

An Roinn Oideachais agus Scileanna

Department of Education and Skills

**Subject Inspection of Science and Biology
REPORT**

**St Mary's College
Rathmines, Dublin 6
Roll number: 60560E**

Date of inspection: 30 April 2013



**A N R O I N N | D E P A R T M E N T O F
O I D E A C H A I S | E D U C A T I O N
A G U S S C I L E A N N A | A N D S K I L L S**

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

INFORMATION ON THE INSPECTION

Date of inspection	30 April 2013
Inspection activities undertaken <ul style="list-style-type: none">• Review of relevant documents• Discussion with principal and teachers• Interaction with students	<ul style="list-style-type: none">• Observation of teaching and learning during five class periods• Examination of students' work• Feedback to principal and teachers

MAIN FINDINGS

- The quality of teaching and learning was mostly very good or good and there was also a small number of lessons with scope for development.
- In most lessons, good quality questioning, good teacher circulation and well-planned student activities, led to good, and sometimes excellent, student engagement but in other instances student engagement required development.
- Some very good assessment practices are established and there is some scope for development in the assessment instruments used.
- There are some very good facilities and co-curricular activities to support teaching and learning in the subjects but the deployment of science teachers merits further evaluation and review.
- Very good use is being made of the subject planning process.

MAIN RECOMMENDATIONS

- Senior management should evaluate and review the current modular approach to teaching the Junior Certificate Science syllabus, incorporating feedback from students and parents.
 - Collaborative and teacher-supported independent learning experiences should be further developed through enabling more active learning, with the teacher in the role of facilitator, whenever appropriate.
 - Teachers should adapt the current assessment instruments for topics to provide greater variety and higher-order challenges.
 - The subject planning process should be used to further develop the areas outlined in the body of the report including curriculum, monitoring student progress and the investigative approach in practical work.
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INTRODUCTION

St Mary's College is an all-boys fee-charging secondary school with a current enrolment of 435. The curriculum includes the Junior Certificate, a compulsory Transition Year (TY) and the Leaving Certificate programmes.

TEACHING AND LEARNING

- In lessons visited, the quality of teaching and learning was mostly very good or good and there was also a small number of lessons with scope for development. Most lessons observed during the inspection focused on revision and one lesson seen focused on the development of a topic and included laboratory investigations.
- During the revision lessons, teachers combined whole-class teaching and questioning with supporting information and communication technology (ICT) images and short demonstrations that enabled students to recall previously conducted investigations. These resources provided valuable reference points for learning and supported students' engagement in the revision process. In a small number of instances, teachers should ensure that the resources are easily visible from the back of the laboratory.
- In some lessons visited, teachers' ICT presentations were very well structured so that they supported task-based learning as well as teacher instruction. This enabled teacher circulation and increased individualisation for the learners in terms of teacher feedback and encouragement. In some instances, however, there was scope for teachers to adapt the lesson structure, by adding student activities and assessments to the lesson sequence. This could be approached by making the ICT slides more interactive.
- Good questioning strategies were used in most lessons. In one double lesson visited, very good teacher questioning encouraged students not only to explain but to predict, relate and provide examples, and this resulted in an exemplary learning experience for students.
- One lesson that incorporated student practical work, facilitated very good opportunities for collaborative learning. In this lesson, students' interaction was dynamic and productive, and they achieved a number of very good learning outcomes in terms of knowledge, skills and attitude.
- The quality of student engagement was mostly good, and excellent in one lesson, but there were times when individual engagement could have been better. To maximise student productivity in lessons, all teachers should facilitate a greater number of collaborative and teacher-supported independent learning experiences and include as many opportunities as possible for students to engage in dialogue in the subjects.
- Students demonstrated excellent behaviour. They listened attentively to instruction and responded to high quality questioning. They were motivated to learn, particularly during activities.
- Student copybooks and laboratory notebooks contained considerable amount of written work completed with very good attention to detail. Students are given frequent tests with teachers displaying the marking scheme and grades achieved in the corrections. It is good practice that students keep tests in folders and refer to them again.
- In some class groups, students completed exercises summarising their learning in a lesson topic. This valuable strategy should be developed and extended to all lessons.

- A considerable bank of end-of-topic assessments has been developed for junior cycle. However, current drafts follow the same format of 'fill-in-the-blanks' and are based on recall questions. The predictability of this format should be addressed. The instruments should be adapted to incorporate higher-order questions in a progressive manner, including application-type questions, and more diverse activities. It would also be advisable to bridge topics and include inter-disciplinary themes.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- Science is a core subject for junior cycle, but unusually, students are taught by three teachers who cover the Biology, Chemistry and Physics sections separately. This presents some unique challenges for students and teachers of a single syllabus, in particular achieving consistency in teacher expectations and in the approaches taken to the scientific and investigative methods. In addition, students have no single educator with responsibility for overall attainment. The school self-evaluation approach should be used to enable management to further evaluate this model of provision and explore options with all involved: teachers, students, parents and management as part of a review of the current provision.
- Management are supportive of the provision of science subjects. Biology Physics and Chemistry are compulsory subjects for TY. For Leaving Certificate, student uptake of Biology is very good and the timetable allows a student to study one, two or all three of the science subjects. Almost all students take the subjects at higher level in examinations.
- Management's provision of facilities for the science subjects and the resources required for student practical work is excellent. The facilities, comprising three large laboratories and preparation areas, are modern and well resourced. The learning environment in most laboratories has been very well enhanced with the use of modern charts, displays and stimulating articles on scientific advancements. ICT facilities are continually updated.
- Management provides support for teachers' continuing professional development and for membership of subject associations. Teachers are keeping themselves up-to-date and records show that a very good range of courses has been attended.
- A very good range of co-curricular activities are organised annually, and through these and the TY programme for the sciences, students have further opportunities to develop their own curiosity and investigative skills in the subjects.

PLANNING AND PREPARATION

- A formal structure is in place to support the functioning of the science department. Very good discussions take place at department meetings including lesson planning, teaching and learning approaches, the promotion of assessment for learning and students' performance in tests.
- The detailed science and technology policy describes organisation and provision as well as the curriculum for all year groups, and it reflects recent whole-school initiatives in promoting assessment for learning and student literacy.
- In developing the curriculum plans further, it would be useful for all teachers to agree on and develop a set of three or four key learning outcomes to be achieved by students in

each year of their study of the subject. These should reflect the principles of the syllabus or programme and be developmental in terms of skills acquisition from year to year.

- Teachers keep records of students' application, homework and performance in tests in order to provide ongoing feedback to students and their parents. It would be useful for all three teachers of each science group to record individuals' progress with the requirements of coursework A, coursework B and the terminal examination so as to assess ongoing trends in the attainment of knowledge, skills and attitudes in line with syllabus objectives. Records of this nature would support subject department discussions on student outcomes as well as ensuring consistency and uniformity of approach.
- Junior cycle science teachers should use the planning meetings to discuss and evaluate ways of promoting the investigative approach to learning Science, including allowing for unseen procedures for coursework A practicals. To support this, an evaluation of the pro-forma laboratory notebooks currently in use would be useful.

The draft findings and recommendations arising out of this evaluation were discussed with the principal/deputy principal and subject teachers at the conclusion of the evaluation. The board of management of the school was given an opportunity to comment in writing on the findings and recommendations of the report, and the response of the board will be found in the appendix of this report.

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Appendix

SCHOOL RESPONSE TO THE REPORT

Submitted by the Board of Management

Area 1 Observations on the content of the inspection report

The Board of Management welcomes the findings in this report, in particular to the quality of teaching and learning and the engagement and behaviour of the students.

It congratulates all involved in the teaching and learning of science in the College and looks forward to continued engagement with the Inspectorate.

Area 2 Follow-up actions planned or undertaken since the completion of the inspection activity to implement the findings and recommendations of the inspection.

Each inspection process has promoted a sustained focus on the core areas of teaching and learning. In our self-evaluation we have focused on assessment for learning, on homework, on analysis of student outcomes and outcome trends, and on the integration of ICT into the everyday classroom experience.

The first main recommendation, on an evaluation and review of the modular approach at Junior Cert, has been included in the programme for the present academic year. The other recommendations – on collaborative learning experiences, assessment instruments and subject planning – will continue to be at the centre of school and subject planning, particularly through the continued use of formal self-evaluation models and in the implementation of the new programme for the Junior Certificate. They will also form part of the aims and objectives behind the continued shift towards classroom models based around IT – supported collaborative, differentiated and independent modes of learning.