Summary – WYP Denmark

• Danish Physical Society unfortunately possesses only little momentum

• EuroPhysicsFun participate in the preparatory meeting in Montreal (invited by Martin Huber)

• EuroPhysicsFun suddenly becomes organizing committee – not suited for such a task. Contact is made to Danish Science Communication who take over the responsibility.
Funding and Activities

• National funding raised (Governmental Sources) ~ 45,000 €

• Website with calendar of WYP activities
• 9 Newsletters (263 recipients)

• Activities arranged only locally with a majority of activities with no special WYP relevance

• Whole scheme not an example of best practice
EuroPhysicsFun.org

International Network of Physics Outreach Groups

Not a real WYP thing

Mikkel Bo Nielsen, World Year of Physics – Closing Meeting, Paris, France, March 2006
About EuroPhysicsFun.org

Purpose:
Initiate and motivate the creation of new student groups at many universities.

Join these and existing activities in an experience and knowledge sharing network.

The work is funded by the Danish Ministry of Science, Technology and Innovation, The Danish Research Council and a private Danish foundation: VILLUM KANN RASMUSSENS FOUNDATION.
Activities

- Multiple representations at conferences in order to address students and scientific staff
- Workshop July 2005
- Annual Meeting 2006 adjacent to ICPS
- Speed training *in situ*
- Equipment Packages
  - Switzerland
  - Norway
  - Denmark
  - France
  - Romania
  - Sweden
  - Portugal
  - South Korea
  - Romania
  - Switzerland
  - Portugal
  - South Korea
  - EPS13
  - Swiss Physical Society Annual Meeting
  - WYP Launch
  - Turkish Physics Students Annual Meeting
  - Sweden
  - Norway
  - South Korean Science Festival
Results

• 16 member groups in 9 different countries
• Initiated/motivated 4 groups
• Monthly Newsletter (563 recipients)
• Substantial website
• Contacts in 35 countries
• Contact to more than 1000 people in more than 70 countries
Future projects within the network

• Coordinated Action – Exchange of People
• More Member Groups
• Fysikbasen.dk -> English/Spanish/….stats
• Joint activities, annual meetings, border crossing events and a vision to be partners in other international action oriented projects
• And more…..
Network members
Future Funding?

• Building/evolving a financial business plan
• International Companies

• EC:

  ....The panel thought that the project (focusing on peer learning) had great relevance.

  ....The project has clear objectives and good methods.

  (from Evaluation Summary Report)
Using physics students?

- Physic students are able to settle with the public's stereotypical image.
- The audience relates and identifies more easily with the show physicist.
- Physic students delivers an enthusiastic expression, which appeals to a broad target group.
- Physics students are close to the educational level of the ordinary audience.
- Physics students are unused in the field of communication.

a vast number of fantastic ambassadors of physics, who regardless of career will benefit from the obtained communicational skills.

EuroPhysicsFun  Department of Physics and Astronomy  University of Aarhus  Denmark
What do I get out of it?
What students get out of it?

- FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN
- You will become a better physicist, experimentally, intuitively and theoretically
- Develop communication skills, that no one else have a chance to get
- Potentially meeting more than 2000 interested, interacting and involved people

EuroPhysicsFun  Department of Physics and Astronomy
University of Aarhus  Denmark
EuroPhysicsFun – so far

EuroPhysicsFun has been presented at e.g:

The Launch of the World Year of Physics (France)
Norwegian Students Annual Meeting in Bergen (Norway)
International Conference for Young Scientists, Katowice (Poland)
Turkish Students First Annual Meeting, Ankara (Turkey)
European Physical Society, Bern (Switzerland)
ICPS2005, Coimbra (Portugal)
and now here at fysikdagarne in Umeå (Sweden)
EuroPhysicsFun – so far

- Contacts in more than 71 different countries
- The EuroPhysicsFun - debate forum (10 nationalities)
- A monthly electronic newsletter is distributed to more than 400 people worldwide

New activities coming up in: Bergen (Norway), Helsinki (Finland) in Aalborg (Denmark)
- Umeå next?

EuroPhysicsFun carried a workshop on show physics in July (6 different nationalities)

10 outreach student groups in the network so far
EuroPhysicsFun Workshops

EuroPhysicsFun offers a complete package containing means to find motivated students seminars disseminating:

Video analysis
Edutainment practice
Experimental maturing (hands-on physics)
Stimulating lectures by artists, didactics people, professors

Fun!! - and much more!!! – Check out our website

Next workshop up 6-9. December 2005
EuroPhysicsFun - networking

Human part:
- annual meetings
- start-up workshops and
- follow-up seminars

Web-based network:
Internal interface (English) solely for Show Physicists
Ideas, inspiration and experience-sharing between the satellite groups

Additionally, a public interface (local European language):
experiment databases, weekly questions, interactive applets, “ask the physicist”

EuroPhysicsFun  Department of Physics and Astronomy
University of Aarhus, Denmark
EuroPhysicsFun.org – what can you do?

-Sign up for our newsletter

-Join the open EuroPhysicsFun forum

-Registrate for our workshop in December

-Advice your fellow students of EuroPhysicsFun

-Tell us about existing show activities in your country

-Contact us if you like to start your own show
Member groups

- 0 – 17 years
- 2-40 students
- More or less affiliated to the university
- Acts more or less as recruitment tool
- Some paid salaries, some not
- Some charges a fee to the schools,
- Some managed by staff at university, some managed by volunteering students
Member groups

- All a huge succes – no matter how you want to measure it
- Driven by the young, energetic enthusiasm of physics students
- High speed and entertaining with respect for the scientific method

A scheme that works:

- Start with a group of 3-4 students
- Choose an audience
- Slowly build up a experimental curriculum
- Slowly expand the group to more people and more experiments
- Widen out the target group
- Aarhus model: Ph.D. manages the show – ensures continuity
- Aarhus model: Paid physics students do the dirty work (Faculty)
- Have fun!
Audience Reactions

• 14 year old girl:

"I thought it got much more exciting when I realized I actually understood what they was explaining"
Audience Reactions

- 14 year old boy:

  "It (physics) has become more fun and I pay more attention s well in the classroom"
14 year old girl:

"Now I like better to do the experiments than before and just in general physics has become more fun"
Audience Reactions

• 16 year old boy: "You did it in a fun way and yet still managed to learn me something"
Audience Reactions

• 17 year old girl:

”It has changed quite a lot for me, because in a way I have regained the thrill of physics. It was enourmously exciting!!”
Constructivistic Principle

You construct your own understanding!

- Authentic questions – open questions where the teacher doesn’t have the final answers
- The answers from the students are used in the dialogue
- The participation of the students is recognized as an important part of the dialogue
Authentic Physics

- Personal authenticity
- Social authenticity
- Professional/scientific authenticity
Personal authenticity

The students must accept the subject as relevant - either as something relevant to themselves or as something that is relevant in a larger connection.
Social authenticity

The subject must have a relevance to the community – such as distribution of energy or the climate of the earth
Professional/scientific authenticity

The learning of physics must be "realistic" – it should be similar to the way you use physics in research or in industry.
The Physics Show

Dialogue

• High appreciation – the input from the audience is used
The Physics Show

Dialogue

• High appreciation – the input from the audience is used

• Follow-up – answers and questions from the audience are treated seriously by the Physics Show
The Physics Show

Dialogue

• High appreciation – the input from the audience is used

• Follow-up – answers and questions from the audience are treated seriously by the Physics Show

• Authentic questions? No!
The Physics Show

Authenticity

• Personal authenticity – by demonstrating physics that are connected to everyday phenomena and by involving the audience in the demonstrations
The Physics Show

Authenticity

• Personal authenticity – by demonstrating physics that are connected to everyday phenomena and by involving the audience in the demonstrations

• Professional/scientific authenticity – by the fact that the performers are real physicists
The Physics Show

Authenticity

• Personal authenticity – by demonstrating physics that are connected to everyday phenomena and by involving the audience in the demonstrations

• Professional/scientific authenticity – by the fact that the performers are real physicists

• Enthusiastic authenticity – the performers show their own enthusiasm and interest in the phenomena
- Create a human chain transferring a music signal
- Amplifiers have to be commercially available
- Do it at markets, in the streets - anywhere!!

Send us the pictures, video’s etc.

I am the record holder in France, the Netherlands, Denmark (157), Norway, Turkey, Poland, Switzerland, Portugal, Romania
– I dare you to pick up the gauntlet! – but first…..
- Create a human chain transferring a music signal

- Amplifiers have to be commercially available

- Do it at markets, in the streets - anywhere!!

Send us the pictures, video’s etc.

I am the record holder in France, the Netherlands, Denmark (157), Norway, Turkey, Poland, Switzerland, Portugal, Romania, and now Sweden – I still dare you to pick up the gauntlet!

See you at the coffee breaks and intermissions!!
• 112 experiments
• More is coming up
• Experiments for all!
• 46,000 hits on experiment descriptions
• 14,000 unique users
• Positive recommendations