Science Education Workshops

Day 2 - 17 September Current trends in interactive teaching and student-centred learning

Teachers worked in their discipline groups:

- Reflect on your own teaching practices and discuss and catalogue them.
- Suggest and discuss possible changes which would change the student experience from teacher-centred teaching to student-centred learning.
- Discuss problems you might have in your institution in implementing these changes.

Feedback from the groups:

**Physics**

Classroom teaching

- Lectures too traditional; lack of interactive learning; lack of student attention
- Large class size but overall in small rooms; not good for traditional demonstrations
- Students are bored with lectures
- Laboratory work – too cookbook oriented
- Teachers should convert cookbook labs into open-ended inquiry based labs

Changes

- Change the role of the teacher
  - Encourage student responsibility for learning
  - Offers a wide range of learning opportunities and strategies
  - Encourage any activity that leads to an active learning situation
- Change the role of the student
  - Encourage personal involvement in their learning
  - Students to make decisions about the outcome of their work
  - Students to own their work and take pride in it
  - Students to plan and design their own experiments
  - Report result to rest of the class; discussion and interaction

Problems

Need to evaluate students as scientists; encourage them to think of themselves as scientists

**Biology**

Classroom teaching

- Lecture by using overheads, Powerpoint, chalk and talk
- Demonstrate in the labs
- Use of mini projects and games

Changes

- Move away from teacher-centred teaching to student-centred learning
- Use buzz groups in the lectures to keep the energy levels up and the students listening
- Use PBL
- Use concept mapping
Problems
- Colleagues not interested in change; change is hard to introduce; lecturers find it difficult to change their role to becoming a facilitator
- Unable to control class
- Time limits
- Lack of student cooperation with new teaching methods
- Difficult to set up lab and instruments

*Mathematics and Computer Science*

Classroom teaching:
- Very teacher oriented; teacher selects problems for students; students choose the method for solving problems; teacher verifies selected method; teacher discusses and concludes at the end

Changes
- Get the students to think out a method for problem solving, using their own experience
- Give leadership opportunities for students through participation in the process
- Share knowledge
- Get students to share ideas for solving problems

Problems
- Lack of leadership within student groups
- Finding suitable problems can be difficult and maybe requires the teacher to do this all the time

*Chemistry*

Classroom teaching:
- Teacher-centred
- Not enough time to cover all the content
- Lab classes use teaching assistants that guide students through all the steps of the experiments

Changes
- Get rid of the teaching assistants and get the students to work out what to do for themselves
- Encourage students to be more independent

Problems
- The lecturers may have to spend more time in the lab; not good at team teaching
- Reduce the content