senior Adviser Eeva Kaunismaa represented a major sponsor of SciFest, the Ministry of Education.

Frank Lin soldered a blinking heart



Frank Lin worked on a blinking heart under the instruction of Jere Karhinen.



All you need is a soldering iron, tweezers and plenty of patience.

Frank Lin came to SciFest with the group Robot United Nations from Taiwan. The robot workshop organised by the Taiwanese was so popular that they ran out of materials in the middle of the festival.

Not to worry: Frank (aged 12) visited the neighbours (Electronics Workshop), which offered "small-scale electronics work". Under Jere Karhinen's instruction, Frank produced a blinking heart using surface soldering seams. Tweezers and a sharp-pointed soldering iron served as his tools.

- I did it myself, Frank Lin beamed as a small battery was placed behind the heart. The heart started blinking!

On the other side of the table Paul, who is two years younger, was also working hard. The heart was completed in little more than a quarter of an hour.

- Yes, Paul exclaimed as the heart started blinking.

The Taiwanese arrived at SciFest even before the festival began and learned about building robots together with pupils from Itä-Suomen koulu. Interaction was smooth, as robotics brought the pupils together.

The Taiwanese also had one of the most visible workshops/were one of the most visible participant groups at the last SciFest.

A robot and dancing girls

Johanna Turunen, Kerttu Lempinen and Maarit Turunen delighted the SciFest audience while practicing for the future Finnish Championships of RoboCupJuniors. A dancing robot built by the girls was also twirling on the stage. The fourth member of the dancing robot team is Anneli Kuronen.

The team won the Finnish championship at SciFest 2009 and went on to take part in the World Championships of dancing robots in Austria. The girls from Kontiolahti, who took part in the World Championships for the first time, won the best debutante award. Other students from Kontiolahti also took part in the World Championships.

Behind this success is the technology club of Kontiolahti's lower and upper comprehensive school, which has also supported the girls in building their robot and taking part in competitions. As the Finnish Championships were not held at SciFest this year, the technology club decided to set up their own workshop in Arena.

- The idea was to train here and, at the same time, introduce these sports to the audience (not only dancing robots but also robot soccer and robot rescue). We also offer people a chance to try assembling robots and playing with them, explained Reetta Lempinen. She is one of the volunteers leading the technology club.



Robots Rule



Stuart Windram (centre) introduced Jari Kouvalainen (left) and Tomi Mantilanaho to the mysteries of robotics.

Robotics and mechanics continue to be the favourite disciplines for children and teenagers at SciFest. This is why the workshops run by The Lab RatZ – Junior Engineers for Africa group from Johannesburg, South Africa, are bursting with curious schoolchildren. And having English as the teaching language did nothing to slow them down...

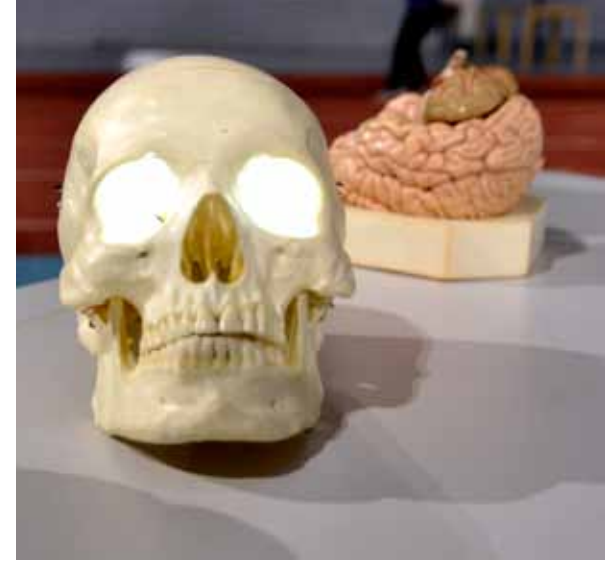
Stuart Windram explained that the workshops follow the same pattern as in South Africa: - First comes building, then programming. We use the same Legos there, too. Everybody speaks Lego, which is why we've had no language barriers here in Arena.

This was the second time The Lab RatZ visited Joensuu and SciFest. In its home country, the group tours 7-8 SciFest festivals every year in different combinations. The group has been active for four years, and it has trained as many as 15,000 South African schoolchildren, many of whom come from an underprivileged background.

- We work on a voluntary basis as a not-for-profit organisation. We also teach the more privileged pupils to some extent to collect funds for our actual activities. The majority of us are third-level students.

The workshops of the team from Johannesburg in Arena were also a reminder of the roots of SciFest, as the idea for the Finnish festivals originally came from South Africa.

” This event is absolutely great for the scientists of tomorrow.



Brain lab from Kuopio

The graduate students of neurobiology at the University of Eastern Finland came to SciFest from the Kuopio Campus. The future doctors gave the workshop participants insights into the brain and brain research. With the help of a microscope, they for example pointed out the differences between the brains of a healthy and a sick mouse.

Dani Hyttinen and Lauri Ylimartimo, fifth-class pupils from Kanerva School, focused on mouse brains. The sight was "exciting".

- I might become a scientist one day. It's a job that really interests me, says Lauri Ylimartimo before turning his attention back to the tiny brain.

Laboratory Scientific Officer Pasi Miettinen told us that the brain researchers at Kuopio Campus have a discussion forum, which came up with the idea of coming to SciFest.

- This event is absolutely great for the scientists of tomorrow. We strive to give wide-ranging information about the brain: the way they work and various brain diseases, explained Lakshman Kumar Puli, who is a fourth-year student in Kuopio. This neuroscientist hailing from Hyderabad, India, will get his doctorate "maybe next year". After that, he intends to return to India.



The students were intrigued by the fascinating life of the Saimaa Ringed Seal. Photo: Jouni Koskela

Phoca hispida Saimensis

A blond-furred Saimaa ringed seal pup snoozing under the ice cover of the lake in spring – what a cute sight. The video describing the underwater lives of a Saimaa ringed seal (*Phoca hispida saimensis*) pup and its mum was the most popular attraction at the stand of Metsähallitus and persuaded the otherwise lively comprehensive school pupils to concentrate quietly. Such cute creatures – and their lives are full of dangers, especially as pups!

After the video, the "Ecology and Conservation of the Saimaa Ringed Seal" workshop, led by Jouni Koskela, featured among other things a ten-question quiz. The answers could be found in the materials on display in the workshop.

Ten questions about the Saimaa Ringed Seal

1. How many seals are there living in Lake Saimaa?
2. What is the Saimaa Ringed Seal's favourite food?
3. How much does a seal eat every day?
4. How much does a fully grown seal weigh?
5. When are the Saimaa Ringed Seal pups born?
6. How much does a pup weigh at birth?
7. When does the Saimaa Ringed Seal shed its hair?
8. How long can a Saimaa Ringed Seal stay under water?
9. How many years can a seal live?
10. What is the most serious threat to the population of Saimaa Ringed Seals?

Answers

1. 260 2. Small fish 3. 2-3 kg 4. 50-90 kg 5. At the end of February 6. Five kg 7. Towards the end of May 8. Up to 20 minutes or longer 9. Over 30 years 10. Fishing gear, especially nets

From idea to solution

Saturday, the final day of SciFest, was a day of open doors. Aino-Maria Passi (10) and Laura-Emilia Passi (soon 9) were busy at the "From Idea to Solution" workshop with their father, Timo-Teemu Passi. Hollow straws were turned into such things as swings.

The family was familiar with the event, as they had also visited Arena the year before last. As a matter of fact,

this was Timo-Teemu Passi's second visit to this year's SciFest, as he had also brought his pupils (Karsikko School).

- The girls did not get to come here with their school (Kanervalta), which is why we came today. It is quite difficult for schools to come here if the distance is longer than what the pupils can walk, Timo-Teemu Passi reflects.

- Dad, we need this one now, what do I do? Laura-Emilia called her dad's attention from the interviewer to more important matters...

5 or 12 spoonfuls of sugar?

Did you know that a carton of sour whole milk containing one percent of fat has five spoonfuls of sugar, and that a carton of yoghurt of roughly the same size is sweetened with 12 spoonfuls of sugar? Of course, everybody knows that a scone has two teaspoonfuls of sugar, while a Danish pastry has 14. Or do they?

- I was not surprised by the amount of sugar, I guessed that there was a good amount of it, says Aleksi Pohjola as he is eyeing the platefuls of sugar.

But it seems to have come as a minor shock for Jenni Husu that a half litre

bottle of fizzy orange contains 23 spoonfuls of sugar.

- I didn't know. I don't think I'd buy it, if I was making the decision now, Jenni admits.

Both pupils from Pielisjoki School have come to SciFest under the guidance of their home economics teacher, Anu Tiippana. They visited among other things the "A Bit Hungry" workshop of the University of Eastern Finland's Institute of Public Health and Clinical Nutrition. The workshop offered illustrative information on such things as healthy snacks.



Pielisjoki School pupils Aleksi Pohjola and Eemeli Hyttinen and home economics teacher Anu Tiippana judging the amount of sugar and fat the displayed foods contained.

“ I didn't know. I don't think I'd buy it, if I was making the decision now. ”



Aino-Maria Passi, Timo-Teemu Passi and Laura-Emilia Passi doing crafts together.

A satellite workshop at Koli

The satellite workshop at Koli was one of the SciFest 2010 novelties. The workshop was run in Koli National Park, to which the pupils were bussed from Joensuu. The workshop was highly compatible with the theme of the event, which was diversity in nature, society and the environment.

The Koli workshop was made possible by the positive attitude and sponsorship of the town of Lieksa and Metsähallitus.

- We intend to expand the satellite workshop practice in the future. For example, at the University of Eastern Finland's Kuopio campus, workshops could take place in laboratories which could not be moved to Joensuu for the time of the event, said Ilkka Jormanainen, Executive Manager of Joensuu Science Society.

” *The organisers of the workshop had also taken into consideration the age range of SciFest participants: the implementation method varied according to pupil age.*



The crime scene has been isolated by the police

DNA reveals the criminal

A crime has been committed at the school. But by whom? The pupils from Joensuu Normaalkoulu need to crack the case, relying on various methods of forensic investigation. Some are using microscopes, others squinting through magnifying glasses, while still others are striving to solve the mystery based on clues and logical reasoning...

Finally, the criminal is caught based on DNA tests – which is frequently the case in real life, too. The DNA tests are also real, as the instruments in the workshop are on loan from the police. Security at the workshop is guaranteed by a real police officer, who also tells the participants about police work.

- Implementation of this workshop is part of our specialised teacher training. A total of 22 trainee teachers are involved, say Tuomo Takala and Mikko Tolvanen, who took part in running the workshop.

According to Takala and Tolvanen, the workshop offered a creative combination of different subjects: biology, chemistry, history, social sciences, physics, and even geography...

- The curriculum includes inter-disciplinary themes, which makes this approach very fitting, the trainee teachers explain. The organisers of the workshop had also taken into consideration the age range of SciFest participants: the implementation method varied according to pupil age.

The workshop felt highly realistic, as the props and materials had been borrowed from the police. Both the Northern Karelian police unit and the Police College teamed up for workshop. - Really great, was Takala and Tolvanen's complimentary assessment.



Clues



Trainee teacher Tuomo Takala enjoyed helping run the workshop.

How to make your own game for the mobile phone

The engineering workshop of the North Karelia University of Applied Sciences introduced the participants to various sectors of engineering.

Children – and why not adults, too – sat at their tables without budging during the workshop. After a quarter of an hour, the participants left the workshop with wide smiles on their faces and fiddling with their mobiles. The workshop organisers had come up with one of the big hits of SciFest 2010: instructed by the workshop leaders, the pupils used a couple of commands to programme a simple game, which they finally downloaded from the computer to their mobile phones using bluetooth technology.

- They have kept us really busy, and it's starting to get hot, beamed Management Assistant Pirkko Saviaro from the University's Centre for Business and Engineering, who was on a break. While taking a rest, her mind was already on the workshop for 2011: - Some sort of activity of this type, we will have to think about it and see.

The mobile game idea was implemented by Laboratory Engineer Mika Lappalainen and Student Councillors Jukka Tulonen and Joni Ranta. Lappalainen came to the University of Applied Sciences for an 8-month continuing education period, and the workshop was part of the practical section of his programme.



A few commands, and your mobile phone game is ready. Cool!

Mika Vanhanen and ENO received an award

In connection with SciFest, the Northern Karelian IT person of the year 2010 was selected. This award went to Mika Vanhanen, the founder and leader of the virtual school ENO.

ENO stands for Environment Online. It is an international virtual school of sustainable development. In the ENO network, the students examine environmental themes and produce information about their environment for the general public. ENO is now active in 150 countries.

The award was granted by the Northern Karelian IT Association.

- An essential reason for giving this award to

Mika Vanhanen was the meagre attention that the ENO virtual school has attracted in Northern Karelia and Finland in general. We cannot help but admire Mika Vanhanen's energy, as we know that the operation of the virtual school has been on knife's edge from year to year because of financial difficulties. ENO has a slight resemblance to the open source code operating system, Linux. Linux, too, is much more highly valued outside Finland, pointed out the Chairperson of the Northern Karelian IT Association, Olli Räisänen.

Mika Vanhanen and the virtual school ENO – similarly to the IT Association – have been partners of SciFest for many years. SciFest extends its warmest congratulations to Mika for this award!

Plain-language science for the general public

Universities, scientists and doctoral thesis writers have a wealth of interesting information. Disseminating it to the general public in understandable popular language is often difficult, however, as the media receive the information in a form that is too difficult to understand. This was one of the findings in a seminar on science communications that was held for the first time in connection with SciFest.

When a university or an individual scientist wishes to publicise his or her findings, the press release must be written in plain language, as the readers, listeners and viewers are ordinary citizens. You cannot use the same jargon with them as you would with other scientists or in a scientific publication. This is why popularising science is a good idea, if you wish to be in the headlines; reporters and editors rarely have time to start translating a press release crawling with scientific terminology, the seminar concluded.

Some in the scientific community have "copped on" to the importance of popularisation, and they are the ones we often see in the media.

Positive publicity is important for individual scientists and larger research projects and universities alike.

The media have full rights to choose what they will publish, when and in what form. The editors aim at objectivity, but journalists are different, and they have various views and educational backgrounds. This is why even scientific information can never be disseminated in a purely objective manner.

- Publicity increases young people's interest in science and equality between research scientists and the citizens. The challenges to scientific communication include the fact that it is often difficult to popularise science, despite good will, noted Kari Hippi, Chief Information Officer from the University of Eastern Finland (Joensuu Campus), who chaired the seminar.



SciFest 2010: Joensuu, 14 - 17 April 2010

In the spirit of UNESCO's year of biodiversity, the theme of the fourth SciFest festival was diversity in nature, the society and environment. Diversity also characterised the actual event and could be seen in its workshops, science cafés, lectures, seminars and training days. The main role was naturally played by the pupils and students who took part in the workshops, at and for whom SciFest was to a great extent targeted and planned.

SciFest 2010 was free for all visitors, and it will also be free in the future. This was the first time the event lasted four days. On Thursday evening and Saturday, SciFest opened its doors to the general public. The lectures given on the weekdays were also open to all those who were interested. All in all, SciFest had some 6,000 visitors.

SciFest is an event that brings together science, researchers and amateurs of science. During the event in Joensuu Arena, the Academy of Finland's centres of excellence in research had their stands side by side with those of school science clubs. One workshop was even held in the Science Park beside Arena. The satellite workshop in Koli National park in Lieksa was a novelty. Its aim was to offer workshop participants new information through personal experience. The key words of SciFest are insights and activities. The organisers hope that the insights will act as a spark that in time will encourage schoolchildren to go on to universities.

SciFest is an international event. This time, it featured workshops from Taiwan and South Africa, but all in all the various tasks involved researchers or students from about ten different countries.

Workshops at the core

The activities of SciFest, which was now organised for the fourth time, have expanded year after year. The event now had 58 workshops - which last either some of the time or which extend from Wednesday all the way till Saturday. The leaders were scientists, teachers, professionals, senior students and amateurs. The workshops either had to be booked in advance, or they worked on a non-stop basis.

The offerings of the workshops were complemented by science cafés, where the lecture subjects included the Saimaa Ringed Seal and the brain. On Wednesday, the SciFest programme also featured a seminar on science communications, which will be repeated in 2011. The subject of the Studia Generalia lecture was climate change.

On Thursday, a symposium on ICT for Development and Learning was held. Friday doubled as a training day for biology and geography teachers. At the same time, the science and training days for teachers of mathematical subjects began, which continued until Saturday.

An increasing number of partners

For the first time, the main organiser of SciFest 2010 was Joensuu Science Society – with strong support from the University of Eastern Finland and numerous other partners. Sponsors included the Ministry of Education, the Finnish Cultural

Foundation, the City of Joensuu, the Alfred Kordelin Foundation, the Foundation for Promoting Karelian Culture and the University of Eastern Finland.

A strong spirit of voluntary work and innovation is characteristic of the festival: new actors are welcomed with open arms, and new ideas are sought high and low; nobody wants to be stuck in a rut. SciFest 2010 was a place for learning and meetings. It also doubled as a catalyst for thinking and the mind.



CHEMISTRY

In Joensuu Arena 13 - 16 April 2011

Free entry



SciFest 2011

Joensuu

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Welcome!

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