



Sparkling Science >

Science linking with School School linking with Science

Final Report, March 28th 2011

**Searching for Footprints of Climate in Classrooms!
Highschool students, teachers and scientists investigate
climate conditions in classrooms looking for correlations
between heat and students' concentration abilities**

LEADING INSTITUTION

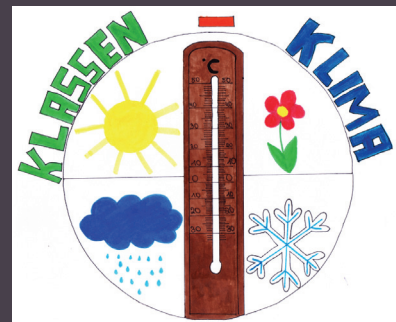
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SCIENTIFIC CO-OPERATION PARTNER

Medical University of Vienna, Institute of Environmental Hygiene

SCHOOLS INVOLVED

GRg 23 Draschestraße, Vienna Bilingual Schooling, Vienna
GRg 4, Wiedner Gymnasium, Sir-Karl-Popper-Schule, Vienna
BG Rechte Kremszeile, Krems, Lower Austria



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Searching for Footprints of Climate in Classrooms!

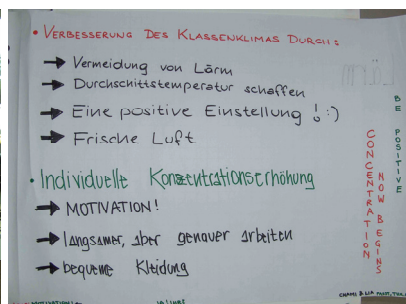
Highschool students, teachers and scientists investigate climate conditions in classrooms looking for correlations between heat and students' concentration abilities

Our project involved over 180 people: About 170 students and eleven teachers from the three Austrian schools: -- BG Rechte Kreamszeile in Kreams, -- GRg 23, Vienna Bilingual Schooling and -- GRg 4, Wiedner Gymnasium, Sir-Karl-Popper-Schule in Vienna, worked together with scientists of the Institute for Meteorology of the University of Natural Resources and Life Sciences Vienna, a psychologist and the co-operation partner of the Institute for Environmental Health of the Medical University Vienna. Our research tried to find out if there is a significant correlation between the influence of heat and students' concentration ability in the classroom.

Students were actively involved in the project work in various ways. During regular lessons and under the supervision of the corresponding teacher each of the 170 students took a concentration-test (adapted d2-test) during one summer semester (about 20 tests per student). Additionally, both teachers and students filled in a questionnaire, evaluating various factors we considered could influence the concentration ability of the students. This questionnaire had been developed as a joint activity at the beginning of our project. At the conclusion of the measuring phase, after 136 test sessions, we had 2.194 completed concentration tests available as well as measured several parameters that allowed an evaluation of the indoor climate conditions of 14 different rooms in the three schools.

In several workshops scientists and students jointly analysed and interpreted the data. Furthermore, students were able to access their personal results and compare it to the average and extreme values within the group. With this knowledge students could evaluate themselves and draw conclusions related to their ability to concentrate which may be of help for their future activities.

Students were also confronted with the fact that research does not always follow the original plan but instead they experienced the need for creativity and flexibility that lead to necessary modifications. Despite of covering an extended period of time and the high probability of having the test done on hot days during the summer semester, our measurements did not take place during days with extreme temperatures. As a consequence of this unfortunate fact (which cannot be influenced) the research question could not be tested with the original plan and therefore students could not obtain a satisfactory answer. Therefore, the main emphasis was shifted to the individual results of the tests of the students which led to new hypotheses for further analysis.



As part of the pilot project “Modulare Oberstufe” in the “Gymnasium Draschestraße” it was possible to run an elective course called „Sparkling Science“ aimed at students interested in scientific research. The students who signed up for this course learned about theoretical and practical aspects based on their interest but the participating 7th graders did not carry out the concentration tests. On the other hand, students of three other classes carried out concentration tests and they were directly involved in the evaluation of their own data.

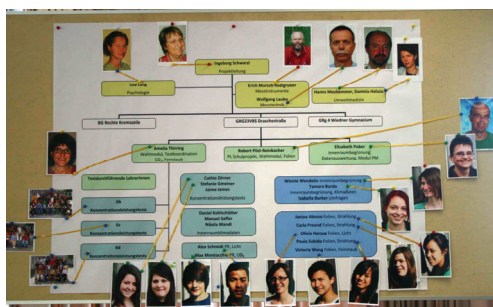
In the “Gymnasium Kremszeile” two classes carried out concentration tests during lessons and were also involved in all the research work. In the Wiedner Gymnasium three classes participated in project work, but it was only one class who performed the concentration tests. Another class measured and analysed indoor air climate data and a third class was invited to work out reasons to make a Sparkling Science-project interesting for students in school.


Two one-day trips including all participants allowed students to get to know each other, interact with one another and exchange ideas and additionally provided insight into current similar research fields. The first trip to Krems included a visit to the light-laboratory of the Danube University Krems, to the weather station of the Central Institute of Meteorology and Geophysics and to the air quality monitoring site of Lower Austria. In the second trip students visited the „Railtec-Klimawindkanal“ in Vienna followed by a lecture about climate change at the University of Natural Resources and Life Sciences Vienna.

The results of our joint research were presented in two public events. Both were organized by all involved persons who enthusiastically presented their results to an interested audience. There were several reports about the project published in the local print media of Krems. The project was presented at several conferences: e.g. “Scicom-Tagung 2009”, Sparkling Science Congress 2009, 5th International Conference on Children’s Health an the Environment (2010) and “DACH-Meteorologentagung” (2010).

An attempt to evaluate our project, three anonymous questionnaires about the „sense of Sparkling Science“ were run at the beginning, during and at the end of the project. Before the project started, students thought “research” means “to find out new things”. In the course of the project students acquired a different awareness about the meaning of research. About one third of the students considers they can seek scientific studies and they believe that their participation in this project enabled them for a better start into a scientific career.

A co-operative research between scientific institutions and schools works well, but in a different way as usual. In this project a small team of researchers were confronted with a large number of students and teachers. The coordination of ideas and wishes from both sides presented a tremendous challenge and was highly enlightening for all persons involved. Both scientists and teachers could imagine further cooperation.





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