Subject Inspection of Science and Biology
REPORT

Grange Post Primary School
Grange, County Sligo
Roll number: 72330D

Date of inspection: 16 November 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 Grange Post-Primary School. 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 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 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 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

Grange Post-Primary School is a small school with a warm friendly atmosphere. An evaluation of Science had been carried out in this school in 2006 as part of a Whole School Evaluation. Science is a core subject at Junior Certificate level. A weekly time allocation of two single lessons and one double lesson is assigned for each year of study of the subject. The overall timetabling of Junior Certificate Science is generally appropriate, however, there is scope to look again at the timetabling of science in third year where a single lesson period is timetabled twice on the same day. This should be avoided if at all possible.

In senior cycle, students can follow the established Leaving Certificate programme with the option of taking the Leaving Certificate Vocational Programme (LCVP) as part of their studies. Biology, Physics and Agricultural Science are the three science subjects offered in the school. This is a noteworthy development as the school did not offer any science subject at Leaving Certificate level in 2006. Biology and Physics are studied in year one of Leaving Certificate and Agricultural Science in year two. All sciences are allocated five periods per week in senior cycle and this allocation is within curriculum guidelines.

The science facilities comprise one laboratory with a preparation area and chemical store. Weekly access to the laboratory for all class groups is organised by the science team. The laboratory is clean, tidy and well maintained. The associated preparation and storage area is also well organised and maintained with an adjacent lockable chemical store. It is recommended that management provide a purpose-built cupboard for the storage of flammable chemicals and a separate one for toxic chemicals. The science teachers have spent a considerable amount of time on the organisation of the laboratory which is noted and commended. In addition, non-science classes do not occur in the laboratory which is good practice.

The current science teaching team comprises three teachers. Two are full time teachers in the school and are involved in the teaching of Junior Certificate Science as well as Leaving

Opportunities for continuing professional development (CPD) in Science has been availed of and encouraged by management. A good range of resources is available to support teaching and learning of science in the school. These resources include a data projector, screen and PC, laboratory equipment, models and posters.

Appropriate health and safety equipment was observed including fire extinguishers, safety goggles, fire blanket, and emergency shut off point for gas. The health and safety statement has been reviewed in 2010 and includes a risk assessment for the laboratory. A code of conduct for the laboratory is clearly displayed. Appropriate accident reporting procedures are in place and copies of accident report sheets are available in the laboratory.

The students are encouraged to become involved in the Young Science and Technology exhibition. Field trips, quizzes, and talks from visiting speakers are also included in the science curriculum in the school. The benefit of these experiences, as a means of reinforcing and enhancing students’ learning, must not be underestimated. Such activities are to be commended and encouraged for all science students.

**PLANNING AND PREPARATION**

The appointment of a second full time teacher to the science team this year allows for a more collaborative approach to planning, particularly in the area of Junior Certificate Science. Team meetings are held and a subject co-ordinator has been appointed. Regular informal meetings also take place.

The science team has engaged in the practice of self evaluation and it is praiseworthy that some areas for development have been identified. The future aims of the science department in the school include increasing the uptake of the sciences at senior cycle and the maintenance of high standards in teaching and learning. They also cited the development of resources in conjunction with the learning-support department as a priority and this is commended and encouraged. It is noteworthy that the school has begun the process of analysing the outcomes of the certificate examinations. This is good practice and this analysis should now be used to inform planning for the science programmes.

A subject plan was provided for Junior Certificate Science and this is based on the school development planning initiative (SDPI) template. It includes aims and objectives of the science department in the school as well as class organisation, homework procedures, record keeping, students’ access to science and resources. Planning for students with special educational needs (SEN) includes some suggested teaching methodologies. The science department should also provide the SEN department with a list of key words and science specific terminology which will be useful in enabling all students to engage better with their science lessons.

Curriculum planning includes a list of topics to be completed in each term of the Junior Certificate Science and Leaving Certificate Biology programmes. A more detailed time frame, for example, to suggest the number of class periods per topic would be very useful to teachers in their own planning. The curriculum planning provided gave a good overview of the programmes to be taught. These science plans should now be developed to provide greater detail to include the
learning objectives from the syllabus linked to appropriate methodologies, resources and modes of assessment.

Observed lessons were planned and structured to provide continuity with the previous lessons. Records of work and assessments completed, to date, with each class were presented. Short-term planning was evident through the coherent theme present in the observed lessons. In addition, there was good prior preparation of a variety of resources for all lessons observed.

**TEACHING AND LEARNING**

Good quality teaching and learning was observed in all classes visited. Lessons observed began with the roll being taken. The teachers then outlined to students the learning intention of the lesson. This is good practice as it sets the scene for the lesson and sets a number of short term goals. In the classes observed there was evidence of a good rapport between the students and the teachers with no discipline difficulties evident.

Teachers placed good focus on getting their students to think for themselves. This was facilitated through allowing sufficient time for tasks to be completed. Questioning, where both recall and higher-order questions were employed, was very effective. Teachers allowed appropriate ‘wait-time’ for an answer from a student, with good probing techniques observed to help students obtain the correct answer.

Lesson pace was appropriate and helped to facilitate student learning. Different methodologies observed, including the use of ICT, practical activities, demonstrations and worksheets, helped to enhance student engagement. In most lessons observed, good linkages were made with previous work completed. Teachers regularly made use of recapitulation and consolidation of the lesson content to ensure student understanding before moving forward. Students engaged well with the classroom activities and showed a good understanding of the concepts and facts taught. In another lesson, a power point animated presentation with clear diagrams for students to label served to enhance and clarify the lesson content.

In all lessons, homework was corrected, usually at the beginning. This was done orally in class with students invited to contribute their answers. The teachers then moved around the room checking on individual student work. Homework was generally assigned towards the end of the lesson and students were encouraged to note this in their homework journals. The homework assigned was designed to assist the students in learning and retaining the topic, which is good practice.

Where practical work was observed, students worked with good regard for health and safety issues. Students worked in groups of a maximum of three during practical work. Students were very engaged in their various practical activities. While the students were working, the teachers circulated giving assistance and answering questions when required, which is to be commended. Good organisation allowed the activities to run smoothly. Students were then asked to share their results and conclusions under the direction and guidance of the teacher. This helped to consolidate the learning and contributed to the students’ ability to independently make a record of their work. This is very good practice. It is also noteworthy that teachers encouraged students to write-up their experiments in their own words, making use of a bank of key words noted on the white board.
ASSessment

The school has a formal homework policy and teachers monitor the implementation of this policy on a daily 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, and through observation of practical activities.

Continual assessment also occurs through class tests on completion of a unit of work or a topic. Formal student assessment occurs through tests at Christmas and summer. Certificate examination students also sit pre-examinations in the spring. In addition, the team award students with marks for their practical copybooks as part of their overall grade in the subject. As an alternative method of providing the students with further motivation for engagement with the practical elements of the course, teachers could include a mini-practical assessment where appropriate. The inspector also reviewed students’ copybooks and homework. These contained an appropriate level of student work and were of a good standard.

Formal reports are issued on completion of the Christmas and summer assessments. This is achieved via the school’s e-portal system. Parent-teacher meetings are also held for all classes annually. The student journal, with comments on homework, is also used to inform parents of students’ progress.

Summary of main findings and recommendations

The following are the main strengths identified in the evaluation:

- Science is a core subject at Junior Certificate level.
- Opportunities for continuing professional development (CPD) in Science have been availed of and encouraged by management.
- Good quality teaching and learning were observed in all classes visited.
- Lesson pace was appropriate and helped to facilitate student learning.
- Where practical work was observed, students worked with good regard for health and safety issues.

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

- It is recommended that management provide a purpose-built cupboard for the storage of flammable chemicals and a separate one for toxic chemicals.
- The science department should provide the SEN department with a list of key words and science specific terminology which would be useful in enabling all students to engage better with their science lessons.
- The science plans should be further developed to provide greater detail. Syllabus-based learning objectives, linked to appropriate methodologies, resources and modes of assessment should be included.

Post-evaluation meetings were 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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