

The Gender Issue

By Caroline Roughneen, Trinity College Dublin, Ireland

Many people are happy to talk about sex - no, not that type of sex - but about the sex of people, whether about boys, girls, men or women. It often preoccupies many of our conversations without us even knowing it. On hearing somebody is pregnant; one of the first questions we ask is 'is it a boy or a girl?'. Because of their sex, girls are dressed in pink, boys are dressed in blue, girls play with dolls and do ballet, and boys play with soldiers or guns and play football.

Gender is important in childhood because it is a social symbol that guides us in how to behave and how to interact with others. And later, in adulthood, men have boys' nights out and boys' toys while women have girls' nights out and pampering beauty sessions. We are usually comfortable with the above



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scenarios because they fit our gender stereotypes. Being a man or a woman influences our experiences, our behaviours and how others relate to us. A person's gender, from childhood to adulthood, plays a central role in every aspect of their life.

Let's talk about sex... and science

Many people are happy to talk about science; the excitement of research, innovation and discovery, and science as a phenomenon that affects us all - from the moment we wake up to the moment we fall asleep. Why then, when sex and science are put together, so many of us think, "that has nothing to do with me"? European women account for 36 per cent of PhD graduates but only 11 per cent of full professors in science and engineering, (European Commission, She Figures 2009). Women remain strikingly under-represented in the science and engineering fields in general. Men and women scientists engage in science for the same reasons - to develop new ideas and contribute meaningfully to society. If men's and women's passion for science is the same, then why does it appear that they cannot contribute to science in the same way? Whether we like it or not, or want to admit it or not, being a man or being a

woman has impact on the science world, including the work that is carried out by science museums. Men's and women's experiences in the science world differ. Studies show that being a man in science means being more likely to publish research articles, being promoted more often, having a greater network of scientists with whom to collaborate, getting paid more, winning more awards and receiving greater recognition for research.

Studies show that being a woman in science means publishing less but having greater impact, teaching more students and doing more administrative work, being less visible and engaging less with the media about her research. If she has a family, she is more likely to do a double shift of work at home by taking on the majority of domestic responsibilities.

Do science museums approach the issue of sex and science when designing their programmes? Do you see the relevance? Do science museums consider the gender balance of their staff? Are there significantly more men than women in decision-making roles? How do you approach the issue of sex and science in programme design when sex and science within the organisation is not addressed? Isn't it time we realised that sex and science is relevant to each and every one of us?

In this issue of the Ecsite Quarterly Newsletter, we explore the issue of gender in science communication institutions, highlighting the importance of making sex and science relevant to all those working in science centres and museums. Read on to find out how Experimentarium in San Francisco, California, successfully integrated research on gender equity in science, technology, engineering and math (STEM), into a geometry exhibition. Hear from two science centre directors who are both tackling the gender issue in their institutions and follow the evolution of the Towards Women in Science and Technology (TWIST) as it challenges visitors across Europe to reconsider their gender biases about women in science. Enjoy these features, and more, in the pages of The Gender Issue.

Caroline Roughneen is the Director of the Centre for Women in Science & Engineering Research, Trinity College Dublin, and is the Guest Editor of this issue of the Ecsite Quarterly Newsletter.

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Next issue:
New technologies in the world of science centres and museums

We asked two Directors how the gender issue plays out in their science centres. Their answers may surprise you.

Gender Q & A with directors

Asger Høeg, Director, Experimentarium, Hellerup, Denmark



How is your science centre being more proactive on gender issues? Are you organizing any specific gender initiatives (both as part, or not, of the TWIST project)?

Most of our exhibits have been designed by men and not women and therefore the forms are not feminine, but masculine. I have learned myself after 24 years as a director that there is a really a different way to communicate science to both genders. Our future exhibitions and programmes will have a more feminine approach.

What makes an exhibit design more feminine?

It's a question about colours and form and the length of the text and how you compose the text. It's about taking into consideration much more; instead of telling science to the people, it's more feminine to include the visitors in a more interactive way and not tell how things are. The feminine way is, "come here and together let's explore..." It's a more social and inclusive approach. In the future, we will continue to ask ourselves if our approach is particularly masculine or feminine when creating our content.

I've been visiting science centres in Nordic countries and in Europe and now I can actually see if the designer and developer of exhibits was a man or a woman. There are exhibits and exhibitions in Europe where you can quickly identify if it is a man's or a woman's work. I am more sensitive to this because of being involved in the TWIST project.

In your opinion, what should science centres do to contribute to promoting women in science across culture?

It's very important that we expose young people to role models. We have 70 young students who are explainers here - a lot of them are young women from Copenhagen University. They are very keen about communicating science.

Eva Jonsson, Deputy Director, Head of Education, Teknikens Hus, Lulea, Sweden



Have you ever personally noted - or heard comments about - any involuntary gender imbalance or misunderstanding in your science centre?

During this fall we have Twisting Fridays where researchers come to Teknikens Hus and display their research. We invite schools and visitors can meet the researchers and take part in what they are doing. We also organize and invite young people in debates where the purpose is to raise their awareness about their own gender biases. They have to start by drawing a researcher or scientist and then we talk about men and women and we also engage them in an anonymous voting system to respond to gender-related questions.

Then we have conversations about whether they think it's important that both men and women contribute to research. And they believe yes, almost 100 per cent. Then we ask them about the pictures they drew: was it an image of a man or a woman? The majority draw men as scientists. We hope that by doing this they get to see their own biases about gender and science.

We also do a lot of in-service training for teachers. We have teacher networks throughout the region and we have the gender issue as an overall perspective in these networks. So when we give training, we always address this question alongside developing competence in teaching science and technology.

We have had some reactions about activities during gender day on the 8 March 2011. We had only female scientists there. One of the boys asked, "why are there only females sitting on the panel?" That's a mark of gender imbalance, but the other way around. We believe there wouldn't have been a reaction if there were only men on the panel. Another example: we have a lot of female teachers working here at Teknikens Hus, and more calling to ask if there is a job they can do here and I have had several male teachers ask, "do you have to be a female to work as an educator at Teknikens Hus?"

Have you developed any specific strategies and/or internal policies for the future to ensure a gender balance in your science centre? Do you think your staff is gender balanced at all levels of authority?

The gender issue is part of our core mission and from the beginning it has always been partly about the external view - what our audience needs - so we have developed gender checklists for when we develop programmes. We always bring it with us to think about how we deal with gender in a specific programme. We also have a gender checklist for developing exhibitions. Regarding the internal perspective, we also strive for balance: In our management team, for example, we are gender balanced.

If we look at the educators, we have only one man. So we need more men. The next time we have the opportunity to hire an educator, it should be a man. As for technicians, we need more females, but we have had big troubles finding them. So we are trying to balance gender in different staff categories.

We also strive for a balanced salary system. I think it was five years ago that we took on a system to set the salary for each staff category which ensured that men and women were paid equally for the same job. We can compare everyone working at Teknikens Hus - staff can see a graph of the gender balance in salaries - it's a fantastic tool to get rid of unfair salaries linked with gender and other issues.

In your opinion, what should science centres do to contribute to promoting women in science across cultures?

All science centres work with scientists in different ways, but when we are pinpointing women, the most important thing is not to make it a question for women only. When we do activities that involve women in science, we must include both men and women in that activity. If we gather only women or girls to talk about gender in science, we will miss something very important. We are both in the world creating things: we must take boys and men into account as well.



Image: Kanate, freedigitalphotos.net

Do the TWIST: Science centres and museums confront gender imbalance

By Sheena Laursen, Experimentarium, Copenhagen, Denmark

Science centres and museums have a very important role in promoting broad public engagement - especially schools and families - with science and technology. More and more science centres and museums strive to participate in social issues and play a social role. This is the case with regard to the gender issue. Girls are underrepresented in science and technology education and careers and women scientists do not hold as many leading positions as they statistically should. A recent research study from Denmark from the Danish Research Centre on Education and Advanced Media Materials (DREAM) shows that more boys visit science centres than girls - look around your science centres and check. Taking into consideration gender mainstreaming in your exhibitions and activities might actually widen your base of visitors and contribute to establishing new partnerships at different levels.

Science centres and museums are able to spearhead examples of gender mainstreaming in science education, innovation and scientific institutions which could prove invaluable to Europe and its future in science and innovation. The Towards Women in Science and Technology (TWIST) project is raising awareness about the roles and representations of women in science through programmes and activities in science centres and museums. TWIST is financed by the European Commission's 7th Framework Programme and focuses on the stereotypes and biases on social roles of men and women and their career paths. The main objective of the project is to develop innovative activities and exhibitions in science centres targeting students, teachers and parents in an effort to inspire on-going discussion on issues of gender and science. The project has 11 European partners and is coordinated by Experimentarium, Denmark.

TWIST activities involve interactive dialogue, teacher training, scientist speed-dating as well as exhibitions in several European science centres, and much more. The main emphasis of these activities is on helping girls view themselves as scientists of tomorrow by exposing them to valuable role models and interactive activities. Collaboration with schools to develop new methods of approaching gender issues is one way the project's efforts will be sustained long after TWIST ends.



Scientists of tomorrow at the TWIST exhibition, Experimentarium, Copenhagen, Denmark

TWIST exhibition module and role models' database

A core part of the project is the TWIST exhibition comprising a database of 42 female scientist role models, and a virtual puppet, which challenges people's gender biases. Find out more about the TWIST exhibition in the info box, "Exhibiting gender".

Gender Day

A new way of focusing on the gender theme in each partner country has been established through TWIST's Gender Day which coincides with International Women's Day. The focus here is on celebrating the role of women in science and bringing female scientists into the science centres and museums to communicate with visitors. One female nanotechnology researcher

enjoyed meeting the visitors so much that she stayed on-site for an entire day. "It is a wonderful way for me to show my research to people and to meet adults and families alike," she said. Many visitors did not notice that only female scientists were showcased that day, however they did learn about their research and remarked that scientists are really 'normal people'. This is also what TWIST is about - changing people's stereotypical ideas of what constitute a scientist.

An example of an activity from Gender Day is a debate that was held among high school students with the provocative topic, "Can women manage by themselves or do they need a helping hand?"

Some of the science centres involved in the first Gender Day have also developed specific exhibits tailored to addressing the topic, as was the case at Bloomfield Science Museum Jerusalem in Israel (see "What's your opinion?" girls and boys weigh in on stereotypes).

The Nordic Women in Physics association has already chosen to adapt the Gender Day idea in the future and focus on highlighting outcomes from female research projects.

Teacher Training

An important aspect of the project is collaboration with schools to develop new methods of approaching gender issues. The consortium is drawing on research and experience from the project activities and

EXHIBITING GENDER

By Michaela Riccio, Città della Scienza, Naples, Italy

How can we help girls imagine themselves as scientists of tomorrow? The TWIST exhibition addresses this challenging question through a permanent exhibit focusing on gender issues. The exhibition suitcase houses some of the aides young people need: interpretative tools to face stereotypes, in the form of Twisty the virtual puppet, and awareness tools which offer positive role models in a multilingual database of 42 European women scientists from seven different countries.

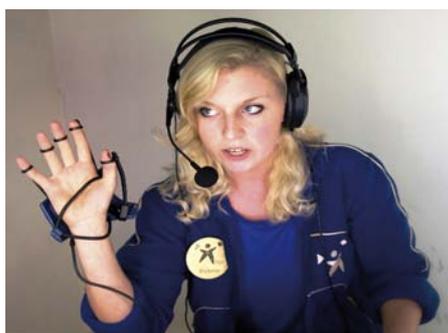
The TWIST exhibition is already on show at these participating institutions: Experimentarium, Denmark, Science Gallery, Ireland, Bloomfield Science Museum Jerusalem, Israel, Fondazione IDIS-Città della Scienza, Italy, Science Centre NEMO, the Netherlands, Ustanova Hiša eksperimentov, Slovenia and Teknikens Hus, Sweden.

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The TWIST exhibition is a free standing element on wheels: closed dimensions: W 156 cm x D 140 cm x H 205 cm and can be delivered with all elements ready to be exhibited. The exhibition is available in English or in your own country's language.



The TWIST exhibit suitcase



An explainer operates the Twisty puppet out of view from visitors



The behind-the-scenes technology of the Twisty virtual puppet

developing the TWIST Guidelines for Teachers to help plan gender sensitive lessons in science, technology, engineering and maths (STEM) subjects. The TWIST Guidelines for Teachers aims to:

1. Empower teachers' own gender biased attitudes toward science and technology
 2. Challenge students' stereotypes
 3. Provide tips and tools on how to address gender diversity in the classroom
- The TWIST Guidelines for Teachers will be published in spring 2012.

TWIST Guidelines

In order to create a knowledge base for developing activities, the TWIST project conducted a survey on gender, science and society through an extensive questionnaire involving 74 European and non-European science centres and museums. The survey gave an overview of gender-related commitments in science centres and museums and identified best practices on how to address female audiences.

The survey resulted in a set of guidelines targeting professionals working in science centres, museums and other science outreach organisations interested in gender mainstreaming when developing exhibitions and other activities. A first concrete step toward sustaining this effort is to incorporate long-term gender action plans in the overall planning process of science centres and museums. The plan should aim at promoting realistic and progressive objectives, securing economic and human resources and finding a balance between programmes specifically addressing girls and women and programmes addressing both genders. Sustainability is also greatly increased by incorporating gender commitment into the core mission of institutions. TWIST Guidelines for science centres and museums are available for download on the project website www.the-twist-project.eu/en/guide/exhibition/

Girls' Day

Girls' Day is one of the outcomes that evolved from the TWIST project in Denmark. It represents collaboration between the Danish Ministry of Education and the Ministry of Equal Rights, the Technical University of Denmark, Experimentarium and the Danish Society of Engineers. The objective is to motivate girls to choose scientific and technical education and career paths by exposing them to the exciting opportunities and challenges these areas can bring. Eighth grade female students (ages 13-14) were invited to participate for a day at Experimentarium where 20 scientific and technological companies offered an internship experience. "MAN Diesel & Turbo," one of the companies involved, stated, "we have a target of reaching 30 per cent women employees so of course we support such an initiative".

Girls and science at Cap Sciences

Cap Sciences, a science centre in Bordeaux, France, is not a partner of the TWIST project, but has been involved in promoting science and technology for girls for eight years, as explained by Nathalie Caplet, the centre's manager of Scientific and Cultural Resources. The Aquitaine region's Delegation for Women's Rights and Equality asked Cap Sciences to find professional mentors for the 25 regional winners of the girls' science and technology vocation award. These girls, entering higher education courses where girls are scarce, are full of passion and would be persuasive role models for others who hesitate to choose technical or scientific careers. Identifying mentors is also a way of raising awareness within industry on the lack of girls in science and technology, and of highlighting female professionals who have made bold career choices. This scheme is still going strong, but Cap Sciences has developed many other activities with the same agenda. A travelling workshop involves teenagers in a role-play board meeting at a fictitious company that manufactures office chairs. Such an activity offers an opportunity to reveal the wide range of jobs involving science and technology. The board receives CVs of men and women, and looks to the teenagers to recruit. The students' biases are challenged through very concrete examples. The gender issue has now diffused across all of Cap Sciences' activities. The future exhibition on maths, for example, will include an in-depth look at the relationship between girls and maths.

Looking forward

We are in the very beginning of this field of raising awareness of the whole gender issue, be it with relation to girls, boys, men and women. The partners of the TWIST project are learning, gaining inspiration and finding out new ways of attracting visitors to our institutions and to participate in the discussion on gender. And perhaps this is the most important aspect of the work in the gender area; it really is about creating activities and exhibitions that speak to all our visitors which are, of course, comprised of girls, boys, men and women.



Visitors interact with the Twisty virtual puppet at the TWIST exhibit opening, Experimentarium, Copenhagen, Denmark

WHAT'S YOUR OPINION? GIRLS AND BOYS WEIGH IN ON STEREOTYPES

During the International Women's Day event at Bloomfield Science Museum Jerusalem on 8 March 2011, secondary school students were invited to respond to provocative stereotypical statements about women in science at a ballot box called "What's Your Opinion?":

- "Girls are emotional rather than rational, which makes them unsuited for science."
- "To succeed as a scientist, you've got to forget about raising a family."
- "Boys are better than girls in science and technology."

We found that there are still prejudices and stereotypes among teenagers about women and the situation among boys is worse than among girls. These findings emphasize the importance of the genders as a target audience.

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Toward Equity: One team's efforts to engage females in a geometry exhibition

By Toni Dancu, Exploratorium, San Francisco, California, United States

Developing exhibits for gender equity, especially ones that focus on topics not immediately attractive to the majority of females (e.g., engineering and math), can be a difficult challenge (Diamond, 1994; Greenfield, 1995; Kremer & Mullins, 1992; TWIST, 2011). The Exploratorium in California, recently developed a travelling exhibition focused on creating gender equitable geometry exhibits, *Geometry Playground*. Below I tell the story of how the *Geometry Playground* team successfully integrated research on gender equity in science, technology, engineering and math (STEM), as well as museum-based best practices, into the development of a geometry exhibition. The goal to create exhibits that strongly appealed to both genders began as part of the original National Science Foundation grant proposal. The Co-Primary Investigators, Tom Rockwell and Josh Gutwill, knew about gender inequities in science, technology, engineering and mathematics (STEM) topics and specifically identified females as an underrepresented audience that the project would make a concerted effort to include. This goal was supported and championed by the Project Director, Josh Gutwill, who is interested in gender equity and had attended diversity workshops to better understand how he could contribute to achieving gender equity. The Project Director's strong commitment to informing the team of gender inequality and working toward equitable exhibits helped the group develop interest in gender equity and maintain momentum toward that end. Furthermore, his devotion of time and resources to the exhibit is development phase made it possible for team members to spend sufficient time and energy working to engage females.

Grounding in the literature

The Project Director allotted a portion of my time on the project (as a research associate) to identifying ways to engage females in STEM based on literature from multiple fields. We supplemented the literature review with applied examples: follow-up interviews with museum professionals, specific designs or approaches other

museums have used to engage females, as well as how they incorporated suggestions found in the literature.

The literature review revealed several suggestions for engaging females that fell into three broad categories:

1. Design for collaboration. Suggestions included:

- Create multi-user and multi-sided exhibits
- Display two parts of the activity simultaneously.

2. Provide context and make connections. Suggestions included:

- Reference practical applications, especially those that address social concerns
- Include a storyline or opportunity for narrative.

3. Use balanced representation of males and females. Suggestions included:

- Incorporate images and examples that include male and female interests
- Involve males and females on the design team.

The complete review, along with a myriad citations (and additional related literature reviews), can be found here: www.exploratorium.edu/partner/pdf/TD_Diss_FNL.pdf.

Team effort

I presented literature review findings to the *Geometry Playground* team on a few different occasions, allowing plenty of time for fruitful team discussions. During these meetings, the Project Director reiterated the importance of gender equity generally and to the project, and established ground rules for discussing such a sensitive topic (e.g., trying to speak from one's own experience, avoiding generalities such as 'always' and 'never', and avoiding gender-themed jokes). I began these meetings by acknowledging that there is a lot of overlap between males and females (not all suggestions will apply to all females and many will

also apply to males) and that gender is more accurately viewed on a continuum (Deaux, 1985; Kimbal, 2007). I presented each of the findings in a descriptive manner, providing sufficient evidence and plenty of examples. I also compiled the suggestions and examples into a single-page table that the team could easily reference throughout the project. These conversations were intense, open, and productive.

Integrating literature

The knowledge gained through the literature review and those team meetings became part of the team's applied process by inspiring exhibit ideas, informing aspects of exhibits, and influencing examples and images provided in the labels. A few instances of this integration are described below.

Geometry in Motion is an exhibit that encourages visitors to build their own mechanical linkages by connecting rods with pivots to transform one kind of motion into another (e.g., back-and-forth into circular). Initial observations indicated that the exhibit was more engaging for males than females. A small team worked through each of the literature review suggestions and identified a variety of female-friendly changes that could be applied to the exhibit. For example, it was made more collaborative by transforming the stations into areas accessible by multiple people at once. Another way it was made more collaborative was by placing the two stations side-by-side and at the same level, making it possible for two or more users to build across the two stations. Further, including opportunities for the visitor to develop a narrative gave the exhibit meaningful context; the development team incorporated familiar objects that could be attached with pivots (in addition to rods), such as hands that could be made to wave, or a hammer that could be made to hit a bell. *The Mirrors Flipbook* exhibit invites visitors to flip through several mathematically stretched and curved images that reflect as perfect images in



Close-up view of the exhibit *Geometry in Motion*



How to connect the parts and create motion at *Geometry in Motion*

the accompanying cylindrical mirror. The images were specifically chosen to provide balanced representation of typically male and typically female interests, as well as gender neutral images. For example, the flipbook included a racecar and a kitten, as well as a sundae and a soccer ball.



Mirrors Flipbook soccer image

Helping the team consider gender during the development process was a great success. But we also wanted to know whether all of this focused effort led to a more meaningful experience for our female visitors.

Evidence of success

Three separate studies suggest that we were able to create exhibits that engaged females.

1. *Geometry in Motion* was part of a quasi-experimental research study. Girls' engagement and social interactions at the original version of the exhibit were compared to a female-friendly version that incorporated many of the suggestions for engaging females (some of which are detailed above). Over 400 participants, aged 8-11, were randomly selected from video data collected on the museum floor. Results were positive; for example, girls spent significantly more time at the female-friendly version of the exhibit (Dancu, 2010). Further, no negative responses were detected among boys.
2. The *Geometry Playground* project also included a large research study, unrelated to gender. Fortunately, we were able to analyze those data looking at participants' gender. For this quasi-experimental study, a randomly

selected sample of 120 adults and children aged 8-12 were videotaped while using, and interviewed after using, three *Geometry Playground* exhibits from a rotating set of six. For both adults and children, we were unable to detect gender-related differences: there were no significant differences in self-reported enjoyment at the exhibits, nor were there significant differences in how much time they spent at the exhibits. Analyses continue for this study and additional gender-related results may emerge.

3. The summative evaluation of the entire *Geometry Playground* exhibition employed naturalistic inquiry to understand how visitors use the exhibits and whether the larger grant goals were attained. While gender was not a primary focus of the evaluation, the study did look for gender issues and found that the exhibition appeared to provide equally meaningful experiences for males and females (Selinda Research Associates, 2011). The *Geometry Playground* exhibition is currently traveling within the United States.

Gender equity in STEM education has long been an international goal (National Research Council, 2009; National Science Board, 2008; TWIST, 2011). Museums can help spark interest and passion about STEM topics and provide visitors practice relevant skills and expose them to content (Falk & Deirking, 2000; Hamilton, et al., 1995; Salmi, 2001, 2002), however, some evidence suggests that there are gender inequities in science museums as well (Crowley, 2000; Diamond, 1994; Milgram, 2005; National Science Foundation, 2003; Taylor, 2005). This is one example of how museums can deliberately engage females with their offerings, while maintaining positive experiences for males. The Exploratorium research team is seeking to conduct further inquiries to better understand gender-equitable exhibit design.

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Women in science for social transformation and equitable development

By Lidia Brito, Director of Science Policy and Capacity Building, UNESCO

A crucial issue that has been debated extensively is the gender dimension of science, technology and innovation. Nevertheless, women and girls around the world are still excluded from participating in science and technology, mainly due to poverty, lack of quality education, and due, also, to the social, cultural, political, and economic environments in which they live.

We know that there are a wide range of reasons why women are underrepresented in research and development. One major factor in many countries is that they are less likely than men to obtain tertiary level qualifications in science, engineering and technology fields required for a career in scientific research. Other factors related to working conditions and career development are also important and include work-life balance, gendered patterns and approaches to productivity, performance measurement, retention and promotion criteria and research grant awards. Lack of good work-life balance policies may limit female participation as women frequently perform paid work along with heavy family responsibilities. Once employed, rigid employment practices and lack of opportunities for retraining can lead skilled women to leave science and technology careers permanently. Although these issues affect both men and women, women are more affected as they are more likely to have gaps in employment due to maternity leave and family care-giving demands.

There is no doubt that improving the quality of scientific education is essential in building science, technology and innovation capacities. Girls steer away from careers in math, science and engineering because they view science as a solitary rather than a social occupation.

The gender inequalities, particularly in developing countries, are also the product of a failure to recognize women's knowledge - in other words, a failure to recognize that women are responsible for half of human knowledge and technical expertise.

Women have been, and continue to be, considered passive recipients of science and technology and enter in to mainstream science and technology without any specific recognition of the different contributions they could make to that system.

It is our belief, at UNESCO, that any good plan for the advancement of science for a sustainable future needs the full participation of women, ensuring their increasing role in policy formulation, implementation and monitoring. Women have to be part of the decision-making process to guarantee the full use of human potential which includes capacity, ingenuity and creativity.

UNESCO has been at the front line of promoting gender equality and the Organization's medium-term strategy for 2008-2013 put it at the forefront of the United Nations' agencies in elevating gender equality to a top strategic priority. UNESCO has been committed to women's empowerment and gender equality for many decades, although the focus and modalities have changed over time. The organization's vision, which is reflected in the UNESCO Priority Gender Equality Action Plan for 2008-2013, provides a road map to translate UNESCO's policy commitment to Priority Gender Equality into specific actions and outcomes by adopting concerted and systematic gender equality (GE) perspectives.

In our programmes, gender equality is being mainstreamed taking into consideration three dimensions: science *by*, *for* and *with* women, shifting from a more traditional approach where women were a subject for science and science policy, but did not have an active role to play as agents of change and social transformation.

This is why our activities will aim to design and implement gender responsive science and technology policies, promote gender parity in our fora and dialogues and most importantly, promote gender balance in decision-making bodies on science, technology and innovation issues and policies. In other words, what is important for us is not only to place the gender dimension in the science policy agenda, but to



Image: freedigitalphotos.net

give women the opportunity to shape the science policy agenda.

It is also our responsibility that, as we promote and carry out capacity building activities for science and technology policy, we train national capacities in a gender balanced way so that, increasingly, women compete for high technical and decision-making posts in their countries, regions and at the international level.

In an era where economic growth is linked to a country's capacity for innovation, the contribution of women is especially important. Women can help diversify research and development teams. They can bring different points of view that can fuel creativity and result in better quality outputs.

What is needed is a genuine recognition of the fact that women are active participants in science, technology and the innovative process (especially in terms of their proven innovative capacities and vast store of indigenous knowledge) and a willingness to incorporate women's values into the practice of science and technology.

We are conscious that we still have a long way to go, and that we have to improve our methodologies and approaches in order to achieve the goal of gender-balanced science, technology and innovation policy policies processes. This is our commitment since we strongly believe that the empowerment of women in science and technology is integral to the empowerment of society.

GENDER DAYS IN HIŠA ESKPERIMENTOV, LJUBLJANA, SLOVENIA

As part of the FP7-funded project, TWIST, Hiša eksperimentov organised several thematic Gender Days (on 8 March, 26 March and 10 October 2011).



Trying out the EEG test at the Hiša Experimentov Science Showroom, Ljubljana, Slovenia

Several programmes ran during these days including:

- Implicit Association Test (a computer exhibit on possible stereotype biases)
- Science Adventures (Interactive Science show produced by a female author)
- Science Candies (short facts about female scientists)

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MAKE YOUR OWN MOLECULAR JEWELLERY, GRONINGEN, NETHERLANDS

The invisible molecular world has proven to be perfectly suitable for jewellery design. Using 20 daily life molecules as a basis, ranging from caffeine to testosterone, participants can design



Molecules as jewels at Science LinX in Groningen, Netherlands

their own molecular compilations and create their necklaces or earrings on the spot. It's all done using the laser cutter at FabLab Groningen.

Science LinX, the science centre of the University of Groningen, developed the workshop for the so-called Cultural Sunday, 18 September 2011 in Groningen, Netherlands. The workshop will also be used in the next science activity for girls organized by Science LinX: Ladies LinX, 10 December 2011.

Contact: Renske de Jonge, r.m.de.jonge@rug.nl
www.rug.nl/sciencelinx/molecularcity

MARITIME AND NAVAL CAREERS FOR GIRLS, BERGEN, NORWAY

On 8 March 2011 VilVite science centre in Bergen, Norway, co-organized an extensive recruitment effort by the maritime industry. More than 200 female undergraduate and secondary school students attended an intensive event presenting career opportunities for women in the maritime sector. The event will be repeated in 2012.

Contact: Svein Anders Dahl, sad@vilvite.no
www.vilvite.no



Fame Naval recruitment at VilVite, Bergen, Norway

GENDER INCLUSION AT AMSTERDAM'S SCIENCE CENTRE NEMO

Science Center NEMO has developed education projects that are specifically designed to be gender inclusive. The successful projects Tube Your Future (for secondary school students) and Spot Je Talent (for primary school students) are bringing youth in contact with gender inclusive science and technology role models. An



Students dressed up for the Tube Your Future Award Gala where the makers of the best movies on S&T professionals win an award. The project has already reached more than 10,000 students (www.tubeyourfuture.nl).

important aspect of the projects' teachers training are workshops about gender aspects in the classroom.

Contact: Marjolein van Breemen
info@sciencecentral.nl

KOMTEK - MUNICIPAL TECHNOLOGY CENTRES, STOCKHOLM, SWEDEN

KomTek is a municipal technology and entrepreneurial school. Here, youth can attend activities in their spare time. One of the prerequisites is that half of the attendees must be girls.

The courses are organized by the municipalities and may involve construction, electronics, design, robot programming and entrepreneurship.

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www.tekniskamuseet.se



Komtek Caption: Five girls display their latest project at the municipal technology school in Järfälla, Stockholm

A GENDER CHECKLIST FOR SCIENCE CENTRES, AMSTERDAM, NETHERLANDS

Science Center NEMO created for the Dutch science museum and science center network - VSC - a 'checklist' that reminds staff about the key issues to take into account and problems to avoid when developing exhibitions and educational events for all visitor groups, with a focus on girls. Mystery guest visits by girls and boys generated valuable input for this checklist.

Contact: VSC Marjelle van Hoorn
info@sciencecentra.nl



AT THE TUNIS SCIENCE CITY, SCIENCE HAS NO SEX, TUNIS, TUNISIA

Men and women have been put on a more equal plane following Tunisia's independence. Tunisian women are now involved in advanced schooling.

Since its opening in 2002, Tunis Science City's main goal has been to spark children's long term interest in science, regardless of their gender. In addition, the centre has strived to battle against the gendering of science through its educational content.

Contact: adel.zouaoui@rnu.tn
www.cst.rnu.tn



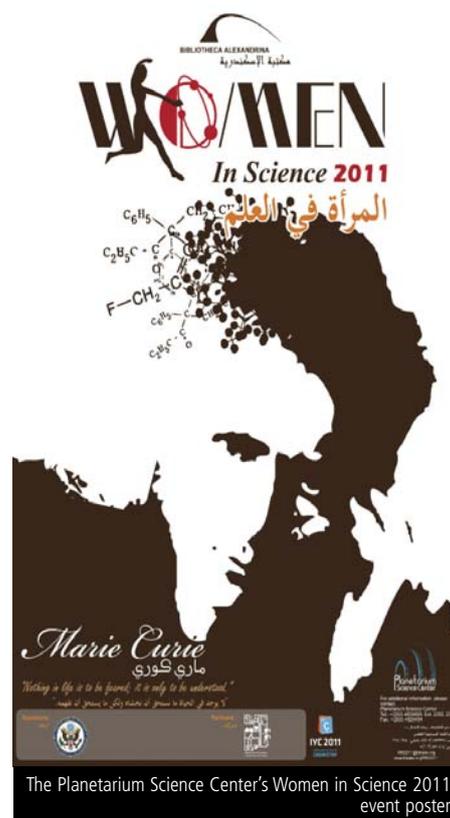
WOMEN IN SCIENCE 2011 CONFERENCE, ALEXANDRIA, EGYPT, 2-4 DECEMBER 2011

Planetarium Science Center at the Bibliotheca Alexandrina, in collaboration with the Arab Network for Women in Science and Technology, is celebrating the centennial of 1911 Nobel Prize in Chemistry awarded to the stellar scientist Marie Curie.

Marie Curie remains to date the only scientist who received two Nobel prizes in two different fields of science; in Physics together with her husband in 1903 and in Chemistry in 1911. Celebrating Marie Curie is also a celebration of chemistry and its undeniable effect on our everyday life.

We are joining the International community in celebrating the UN declared International year of chemistry 2011, in an effort to raise the public awareness about the science of chemistry and its impact on our daily life.

www.bibalex.org/WIS2011/Home/Home.aspx?lang=&



WE NEED YOUR LISTINGS

The Winter issue of the Ecsite Quarterly Newsletter will look at new technologies in the science centre and museum world. Listings should be no more than 60 words long and be accompanied by a high-definition photo.

Remember to include a brief caption with the photo. Please send all theme-appropriate listings to Emma Wadland, Ecsite Communications Officer: ewadland@ecsite.eu



Looking ahead to Toulouse 2012

Ecsite Annual Conference 2012: Space and Time, Unlimited Cité de l'espace, Toulouse, France, 31 May - 2 June 2012

Creative and original session ideas have been pouring into the Session Ideas Forum on the Conference website. If these ideas are any indicator of what's to come, then we are in for an innovative Annual Conference. Two days of Pre-Conference Workshops will take place at Cité de l'espace on 29 and 30 May and the main conference will be held at a state-of-the-art venue in central Toulouse, 31 May - 2 June. The city's famed Natural History Museum is also a partner of this year's conference.

Contact Alikí Giannakopoulou for more information: agiannakopoulou@ecsitemeu. www.ecsitemeu/annual_conference

Grundtvig Grant available for attending the Annual Conference

Planning to attend one of the Pre-Conference Workshops such as Equipping the Explainer or Researching and Evaluating your Institution in addition to the main Annual Conference days? Then you might be eligible for a Grundtvig Grant from the European Commission. Through Grundtvig, the EC provides funding to facilitate a European dimension in all sectors of adult education. The Ecsite Annual Conference is officially accredited as a training opportunity in adult education. Contact your National Agency to apply: http://ec.europa.eu/education/lifelong-learning-programme/doc1208_en.htm. The code for the course is: BE-2012-197-001. Apply via the scheme Visits and exchanges for adult education staff.

Contact Alikí Giannakopoulou for invitation letters: agiannakopoulou@ecsitemeu.

Ecsite Annual Conference 2012 Business Bistro registration to open now

Do you want to share your commercial activity with about 1,000 delegates at the largest science

communication conference in Europe? Then be sure to book a booth at the Ecsite Annual Conference Business Bistro. With 55 booths and all coffee breaks hosted there, the Business Bistro is the commercial and social hub of the conference.

Contact Alikí Giannakopoulou to book a spot for your business: agiannakopoulou@ecsitemeu. Visit www.ecsitemeu/annual_conference for information on conditions, the floor plan and the exhibitors' guide.

Save on flights to the Ecsite Annual Conference via Air France and KLM Global Meetings

Come to the 2012 conference and benefit from discounted flights by booking online via Air France and KLM Global Meetings. If you buy your ticket via the Air France & KLM Global Meetings website, your electronic ticket will carry a special mention which justifies the application of the preferential fares.

Visit www.airfranceklm-globalmeetings.com to access preferential fares granted for this event. Use these references:

Event: Ecsite Annual Conference 2012

Event ID: 14142AF

Valid for travel from: 24/05/2012 to 7/6/2012

Event location: Toulouse, France

Discounts are applied to a wide range of airfares on all Air France and KLM flights worldwide if passengers are travelling on the following classes of travel: Espace Affaires [Business] and Economique [Coach]. A -10% rebate is applied on published non-restrictive public fares. A reduction of -5% is granted on restrictive-discounted fares.

Contact Alikí Giannakopoulou for more information: agiannakopoulou@ecsitemeu.



Toulouse, France: host city of the Ecsite Annual Conference 2012

PCST 2012 and Ecsite 2012: The perfect pair, each 10% off

The 12th International Public Communication of Science and Technology (PCST 2012) conference heads to Florence, Italy, 18-20 April, 2012. Ecsite's Annual Conference (Ecsite 2012) takes place May 31 to June 2, 2012, in Toulouse, France. This offers an unprecedented opportunity for exchange between the academic and practical science communication communities of Europe.

PCST and Ecsite are each offering a 10% full conference fee discount for those attending PCST 2012 and the Ecsite Annual Conference 2012, 31 May - 2 June in Toulouse, France.

How can you take advantage of this one-time opportunity?

You will have the chance to declare your attendance at Ecsite 2012 when registering online for PCST 2012. From here, you will be issued a promotion code.

When Ecsite Annual Conference registration opens in February 2012, you will be offered the chance to declare your attendance at PCST 2012.

Please retain your receipts as a proof of registration for both events and present them on site at both conferences.

Conditions

For Ecsite 2012, the discount is only applicable to a three-day Full Conference registration for Members and non-members (Students, Newcomer Members, one-day registrants and those attending only Pre-Conference Workshops are not eligible for this discount.)

For PCST 2012, the discount applies only to the Full Registration fee.

Attending the two biggest science communication conferences in Europe of 2012 just got a little easier. See you soon in Florence and Toulouse!

www.pcst2012.org/

www.ecsitemeu/conference

PRESIDENT OF ECSITE SIGNS CAPE TOWN DECLARATION AT 6TH SCIENCE CENTRE WORLD SUMMIT

At the 6th Science Centre World Congress convened in Cape Town, South Africa, from 4-8 September 2011, 416 delegates from 56 countries assessed the impact of science centres worldwide and formulated plans that will ensure that they continue to play a constructive role in addressing global issues at the interface between science and society. Robert Firmhofer, President of Ecsite, together with Presidents of the other networks, signed the Cape Town Declaration which enshrines science centres' commitment to social improvement. View the event's media gallery, featuring video interviews with participants, here:
www.inventafrica.co.za/6SCWCGallery.aspx

PLACES

Over 70 European policymakers and more than 60 science communicators gathered in Paris, France, recently for the 1st PLACES Conference to talk science communication policies for European cities and regions. Visit the PLACES blog to read about the key points that emerged from the conference: <http://www.openplaces.eu/conference/>. The 7th Regional Science City Workshop, convened by project partner ERRIN, recently took place in Ljubljana, Slovenia. The focus was on the role of science in knowledge economies with a specific emphasis on creativity and design.



From left: Richard Tuffs, Director, European Regions Research and Innovation Network (ERRIN), Philippe Galiay, Policy officer, European Commission DG Environment and Quentin Cooper, BBC science journalist at the 1st PLACES Conference

TWIST



Experimentarium in Copenhagen (TWIST project coordinator) - as well as other science centres involved in the project - recently launched two TWIST exhibits and gave a sneak preview of the third exhibit on 29 September 2011. Four of the female scientist role models portrayed in the video database of the project attended the opening, 60 men and women from NorWiP (the Nordic Network of Women in Physics) and many others who have contributed to the project from its inception. The virtual puppet, Twisty, participated eagerly in all discussions and many guests chose to take the "Test your biases" gender test. www.the-twist-project.eu/.

XPLORE HEALTH

Xplore Health's project partners recently met at DOMUS, La Coruña, Spain (<http://mc2coruna.org/domus/>). The partners assisted in an outreach event with the participation of local schools and collected feedback from science centres and teachers directly involved in the project's activities. All project partners are developing new materials, games and experiments on topics such as HIV, Skin cancer, mental health, Malaria, etc. An evaluation of Xplore Health's interactive tools currently operating in schools and science centres has been carried out by an external consultant (Boost Education, UK, (www.scienceandhumanities.co.uk), and is already adding very important feedback to the development of the upcoming modules: www.xplorehealth.eu/.

Contact
 Marzia Mazzonetto for more information:
mmazzonetto@ecs site.eu.



Participants at the Pilots Training Course, Trieste, Italy

OPEN SCIENCE RESOURCES

The project is prominently featured in the EDEN (E-learning and Distance Learning Network) Open Classroom Conference, which took place in Athens, Greece, 27-29 October 2011.

The conference, one of the most important meeting opportunities in the field of e-learning, is hosted by OSR's content manager Ellinogermaniki Agogi.

Explore the portal and contribute your own resources at w.osrportal.eu.

NEW PILOTS TRAINING COURSE A SUCCESS IN ITALY

The first edition of the "Pilots Training Course for Museum Explainers, Educators and Young Scientists Involved in Outreach Programmes," organized by Ecsite, was recently held in Trieste, Italy.

Thirty-one participants from science centres and university outreach centres from all over the world joined together in sunny Trieste to share experiences and best practices, learn from an experienced group of trainers, and share materials developed during the EU-funded Pilots project and have a great time together.

The new edition of the course will be held at Pavilion of Knowledge - Ciência Viva, Lisbon, Portugal, 17-21 September 2012. More information coming soon!

Check the HUB portal (<http://pilots-hub.ning.com/>) for outcomes and photos from the course.

**Innovation Convention
2011, Brussels, Belgium,
5-6 December 2011**

The European Commission is holding its first Innovation Convention following the adoption of the Innovation Union Flagship initiative in October 2010. This major event will gather more than 1200 participants involved in the innovation chain, including high-level policy makers, CEOs, Deans of universities and research centres, bankers, venture capitalists, top researchers and innovators. The programme includes master classes and round tables on innovation, an interactive panel debate with global innovation players and the award of the Women Innovators Prize.

http://ec.europa.eu/research/innovation-union/index_en.cfm?section=ic2011

**Noyce Leadership Fellowships
2012-2013: Apply now**

Annually, 18-20 executives from around the globe are selected as Noyce Leadership Fellows to participate in a year-long, intensive program of professional development and personal growth. Throughout the program year, Fellows bring real-life issues into the program - seeking insights and solutions from interaction with faculty, executive coaches, other program advisors, and their peers. NLI provides leaders with access to knowledge, alternative approaches, promising practices, and professional networks to sustain and advance innovation in their own institutions and in the field. Application materials for the 2012-2013 cohort of Noyce Leadership Fellows are available online: http://noycefdn.org/NLI_eligibility.php. For inquiries or a personal consultation, please contact NLI Associate Director Jennifer Zoffel: jzoffel@gmail.com.

**Planet Under Pressure,
London, UK, 26-29 March 2012**

In advance of the Earth Summit 2012 (Rio+20) the world science community is preparing policy documents on nine major issues relating to Global Environmental Change (GEC). These will be significant in framing what is said when the world's scientists meet in advance of Rio+20 at the Planet Under Pressure (PUP) conference in London in March next year: www.planetunderpressure2012.net/.

The International Council for Science has launched the first four of these policy reports, and all of them link to the future management of biodiversity and ecosystem services:

www.icsu.org/rio20/policy-briefs.



Image: freedigitalphotos.net

**12th international public
communication of science and
technology conference (PCST),
Florence, Italy
18-20 April 2012**



Content will cover science journalism, science communication and science in society research, science museums, public engagement with science and technology, and communication activities by research institutions. Plenary Speakers will include: Piero Angela (RAI, Italian Public TV), Felice Frankel (MIT), Helga Nowotny (President, European Research Council), Semir Zeki (University College London), Martin W Bauer (LSE, editor of the journal, Public Understanding of Science), John Durant (MIT Museum of Science), Edna Einsiedel (University of Calgary), Bruce V Lewenstein (Cornell University).

www.pcst2012.org.

Attend the Ecsite Annual Conference and the 12th PCST Conference and get a ten per cent discount on registration for both events. Look for details on both event websites.

**12th Scenography
Colloquium: Intermediate
Spaces Change and Transition,
Dortmund, Germany, 18-20
January 2012**

Participants will learn about innovative museum concepts, the latest scientific knowledge and current examples of exhibition design and will also be exposed to a wealth of new examples. The programme will be shaped by papers presented by prominent interdisciplinary speakers, workshops, panel discussions and the new "Knowledge Café".

www.dasa-dortmund.de/en/Scenography/Scenography/html

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

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