An Roinn Oideachais agus Scileanna
Department of Education and Skills

Subject Inspection of Biology
REPORT

Presentation Secondary School
Ballingarry, Thurles, County Tipperary
Roll number: 65240L

Date of inspection: 24 January 2011
REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN BIOLOGY

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Presentation Secondary School, Ballingarry, County Tipperary. It presents the findings of an evaluation of the quality of teaching and learning in Biology and makes recommendations for the further development of the teaching of this subject 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 the teacher, examined students’ work, and had discussions with the teacher. The inspector reviewed school planning documentation and teachers’ written preparation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and subject teacher. The board of management of the school was given an opportunity to comment on the findings and recommendations of the report; the board chose to accept the report without response.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

This co-educational school has an enrolment of 263 students in the current school year. The school offers a wide range of curricular programmes: the Junior Certificate, an optional Transition Year (TY), the Leaving Certificate, the Leaving Certificate Vocational Programme (LCVP) and the Leaving Certificate Applied (LCA) programme.

Science forms part of the core curriculum in the junior cycle. Students currently receive three single lessons in year one. This is below the time allocation recommended in the curriculum guidelines. In year two and three science is given a time allocation of one double lesson and two single lessons. This is the recommended time allocation for each year of the junior cycle and should be applied to all year groups.

Following the Junior Certificate examination, students can enter the TY programme. Biology is studied for the full year as part of this programme and is allocated two single lessons each week. Physics and Chemistry are each studied for half the year by TY students and are also allocated two single lessons weekly.

Biology is an optional subject for Leaving Certificate students. The percentage of students taking Biology for Leaving Certificate is good and it would appear to be the main senior science subject offered in the school. The time allocation is currently one double lesson and three single lessons in both year one and year two of Leaving Certificate. This allocation is consistent with curriculum guidelines. Classes are mixed ability. As a result of student demand the school has introduced Agricultural Science, with one class of year one Leaving Certificate students studying this subject during this academic year. It is the aim of the school to continue offering this subject. The combined physics and chemistry course is the other senior science subject presently being delivered in the school. Currently, there is one small class of year one Leaving Certificate students studying this subject. It might be timely for the whole science department to discuss the future of science in the school and how participation in the sciences can be strengthened.
The science facilities comprise one laboratory with an associated preparation area and chemical store. There is good access to the laboratory with a rota used when required by the science staff. Currently the school has an application for additional laboratory space as part of a school extension plan but no decision had been arrived at in relation to this at the time of the inspection. Materials such as posters, models and charts were present in the laboratory. Some of these were of student origin, which is good to see. There were notice boards present, which contained science information for the students to access. The presence of information and communications technology (ICT) equipment such as a computer and data projector helps with the delivery of information. In addition the team also has access to ICT resources including datalogging equipment. Continued use and development in this area is recommended.

A team of teachers delivers the science programme on offer in the school. One member of the team is presently teaching the biology syllabus. Currently co-ordination occurs at an individual subject level. It would be worth considering the appointment of a subject co-ordinator for the sciences from the members of the science team. This role should be rotated regularly among all members of the team as it has potential to contribute to the professional development of all over time. It is understood that many informal meetings occur and formal meeting times which are minuted are also facilitated. Currently the allocation of resources is based on the requests of individual teachers. This could be approached collectively through a co-ordinated science department structure where issues like the necessary annual maintenance of resources and plans for the continuing development and expansion of the resources within the facilities can be discussed by the whole team.

School management and the teachers recognise the importance of continuing professional development (CPD). It was very positive that the school supports membership to the Irish Science Teachers’ Association (ISTA). In addition the students benefit from attendance at and participation in the science week activities, quizzes, industrial visits, field trips, and having visiting speakers to the school. The benefit of these experiences to the student must not be underestimated as a means of reinforcing and enhancing their learning. Such activities are to be commended and encouraged for all science students.

The school has a health and safety statement. Teachers were consulted through staff meetings with individual submissions also used in the preparation of this statement, which is good practice. Management stated that the current statement is reviewed annually. It is positive that there is a section relating to subject areas in the overall statement. There is a good level of safety equipment such as fire extinguishers, safety blankets and safety glasses, in the laboratory.

**Planning and Preparation**

This school has been involved in a process of school development planning and a school plan has been prepared. The collaborative development over time of a whole-school homework policy would further support the teaching and learning of Biology.

Common plans for both Science and Biology are present for all year groups, which is good practice. The development of all plans in an electronic format is recommended. The team could consider the further development and expansion of the plans into areas such as learning outcomes. It is suggested that the selection and inclusion of a number of self-reflection and self-evaluation criteria for both teachers and students in the area of teaching and learning would be a most valuable addition to this work.
A separate biology programme has been developed for the TY students. This is good practice. The inclusion of more specific details under the course content headings in this plan is recommended, with the desired learning outcomes for the students outlined.

Observed lessons were planned and structured thoughtfully and thoroughly to take into account issues such as relevance of content, length of lesson, prior learning, selection and preparation of resources, and differentiation. Records of work and assessments completed to date with each class were presented. These are all elements of good practice.

**TEACHING AND LEARNING**

Three lessons were observed as part of the evaluation process, one TY lesson and two Leaving Certificate lessons. Teaching and learning in these lessons was good or very good. The teacher demonstrated a great interest and understanding of the subject which was successfully communicated to the students during the lessons. This is highly commended.

Lesson content was well chosen, based on plans developed and appropriate to the student level concerned. The topics being studied in the lessons observed were photosynthesis, genetic engineering and human nutrition. Clear aims and objectives were evident for the observed lessons. It is recommended that the objectives shared with students at the start of lessons contribute more to whole-class review of learning during and at the end of the lesson. The use of a learning check for students during lessons is also worth considering as it can help both teacher and learner evaluate learning. In conjunction with this the further development of the keyword concept could be developed and linked with the learning objectives for the students. The students demonstrated a good knowledge of the subject matter and they were able to make concrete linkages between past and current material.

The use of visual materials was evident in all lessons. PowerPoint presentations, charts, handouts, downloads from the internet and the white board were used to good effect to engage students and to develop the learning point. The size and clarity of text and picture illustrations on occasions could be larger to ensure students’ viewing is not compromised.

In some lessons homework was corrected. This was done orally in class with students invited to contribute their answers. The use of the board to highlight the right answers would have been helpful in some instances to consolidate students’ learning. The assigning of homework occurred at the completion of all classes observed. Students were either given a worksheet for completion or assigned questions from their textbook. In the main, the homework assigned was designed to assist the students in learning and retaining the topic, which is good practice.

Lesson pace was very good. Teachers’ circulation around the laboratory and time-specific instructions supported this good lesson pace and learners’ engagement. A very good teacher-student rapport was evident in all lessons. A supportive, encouraging, and affirming atmosphere was observed and contributed to classes that were very well managed. In lessons observed, students’ learning and engagement were best supported when methodologies such as pair work, group work and visual resources were employed. Lessons were balanced between student activity and teacher instruction. Very good questioning was observed, with both lower and higher-order questions directed to named students. The use of ‘wait-time’ during questioning was used successfully by the teacher. In addition, the teacher was able to orally draw and probe from students through skilful questioning the answer to the assigned question. The whole class
benefited from this exercise which simultaneously ensured and evaluated the learning that was occurring.

No practical activities were observed in the lessons. Examination of a sample of students’ practical note copies showed evidence of the previous practical activities completed. In addition, it was observed that these were monitored by the teacher. This is good practice.

**ASSESSMENT**

The school has developed assessment practices that operate on school-wide basis. Students’ progress is monitored on an ongoing basis. Informal assessment of students’ learning occurs daily. This is achieved through various types of classroom activities such as the correction of homework, oral questioning at the start of and during the lessons, project-work assessment and practical activities. Some of these activities were observed in the lessons viewed. Consideration could also be given to the inclusion of comments on homework and marks on homework to inform parents of students’ progress. Continuous assessment also occurs through the administration of class tests by the teacher on completion of a unit of work or a topic and or at mid-term.

Formal tests are held at Christmas and at the end of the year. Certificate examination classes also sit pre-examinations in the spring of their examination year. Reports are sent to parents after formal assessments. There is an annual parent-teacher meeting for each year group. Comments in relation to students’ homework can also be made by teachers in the student journal. The certificate examination results are analysed by the school. The teacher retains all assessment results, from which trends in student achievement can be observed, which is good practice.

The teacher awards the students of Biology credit for their practical work completed and for their write ups as part of their overall assessment grade. This is very good practice and provides the students with further motivation for engagement with the practical elements of the course.

**SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- Provision for, and access to, Biology is very good.
- The subject is generally well supported in terms of the allocation of time, timetabling, facilities and resources.
- School management is well informed and supportive of quality provision in the subject.
- Planning is very good and preparation for biology lessons is thoughtful and thorough.
- Teaching and learning was found to be good, or very good, in all lessons observed.
- Student-teacher rapport in biology lessons is very good.
- Very good questioning of students was observed in the lessons visited.
- Students are awarded credit for practical work completed in Biology by the teacher as part of their overall grade in the subject, which is good practice.
- Student engagement was significantly enhanced by the teachers’ interest and enthusiasm about biology.
As a means of building on these strengths and to address areas for development, the following key recommendations are made:

- The use of learning outcomes and of some elements of self-evaluation should be incorporated into biology lessons in order to further enhance teaching and learning.
- Further integration of active methodologies into all biology lessons is recommended.
- The science team should discuss the further development and integration of ICT into the teaching and learning of the sciences. The science team should also consider how the sharing of resources through this medium will be achieved and maintained into the future.

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

Published October 2011