



used and lessons had a logical structure and were intelligible. What should be improved are opportunities for students to independently suggest steps leading to problem solving and allow students, to a larger extent, to use their own opinions and experience (development of competences necessary for problem solving). Methods through which it is possible to lead students to apply findings and procedures to typical life situations (i.e. connecting theory and practice) are at a lower level than those used in basic education. According to inspectors' observations class teaching is characterised by a lower level of activities of students but 70 % of the classes observed did also include practical activities. With regard to the methods and forms of teaching a considerable decline in their variety was seen; utilisation of diversified methods, with the exception of teachers' lectures, fell and frontal teaching dominated much more than in basic education.

Sufficient and modern equipment as well as aids for the teaching of natural sciences are not a commonplace in secondary schools. Less than one quarter of schools are well equipped and their equipment has been modernised recently; the equipment of about half of schools can be described as being sufficient, though obsolete; one quarter of schools are coping with a lack of equipment (mainly in the area of aids used for illustrative teaching and aids for students' experiments). Purchases of aids in recent years could be described as being insufficient; some schools have not bought any aids. No significant investment of this type was recorded in the schools visited. Minimally there is one technical classroom for teaching natural sciences in 80 % of secondary schools, most often these are classrooms for teaching chemistry, but also for physics and sometimes there is a combined classroom for teaching more natural science subjects. ICT is most frequently used in natural sciences, in particular for simple presentations of topics being taught (approximately 30 % of the monitored lessons).

The majority of schools implement projects or experimental verification involving natural science topics in order to complement the teaching of practical activities and to connect class instruction with the real world. Approximately 70 % of schools strive to enliven teaching by cooperation with external partners. In contrast with basic schools, higher education institutions and companies are also involved in cooperation; frequent partners are environmental centres, environmental movements and associations as well as other secondary and basic schools. More than half of schools encourage students to participate in "Olympics" and contests concerning natural science subjects, thus stimulating the interest of students in natural sciences. Schools also provide opportunities for talented students.

Positive Findings

- A higher degree of involvement of schools in project implementation and in cooperation with external partners supports links between class instruction and practice and enriches the topics taught.
- Usage of technical terminology and symbols, a logical structure and intelligibility of lessons, emphasis put on repetition and the strengthening of topics taught, well arranged lessons in terms of time distribution (natural science terms are used according to the definition of OECD/PISA).
- Relatively frequent utilisation of ICT to liven up instruction in the form of presentations of topics.
- A high degree of participation of pedagogical staff in the further education of teachers.