Subject Inspection of Biology
REPORT

Scoil Dara
Kilcock, Co. Kildare

Roll number: 61691B

Date of inspection: 5 March 2010
REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN BIOLOGY

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Scoil Dara. 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 two days during which the inspector visited classrooms and observed teaching and learning. The inspector interacted with students and teachers and examined students’ work. The inspector reviewed school planning documentation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the 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

There is good provision and whole-school support for the study of science subjects in Scoil Dara. Although Science is not a compulsory subject at junior cycle, the proportion of students who take Science is very high. Science is also provided in the optional Transition Year. Three Leaving Certificate science subjects, Biology, Chemistry and Physics, are provided as optional subjects for students following the Leaving Certificate programme.

The proportion of students taking Biology to Leaving Certificate level is very encouraging. These students are allocated one single and two double periods each week. This allocation is in line with syllabus recommendations. Classes are mixed ability and class periods are distributed appropriately across the week.

Facilities for the teaching of science are very good and include four laboratories and a demonstration room. The laboratories and associated preparation rooms and storage areas are well organised and maintained to a good standard. The provision of information and communications technology (ICT) resources, such as computers and data projectors, for the teaching of the sciences is very good. An interactive whiteboard has been installed in the demonstration room. The learning environment in the laboratories and demonstration room is enhanced by a display of appropriate charts and posters, including some student-prepared material. Student access to these facilities is very good and all class groups have weekly access for a double period at a minimum.

The deployment of teachers is good. Teachers are allocated to classes on a rotational basis and continue with their assigned class groups throughout senior cycle. This good practice facilitates long-term planning and ensures continuity in both teaching and learning. There are currently five qualified teachers of Biology in the school. It was evident from the outset of the inspection that biology teachers are keen to promote positive attitudes towards their subject and to encourage students to achieve to the best of their abilities.
Management actively supports teachers’ attendance at relevant continuing professional development (CPD) courses. In addition, a number of whole-school professional development events have been organised in the recent past on the topic of differentiation in the classroom.

The provision for science in Scoil Dara is complemented by a range of extracurricular and co-curricular activities such as the school’s involvement in science week activities and events, the Young Scientist exhibition, field trips and visits to out-of-school sites, and involvement in the Green Schools initiative.

Good attention to health and safety issues was observed during the inspection. Safety equipment available in the laboratories included first aid kits, gas and electricity isolation switches, fire extinguishers and fire blankets. It is recommended that, in order to enhance health and safety provision, simplified safety notices be displayed in a prominent manner in the laboratories. The school has a health and safety statement which was drawn up with appropriate consultation. It is recommended that this statement be reviewed annually, in keeping with best practice.

**PLANNING AND PREPARATION**

Subject department planning is very well established in Scoil Dara and is a collaborative activity involving all members of the science department. A high level of collegiality was in evidence amongst the members of the department and collaboration is evident, for example, in the manner in which access for all class groups to the laboratories is maximised. Formal planning meetings are held each term and frequent informal meetings are also held to manage ongoing issues.

Good planning is evident from the on-going compilation of an excellent science department folder which contains all relevant information on the operation of the department and the schemes of work for each year and subject. It was noted that sections of the folder contain specific details on planning for issues such as a differentiated approach to teaching mixed-ability class groups, cross-curricular links with specified subjects, assessment procedures, health and safety issues, resources and record-keeping procedures, to list but a few. The commendable practice of carrying out an analysis and review of the outcomes for students in state examinations, as part of the subject planning process is also in evidence.

Curricular plans, appropriately based on the syllabus content for each subject, and containing detailed schemes of work for each year have been prepared. The schemes are comprehensive and realistic. The biology schedule outlines the topics to be taught each month for the duration of the course and includes reference to practical work. It is important that the schedules are adhered to in order to facilitate the provision of common assessments for students. It is recommended that, in order to enhance the planning already completed, the learning outcomes documented in the plans are closely linked with assessment objectives thus ensuring compatibility between what is taught and what is assessed.

It is recommended that the contents of the science department folder be copied onto the school’s ICT network, to facilitate the sharing of the extensive resources it contains, to enable ongoing modification and updating of materials and to promote the dissemination of good practice.

Individual teacher lesson planning is very good. The teachers were well prepared for class and, in all cases, due cognisance was given to the needs and abilities of students in preparing and delivering lessons. Such preparation was instrumental in ensuring that lessons were of a good quality. Required resources and materials were prepared in advance, including electronic and
other resources and the apparatus required for demonstration and student-centred investigative work.

**TEACHING AND LEARNING**

Good quality teaching was evident in all the classes visited. Lessons were well structured, with lesson objectives being outlined at the start of each lesson. These objectives were revisited at the close of lessons, to review progress and provide a basis for the assignment of homework. It is recommended that lesson objectives are expressed as learning outcomes, in order that the focus is appropriately placed on students’ learning.

The balance between teacher-led and student-centred phases in lessons was mostly good and a pattern of introducing new material, presenting students with an opportunity to put new learning into practice followed by a brief review, was apparent in most instances. However, in a small number of instances, the tendency towards prolonged periods of teacher input should be avoided. In these situations, more frequent pauses for review and consolidation of learning should be introduced, to promote active student participation.

The very good practice of assigning homework to students, in an integrated manner during the course of the lesson, was apparent in one lesson and it is suggested that greater use be made of this strategy. Homework was given at the conclusion of all other lessons. The homework was appropriate to the lesson content in all instances and was designed to assist each student in learning and understanding the topic in question.

The topics addressed during the lessons observed were mostly in line with planning documents and included ecology, microbiology, blood, circulation and the human defence system. A variety of appropriate and well-chosen methodologies and active teaching strategies were put into practice to encourage student participation and facilitate learning. These included the use of ICT, teacher explanations, discussions, student writing, the use of worksheets and handouts, and questioning of students. The use of subject-specific terminology was very good in all lessons. Good continuity with prior learning was always apparent and opportunities were created to link content to students’ experiences. Lessons were well paced.

Teachers demonstrated good classroom management skills. Good classroom routines were in place and students were aware of what was expected of them. Teachers’ high expectations helped to create a positive and productive atmosphere in all lessons and encouraged students to engage with the learning process and work hard. Students were challenged by their teachers and they responded well. It was encouraging to note the extent to which, in many classes visited, students maintained good notebooks in which they recorded important points of theory during the course of lessons. This is good practice and these notebooks serve as valuable revision aids to students.

The quality of rapport between teachers and students was very good. Student input was sought and valued during the course of lessons and students were well affirmed for their efforts in most lessons. The level of individual attention given to students facilitated a differentiated approach to teaching. This was evidenced by the manner in which, in most instances, teachers moved around the classrooms assessing students, assisting and supporting them, and encouraging them to perform to the best of their abilities.

Questioning of students was used extensively and effectively in most instances and students generally responded knowledgably and with confidence. The use of questions to establish levels
of prior knowledge, to assess the quality of learning on an ongoing basis and to assist in the exposition of new material was evident. Questioning also provided teachers with opportunities to apply a differentiated approach to teaching. Questions ranged from simple, lower-order, recall-type questions to more difficult higher-order questions which encouraged students to think at a deeper level. A good mix of global and directed questioning techniques was used. When using directed questioning, it is important that students are given time to think and compose their answers before a respondent is chosen. It is also important to ensure that all students are included in these interactions and an occasional tendency to restrict questioning to students in teachers’ direct line of sight should be guarded against. Careful consideration of the seating arrangement in of students may help to avoid this practice.

**ASSESSMENT**

Good quality learning was evident from students’ level of engagement with learning activities, the questions they asked and the quality of their answers during in-class questioning, the extent and quality of their written work and the overall good quality outcomes in the certificate examinations. They successfully carried out the different tasks assigned to them during the lessons observed and they displayed a good level of knowledge and understanding during interaction with the inspector.

A good regime of formal and informal assessing and monitoring of students’ progress and achievement in is place in Scoil Dara. Teachers assess the level of student understanding on an ongoing basis through questioning, examination of homework and general observation of students, as noted by the inspector. Students’ copybooks and laboratory notebooks were well monitored and regular good quality formative feedback was provided by most teachers. This enabled students to deliver a good standard of presentation and content in return, in the majority of cases. Teachers are advised that, when preparing student worksheets for reporting on practical work, and in order to promote an investigative approach to experimental work, an overly prescriptive approach should be avoided and students should be encouraged to fill in the various sections in their own words. Hence, it is recommended that strategies which facilitate the development of students’ own skills in the preparation and presentation of reports be adopted.

Fifth-year students are formally assessed at Christmas and prior to the summer break and a progress report issued to their homes on both occasions. An additional progress report is issued in the spring. Sixth-year students are formally assessed at Christmas and by means of a mock examination in the spring and reports are issued on both occasions. Common testing is used where possible. Additional testing is carried out at the discretion of individual teachers. Annual parent-teacher meetings and students’ journals are used as additional means of maintaining communication with parents.

**SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- There is good provision and whole-school support for the study of Biology in Scoil Dara. The facilities available for the teaching of Science are good and the provision of ICT resources is very good.
• The science department in Scoil Dara is well organised and ably coordinated. Good planning for the provision of Biology is evident and regular formal and informal meetings facilitate the on-going development of the biology plan.
• Good quality teaching and learning were evident in all the classes visited. Lessons were well structured, classroom management was good and there was a good rapport between students and teachers.
• Students were challenged by their teachers and they responded well. They engaged well in the learning process.
• A good regime of formal and informal assessing and monitoring of students’ progress and achievement is in place and parents are kept informed of students’ progress on a regular basis.

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

• It is recommended that simplified safety notices be displayed in a prominent manner in the laboratories and that the school’s health and safety statement be reviewed annually.
• It is recommended that the contents of the science department folder be copied onto the school’s ICT network, to facilitate the sharing of the extensive resources it contains, to enable ongoing modification and updating of materials and to promote the dissemination of good practice.
• It is recommended that, during lessons, an occasional tendency towards prolonged periods of teacher input should be avoided and that more frequent pauses for review and consolidation of learning should be introduced.
• It is recommended that, when using directed questioning, students are given time to think and compose their answers and that all students are included in such interactions.
• It is recommended that strategies which facilitate the development of students’ own skills in the preparation and presentation of written reports be adopted.

A post-evaluation meeting was held with the principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

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