

## ECTN – Links with Schools: Examples of good practice, Part V

Starting from ECTN-Newsletter 1/2005 the Links with Schools-Group within the ECTN will regularly provide examples of how to cooperate between HE institutions and schools. The examples of this issue are coming from the University of Chemical Technology and Metallurgy, Sofia/Bulgaria, about using TV as a medium to make Links with Schools visible, and the Northumbria University, Manchester/UK about students' lab-work courses.

### **Some developments of the links between University of Chemical Technology and Metallurgy – Sofia, Bulgaria and the specialized in chemistry education secondary schools in Bulgaria**

By Kalina Mutafchieva, Ivan Dukov, Alexander Zahariev  
University of Chemical Technology and Metallurgy

Every year since 2003 at the University of Chemical Technology and Metallurgy (UCTM) so called “**Open doors day**” is organized. It is held annually in the early spring. On this day teachers and students from the last class of the specialized in chemistry education secondary schools, from the secondary schools implementing an extended teaching in chemistry as well as from schools with an extended language teaching from all around Bulgaria, are invited to visit the University of Chemical Technology and Metallurgy. At the beginning the teachers and students have a meeting with the Vice-Rector responsible for the University educational affairs. After this they meet the Deans of the technology faculties. The main purpose of these conversations is to acquaint the teachers and students with the opportunities to continue the chemistry education in the University. After that they are invited to see the lecture halls, chemical and computer laboratories. Finally, conversations with the Rector are organized where problems in the secondary education are discussed.

It may be of importance to note that our University created a working group engaged to the links with schools and this group is lead by the Vice-Rector responsible to the educational affairs.

Recently, a group of teachers from the university teaching staff has been engaged to disseminate materials presenting UCTM in all specialized secondary schools in Sofia and around (there are several such schools). These materials contain a lot of useful information of what is UCTM, what kind of faculties are there and what kind of specialties there are at UCTM. The students from these schools are acquainted in details with the application in UCTM as well.

As an interesting part of the activities in the links with schools is probably the annual “fair” of the Bulgarian universities, held in different Bulgarian towns, where materials and detailed information about the Universities are offered and disseminated on stands. It is announced in due time in the schools as well as on the radios, TV and newspapers. The presentation of the Universities is performed by authorized people. They disseminate a lot of printed materials and give answers to all who are interested

in. The fair helps the candidate students to choose the most appropriate to their wishes university. UCTM also takes part at this fair every year and everywhere.

The general result expected from these activities is mostly to attract students who are mainly interested in studying chemistry and chemical technology.

A month ago a 20 min TV session allocated to the children was emitted on the National TV. Conversations with one of our colleagues were held about elementary conceptions and questions in the field of chemistry in order to be understandable by the pupils. There were demonstrations in a laboratory. Another TV session was dedicated to the graduation ceremony of the 2004 master courses in UCTM.

We will attempt to ensure these films in order to show them to the people which are interested in them.

As a conclusion we hope that these developments will be quite helpful as good practices to all who are occupied with the problems of the links with schools.

### **Rating according to ECTN criteria**

*Is the link personal, reliable, and cooperative?*

YES. The University established a task group headed by the vice-rector.

*Is the link acknowledged, networked, and is support available?*

YES. The link is supported by the head of the university. Support is available in form of dissemination by the national TV.

*Is the link visible?*

YES. The project is visible in TV, through a fair in different cities and in newsletter reports.

*Is the link attractive and helpful for the students?*

YES. The link allows students to get insights into university research and necessary qualification. It supports decisions about future education.

### **Information and contact:**

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## **Applied Science Alive**

By Alan Jones

Northumbria University, School of Applied Science

In our link "Applied Science Alive", students aged 16-17 years old from local secondary schools (radius about 50 miles from the university) are invited to spend a day in the laboratories of the School of Applied Sciences. The School of Applied Sciences offers a range of activities occupying the 4 days of the week: Monday to Thursday – between 10.00 am and 3.30 pm.

The activities are designed to be topical, interesting, use laboratory facilities and equipment not normally available in secondary schools, and to demonstrate the

practical application of the students' science programmes. The three major themes encompass **Analytical Chemistry**, **Biochemistry** and **Biology** and are:

1) *'Drink, Diabetes or Deadly Deed'*

This is a forensic analysis problem to determine the possible cause of death by measuring the victim's blood sugar level (spectrophotometry), blood potassium level (flame emission spectrometry) and urine alcohol content (gas chromatography). Students will work in teams of three (max 45 overall) and a prize of £25.00 is donated each day to the team obtaining the best overall results.

2) *'KISS – Kissing, Infection, Science and Sex'*

In this session, students will diagnose which amongst them have been 'infected' with Epstein Barr virus (glandular fever) by using an immunodiagnostic assay. Students will work individually in the laboratory.

3) *'Werewolves, Zombies and Vampires'*

Biology, Chemistry and Physics are used to explain these 'fairystories'. The origins of most 'fairytales' are based on unexplained science. This interactive lecture will demonstrate how our understanding of Biochemistry, Genetics and Spectroscopy explains these phenomena.

These two topics comprise a single event.

4) *'Designer Foods – What's behind Genetically Modified Organisms?'*

This 'hands-on' workshop will involve practical exercises involving some of the methods used in the creation of GMOs along with opportunities to discuss the pros and cons of the technology. Techniques used in genetic modification will be demonstrated and students will be able to gain practical experience in an exercise to detect genetic modification of foods (PCR and gel electrophoresis). Discussion of the principle of genetic modification will introduce the importance of ethics in science. (Max. number: 30 per day).

The aims of the link are several fold:

- To give the students experience of Science in a University context.
- To give students from non traditional backgrounds a University experience.
- To enthuse students about science.
- To forge links with Schools and science teachers
- To demonstrate to Schools, the ethos of Northumbria University
- To market Northumbria University to students throughout the North East Region of England

Feedback indicates that the sessions are very popular with students and teachers alike and they like the competitive 'edge' to the forensic science programme.

All sessions are fully booked and we often must disappoint schools. However, we run additional sessions when mutually convenient.

The programme is funded by the School of Applied Sciences – Academic and Technical Staff give their time as part of the normal teaching regime, and chemicals and disposable items are funded from the School of Applied Sciences consumables budget.

The only downside we have experiences so far is that schools tend to try to send a whole class to one of the session, and some of the students have no experience of the subject specialist techniques. For example: often students are sent on the Forensic Science session, but they are not studying A level Chemistry and so have little experience with concentrations and dilutions. However, we do our best with them.

### **Rating according to ECTN criteria**

*Is the link personal, reliable, and cooperative?*

YES. For each lab-work offer one member of staff is in charge.

*Is the link acknowledged, networked, and is support available?*

YES. The link is networked within and supported by the whole faculty. The link is supported by time and resources from the budget of the whole faculty. Technical staff give their time as part of the normal teaching regime.

*Is the link visible?*

YES. The project is visible in TV, through a fair in different cities and in newsletter reports.

*Is the link attractive and helpful for the students?*

YES. The link allows students to get insights into very special and context-driven areas of science which regularly are not part of the science curriculum.

*Is the link structured and evaluated?*

YES. The project is evaluated by collecting feedback from the participants.

### **Information and contact:**

Details of the specific sessions can be obtained from the following staff at Northumbria University:

'Drink, Diabetes or Deadly Deed'

[Alan.Jones@unn.ac.uk](mailto:Alan.Jones@unn.ac.uk)

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