

An Roinn Oideachais agus Scileanna

Department of Education and Skills

**Subject Inspection of Science and Chemistry
REPORT**

**Hamilton High School
Bandon, County Cork
Roll number: 620500**

Date of inspection: 4 October 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 CHEMISTRY

INFORMATION ON THE INSPECTION

Dates of inspection	4 October 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 class periods• Examination of students' work• Feedback to principal and teachers

MAIN FINDINGS

- The standard of teaching and learning observed was good in some lessons and very good in other lessons.
- Very good use of information and communication technology (ICT) supported students' learning.
- Junior Science is a core subject and student uptake of the Leaving Certificate science subjects is very good.
- The inclusion of a project element of assessment in first year is very good.
- Lack of adequate laboratory facilities places restrictions on regular student access to a laboratory.

MAIN RECOMMENDATIONS

- Lessons should be based on the sharing and use of learning outcomes.
 - The safety requirements of the biology laboratory should be addressed as a matter of priority and this laboratory should be appropriately resourced to facilitate the teaching of junior Science.
 - Using the same format as the chemistry plans, the programmes for all the science subjects could be developed further, given the significant work completed by teachers on an individual basis.
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INTRODUCTION

Hamilton High School is a voluntary secondary school for boys, in Bandon in County Cork. Junior Certificate, Transition Year, Leaving Certificate and the Leaving Certificate Vocational Programme are offered to the students.

TEACHING AND LEARNING

- The standard of teaching and learning observed was good in some lessons and very good in other lessons.
- Lessons were generally well structured, ensured continuity by beginning with a review of previous learning and the pace was generally appropriate. In some instances, the learning objectives were shared with the students at the outset. It is recommended that all lessons begin by outlining the intended learning outcomes to the students and these learning outcomes should be revisited in a review stage.
- In the practical lesson observed, students' practical skills were well developed and they worked well together in a safe manner in small groups.
- In almost all lessons, ICT was used effectively to highlight salient points and provide appropriate visual images. The use of a visualiser in one instance was very effective.
- Questioning was used successfully to ascertain students' learning and to develop lesson content. Use of higher-order questions was observed and teachers supported students as they developed their answers.
- Students should be encouraged to work collaboratively and in a structured manner during pair-work activities.
- There was evidence of linking the lesson topic with students' everyday experiences and previous knowledge to develop the lesson content.
- Opportunities to enhance students' subject-specific literacy and numeracy were exploited in some instances. Teachers should consider introducing the use of 'note making' rather than 'note taking'. This would facilitate students in developing their understanding of the concept during whole-class discussion. In this way, note-making can be used as a strategy to consolidate students' learning.
- A very good teacher-student rapport was evident in the lessons visited. The relaxed atmosphere was conducive to learning and students participated very well.
- The uptake of Science at higher level for Junior Certificate is very good. The analysis of student performance in the certificate examinations conducted annually should be retained in the planning folders and should inform teaching and learning.
- Learning in class was consolidated by homework assigned. In the copybooks sampled, the standard of students' written work was good in some instances and very good in others. Student progress is monitored through regular tests. Common assessments are used to ensure standardisation of learning across the year groups. This is very good. The inclusion of a percentage for a project in the overall assessment grade for first-year students is commended. Science teachers indicated that they would consider aggregating marks from the assessment of practical copies with end-of-term examination marks to arrive at overall term results. This practice is encouraged.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- All students study Science in mixed-ability classes. Biology, Chemistry and Physics are provided as optional subjects for Leaving Certificate. The uptake of the Leaving Certificate sciences is very good.
- The science programme in TY consists of short modules of Physics, Chemistry, Biology and Applied Maths. Students also study modules of Science and Technology in Action. This is very good as it facilitates the study aspects of applied science that are not on the certificate examination syllabuses.
- Overall, timetabling of the sciences is appropriate. Mandatory student practical work is facilitated by the provision of a weekly double lesson for each class in junior cycle. However, there are no double lesson-periods provided for the sciences in senior cycle. While acknowledging timetabling constraints, it is nevertheless recommended that a weekly double lesson be provided for all science subjects to facilitate the completion of the mandatory practical work by the students.
- Subject option bands for senior cycle are based on student input. This is positive. Students are well supported when choosing their subjects. The sampling of subjects in TY is very good as it allows students make informed choices.
- A high level of ICT provision in the school supports teaching and learning.
- The school has one regular-sized laboratory, the chemistry laboratory. A high level of collaboration among the science teachers ensures that larger class groups have access to this laboratory for mandatory practical work.
- The biology laboratory is much smaller. There is no gas or water on student benches. Thus, this room is not suitable for larger class groups or for student practical work. In-school management are fully aware of restrictions caused by current facilities. During the previous science and chemistry inspection in 2005, it was strongly recommended that the biology laboratory be resourced in order to support the teaching and learning of Science. This has not happened. The biology laboratory should be upgraded and resourced.
- The chemicals in the biology laboratory should be removed to the adjoining store and should be stored according to Department guidelines.
- This store, adjoining the biology laboratory, should be appropriately ventilated and gas and electrical isolation switches should be installed. While the principal has brought these safety requirements to the attention of the unitary manager, they remain unresolved to-date.
- Chemicals are stored appropriately in the storage and preparation area adjoining the chemistry laboratory. However, the chemical store should be appropriately ventilated and the flame-resistant press should be moved to the store.
- The safety statement should be revised to align with guidelines recently devised by the Health and Safety Authority and other agencies.
- The provision of whole-staff professional development (CPD) is very good.
- Students participate in a good level of science-related extracurricular and co-curricular activities.

PLANNING AND PREPARATION

- It is clear that the science department works in a collaborative manner.
 - A common programme of work for junior Science has been devised.
 - Very good work has been done on developing senior cycle chemistry plans. The TY and Leaving Certificate programmes are written in the form of learning outcomes which are linked to the teaching and learning methodologies, assessment strategies and the resources to be used. Timeframes are also specified. Using the same format as the chemistry plans, the programmes for all the science subjects could be developed further, given the significant work completed by teachers on an individual basis.
 - The aspects of Science and Technology in Action undertaken should be specified in the TY plan.
 - Work has begun on organising physics experiment boxes for Junior Science.
 - Minutes of the last two department meetings have been retained. Building on this good practice, it is suggested that these be recorded in electronic format which would more easily facilitate the retention of minutes on an ongoing basis.
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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 Unitary Manager of the school was given an opportunity to comment in writing on the findings and recommendations of the report, and the response of the unitary manager will be found in the appendix of this report.

Appendix

SCHOOL RESPONSE TO THE REPORT

Submitted by the Unitary Manager

Area 1 Observations on the content of the inspection report

- Thank you to the Inspectorate for their professional guidance and advice.
- The Science Department will be encouraged to share and use “learning outcomes” in lessons and to further develop individual science subject plans, including Transition Year.
- In so far as recourses from the Department of Education and Skills and timetabling constraints will allow, the inclusion of a double class for senior cycle science subjects will be further investigated.
- It is requested that the DES will continue to provide adequate resources to the school to facilitate the very good uptake of science subjects at senior cycle in the future.
- The resourcing and Health and Safety requirements of the Biology laboratory will once again be brought to the attention of the School Manager. The Principal is fully aware of the restrictions placed on regular student access to a laboratory and the difficulties encountered by staff. These concerns have been highlighted to the School Manager.

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

A. Chemistry Laboratory

- (i) the provision of a vent from the Storeroom is in hand
- (ii) Press-button gas valves will be installed.

B. Biology laboratory

- (i) A vent from the store, through the house gable, is in hand.
- (ii) The gas tank will be moved outside.
- (iii) The sinks and gas burners will be increased from two to four of each, and will be fitted, as far as possible, to comply with the official specifications.

C. We fully agree that a new and larger laboratory is badly needed for Biology. This, however, will require substantial financial assistance from the Department of Education and Skills.