Making it obvious – how an entire School was introduced to Climate Change Research

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Background

Will plants grow faster and larger in a future warmer and CO_2-enriched climate and if they do will they be able to compensate for increasing atmospheric CO_2 concentrations by storing carbon in their biomass ? This question was tackled by a team of the University of Innsbruck and the teachers (1st picture on the right) and pupils from the Anton-Auer Secondary School in Telfs, Austria.

Approach

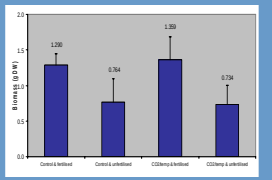
After a general introduction on the causes and consequences of climate change for all participating pupils, the younger pupils built two open-top chambers (2nd picture on the right) within the frame of their manual training class, which were used further on in the experiment to simulate future climatic conditions (elevated air temperatures and CO_2 concentrations). The older students were introduced to the basics of scientific working and how to set up a scientific experiment: They learned about experimental design, what a control group is and why it is needed, which parameters have to be measured and what the possible sources of error are and so forth. For curriculum reasons, the project was run in autumn and therefore lettuce was chosen as study object, because it usually grows fast even at that time of the year.

Experiment

The pupils separated the plants into two groups - one which would grow under expected future conditions of higher temperatures and CO_2 concentrations inside the open-top chambers. The other group was exposed to current climatic conditions. To investigate the influence of nutrient status, each group was subdivided into plants provided with and without additional nutrients. The participating pupils observed and measured these plants on a regular basis over a period of four weeks (3rd picture on the right). While the “young scientists” did their investigations they were closely observed by their school mates, because the study area was set up in the school yard. This scientific investigation not only occupied the students involved, but caught the whole school’s attention to this unusual project. After four weeks, plants were harvested, oven-dried and weighed.

Conclusion

Finally the pupils analysed their data and created graphs and figures for the final presentation (4th picture on the right), after which the students discussed their results with their teachers and the university team. The outcomes of the project were finally presented to the entire school by the pupils themselves using different sorts of presentation methods such as posters and power point presentations. This part of the project was designed to encourage students to present results using their own words. The audience who had not been directly involved in the project had the advantage to get scientific information in the familiar language of teenagers. Although the topic was a great challenge for pupils of that age group, they had been offered the opportunity to get into contact with the nature of science.



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