

# SciFest 2011

CHEMISTRY FOR ALL!



Mayor of Joensuu  
Kari Karjalainen:

## The future needs its author

At the opening of SciFest, the Mayor of Joensuu, Kari Karjalainen, gave his full support to the festival.

- The future needs its author! Karjalainen said with emphasis.

The Mayor hoped that SciFest would become a year-round activity, "for example, in the form of science camps already in operation."

- SciFest is an important part of the range of events offered by the City of Joensuu and supports the role of Joensuu as an educational city, Mayor Kari Karjalainen stressed.

In the opening of the festival, which was staged for the fifth time, the atmosphere was in any case confident and relaxed. Perttu Vartiainen, the Rector of the University of Eastern Finland, saw SciFest as already having established itself.

- You could say that this is beginning to be an institution. The organizers of the event had a great idea to begin with, and, for sure, great ideas will get the money and find the partners, Vartiainen praised. The rector pointed out that for the university the festival was a place to exhibit its work as well as to display itself. -

The mission of the event has been and will be: more students to study science, Vartiainen said.

At the opening ceremony the year's influential Northern Karelian in information technology was also awarded. Blanco Oy from Joensuu, which is specialized in data destruction, received an honourable mention.



*Fresh Mayor of the City of Joensuu, Kari Karjalainen, uttered words of praise and support for SciFest.*



*Farjo performed its music for the opening.*

The fifth SciFest was staged in Joensuu Arena multipurpose hall between 13th and 16th of April 2011. The number of visitors reached a new record: all in all, SciFest drew together 7,500 visitors.

The festival opening hours had been slightly changed compared to previous times: on weekdays the doors closed earlier, and Saturday became more clearly a day of open doors. The changes worked out well, since as many as 700 visitors acquainted themselves with the workshops on Saturday. To be sure, during weekdays the event was visited also by others apart from school children and students.

In addition to the growth in the number of visitors, SciFest swelled up once more in content. Nearly 60 workshops and stands were set up in Arena. The festival offering was increased by two evening Science Cafes organized by the Academy of Finland, and for the second time there was a science communication seminar directed for future and current science professionals. A part of it was held at Joensuu Science Park, and a part took place in the Arena premises.

The theme of SciFest was chemistry, honouring the International Year of Chemistry. Indeed, Arena had many workshops the content of which was pure chemistry. Moreover, the themes of several other workshops indirectly reflected chemistry. Chemistry for all and in as many forms as possible, the spirit of the event could be summarized. However, SciFest is not slavishly built around a single theme – also other natural sciences were strongly represented. Humanities also appeared in SciFest workshop offering.

SciFest's keywords are insight and activity. It has been realized in the design and implementation of the workshops as well: insights and learning take place through activities. The basic idea of the festival has remained the same throughout its five-year period of operation: it is hoped that challenging, meaningful activities and insights will act as sparks for the visitors to encourage them, in due course, to seek their way to the university to study. SciFest is a free science festival for all, and organizing it relies on a strong spirit of action.

The main organizer responsible for SciFest is the Joensuu Science Society ry; the second main organizer is the University of Eastern Finland. The festival is financially supported by the City of Joensuu, the Finnish Cultural Foundation, the Ministry of Education and Culture, the Foundation for the Promotion of Karelian Culture and the Alfred Kordelin Foundation.



*Rantakylä School's sixth class students Aleksandra Kuhlman (on the left) and Nawaal Mowliid enjoyed their stay in Arena on the opening day of SciFest.*



*Is this there the murderer's handprint? Access to the scene of the crime was strictly forbidden.*

## Crime Scene Physics

Physics, chemistry and mathematics are subjects that give the shivers to many school kids.. No sign of shivers were to be seen, however, in the Crime Scene Physics (CSP) workshop, which was packed with schoolchildren and students throughout SciFest. An opportunity to explore the practical research methods and practical applications of the disciplines the workshop represented was provided in such an addictive manner that the approximately one-hour workshop seemed to last just for a moment.

Students of the Department of Physics and Mathematics of the University of Eastern Finland had staged a crime scene at the workshop. By

analyzing the clues found there, those at the workshop had to figure out who was the person who had murdered the top physicist.

When a group of students from Juuka's Poikola school arrived in the workshop, an investigation led by Chief Research Scientist Ville Rautiainen was under way. After a short introduction and briefing, the students were divided into groups; each group then in turn familiarized itself with the use of various devices that were to be used as aids in the investigation.

- The crime will be resolved with the help of physical measuring devices, the Chief Research

Scientist guided his new research assistants.

The equipment at the disposal of the CSP workshop is fairly commonplace at the physics department: thermal imager, spectrometer, microscope ... According to Rautiainen, the group of 12 students had been designing and building the workshop since February. -Some of it kicked over the traces. As we did it ourselves, it became a quite a big deal at the end!

This time, big was beautiful, or at least effective: The congestion at the workshop did not end until on Saturday at 2pm when SciFest closed down.

## Pääkkönen won it all



*Johan Pääkkönen*

Johan Pääkkönen, freshly graduated from Joensuun normaalkoulu, skimmed off the cream in the annual Finnish Association of Teachers of Mathematics, Physics, Chemistry and Informatics (MAOL) competition, the awards of which for Joensuu were presented in connection with SciFest.

In the open series for mature students, Pääkkönen, aged 17, won the category of not only mathematics but also physics and chemistry as well. His success had already begun the year before in the basic physics category, in which he reached right up to the national finals.

Thus Pääkkönen was no shooting star. The results of the matriculation examination prove it also.

- I got an L in maths and physics, but an E in chemistry. I will still improve my chemistry grade, the youth who is going to study chemistry at the University of Eastern Finland told.

It is chemistry that is the subject closest to him, even though math and also physics interest him.

- For some reason, I just prefer doing chemistry. Pääkkönen is not alone with his chemistry: Professor Tapani Pakkanen from the Department of Chemistry at the University of Eastern Finland told that there are about a million chemists throughout the world doing science. But in that the community there is still a hole of the size of Pääkkönen to enter!

Results on page 15.

## “Eight-graders will be taken in”

Teachers of Juuka's Poikola School, Ritva Kähkölä, Irma Moilanen and Antti Ruokolainen, followed their students' activities in Arena on the opening day of SciFest. According to them, the school now has a tradition, which requires that the eight-graders will be taken in the festival at Arena.

enjoyable, close enough, and also free of charge, the trio argued. This time there were three Juuka classes in three different workshops amassing experiences and adventures. -Someone might even become interested! the teacher-trio cherished their hopes.

- The event has been found

## Weather balloon data was the topic of interest

Having climbed to the height of 20 kilometres before it falls, a weather balloon with its equipment can get all sort of information about temperature, barometric pressure, wind, humidity ... Installed in the balloon sent into the sky from Joensuu in March there was also a video camera and a digital camera, so information accumulated also in a visual form.

Information of the weather balloon project, which was realized together with the Joensuu Lyseo Upper Secondary School, local radio amateurs, and Vaisala, was extracted, and the results were presented at SciFest with the help of bulletins, quizzes, and various competitions. The project participants had some luck with them, because the weather balloon that had plunged into the ground had remained intact, and it was easily found with GPS.

- The research report done by our students is on the computer. For visitors in our section we distribute a questionnaire, and the answers can be found in the report amongst other things. After looking up the answers, one gets a raffle ticket and can participate in the competition, Niilo Kaikkonen, the geography and biology teacher of the Lyseo Upper Secondary School, told about the workshop activities.

For Juha Sormunen, a sixth-grader from Rantakylä School, who had examined the data collected by the weather balloon, it was the first time to participate in the SciFest festival, and he assured he was enjoying himself. - Nice!



The weather balloon was attached to the ceiling of the workshop.

## Is the medication OK?

- Our goal is to get school-age children interested in the safe use of medicines. Concerning children of primary school age, the responsibility, of course, falls on the parents. Nevertheless it would be good to gradually familiarize with the matter, public health science student Marika Kangasniemi summed up the offer of her SciFest section.

- For us at the University of Eastern Finland, getting the section together has been a part of the Health Promotion course, Kangasniemi informed.

For the section, students had built a thickish information package, which the school children digested, among other things, with the help of a quiz.

With blushed cheeks, Pinja Hassinen, a fifth-grader from the Rantakylä School, filled in a quiz form. At times the questions were difficult, but I knew, however, Pinja assured. Medical matters had not been a topic at the school yet; therefore Pinja with her schoolmates regarded the information bulletin offered by the section as «good». Before this, information about medicines and their use has accumulated «a bit there and a bit here».

Finally a medicine roulette was given a spin. There was a prize awaiting.



Pinja Hassinen knew the correct answers.

## Robots from Taiwan

Taiwanese have coloured the SciFest Arena already many a time with their section. The Robotics Group from Taiwan workshop, which the visitors ran together with the students of the Finnish-Russian School of Eastern Finland, once again attracted robot-builders – when it was discovered that Finnish could also be spoken in that section.

The Taiwan group consisted of 15 individuals, nine of whom were students from different parts of Taiwan.

- Robotics is a hobby for all of us. We teach micro-robot assembly to Finns and, at the same time, tell them about

our country, Richard and Ken told. To facilitate communication between people, the guests had translated their names to a European form.

The Taiwanese also had time to follow instruction in Finnish schools: - Very interesting, but due to the different language we cannot understand it all, Richard and Ken commented politely.

Finally the Taiwanese section ran out of robot parts. Perhaps that also was recorded in a notebook, which the group filled out during their visit: There is a plan to organize their own SciFest in Taiwan as early as 2012.



Richard and Ken are passionate robot-builders.

## Can science be popularized?

- I think not, Professor Jaakko Frösén answered his own question at the SciFest science communication seminar.

According to Frösén, science is science, and we should not try to change the fact. On the other hand, popularization of knowledge produced by science is possible and even desirable, the Professor at the University of Helsinki and Director of the Academy of Finland Centre of Excellence emphasized with his strong chest voice. However,

he thought it would be better to talk about popularization of research.

believes that instead of using the term “science communication”; one should use the term “research communication”; that would tell us that it has more to do with the research process.

, science communication can be divided into three parts: communication about science, publication of information and popularization of research. The first focuses mainly on publication of the

results of scientific research on terms of the researchers and to a small group. When publishing information, the target audience is broader and extends outside the ambit of scientists; at the same time information that has been private becomes public.

- And thirdly, I talk about popularization of research rather than about popularization of knowledge. There are differences with these terms, and their use should be considered in more detail! Basically it is a question of simplifying information and sharing it also with those who do not have the same education as the researchers, the professor pointed out.

Frösén's lecture was listened to

breathlessly, after all he is one of the best examples of successful, long-term popularisers of research. Deep involvement with research communication has spawned both a lot of positive publicity as well as external funding for the projects led by Frösén.



Professor Jaakko Frösén.

Academy Science Cafe:

## Music affects emotions

In connection with SciFest, two Academy of Finland Science Cafes were arranged. In the Science Cafe of the opening day, at Arena's Molekyyli cafe, Professor Tuomas Eerola from the University of Jyväskylä lectured about emotional impact of music.

According to Tuomas Eerola, emotions are conveyed well with music, and music leads to quite strong emotional experiences. Music is also an effective way to influence mood. Eerola thinks that music can even be linked to species development.

- Emotional reactions are generated by the music itself and by the listener's musical taste, personality and mood. Also the situation plays its part, Tuomas Eerola pointed out.

At the Centre of Excellence of the University of Jyväskylä and the Academy of Finland, feelings and the impact of music on them is studied in a multidisciplinary way.

- Four different approaches are used in the research: listener-orientation, music-analytical perspective, physiology (breathing, heart rate, etc.) and neural approach.

The researchers have drilled down into the connections between content of music and emotions. Attempts have been made to extract musical features, with the help of a computer, from the music listened (words are not investigated), and to store them in a form that can be presented graphically. The result, developed in the Centre of Excellence, is a feature extraction software for music.

- With it, for example anger, fear, joy and sorrow can be extracted from music.

Application areas of the research include technological applications (music browsing systems and automatic playlist generation) and the effects of music on wellbeing. A good example of the latter is in the care of a cerebral haemorrhage patients: in the trials, rehabilitation of patients with the help of listening to music has proved better than the standard therapy.

- Compared to books, music is much more efficient. But why? That is being investigated, Eerola tells us. He particularly brought out good results in the treatment of depression: music therapy has been found to be a very effective method of treatment.

- In an exam situation, depressed individuals can be distinguished from healthy ones by identifying feelings from the music. According to Professor Tuomas Eerola, music therapy also has a sustaining influence on cognitive abilities.

University of Jyväskylä's music research programme, in addition to participating in the SciFest lecture, also had their own workshop.



Professor Tuomas Eerola.

## Dog-doo on the map

Paikkaoppi (a new Internet based learning environment) became familiar to those who participated in the Cleanliness on the Map workshop teaching. Participants' task was to locate, among other things, dog dirt and debris from around Arena. In addition, the pH of melted snow was measured. The research tools included also the decibel meter and a camera.

- We also have a GPS at our disposal, so we can determine the location data of the findings. When we return from the outside to the Arena workshop we upload the results to a computer and place the findings among digital map material. When there are four groups in different parts of the terrain at the same time, we can examine the differences between areas, explained the workshop leader, Ilkka Sirikka.

Most likely, history of science was being made at the workshop: there has hardly been an investigation about what are the favourite places for an urban dweller to mess up or litter the environment.

In the workshop maintained by the biology and geography students, consideration was given to how to apply, in everyday life, the lessons learned at the workshop. The workshop theme, cleanliness of urban environment, touched the schoolchildren because the workshop was very popular.



*Trash was filmed and later the filming location was placed on the map.*

## Linseed

Hard belly? Chronic constipation? Don't worry, you should head to the pharmacy and buy linseed – that helps.

Did you know, by the way, that Finland's first rural pharmacy was opened in the "bread" parish of Liperi in the year of grace 1834 by the imperial consent of Nicholas I?

The Time Travel to Pharmacy workshop created by the Niinivaara Upper Secondary School provided information about old time pharmacy, its operations and products. Nothing but chemistry – the whole workshop: between the pharmacy staff and customers, and, of course, within medicines.

Chemistry information package was offered as a combination of fifteen minutes' mini drama, a pharmacy staged in the premises and an information point. It worked. With her students, Drama Teacher Kirsi Jaatinen had worked out a learning package, which apparently went well down with the school children; no adverse reactions were to be seen.

- It is nice that all are acting and dressed up for it. It was well acted. But was it the same pharmacy in question all the time, reflected a fifth-grader Heini Turunen from the Finnish-Russian School of Eastern Finland when considering the offer of the workshop.

In addition to information, veritable, classic food tidbits were also available: Pharmacist's salmiac, or Haganol salmiac. That, too, passed the muster.



*Pharmacist and his assistants and old-fashioned, "real" medicine bottles.*

## Soap Bubbles – with one's own formula

The International Year of Chemistry is celebrated, among other things, with a national soap-bubble competition. One of its regional qualifying rounds was held in connection with SciFest. The final will take place in December at Heureka in Vantaa as part of the Chemistry Night event.

- The competition is for doubles. The recipe for soap water is free. In the contest, the form, size and durability of soap bubbles will be evaluated, told Yuri Timonen, the person responsible for Arena's qualifying arrangements on behalf of the Eastern Finland Section of the Association of Finnish Chemical Societies.

A three-person jury, led by Researcher Elina Laurila, was meticulous in their work and tried to provide descriptions for the competition bubbles. A dozen teams participated in the competition.

The competition was won by Joensuu Lyseo's comprehensive school's 8 B class. It was represented by Iida Lehtinen and Heidi Malinen, who thus will continue to the finals in Vantaa. The jury was satisfied with the winners. - From the viewpoint of chemistry, durability and roundness of a big ball are properties that are hard to achieve, but the winners did manage large and round balls, Elina Laurila with her companions praised the winners.



*Iida Lehtinen blew the biggest bubbles.*

## Meringue ran out

The Edible Foam Party workshop seemed so delicious, that the meringue samples offered by the workshop ran out. It did not make any difference to the activity, however.

- Our goal is to inspire more young people for cooking and present chemical reactions that occur in food preparation. Molecular gastronomy describes the chemical side of cooking, explained Päivi Silvola, who is studying at the University of Eastern Finland's Kuopio campus to become a nutrition therapist. Foam Party was selected as the theme of the workshop, since formation of different

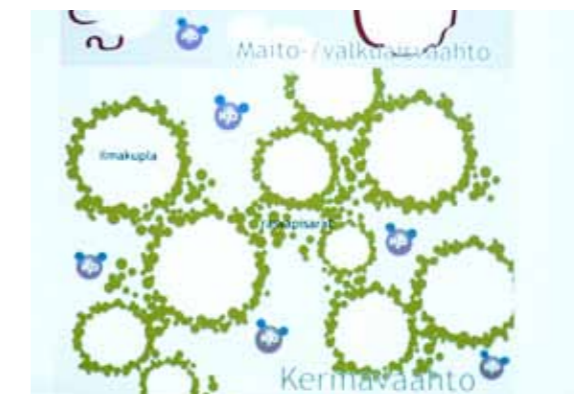
foams is easy to show in practice. Among the things produced at the workshop were milk cream and whipped cream. Sweet meringue served also as an example of how and at what stage the foam is formed.

- This is accumulation of information in a more interesting form, Silvola reasoned.

The workshop leaders study clinical nutrition science. Fortunately, the way the workshop looked like was far away from clinical – foam just bubbled and splattered.



*Päivi Silvola set up the Foam Party.*



*Texture of whipped cream.*

## LED lit up!

Circuit operation became thoroughly familiar to those students who participated in the Build Your Own LED Flashlight workshop arranged by the Finnish-Russian School of Eastern Finland. At the workshop, an electric torch was built out of a high-efficiency LED, cardboard, iron wire and a squirt of glue. And the best of all: the lamp also lit up.

Having selected SciFest as an optional subject, the workshop was run by the students of the Finnish-Russian School of Eastern Finland. According to Dan Sun, who had instructed the school children, the workshop customers easily internalized the guidelines and understood the structure of the lamp well. Karttula's Pihkainmäki School's fourth-grade students, Samuel Kuhanen, Toni Jäntti and Lauri Collan, toiled away, each with his own project. Each one's work paid off, and the LEDs started to flicker in the boys' hands.

- It would not have occurred to us to do something like this on our own, without guidance, the trio thought. The program of the Pihkainmäki School students included two pre-selected workshops and, thereafter, nonstop roaming around the workshops. The nicest thing with SciFest was that one could take the self-made lamp away.



*Samuel Kuhanen (left), Toni Jäntti and Lauri Collan built a LED lamp.*

## eTwinning takes Lieksa around the world

The schools of Surpeinvaara and Koli in Lieksa are seats of learning that are located on the "edge of the world". The physical distances to other parts of Finland and especially elsewhere in Europe are long. Fortunately, the schools have enthusiastic leaders, who have understood how to take advantage of the Internet and the latest technology in their schools: links with other European schools are a part of everyday study in Lieksa.

The Winnaajat Online Workshop showed how Surpeinvaara's students in practice take advantage of their connections with other parts of the world. There is a large interactive smartboard equipped with a touch screen in the class, and the display screen of the smartboard makes it easy to discuss, for example, with the students and the teacher of a Czech school.

- The working language is English. This activity is carried out within the framework of the eTwinning program supported by the EU. Support is provided also by the Finnish National Board of Education and the City of Lieksa, the rector of the Surpeinvaara School, Jukka Pöppönen, tells.

The idea behind is that it is easy to find partners in the web environment and to implement with them joint learning projects. In addition to partners, eTwinning offers tools also. -eTwinning is an inexpensive way to participate in international educational projects. This is part of global education and also of multiculturalism in education. At the same time, students' presentation skills will develop, Pöppönen explained.

Interaction on the Web naturally also encourages physical contacts. Provisions and support for it are available through the Comenius project, which has also been utilized at Lieksa schools.

People in Lieksa are among the most active "Winnaajat". In the current year, the schools of Surpeinvaara and Koli reached a position among the top seven eTwinning schools in Europe in the category of 12–15-year olds.

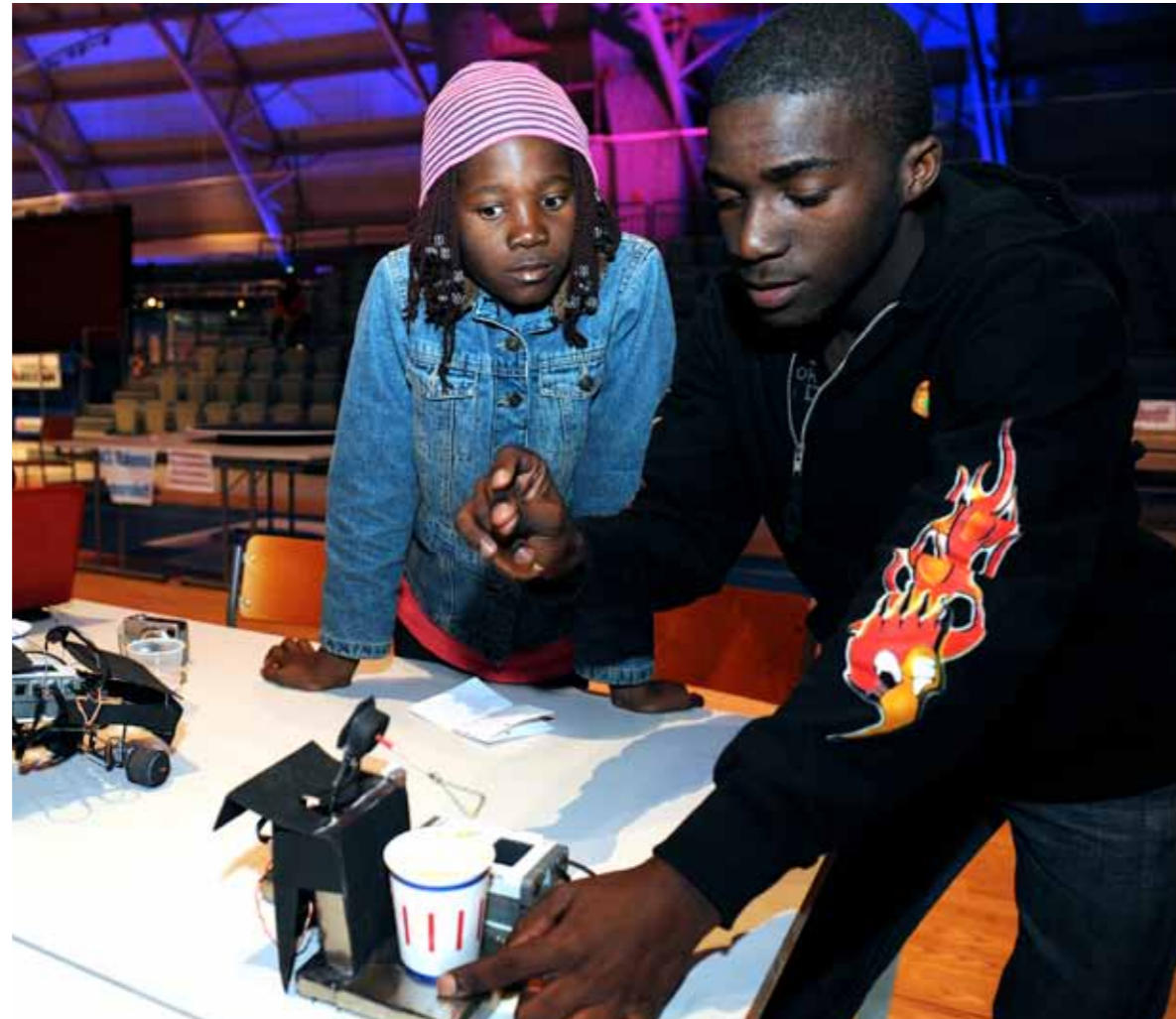
Great, Congratulations from SciFest!

## Greetings from Mozambique

In Mozambique, which is one of the world's poorest countries, Finland finances the Stifimo program. The program aims to develop children's science club activities in the country. The goal is to provide young people with an opportunity to learn how to build and program robots, among other things.

Stifimo (Science Technology Innovation Finland Mozambique) brought a small group of Mozambicans to SciFest to seek inspiration and to learn from the workshops. There were also school children with them. - It was really interesting, and a lot of science was involved. It is good that the instructors have the time to show what is done in each workshop, Eduardo Muhamad Ali reckoned. He himself is involved as the representative of the Ministry of Higher Education, Science and Technology, introducing science club activities in different parts of Mozambique. - Now we use Legos in these clubs, but once we have access to local supplies and materials, we will give up Legos. They are so expensive. Now we are forced to recycle the same Legos through different schools because we cannot afford to buy them for all of them. We also hope that the club activities would produce new innovations that would benefit us.

The Finnish leader of the Stifimo program in Mozambique is Professor Erkki Sutinen, the spiritual father of Joensuu SciFest. On the other hand, the idea of SciFest is from South Africa; thus the north-south axis functions as a smooth two-way street.



*Eduardo Muhamad Ali and a 12-year old Mozambican, Anacleta Nhangone, are demonstrating an automatic drink mixer made by themselves.*

## From Tartu to SciFest

Lecturer in Mathematics at the University of Tartu, Indrek Zolt, had brought three school children from Estonia to SciFest with him. The trio had been awarded the trip for their success in a national competition testing information processing skills. The ability of competitors to utilize computer, in editing and word processing among other things, had been measured. Therefore, it wasn't a programming competition, but ability to use software had been required. - When considering what to give as a prize to the competition winners, we heard of SciFest. The event being free on top of that, we decided to give a trip here as the prize. With the support of sponsors, the trip succeeded. The most important thing here is that the winners will gain experience in different sciences, Indrek Zolt said.

The winners of the competition are real IT virtuosos: the number of participating students in the first round of the contest was 4,000.

Of Arena's workshop offer, the Estonians were particularly interested in the world of microcontrollers and in robotics workshops. - It's great that here you can do it yourself and ask! A really good event - I myself have participated in the workshops, Zolt chuckled.



*Estonian visitors, Tonis Laasfeld (left), Ago Allikmaa, Indrek Zolt and Edwin Weber, solving math workshop tasks.*

## Chemistry for all

The theme of SciFest 2011's was chemistry. The Department of Chemistry of the University of Eastern Finland erected, in honour of the theme, a chemistry laboratory in Arena, where the willing individuals could test their skills as a chemist.

A chemist's white coat on, safety glasses on the nose, hands gloved and - well: a real chemist! At the workshop, super-balls and bath bombs, for example, were made of different ingredients.

This story will now unfold a carefully guarded bath bomb recipe. Once the ingredients of the recipe are mixed in a correct proportion and heated at the right temperature, an interesting chemical reaction, "the bomb", is shown.

The idea behind making a super-ball, on the other hand, was to visualize polymerization. In it, two ingredients when mixed together resulted in silicone plastics. By sculpturing it, a bouncy super ball was born. That's chemistry.

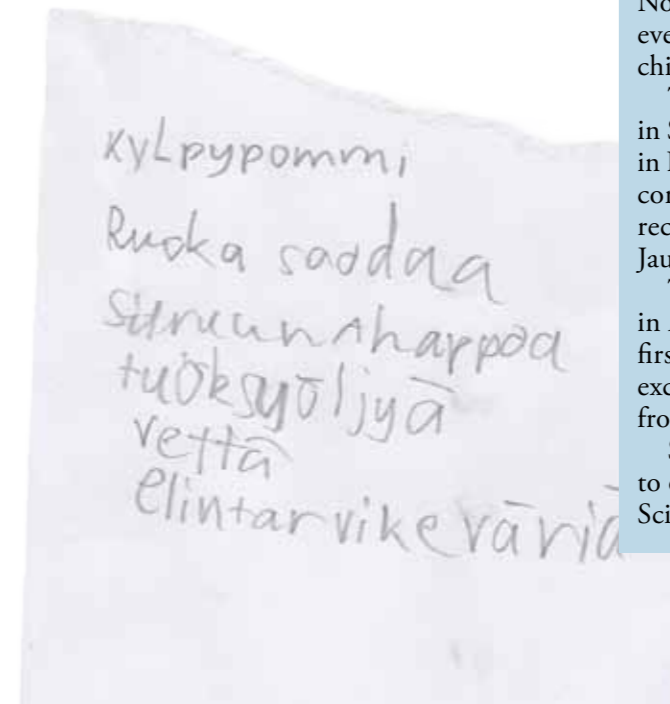
## We came from Savo

The SciFest festival gathers visitors mainly from North Karelia, but once information about the event becomes available students and school children come from other parts also.

The students of Pihkainmäki's school arrived in SciFest for the first time. The school is located in Karttula, in Kuopio, Finland. - I have personal connections with the organizers, and we have received information through them, Tuula Jauhainen, a school teacher, said.

Three grades from Pihkainmäki School arrived in Arena: the first, fourth and fifth grade. - The first impression is that once is not enough: exceedingly comfortable workshops to choose from.

Savonians' trip to Joensuu succeeded thanks to outside sponsors and parents' support. Great, SciFest would also like to thank them!

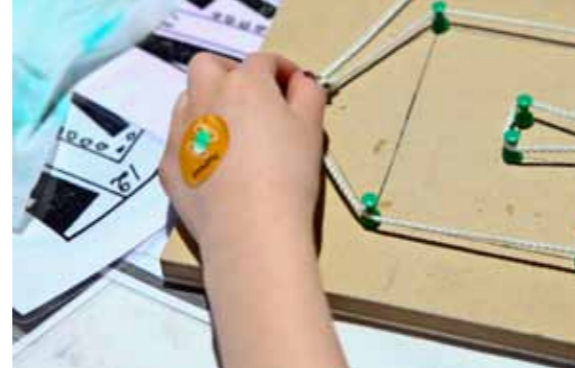


# Math is boring!

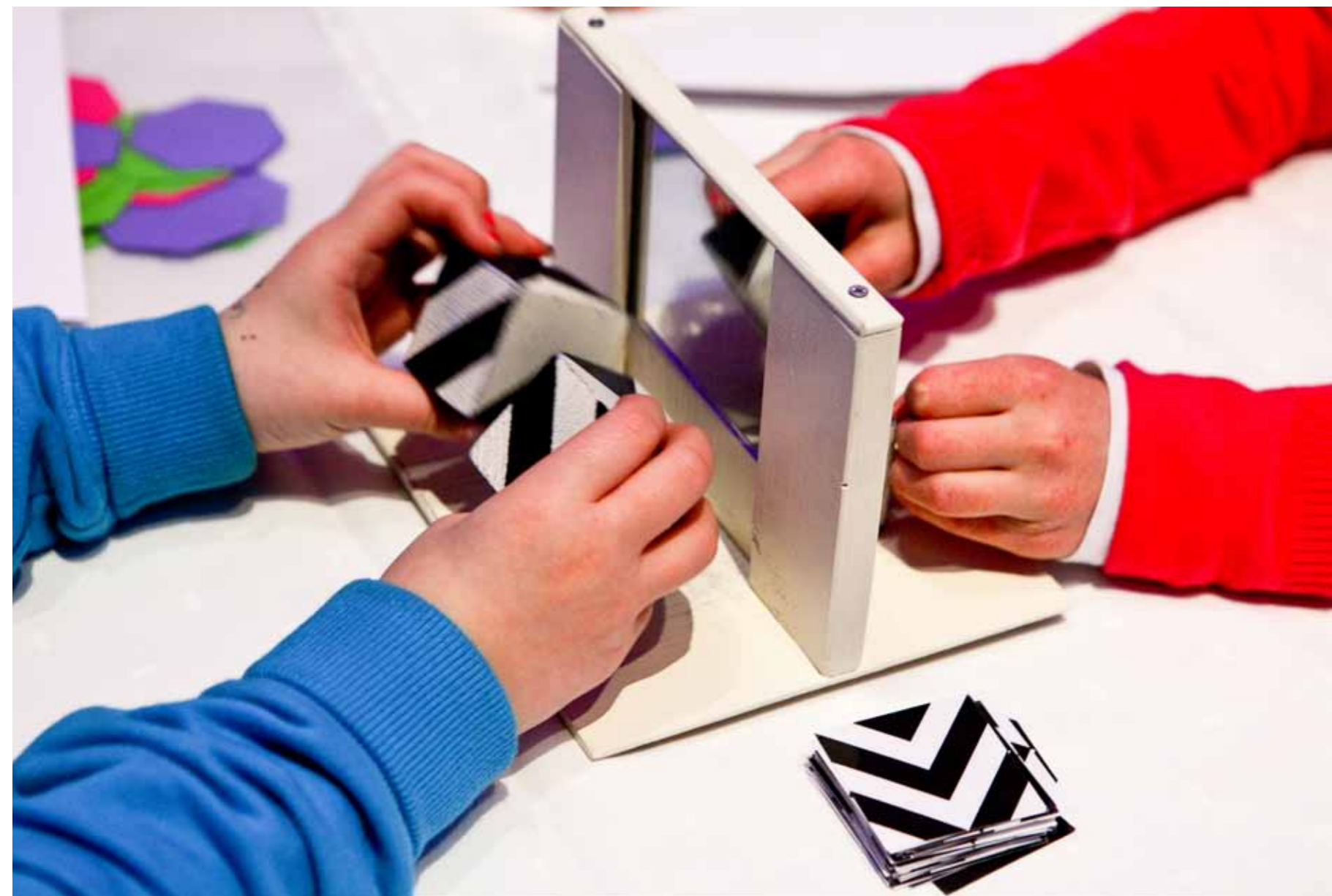
That's right, the title is nonsense. But there is some truth in that math can be boring if it is taught in a tedious manner. Boredom was nowhere to be seen at the SciFest math workshops when the possibilities and applications of mathematics were presented in adjoining workshops by the students of the Department of Physics and Mathematics of the University of Eastern Finland.

Polyhedrons, conic sections, networks and network theory as well as symmetry games and tiling were of great interest because they had been designed to be absorbing; they were challenging but solvable. Students at the workshop dealing with network theories were guided, among others, by Mika Koponen. - Educational ideas have been received from France, for example, and tasks have been developed by ourselves, too. Our goal is to tell you that math is more than mere calculations. And what enthusiasm has prevailed in this very department also! We aim to ensure that mathematics and mathematical ideas would result from the activities in these departments, Koponen said.

Lehmo School's teacher Jarkko Turunen followed with curiosity what his students were doing. - The aim is to make them see what everyday matters the things taught at school can be applied to. At school, they often ask about the need of the education of the kind offered...



*Cones, polyhedron, symmetry games and many other things became familiar at math workshops.*



*Vilma Lehtonen (in the middle) voted for Sinikka Wing in the Creepy-Crawly elections.*

## Who won the Creepy-Crawly Elections?

The result was not clear yet by the time of writing because the turnout was a record high and the recount of votes was still ongoing. In pre-election polls the favourites were Sinikka Wing, Veera Compound-Eye and Raimo Cad-Aver.

Sinikka Wing got a vote, at least from Vilma Lehtonen. Reasons for this were due to a kind of matter-of-fact policy: - It was the most plain by its looks, was the estimation of a Nurmes' Kirkkokatu primary school student.

Perhaps Sinikka Wing was just one of the plain Basic Insects, whose support was increasing in opinion polls. The playful Creepy-Crawly Elections 2011 workshop was crafted by Digitarium, the Digitisation Centre of the Finnish Museum of Natural History and the University of Eastern Finland. The aim was to inspire students to identify insects and to talk about Digitarium at the same time. The unit's tasks include digitisation of scientific samples in Finland. The freshly launched unit has a huge task ahead of it.

## SciFest got its own radio

One example of SciFest becoming more mature is that the event got its own radio channel – however, at this stage only for the duration of the festival.

The radio transmitted programs through ether from Wednesday to Saturday at a frequency of 98.7 megahertz and in the SciFest net-radio. The program was produced by the students of communication studies at the North Karelia University of Applied Sciences and, under their guidance, by school children who had enrolled to the radio workshop.

The department was really swinging, and programs were made of a wide range of issues. Enthusiasm was high for all to see.

The enthusiasts included students of Karsikko School's 5 A-class: Aino Pieviläinen, Ida Nevalainen, Sari Reijonen, Sanna Kähkönen and Enni Tuononen. - No way we would refuse – the teacher saying that we could get in, and we got in!

The "famous five" had figured out the topic of their program and were waiting for its completion for web radio. - Some help was received for editing ... well, here it comes! SOUNDS REALLY GOOD! the girls screamed when hearing their output on the radio. The girls' teacher, Heli Hjälml, pleased with her students' initiative, couldn't but agree. - A good shove to advance young people's activities, Hjälml chuckled.



*Nicolas Bakajika steered a group of Zambians at the SciFest festival.*

## Orphaned children's miracle

International guests at SciFest also included a group from Zambia. They represented a project funded by Finland; the project has trained nearly 300 orphaned children and more than 60 adult students to become experts and teachers of information technology. It is hoped that IT skills would continue spreading through them.

The ultimate aim of the project is establish, in the field of IT, a vocational school, which the Evangelical Lutheran Church of Zambia would look after.

Nicolas Bakajika, the project coordinator, who had arrived from Zambia's capital city Lusaka, told that the children to be educated are orphans or half orphans. - In a country where there are computers only in few schools, it seems like a miracle to get to this training. They too understand it and act accordingly. Having this training, they will have a direct connection with the world: Thanks to Internet, the USA and Europe are really close. In the future, it will be much easier for them to start studying, Bakajika pointed out.

Travel to Finland is not a mere diversion for Zambians, it is a useful study tour – a part of the miracle.



*Aino Pieviläinen (left), Ida Nevalainen, teacher Heli Hjälml, Sari Reijonen, Sanna Kähkönen and Enni Tuononen listen to the interview conducted by the students.*



*Zambian school children eagerly took advantage of what the Arena workshops had to offer.*



*The Minecraft workshop was full at all times.*

## The world out of nothing

At first glance, the Minecraft at School workshop does not seem very original: the room is full of laptops. But seeing that the laptops are in full use during the whole of SciFest, one is forced to drop into the workshop again. Also on Saturday, the workshop was full of young people glued to their laptop screens. So what does it mean? A computer game, of course!

Minecraft is a game where you are born in the middle of an empty world, which can then be built to your liking. It happens, for example, by processing and modifying a variety of materials. For example, wood is made to planks, and then to board and so on, explained one of the workshop leaders, Jannika Aalto.

Naturally, the purpose of the workshop wasn't to be a mere game room to entertain young people; in fact, players were made use of by asking them to provide feedback. - Testing - to find out what would be the best ways to teach with the help of games. The aim is that this game would allow us to teach the curriculum content, Aalto said.

All the workshop leaders were teacher-students in class, but the operation was run by Aalto and her male friend, Santeri Koivisto. Their goal is to take advantage of the Swedish Minecraft game in their own company and, with the help of it, offer new tools for teaching.

If the duo is able to carry the intensive atmosphere that prevails in the workshop over to schools and improve learning outcomes by means of their software, they will be contributing to SciFest history.

*Tom Mantilanabo was fully focused on the planning of the new world.*



*The pizza served in Topi's and Veeti's bar was guaranteed to be fresh.*

## Topi and the Veeti built a bar

Topi Turunen and Veeti Mutanen, accompanying the technology club of Varparanta school, were among the firsts on Saturday to come to SciFest. A workshop to their liking was found almost immediately: the two companions started building a bar using Legos as part of a package aimed at building an entire city.

The city would arise when the town sectors or buildings assembled separately by the groups were joined together.

Topi's and Veeti's bar was based entirely on the duo's own plans: bureaucracy and old-fashioned attitudes of the City Technical Board could not hamper the work. The bar was undoubtedly influenced by the ABC chain, but none of its cafes had a cat as a standard fixture, that's for sure! And no such fine rotating grill (or would it be micro) than the one at the boys' bar. - Designed completely by ourselves. This is quite entertaining, Topi Turunen whizzed amid his toiling. The duo's amusing bar was crowned by lights that really worked.

The Build a Joint City with Legos workshop was carried out by the Everyday Technologies for Specific Groups project and the Honkalampi Foundation. - Here we investigate the instrumentality of technology in children's work. We are looking for feedback, specifically from children and teachers. The study will be carried out by the special education researchers at the school of Educational Sciences and Psychology of the University of Eastern Finland, project planner Eila Nissinen told.

The workshop was one of the most popular ones at SciFest. - The instrument carried away everyone. It would be interesting to hear the debate the children had when planning the city and when the whole eventually was merged together from various pieces.

The workshop not only attracted children: the oldest participants were more than 20 years of age.



*Soccer is for children's city.*

Academy's Science Cafe:

## Toxins contaminate the indoor air

Professor Mirja Salkinoja-Salonen from the University of Helsinki speaking at the Academy of Finland's Science Cafe on Thursday night attracted a large audience to listen to her lecture. The topic of the SciFest lecture What is it in the indoor air of a mold house that poisons? is of current interest also in North Karelia.

Professor Salkinoja-Salonen's answer to the title of the presentation was clear: toxins produced by microbes play critical part as indoor air polluters.

Toxins cause health problems also for the food industry, but there the hazards have been brought under control better. Why haven't we been able to manage indoor air problems more effectively? - For two reasons, especially. First, indoor air quality legislation is non-existent, except for workplaces. So, when problems arise, usually only issues of building technology come under investigation and health risks are not addressed properly. Second, the wrong thing is being studied! The food industry started to investigate mycotoxins some twenty years ago, which should be done in air quality investigations as well, Mirja Salkinoja-Salonen emphasized.

According to Salkinoja-Salonen, the method of air quality study she recommends has been in use at the University of Helsinki already for about 20 years, but mycotoxin studies have not been accepted for official use. - There is no EU legislation regarding the matter, and even in Finland it has not been attended to. The issue, therefore, has been neglected, and there are many who suffer as a consequence! the indignant professor criticizes.

With the help of pig sperm, Salkinoja-Salonen and her research team examine the harmfulness of toxins produced by microbes. Microbes are added among healthy sperm. If they are toxic, sperm cells die or at least will be badly damaged. Thus toxins can be identified.

The researcher laid emphasis on that when renovating buildings which suffer from air quality problems one should always look for the microbial source - one should find the "beehive", i.e. the source of the problem in the building. No need to repeat any renovations then, as has often happened.

Academy of Finland's Centre of Excellence led by the professor presented the research method also in her own workshop at Arena.



*Professor Mirja Salkinoja-Salonen held a workshop and lectured in the Science Cafe.*

# Feelings



*Pibla Liimatta (left), Henna-Riina Koskinen and Netta Haavistola. Jaana Keränen. Juha Farin. Jan Vihonen. Reetta Lempinen*

## Jaana Keränen

Jaana Keränen had arrived in SciFest from Kontiolahti on Saturday with the youth of the Varparanta School's Technology Club. Technology Club is a leader project named Mediaviisas ("Media wise"), whose head is Keränen. - The school's parents' association supports the club. The school has currently so many ongoing projects that it is not the reason that we came here. So we just came. For me, this is the first time, but I have followed the evolution of the festival on its website, Jaana Keränen said.

According to the project leader, Saturday's absolute hits were the Lego Club and the workshop producing LED lamps. Both of these were workshops where the participants were able to try their hand at work. - SciFest is quite comprehensive, but one should perhaps get prepared in advance and find out about its offer, Keränen considered. Some workshops might have lacked leaders, she said.

Keränen's day was an easy one: Technology Club members did not hanker after leaders with their carryings-on at the workshops.

## Pihla, Netta, Henna-Riina

Pihla Liimatta, Henna-Riina Koskinen and Netta Haavistola, all three of them, had arrived in Arena together. - Last year we came here with school, but now we did not. Our friends paid a visit, to tell the truth, and we heard of the workshops from them. That is why we came now on Saturday, the schoolmates explained.

The trio had already managed to tour around various departments. A favourite was found, too: - Building smartbots was nice. They were fun to make!

The girls representing the schools of Joensuu Noljaikka and Pataluoto sent a clear message to their teachers: Visiting SciFest with the class during a school day is a must.

## Juha Farin

Juha Farin from Tohmajärvi arrived in SciFest with his four children and a wife. He had received some information about the event through the stories

in the Karjalainen newspaper. In addition, he had visited the festival's website. - This is my first time, and it looks like a really good event. As soon as we came here, the children rushed in to make torches. We were given a chance to solve a crime mystery also. I myself can learn here, Farin chuckled.

Farin believes that the "stuff" available at the workshops could also be used in schools.

According to Farin, no school classes from Tohmajärvi came to SciFest, for some reason. He belongs to the parental council of Kemie School, and the follow-up measures have already been figured out to activate the schools:

- I thought I will make some very loud noises when we meet again.

## Jan Vihonen

Jan Vihtonen, who has worked with the SciFest section of the Ancient Greek Written Sources at the Center of Excellence of the University of Helsinki, was a satisfied man on Saturday. Four days had passed off without major problems, and there had



*Tiina Tarnanen, University Pastor*

For the second time, Joensuu Evangelical Lutheran Parish and its university work pitched an oasis of silence called Schapel at SciFest. The space decorated with genuine green plants attracts one for a respite. - This is a resting place and a place to quieten down. The identity of this is Lutheran, but it is open to all. People have come here to rest, chat, and to make ample use of prayer stones, University Pastor Tiina Tarnanen, who was on duty, told.

Tarnanen thinks that the chapel integrates well to SciFest, one of the reasons being that all innovations and inventions originate from the innermost part of the human being, from rest, that is.

According to the pastor, in particular the girls have done a lot of fingerprints with the colours available. - I have reminded each of them that he or she is unique and as such valuable - for insecure young people that is very important to hear. And, of course, in the eyes of God everyone is important and valuable.

The section also provided an opportunity to create poems or aphorisms with words printed in plastic. On Friday, some SciFest visitor had put together a sentence which Tarnanen thought would be perfect for the event itself as well as more broadly reflect the spirit of modern life: a man is not a machine.

been enough visitors, perhaps in excess even. - At times the crowd was too big to say the least; we can in principle have only 10 people at each stand. Most of the visitors have been really interested, but, among them of course, there are those who are less interested in.

For the fourth time, Vihtonen's unit under the leadership of Professor Jaakko Frösén was at SciFest. - The story drawing together the four stands in our section has developed all the time during these past four years. This makes a really nice change for the researcher. Vihonen described his own task in the workshop as follows: - Physical accomplishments which do not require mental work. These include earthworks (among other things, the department has 1.5 cubic meters of sand where the workshop participants can sieve out discoveries of various kinds. Editor's note).

## Finnish Association of Teachers of Mathematics, Physics, Chemistry and Informatics competition results:

### Comprehensive school mathematics

1. Atak Beste (31p), Pielisjoki School
2. 2. Simo Kettunen (29p), Pielisjoki School
2. 2. Riku Laakkonen (29p), Pielisjoki School
2. 2. Kiira Tiensuu (29p), Pielisjoki School
2. 2. Rami Sudan (29p), Pielisjoki School

### Upper secondary school mathematics Basic Series

1. Heidi Sairanen (35p), Joensuun Normaalikoulu: Upper secondary school
2. 2. Antri Maaranen (34p), Joensuun Normaalikoulu: Upper secondary school
3. 3. Janne Karttunen (27p), Joensuu Co-Educational school: Upper secondary

### Open Series

1. Johan Pääkkönen (18p), Joensuun Normaalikoulu: Upper secondary school
2. 2. Juha Pääkkönen (11p), Joensuun Lyseo: Upper Secondary School

No rewards were given in the intermediate series.

### Physics, Basic Series

1. Heidi Sairanen, Joensuun Normaalikoulu: Upper secondary school
2. Tuomas Kynkäänniemi, Joensuun Normaalikoulu: Upper secondary school
3. Olli Tukiainen, Polvijärvi Lukio: Upper secondary

## Reetta Lempinen

Kontiolahti Technology Club's Build Sumo Robot workshop was quite overwhelmed for full four SciFest days. Robots and their construction interested boys and girls. The robots were built using the NXT Lego series and programmed to fight for victory against another robot. - The exhibits include voice controlled robots, which also interested girls. We have had good facilities, and you have worked quite well, Lempinen kept talking slowly.

In his opinion, Saturday's open day is the best time of the festival: - Then it is the time for the most eager, in particular, to arrive; it is really nice to work with them.

The workshop had good experiences with a solution it had arrived at in advance: robot construction according to a short pattern and the same with a more demanding work method were being offered. That successful practice will be continued also in the 2012 SciFest festival.

Robots rule!

### Physics, open series

1. Johan Pääkkönen, Joensuu Normaalikoulu: Upper secondary school
2. Heikki Karjalainen, Nurmes Lukio: Upper secondary

### Chemistry, basic series

1. Joonas Nissinen, Joensuu Co-Educational school: Upper secondary
2. Anna Kaisa Piironen, Polvijärvi Lukio: Upper secondary

### Chemistry, Open Series

1. Johan Pääkkönen, Joensuu Normaalikoulu: Upper secondary school
2. Jaakko Huovinen, Joensuu Lyseo: Upper secondary

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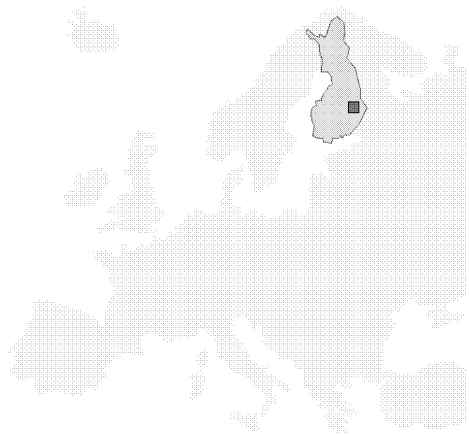
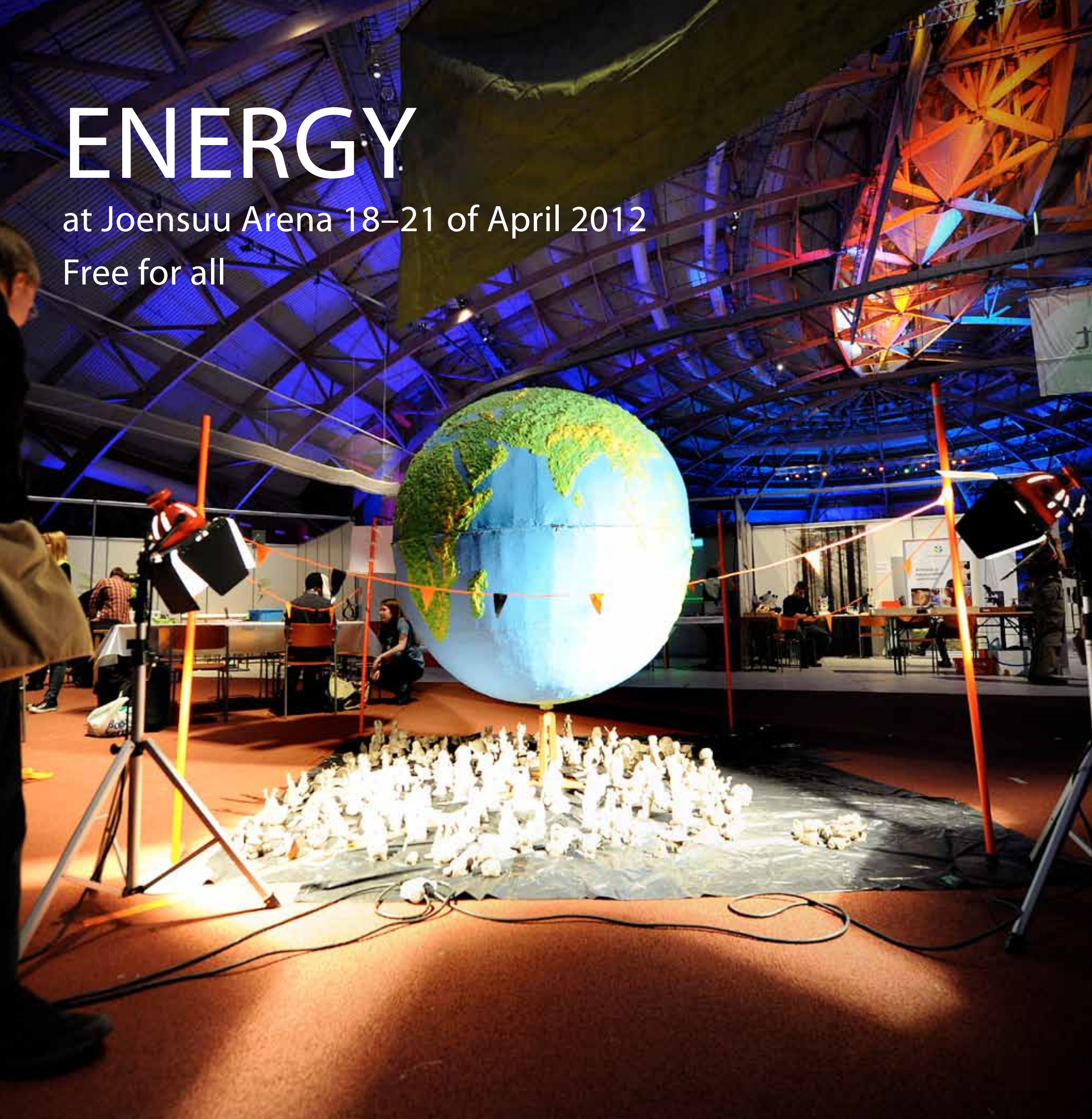
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