An Roinn Oideachais agus Scileanna

Department of Education and Skills

Subject Inspection of Science and Physics
REPORT

Seamount College
Kinvara, Co Galway
Roll number: 63050T

Date of inspection: 25 January 2010

AN ROINN OIDEACHAIS AGUS SCILEANNA | DEPARTMENT OF EDUCATION AND SKILLS

REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN SCIENCE AND PHYSICS

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Seamount College, Kinvara. It presents the findings of an evaluation of the quality of teaching and learning in Science and Physics and makes recommendations for the further development of the teaching of these subjects in the school. The evaluation was conducted over one day during which the inspector visited classrooms and observed teaching and learning. The inspector interacted with students and teachers, examined students' work, and had discussions with the teachers. The inspector reviewed whole-school planning documentation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and deputy principal. The board of management was given an opportunity to comment in writing on the findings and recommendations of the report; a response was not received from the board.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

Science is well supported in terms of facilities and the provision of Physics, Biology and Chemistry at senior level. All students take Science in junior cycle in mixed-ability classes and each student takes at least one of the senior sciences. Given the size of Seamount College, the variety of senior level science subjects is an indication of the high status of science in the school's curriculum.

There is an urgent need to increase the time allocated to Science in first year and in second year as was also recommended in the report on a subject inspection of Science and Chemistry in 2005. It is necessary also that science classes should be spread as far as possible throughout the week with only one double class period allocated to student practical work. The time allocation to the science subjects in senior cycle also needs to be reviewed.

The school has a Transition Year programme that is taken by a small number of students and that includes Science in its curriculum. Transition Year Science includes biology, chemistry, and physics components and it emphasises the applications of science. When the TY Science programme is being reviewed the overall objectives of the programme should be rewritten so as to more closely reflect the actual programme content.

The school has a special needs policy that outlines the general principles underlying the school's support of students with special educational needs. The impact of this policy was evident in the science class observed. In order to provide a basis for the further development of its support for students with special educational needs and students receiving learning support, the school should include in the policy more information on its current practices.

The science teachers are appropriately qualified and new science teachers are provided with an induction booklet that provides them with information on the school's science resources. This also includes literature to give prospective students information on each of the science subjects.

All of the science teachers have undertaken appropriate continuing professional development (CPD) provided by the second-level support service and one has participated in the STAR (Science Teacher Assistant Researchers) programme funded by Science Foundation Ireland.

The school's laboratory is large, modern and is well equipped with information and communication technology (ICT). Students have good access to the laboratory. Students' work is displayed on the laboratory walls. A periodic table and some material of a science-related nature such as science careers information should be considered for display also. Storage of laboratory equipment and chemicals is adequate. As resources allow, the board of management of the school should give priority to addressing the inadequate heating in the laboratory.

The school has a health and safety policy that includes a detailed list of generic hazards in the science laboratory. To support the regular review of its safety statement, the science staff should carry out annual health and safety audits of the science laboratory. The work should be informed by the Department of Education and Science and State Claims Agency publication *Review of Occupational Health and Safety in the Technologies in Post-primary Schools* (page 25) and the Department of Education and Science publication *Safety in School Science*.

A measure of the commitment of the science teaching staff is the involvement and success of students of the school in Scifest.

PLANNING AND PREPARATION

Each of the lessons observed was well planned and all required materials were to hand. From examination of students' work it was evident that the classes inspected were following the appropriate programme. Suitable support material had been prepared for the lessons and there was evidence of the existence of long-term subject planning for Science and for Physics. The science and the physics subject department plans were not available for inspection.

The science department has a co-ordinator and, in line with good practice, this position rotates. With the exception of senior Biology one teacher is responsible for curricular planning for each of the science subjects. A subject department planning meeting takes place each term and minutes are kept of these meetings.

In order to further develop its work at a subject department level the science teachers should build an element of review into their planning meetings and should adopt the practice of regular discussion and trial of methodologies. Other areas that would be beneficial in this context are the further development of ICT in the teaching and learning of Science and Physics. In particular the schools intranet could be developed further so that students could use it to support their learning in Science and Physics.

TEACHING AND LEARNING

Very good teaching and learning were seen in each lesson observed. The lessons had a structure that reflected the teachers' advance planning.

Where a lesson had clear aims and desired learning outcomes and these were communicated to students at the outset of the lesson, this reflected very good practice that placed student learning at the centre of the lesson. These learning objectives should be followed up with students at the end of the lesson as an assessment. A variety of methodologies was in use in each lesson, including questioning, use of ICT, demonstrations and laboratory activities. A range of teaching resources including ICT, student worksheets, and laboratory equipment was used effectively in each lesson.

Questioning of students was effective especially where questions were put to individual students and where students were given time to reflect before answering. Students responded well to questioning and displayed good knowledge of the subject matter of each lesson.

Appropriate attention was given to the mixed-ability nature of the classes observed. Very good practice was evident in one lesson where a considerable emphasis was placed on developing students' knowledge of the vocabulary of science. This was done through the use of keywords and the labelling of laboratory apparatus.

In the science class observed an investigative approach to student practical work was being followed in line with good practice. This involved an initial class discussion of what was required in order to meet the aims of the experiment. At the end of the class the experiment was discussed again and the conclusions were drawn out. Students worked purposefully and co-operatively and it was clear that they understood the experiment. The concept of a control was central to the students' experimental work and it was clear that they had a good understanding of this.

In both lessons observed where student practical work was carried out, it was well integrated with theory and there was an emphasis on ensuring students' full understanding of the experiments and of their outcomes. It was evident that students were well accustomed to carrying out practical work. Students' records of practical work carried out were well kept and were regularly checked.

Classroom management was of a high standard and there was an atmosphere in each lesson that encouraged students in their learning. It was clear that students were engaged and were learning. Much of that learning was active in nature.

ASSESSMENT

Homework in Science and Physics is supported by the whole-school homework policy that gives guidance on the homework to be given to students, the monitoring of that homework and giving feedback on homework.

Students' work is assessed on a regular basis, both informally and through monitoring of their written work. In the case of Physics, students' copies are commented on and students are advised on what they should do to improve their work. Teachers should as a rule follow up on incomplete work and on comments made on students' work.

The science department shows very good practice in that each year second-year students carry out science projects. These are a valuable extension of the investigative approach taken to Science in the school.

Teachers' expectations of students in Science and in Physics as seen in the lessons observed are high. This is also shown by the proportion of students that take Physics and Science at higher level in the state examinations.

Students are assessed informally through their performance of classroom activities, through their homework and orally. They also have mid-term and end-of-term tests and continual assessment. Students' performance of practical work is reflected in the marks awarded in end-of-term examinations. Parents are kept informed of their daughters' progress through school reports, parent-teacher meetings, and the student journal.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- Science is well supported in terms of facilities and the senior cycle subjects provided.
- The variety of senior level science subjects is a reflection of the high status enjoyed by science in the school.
- A measure of the commitment of the science teaching staff is the involvement and success of students of the school in Scifest.
- Very good teaching and learning was seen in each lesson.
- Second-year students carry out science projects each year.

As a means of building on these strengths and to address areas for development, the following key recommendation is made:

- The class time allocated to Science and to Physics should be increased as was also recommended in the subject inspection report on Science and Chemistry in 2005.

Post-evaluation meetings were held with the principal and the deputy principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

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