

An Roinn Oideachais agus Scileanna

Department of Education and Skills

**Subject Inspection of Science and Biology
REPORT**

**St Raphaela's Secondary School
Stillorgan, Co. Dublin
Roll number: 60361V**

Date of inspection: 7 December 2011



**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	6 and 7 December 2011
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 double lessons• Examination of students' work• Feedback to principal and teachers

MAIN FINDINGS

- The quality of teaching and learning observed was good, with many instances of very effective practice, although there is potential to develop co-operative learning.
- Lessons were characterised by very high levels of teacher clarity and expectation combined with generally very effective use of modern technology and good resources.
- Teachers very successfully develop in their students an appreciation of the roles and applications of science in everyday life, and provision is made for high-quality co-curricular activities.
- Good-quality assessment practices are used and learning checks are integrated into lesson structure.
- The sciences are very strongly supported and very well provided for.
- Subject department planning is very productive with very good collaboration and a focus on achieving consistency and ongoing development.

MAIN RECOMMENDATIONS

- In further developing learning as students progress from first year to sixth year, teachers should increasingly encourage students to work independently and in co-operation with each other.
 - While the investigative approach to Junior Certificate Science is clearly understood, teachers should consider further developing the ways in which students can be led to plan, design and record investigations to ensure they are fully acquiring these skills.
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INTRODUCTION

St Raphaela's Secondary School provides all-girls second-level education to 440 students. It offers the Junior Certificate and the Leaving Certificate and an optional transition year (TY) programme which is availed of by most students.

TEACHING AND LEARNING

- Overall the quality of teaching and learning was good with many instances of very effective practice.
- Lessons were very effectively structured with intended learning outcomes displayed and outlined to students at the start of each lesson, learning checks integrated during lesson progress and a review of learning at lesson conclusion. Lesson content was communicated in a way that was understood and all key concepts and examples were clearly explained and linked to prior learning and real-life applications. These approaches, in combination with high expectations, strongly influence learning and are yielding very good outcomes for students.
- Other productive assessment for learning (AfL) practices observed included differentiation in the questions asked by teachers in combination with good formative feedback. Best practice was observed when teachers adopted an investigative approach to questions and tasks that challenged students according to ability. While effective AfL practices are clearly employed by teachers, there are some possibilities to place further emphasis on AfL when planning lessons, as this will yield additional dividends for learning.
- Well-chosen resources were used to make learning more interesting and accessible to all abilities. In most instances, very effective and flexible use was made of the available information and communication technology (ICT), including interactive white boards, and this added greatly to a contemporary expression of the subjects.
- Presentations supported exemplification of learning points by providing images of living organisms and scientific processes, and demonstrations on the navigation of websites for homework. However, in a few instances text-laden presentations were over-utilized in combination with teacher instruction. This method should be reconsidered so students are habitually challenged in more active learning tasks such as working independently or co-operatively.
- Proper emphasis is placed on student practical work and in these activities students demonstrated high interest, very good procedural skills and the ability to work well co-operatively. In practical work, teachers set analysis and exploratory tasks as appropriate and the scientific method is very well promoted. Procedural planning for investigations, however, could be developed.
- Laboratory reports are completed to a high standard of composition and presentation and this is supported by the evident developmental feedback provided. Teachers should, however, consider the extent to which the current laboratory booklets fully support the investigative approach and the progressive development of students' report writing skills.
- Other co-operative learning activities were integrated in some lessons through pair work or attempted discussion, but these activities were often short. There is scope for the further development of co-operative learning in situations other than practical work and

students will require some coaching on the principles of these techniques. Successful practice was seen when teachers took opportunities to involve students in the lesson.

- Students' written work showed very good progress and a positive work rate in class work and homework.
- Teachers pay good attention to developing students' skills in drawing and interpreting graphs and expressed some good ideas for whole-school approaches to building on this.
- A very good atmosphere for learning was generated. Students were co-operative and responsive demonstrating high levels of interest.
- Outcomes in the state examinations show that a very high proportion of students take higher level. Students have high expectations for their own performance in both house and state examinations. They are encouraged periodically by teachers to track their own progress and set targets for themselves in reflective exercises on school templates.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- Science is a core subject for junior cycle and TY. Biology, Physics and Chemistry are provided in senior cycle. Positive steps are taken to promote the subjects and there is a very high uptake of Biology and good uptake of Physics and Chemistry.
- Appropriate timetable allocation is made for the sciences in junior and senior cycle.
- The sciences are taught in mixed-ability class groups in junior and senior cycle and this arrangement is working very well for teachers and delivering good outcomes for students.
- Five teachers are deployed to the sciences in accordance with their professional qualifications.
- There are three modern and excellently-resourced laboratories and access to these for students is very good. The learning environment in the laboratories and corridor areas is excellently enhanced with displays, competitions, media articles and student projects.

PLANNING AND PREPARATION

- Individual and collective subject planning is of a high standard. Collaborative planning includes preparing agreed curriculum plans and common assessments for each year group; planning for a wide range of co-curricular activities; the promotion of the subjects and providing for the efficient use of the laboratories. The extension of planning to share electronic resources to support teaching and learning in topics is an area worth focusing on given the recent enhancements in ICT.
- Agreed schemes of work are well developed. All schemes have indicated time frames and learning outcomes aligned with teaching strategies including provision for differentiation, resources and assessment. The very highly developed scheme for junior cycle has an admirable focus on student learning; it differentiates what all, most and some students should be able to do and also outlines what teachers want students to learn, how they will help students to learn and how teachers will know students have learned.
- The TY Science programme provides students with a varied and interesting practical experience of the subjects at senior cycle and builds on the skills gained at junior cycle.

- Good self-evaluation is evident. As well as reviewing and developing schemes of work annually, the department undertakes an annual analysis on the outcomes of state examinations, comparing them with national figures. In addition to the current yearly analysis, it may be worthwhile examining trends over a number of years.
- Teachers keep themselves well informed of professional development opportunities and ICT to support the subjects.

The draft findings and recommendations arising out of this evaluation were discussed with the principal and subject teachers at the conclusion of the evaluation. 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.

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