



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

	Teachers	Scientists
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.