



Sparkling Science >

Science linking with School
School linking with Science

Interim Report, 30th January 2010

Youth researches: Traffic and Security

LEADING INSTITUTION

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PARTNERS FROM ECONOMY AND SOCIETY

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Austrian Road Safety Board
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SCHOOLS INVOLVED

HTBLVA Mödling, Lower Austria
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Austrian Federal Ministry of
Science and Research

Youth researches: Traffic and Security

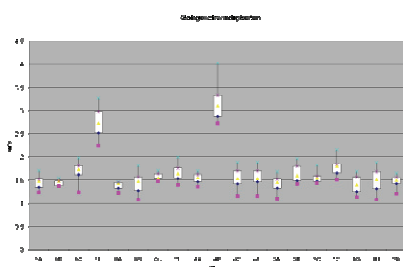
Children and teenagers grow up with vehicles and in general they are soon fascinated by them, since they increase the personal mobility. With growing age first the bicycle and later motorized vehicles in general are highly important to young people. Therefore, it seems obvious to build on this elementary interest and curiosity in transportation and to familiarise young people with science and research.

The project is based on the idea to let pupils carry out data acquisition, measurements and data interpretation. Such parameters are e.g. the walking speed of pedestrians, driving speeds of powered and non-powered road users, braking deceleration of vehicles etc. The measurements are concerned with physical quantities, which are descriptive and to which pupils have or can establish a relation. Data acquisition of such parameters in real traffic requires the use of modern measurement equipment on one hand, but must still be simple enough to be used, in order to let the young people work independently and on their own. Moreover, the entire project is subdivided in smaller project units, to allow for adjusting the level of demand to the level of skills of the pupils. All tasks can be worked on a level suitable for the knowledge and talents of secondary school pupils. Multidisciplinary work is also possible, since the general theme of this project concerns Mathematics, Physics, Psychology, engineering disciplines, and more.

During the spring semester 2009 measurements of walking speeds of pupils of all ages were carried out under the supervision of Prof. Bammer. The primary measurement quantity has been the time needed to walk a certain distance. From this the walking speed can be calculated. This measurement method was easy to carry out for pupils of all ages. So they were able to mainly work on their own on this task. To increase the accuracy of the measurements, several pupils did take measurements at the same time.

In addition to the time measurements, personal data like age and weight were collected for each person tested. All in all the walking speeds of several hundred pupils were examined, mostly by their class mates. All data have been entered in a database, ready for further in-depth analysis.

From a scientific point of view the project is interesting and shows promise, since there is a demand for up-to-date data of traffic-related parameters of all kinds. Specifically data for teenagers are sought after and therefore their participation is essential and well needed in this project. Also there is a chance to acquire more data in less time by taking advantage of the large number of pupils available in each of the cooperating schools. From a statistical point of view this is also very promising and an advantageous aspect of the project. All-in-all this project has scientific significance and combines the goal to familiarize pupils with science and to acquire new research results.



Preliminary analyses show how the average walking speeds depend on individual parameters like age and body size. This project is managed also by a student of the Vienna University of Technology who is in his last year of studies to become a high-school teacher. He is “increasing his experience for his future profession and how to work with pupils”.

Another group of pupils from the HTL Mödling, which is also involved in the project, has carried out preliminary studies under the guidance of Prof. DI Pucher, to prepare for measurements with a large number of bicycles. The goal is to measure the maximum braking deceleration of pupils riding on bicycles. In preparation, e.g. the friction coefficient between tires and roads were measured and tests were made with a professional measurement device “Bikeview”. However, since a low-cost accelerometer is also developed at HTL Mödling, it’s a unique opportunity to use and compare two measurement systems at the same time. Prof. DI Pucher is convinced, that the “traffic safety project will be very useful, since it can be used by interested pupils for their special field project”.

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Pupil: “I think it is cool, that our class and school participates in Sparkling Science, since I am interested in project management and would like to manage projects by myself in the future.”


Pupil: “It provides a welcome change to common-or-garden lessons.”

Pupil: “The acquired knowledge can be used in everyday life, there is a relation to normal life.”

Teacher: “Projects offer a good opportunity for the pupils to get a different class experience and are a welcome change to the daily teaching routine.”

Teacher: “Team work of the pupils, organisational skills, and time management will be put to the test.”





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