What is a teacher-scientist partnership?

CarboSchools develops partnerships between teachers (mostly from secondary schools) and global change scientists to give pupils the opportunity to
- conduct experiments on the impact of greenhouse gases
- get a practical experience of research and interact with real scientists
- discuss options and take actions for reducing CO2 emissions
- inform the wider community by producing articles, exhibitions, conferences etc.
- when possible, engage in cooperations with other schools in Europe

The vision of such partnerships is that researchers and teachers co-operate in the frame of projects lasting up to several months with mutual benefit - in opposition to one-way approaches where scientists deliver knowledge to schools. This document gives the essentials about the partnership approach and offers practical advice based on experience gathered in several European countries since many years by carboschools partners.

6 examples of projects are presented on the 2nd CarboSchools booklet (pdf available at www.carboschools.org)

The essentials
- a partnership of equals between a researcher & a teacher -

- The teacher is the coordinator, the scientist a partner:
  - first contact should usually be made by the teacher
  - activities should be driven by teacher needs
- Plan activities jointly, ahead of working with pupils & respect each others’ other commitments
- Establish most reliable & efficient methods of communication
- Agree & understand the nature of the activity and your different roles in its delivery
- Try to make frequent contact (direct/indirect), particularly initially
- Grow progressively into your partnership: small goals, smart experiences
- Make the partnership as direct as possible, avoiding bureaucratic obstacles and hierarchies

How much time is needed?

Teachers as well as scientists have little time and involvement in such activities goes beyond their respective basic duties. The amount of time to spend will really depend on both partners. Most scientists, when not already engaged with a school, will be happy to spend a day or two per year. PhD students may sometimes give more. A few scientists may be able to spend more time on these projects. Some activities may be short and intensive (eg 1 day in the field), others more sustained for a longer period (e.g. monthly meeting and follow-up through e-mail or phone).

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Key roles, benefits, advices & mistakes to avoid

Partnership means contributions from but also benefits for all parties

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<th>Teachers</th>
<th>Scientists</th>
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| **Key roles** | Impulse and coordinate the partnership  
Be the expert on children and on best methods and projects that can work at school  
Create a stimulating learning situation based on practical work  
Support / inspire pupils during their research work | Give insight into research / into what real science means  
Give new knowledge about the topic and use of new methods and instruments |
| **Main benefits** | Gain knowledge, mostly practical, from scientists  
Create students projects similar to authentic research methods  
Get inspiration to do new things in lessons, to develop new experiments and methods  
Get access to funding & new equipment  
Stay updated with recent developments in science  
Get new motivation from an unusual activity  
Make students aware that science is a stimulating activity, not just textbooks knowledge | Improve your personal abilities to communicate with the public, clarify your own ideas  
Meet enthusiastic and ambitious teachers and students  
Attract pupils in scientific studies, increase interest for science  
Getting new motivation from an unusual activity |
| **Main advices** | Be active to find a contact, and just take the contact with the scientist  
Meet before starting with pupils and agree on what to do, common goals etc.  
Make it a regular activity integrated to the curriculum  
Discuss timing in advance, fix time limits from the beginning  
Be open to scientist's input even if this requires that you adapt your knowledge / point of view  
Learn a bit of English | Listen carefully to teachers  
Make sure your partner teacher has time enough to work on the project  
Consider this activity as an integral part of your work as a scientist |
| **Main mistakes to avoid** | Don't start too big or make things too complicated  
Don't limit a scientist's input to a lecture but let her/him actively participate in designing projects  
Stay in your own role and don't expect the scientist to replace you  
Don't give away everything to students, let them find out during their research  
Don't force a class - work with motivated groups | Do not dominate the partnership  
Don't work just on knowledge transmission  
Don't have too much expectations on teachers & pupils |

What shall pupils do and gain?

Main activities that can be conducted in partnership with a scientist:
- Real-time experiments (in lab, on field or at school)
- Site visits (real visits with scientists, not through public relations)
- Lectures & debates
- Access to research results (e.g. real data on the internet)
- Follow-up communication (question/answer with students)

Benefits for pupils:
- do experiments;
- learn about scientific discovery process;
- participate in “real” scientific research;
- learn about careers and what scientists do;
- test if science "suits" you;
- make learning fun;
- sense of accomplishment - feel proud of what you achieve;
- gain in self-confidence by being taken serious by scientists;
- apply foreign language skills;
- encounter and understand science that is relevant for society; prepare for making informed choices on policy decisions as adults.