An Roinn Oideachais agus Scileanna

Department of Education and Skills

Subject Inspection of Science and Biology
REPORT

Riversdale Community College
Blanchardstown Road North, Dublin 15.
Roll number: 70081V

Date of inspection: 13 May 2010
REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN SCIENCE AND BIOLOGY

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Riversdale Community College. It presents the findings of an evaluation of the quality of teaching and learning in Science and Biology and makes recommendations for the further development of the teaching of these subjects 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 the teachers, examined students’ work, and had discussions with the teachers. 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 teachers. 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

Riversdale Community College has three science laboratories. They are well equipped and have good information and communications technology (ICT) facilities. Each laboratory has a PC, data projector and screen. All are broadband enabled. The science team also has access to two computer rooms. It is noteworthy that the science team endeavours to ensure that the majority of science classes are held in a laboratory.

The laboratories are linked by a preparation area which has two storage rooms for chemicals. These lockable chemical stores are well organised using the colour-coded scheme. Toxics and flammables are stored in lockable cabinets. At the time of the evaluation the science team were in the process of organising materials and apparatus into kit boxes for the mandatory practicals in Junior Certificate Science.

Appropriate health and safety features were observed during the evaluation. Health and safety equipment such as fire extinguishers, fire blankets, first-aid kits and safety goggles are present in all laboratories. Each laboratory has an isolation switch for gas and electricity. A code of conduct for the laboratory is displayed in each of the three rooms. Appropriate accident reporting procedures are in place. A list of telephone numbers for the emergency services should also be displayed in the laboratories together with the names of teachers with qualifications in first aid.

It is notable that the school provides all of the second level curricular programmes—the Junior Certificate, the Junior Certificate School Programme (JCSP), the Transition Year programme (TY), the Leaving Certificate, the Leaving Certificate Applied (LCA) and the Leaving Certificate Vocational Programme (LCVP)—to meet the varying needs of its student population. TY is a compulsory programme in this school.
In the junior cycle, students are allocated to two bands on the basis of information from feeder primary schools and an assessment at the start of first year. The top fifty percent of students are allocated to the first band where Science is a core subject.

It is good that Science has also been made available to students in the second band this year. In order to ensure equality for all students and so that all junior-cycle students can access Science, this practice should be continued from this point onwards. A number of the students in the second band also follow the JCSP. Biology, Physics and Chemistry are currently available as optional subjects for the Leaving Certificate.

Science is allocated four class periods per week; this allocation takes the form of two double periods in first year and one double period and two single periods in second year and third year. In response to a request from the science team, management has plans in place to allocate one double and two singles to first-year Science from September 2010. This will have the added benefit of a better spread of lessons throughout the week. Biology classes are allocated five periods per week in each year of the Leaving Certificate programme. This arrangement includes at least one double period for practical work. The allocation of class periods to the sciences is in line with National Council for Curriculum and Assessment (NCCA) recommendations. Teachers generally retain the same science class from one year to the next and this level of continuity is praiseworthy.

Teachers have availed of continuing professional development (CPD) and this is supported by management. For example, science teachers in the school have attended in-service training for the revised science and biology syllabuses.

PLANNING AND PREPARATION

The science department in Riversdale Community College is co-ordinated effectively and it is good to note that this position is rotated among members of the science team on an annual basis. Formal meetings of the science team take place approximately twice per term. There is also regular informal contact between members of the team.

Planning documentation presented at the time of the evaluation was organised under the following headings: aims, objectives, minutes of meetings, co-ordination of the science department, class organisation policy. This documentation is in line with the School Development Planning Initiative (SDPI) guidelines. It is noteworthy that the planning folder also contained planning for students with special educational needs and planning for a culturally diverse environment.

In planning for the curriculum content of the courses, teachers have collaboratively compiled lists of topics to be completed in each year for Junior Certificate Science and topics to be completed during each term for Leaving Certificate Biology. This provides a sound basis for the more detailed programmes of work which have been developed for each year group. A list of the topics to be completed in class for the year could be circulated to students. This would assist students in planning and organising their work.

It is noteworthy that the programme of work for each year group includes a section on health and safety to be delivered to students at the beginning of the school year. Programmes of work for Junior Certificate Science outline the learning objectives for each topic and link them to methodologies, activities and modes of assessment within a given timeframe. This is good
practice. Planning for Biology in senior cycle is carried out on a three-year basis to incorporate Biology in TY as well as Leaving Certificate Biology. It is good to note that the programme of work for Leaving Certificate Biology outlines the learning objectives for all topics taught. There is some variation in how the programmes of work have been set out for the senior cycle. It is recommended that the science team discuss best practice in this regard and adopt a common template for the programmes of work for all the sciences.

The biology element of TY has an appropriate mix of Leaving Certificate and non Leaving Certificate content. Notable elements of the programme include DNA fingerprinting, bacterial transformation and a visit to Coláiste Dhúlaigh for ‘DNA Day’. However, there is scope to expand on the methodologies, activities and modes of assessment used. It is recommended that the document provided by the Transition Year Support Service (TYSS), Writing the Transition Year Programme be used as a guide. The common template advised earlier should also be utilised.

The science team has developed a considerable number of resources for the science department. These resources are stored in the science folder on the common server in the school which enables the efficient sharing of good practice among the team.

Individual teacher planning was good. Best practice was observed where teachers had modified the science department’s programme of work to suit the needs of the class groups being taught. All equipment and resources to be used had been set out in advance and this contributed to the good quality lesson management observed.

TEACHING AND LEARNING

In all lessons there was evidence of considered and effective planning. Good practice was observed where the aims of the lesson were outlined to the students at the outset and there was careful prior organisation of resources including materials for practical work. In most cases the lesson content was linked to a previous lesson. In many lessons, homework was corrected at the start of the lesson and this is good. One lesson began with the novel approach of checking on the progress of the fledglings in Áras an Uachtaráin through Derek Mooney’s ‘birdcam’ on the internet. This approach provided a good stimulus for discussion in the lesson.

Teachers maintained discipline in a sensitive manner and this resulted in a good rapport between students and their teacher. Students were addressed by name and teachers adopted an informal style when interacting with them. In most lessons, there was a good level of enthusiasm among students to volunteer answers and to participate in lesson activities. This enthusiasm was encouraged by the teacher and it contributed to the positive learning environment.

Lessons observed included a range of methodologies in the delivery of lesson content. Many of these methodologies called on the active participation of students. These included group work, pair work, brainstorming, teacher demonstration, quiz, practical work and board work. Resources such as models, plants and ICT were incorporated into the lessons and these helped clarify and reinforce the topic.

Teachers showed an awareness of the students’ learning styles and adapted their teaching to suit the students’ needs. Students in one lesson were observed using ‘show me’ boards where they could write or draw their answers on their own board and hold it up for the teacher to see rather than giving answers verbally. In another lesson students watched an engaging, animated clip to
show the path of food through the digestive system. Lesson structure was supportive of students’ learning and took cognisance of students’ previous knowledge. Teachers made good use of a range of house plants to show transport of water in plants as well as the very effective use of the apple blossom to help students identify the different parts of the flowering plant. This use of everyday, concrete examples served to involve students in their learning.

The instruction provided to students was clear and concise. Students were engaged in the learning process. They listened attentively to their teachers, responded to questions, asked questions, carried out activities and completed written exercises. Some teachers encouraged students to work in pairs on their tasks and discuss answers before writing them down. Teachers made good use of worksheets and diagrams to complement and enhance the learning activities. In one lesson, the teacher used the whiteboard to depict a diagram of the digestive system while students were given worksheets on which they were asked to label the diagram. There was good emphasis on the identification and pronunciation of new words and key scientific terminology. This was particularly evident in lessons where a number of the students’ first language was not English. Further resources are available on the website of the English Language Support Programme (www.elsp.ie).

Students’ completion of practical activities was carried out safely and students displayed good team-working skills. Best practice was observed where students displayed established routines for setting up and tidying up after their work. These established routines helped students to gain a sense of responsibility for the efficient conduct of experimental work.

ASSESSMENT

A range of assessment techniques is used in Riversdale Community College. These include formal examinations at Christmas and summer for first-year, second-year and fifth-year students as well as mock exams for the students taking the certificate examinations.

Common end-of-year tests are held where possible and it is good to note that the science team incorporates a percentage of the overall mark for the completion of practical write-ups. Regular class tests and end-of-topic tests are also administered.

Teachers generally maintain good records of student attendance, completion of homework exercises and test results. Samples of students’ work were available in lessons visited. These samples showed that homework is a regular feature of students’ learning and is corrected and monitored regularly by the teachers. This is best practice and is commended. In order to help consolidate the learning process it is important that students be encouraged to follow up on corrections made by their teachers. It is recommended that the science department explores how students’ follow-up on corrections can best be encouraged.

Parents are kept informed of students’ progress through the student journal, reports, parent-teacher meetings. Staff members are also willing to meet with individual parents as necessary.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:
The science department in Riversdale Community College is co-ordinated effectively and the position of co-ordinator is rotated among members of the science team on an annual basis.

The college has three science laboratories which are well equipped and have good ICT facilities.

In the lessons observed, teachers maintained discipline in a sensitive manner and this resulted in a good rapport between students and their teacher.

The instruction provided to students was clear and concise.

The lessons observed included a range of teaching methodologies, many of which called for the active participation of students.

The completion of practical activities was carried out safely by students who displayed good team-working skills.

Teachers generally maintain good records of students’ attendance, the homework exercises they complete and their test results.

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

- The science team should adopt a common template for the programmes of work for all the sciences.
- The plans for TY should be expanded further using the document *Writing the Transition Year Programme*.

A post-evaluation meeting was held with the teachers of Science and Biology and 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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