

Workshop: Attracting Girls to Physics

Members: Anne, Barbara, Erna, Atsu, Silvina, Youngah
(Anne is the coordinator of this workshop)

October 8:

1. Session: 4:00-6:00 pm

Topic: Attracting young people to physics, not losing the girls and boys

Talks by (20 min + 5 min. Discussion):

- Ellen Henriksen and Anne Borg (Norway):
Girls and education - physics not an option?
- Afaf Gadalla: **Attracting girls into Physics**

30 min: Discussion and collecting best practices and useful hints
Here we expect the women to talk about your experiences.

October 9:

2. Session: 10:45-12:30 am

Topic: Girl-friendly pedagogy

Talks by (20 min + 5 min. Discussion):

- Masako TANEMURA, Fumiko OKIHARU, Kyoko ISHII, Haruka ONISHI, Mika YOKOE and Hiroshi Kawakatsu: *The History and Aim of LADY CATS (Physics women teachers in Japan)*
- Ann Marks: *Physicists in Primary Schools Project (PIPS): Fun Presentations for Physicists to Take into Schools Worldwide*

30 min: Discussion and collecting best practices and useful hints

October 10

3. Session: 10:30-12:30 am

Topic: Girls: camps, summer schools and programmes; best practice – How to do it? Preparation for different age groups; what material is available?

Talks by (20 min + 5 min. Discussion):

- Eiko TORIKAI, Japanese activities directed to girls for attracting them to physics and engineering
- Hands-on-Experiments and Internet possibility
- Girls Day in USA and other countries

- Science on Stage in EU

30 min: Discussion and collecting best practices and useful hints

30 min: 3 Hands-on-Courses as example: How to do it?

Content of the talks:

Girls and education - physics not an option?

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Abstract

Despite recruitment efforts through several decades, girls are still under-represented in physics education in most countries. Why does this situation persist? What is it about physics that makes girls turn away?

How can we describe and understand girls' considerations and priorities when choosing education and career, and how can we act on this knowledge to attract and retain more girls in physics?

We will look at research findings concerning young girls' educational choices and interpret these in the light of sociological theories of young people's identity formation in late-modern societies. We will also draw on research on girls' experiences of secondary school physics teaching and identify areas where girls' interests and self-confidence differ from those of boys. Finally, we will use research findings and theoretical perspectives to identify a range of possible pathways for motivating girls to choose, and stay with, physics.

Attracting girls into Physics

Afaf Gadalla*

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Yet it is apparent that the technological age is well upon us, with scientific and computing advances changing lives quite dramatically each year. This is why we must be ready to join a train is already on move and contribute to changing the face of science and be achievers.

A recent international study¹, of women in physics showed that enrolments in subjects which facilitate enrolment in non-traditional areas, such as physics and science are declining both boy and girls; also profession in the "hard" sciences are being seen as less

attractive by many school-learners. Apparently, the numbers of women are severely underrepresented in physics & sciences which required strong physics background. We are tending to think of the whole way from first grade to research so the gender gap begins early in pipeline from the first grade.

In order to motivate more girl pupils and students to study physics in Assiut governorate, there were serious efforts in renovating the education of physics at class rooms of middle & secondary schools.

The Association of Assiut Alliance for Women (AAW)⁺ (research & development center) in corporation with Assiut District for Education have established a program that increasing the number of girls in science and physics and to encourage them to stay. Therefore, informal grouping have been organized at middle& secondary school-learners who trained with needed experiences to be able to attracting and encourage girls to learn physics.

The association of AAW do help for science teachers to enrich their lessons on science & technology by giving possibility access to different activities through:

Courses, capacity building workshops, resources, frequent appointments for communication university scientists & providing them with informative publications, software and visual aids, training session on computer science.

After implementation the program at some schools, an interesting point that came to the fore was that the girls appear not to be as imaginative as boys in abstracting ideas of physics and that was the primary reasons for girls dropping out of science and physics.

This could be overcome by making special efforts to held a topical physics & technology summer schools under supervision of AAW association.

* Currently the author is working as Advisor to Assiut University President for Girl Students Activities.

1. W. J. Megaw, paper prepared for the meeting, Gender and Science and Technology 6, Melbourne, Australia, July 14-118,1991.

+ The (AAW) is a non-governmental Organization, that make gender equity as a part of their policies. Also one of the most important goal is to achieve a scientific literate Society. It located at Assiut University Campus and the author represents its board director.

Anne Borg comment to Ellen Henriksen

Also I have agreed with my colleague in Oslo, Ellen Henriksen, that we will be able to make a presentation about the which factors that are affecting girls choices of education with special emphasis on physics. Her group is currently making a study in Norway and has

also applied for an EU project along the same lines together with colleagues in Europe. Also we will come up with some point for the following discussion. However, Ellen Henriksen has small children and wants me to give this presentation as she is unable to travel a lot at this point.

The History and Aim of LADY CATS (Physics women teachers in Japan)

Masako TANEMURA^a, Fumiko OKIHARU^b, Kyoko ISHII^c, Haruka ONISHI^d,
Mika YOKOE^b and Hiroshi Kawakatsu^f

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LADY CATS (LADY Creators of Activities for Teaching Science) is a science teachers' organization mainly consisting of women ranging from primary school teachers to university researchers.

Our activities aim at encouraging students and teachers who are not interested in physics. Recently many primary teachers feel uncomfortable with science because they have studied only general science and they feel it is not enough to teach science, especially physics. There are many women teachers at primary schools. Moreover not many girls major physics, too. It causes there are fewer women physics teachers in higher education.

We formed LADY CATS in 2005 to change these tendencies through our activities. We are dedicated to exhibiting simple yet beautiful science experiments that demonstrate the principles of physics. These experiments should be easy to prepare at low costs. We presented some experiments in international conferences such as ICPE with male teachers.

The name of LADY CATS is taken over from the group called "STRAY CATS". They have introduced interesting experiments by demonstrations at numerous international conferences for over twenty years, and now most of them are near retirees.

We believe that our activities fascinate many people through our passion in physics.

Physicists in Primary Schools Project (PIPS): Fun Presentations for Physicists to Take into Schools Worldwide

Ann Marks
University of Sheffield, UK

The Physicists in Primary Schools project is a joint venture triggered by the UK Women in Physics Group. A team from the University of Sheffield, with EPSRC funding, has developed fun presentations, which are on the Institute of Physics website, and use everyday articles for numerous, novel class activities for physicists to take into primary schools. The aims are to enthuse young children with the enjoyment and excitement of physics as well as to support the primary school teachers with the curriculum, which includes many abstract concepts. All the PIPS material is free to download from www.iop.org/pips, providing PowerPoint presentations and detailed explanations as well as videos of the activities in classrooms. The topics are suitable for children aged 4 to 11 years and are effective at exciting the interest of young girls in physics. There is interest in translating the presentations into other languages as there are few words on the slides and it is recognised that in many situations the material is valuable for older age groups. The presentations therefore have the potential to be useful worldwide. For further details, contact a.marks@sheffield.ac.uk.