Subject Inspection in Science and Chemistry

REPORT

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<th>Ainm na scoile / School name</th>
<th>Cobh Community College</th>
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<td>Seoladh na scoile / School address</td>
<td>Carrignafoy</td>
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<td>Cobh</td>
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<td>Co. Cork</td>
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<td>Uimhir rolla / Roll number</td>
<td>70970G</td>
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Date of Inspection: 23-03-2017
WHAT IS A SUBJECT INSPECTION?
Subject Inspections report on the quality of work in individual curriculum areas within a school. They affirm good practice and make recommendations, where appropriate, to aid the further development of the subject in the school.

HOW TO READ THIS REPORT
During this inspection, the inspector evaluated learning and teaching in Science & Chemistry under the following headings:

1. Learning, teaching and assessment
2. Subject provision and whole-school support
3. Planning and preparation

Inspectors describe the quality of each of these areas using the Inspectorate’s quality continuum which is shown on the final page of this report. The quality continuum provides examples of the language used by inspectors when evaluating and describing the quality of the school’s provision in each area.
Subject Inspection

INSPECTION ACTIVITIES DURING THIS INSPECTION

<table>
<thead>
<tr>
<th>Dates of inspection</th>
<th>22-03-2017 and 23-03-2017</th>
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<tr>
<td>Inspection activities undertaken</td>
<td>• Observation of teaching and learning during five class periods</td>
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<tr>
<td>• Review of relevant documents</td>
<td>• Examination of students’ work</td>
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<td>• Discussion with principal and key staff</td>
<td>• Feedback to principal and relevant staff</td>
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<td>• Interaction with students</td>
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SCHOOL CONTEXT

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS:

FINDINGS
- The quality of teaching and learning observed ranged from good to very good in the lessons observed.
- Commendably, the use of a problem-solving and investigative approach to teaching Science and Chemistry was observed in a number of lessons.
- Some use of formative assessment strategies was observed; students’ learning would benefit from the extended use of such approaches.
- Whole-school support and provision and timetabling for the sciences is good, although time allocation for the TY sciences varies across subjects.
- A very good level of collaboration and co-operation exists among science department members and this has resulted in an excellent level of subject planning.
- A good approach to planning for the new Junior Certificate Science Specification has taken place, which included detailed consideration of learning outcomes; reference to the junior cycle key skills would be beneficial.

RECOMMENDATIONS
- Formative assessment strategies should be used to a greater extent across the science department.
- The imbalance in the time allocated to individual sciences during Transition Year (TY) should be rectified in future TY science plans, with parity given to Physics, Chemistry and Biology.
- When planning for the new Junior Science specification, the learning outcomes in the nature of science strand and the key skills should be specifically linked to the learning outcomes in
the other strands to ensure an integrated approach is taken to teaching these aspects of the junior cycle programme.

DETAILLED FINDINGS AND RECOMMENDATIONS

1. TEACHING AND LEARNING

- The quality of teaching and learning observed ranged from good to very good.
- Teacher preparedness for lessons was very thorough, and included planning for the integration of information and communication technology (ICT), student activities and student practical work.
- Overall, lessons were built around a clear rationale and structure and were driven by active student-centred methodologies.
- Lessons were well structured, with teacher input seamlessly integrated with purposeful student tasks, including student practical work. The pace was good in most lessons.
- Clear, relevant learning intentions that were contextualised to students’ learning needs were shared with students in lessons. Best practice was observed where these were used to review student learning during and at the end of the lesson.
- At the beginning of one lesson, a video clip was effectively used to stimulate student interest in the new topic.
- Teachers were aware of students’ individual learning needs, and selected teaching practices to encourage and assist students in their learning. In-class support for student learning was very good.
- In one instance, advice was given in relation to: tailoring text on slides to meet student needs; identification of the rationale for, and the required learning from specific tasks; and best practice in relation to enhancing students’ understanding of subject-specific terminology.
- Commendably, the use of a problem-solving and investigative approach to teaching Science and Chemistry was observed in a number of lessons. Effective strategies for this approach observed included posing a question to the students and asking them to state a hypothesis and design an experiment to prove the hypothesis.
- Students worked well in practical lessons and almost all were interested and engaged. In one practical lesson following teacher demonstration, students had to complete a task relating to sequencing the experimental procedure in advance of doing the experiment. This is very good.
- Classroom atmosphere was very positive, teacher and student rapport was very good. Discipline was sensitively and unobtrusively maintained on the rare occasion that it was necessary.
- Effective use of questioning was a central tenet of all lessons observed. Students’ contributions were encouraged and affirmed and they were very well supported as they developed their answers.
- Some evidence of the use of formative assessment strategies was observed in lessons. Such strategies should be used to a greater extent across the science department. Very effective approaches to assessing students’ learning included the use of placemat activities, and student use of mini whiteboards at the end of one lesson.
Overall, students’ learning in relation to skill development and subject knowledge was good.

Commendably, appropriate literacy and numeracy strategies were incorporated into lesson structure.

It is good to note that the science department sets targets set to improve attainment in certificate examinations.

2. SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- Whole-school support and provision and timetabling for the sciences is good. Science is a core subject in junior cycle. Agriculture and Horticulture is offered in the LCA programme.
- Biology, Horticulture, Chemistry and Physics are offered as modules in TY. However, provision in terms of the time allocated to the individual science subjects is imbalanced. This imbalance should be rectified in future TY science plans, with parity given to Physics, Chemistry and Biology. In addition to providing a broader scientific education, this would also ensure that students would have sufficient subject sampling in advance of choosing subjects for Leaving Certificate.
- Biology, Chemistry and Physics are offered as part of an open subject choice for Leaving Certificate. However, the uptake of Physics and Chemistry is low; both subjects are only being offered in sixth year during the current year. The science department should continue to develop strategies that would increase students’ interest in and uptake of the physical science subjects.
- The two laboratories and demonstration room provide visually stimulating learning environments with displays of students’ work and scientific models, and the laboratories are well resourced.
- A very high level of attention has been paid to health and safety procedures in the science department. Chemicals in the storage and preparation area are classified and segregated according to best practice guidelines and resources are very well organised. Commendably, risk assessments for the laboratories are completed.
- End-of-term assessments are devised using a core of common questions for all classes in a specific year-group, with additional questions for individual classes as necessary. Such an approach is good as it assists in working towards standardisation across year groups.
- A very good level of co-curricular and extracurricular activities supports students’ learning of and interest in the sciences.
- The school has a good complement of science teachers. Very good links have been made with the Irish Science Teachers’ Association and the commitment of the science department to upskilling is evidenced by their willingness to attend science-related in-service.

3. PLANNING AND PREPARATION

- A very good level of collaboration and co-operation exists among science department members. The coordination of the science department is very effective.
- The level of subject planning is excellent. Plans have been devised for all sciences. There is significant evidence of teacher evaluation of progress in relation to these subject plans on a half-termly basis. This is very good.
- Commendably, a collaborative approach to detailed planning for the new Junior Certificate Science Specification has taken place. Learning outcomes have been interrogated, thus
ensuring a shared understanding of intended learning and the resulting sub-elements have been included in the subject plan. Building on this good work, the learning outcomes in the nature of science strand and the key skills should be specifically linked to the learning outcomes in the other strands to ensure an integrated approach is taken to teaching these aspects of the junior cycle programme. Teaching methodologies and assessment modes should also be included.

- Examination of TY science programmes of work indicate that students have opportunities to develop skills and learn concepts, which are outside the certificate syllabuses in some instances. This approach is very good. The TY chemistry plan should be reviewed to incorporate such experiences for students.
- Planning for lessons ranged from good to very good.

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 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.
THE INSPECTORATE’S QUALITY CONTINUUM

Inspectors describe the quality of provision in the school using the Inspectorate’s quality continuum which is shown below. The quality continuum provides examples of the language used by inspectors when evaluating and describing the quality the school’s provision of each area.

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<th>Level</th>
<th>Description</th>
<th>Example of descriptive terms</th>
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<td>Very Good</td>
<td><strong>Very good</strong> applies where the quality of the areas evaluated is of a very high standard. The very few areas for improvement that exist do not significantly impact on the overall quality of provision. For some schools in this category the quality of what is evaluated is <strong>outstanding</strong> and provides an example for other schools of exceptionally high standards of provision.</td>
<td>Very good; of a very high quality; very effective practice; highly commendable; very successful; few areas for improvement; notable; of a very high standard. Excellent; outstanding; exceptionally high standard, with very significant strengths; exemplary</td>
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<td>Good</td>
<td><strong>Good</strong> applies where the strengths in the areas evaluated clearly outweigh the areas in need of improvement. The areas requiring improvement impact on the quality of pupils’ learning. The school needs to build on its strengths and take action to address the areas identified as requiring improvement in order to achieve a <strong>very good</strong> standard.</td>
<td>Good; good quality; valuable; effective practice; competent; useful; commendable; good standard; some areas for improvement</td>
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<td>Satisfactory</td>
<td><strong>Satisfactory</strong> applies where the quality of provision is adequate. The strengths in what is being evaluated just outweigh the shortcomings. While the shortcomings do not have a significant negative impact they constrain the quality of the learning experiences and should be addressed in order to achieve a better standard.</td>
<td>Satisfactory; adequate; appropriate provision although some possibilities for improvement exist; acceptable level of quality; improvement needed in some areas</td>
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<td>Fair</td>
<td><strong>Fair</strong> applies where, although there are some strengths in the areas evaluated, deficiencies or shortcomings that outweigh those strengths also exist. The school will have to address certain deficiencies without delay in order to ensure that provision is satisfactory or better.</td>
<td>Fair; evident weaknesses that are impacting on pupils’ learning; less than satisfactory; experiencing difficulty; must improve in specified areas; action required to improve</td>
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<td>Weak</td>
<td><strong>Weak</strong> applies where there are serious deficiencies in the areas evaluated. Immediate and coordinated whole-school action is required to address the areas of concern. In some cases, the intervention of other agencies may be required to support improvements.</td>
<td>Weak; unsatisfactory; insufficient; ineffective; poor; requiring significant change, development or improvement; experiencing significant difficulties;</td>
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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 BOM welcomes the report, findings and recommendations. We are particularly pleased to advise that the teaching and learning recommendation with regard to individual science subjects will be looked at for the coming year. We will endeavour to address that recommendation within the constraints of our available resources.