

**An Roinn Oideachais agus Scileanna**  
**Department of Education and Skills**

**Subject Inspection in Science**

**REPORT**

<b>Ainm na scoile / School name</b>	C.B.S. Mount Sion, Waterford
<b>Seoladh na scoile / School address</b>	Barrack Street Waterford
<b>Uimhir rolla / Roll number</b>	64930I

**Date of Inspection: 03-05-2018**



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An Roinn Oideachais  
agus Scileanna  
Department of  
Education and Skills

## **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 under the following headings:

1. Teaching, learning 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.

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.

## **CHILD PROTECTION**

During the inspection visit, the following checks in relation to the school's child protection procedures were conducted:

1. The name of the DLP and the Child Safeguarding Statement are prominently displayed near the main entrance to the school.
2. The Child Safeguarding Statement has been ratified by the board and includes an annual review and a risk assessment.
3. All teachers visited reported that they have read the Child Safeguarding Statement and that they are aware of their responsibilities as mandated persons.

The school did not meet the requirements in relation to 1 above and therefore was not fully compliant with the checks undertaken at the time of the inspection visit. However, the school has subsequently furnished evidence of compliance with these requirements.

## SUBJECT INSPECTION

### INSPECTION ACTIVITIES

<b>Dates of inspection</b>	02-05-2018 and 03-05-2018
<b>Inspection activities undertaken</b> <ul style="list-style-type: none"><li>• Review of relevant documents</li><li>• Discussion with principal and key staff</li><li>• Interaction with students</li></ul>	<ul style="list-style-type: none"><li>• Observation of teaching and learning during three one-hour class periods</li><li>• Examination of students' work</li><li>• Feedback to principal and relevant staff</li></ul>

### School context

Mount Sion CBS is a voluntary secondary school for boys under the patronage of Edmund Rice Schools Trust (ERST). The school participates in the Delivering Equality of Opportunity in Schools (DEIS) action plan for inclusion. The school has a current enrolment of 284 students. All junior cycle students are enrolled in the Junior Certificate School Programme (JCSP). The school also offers the established Leaving Certificate, the Leaving Certificate Vocational Programme (LCVP) and a compulsory Transition Year (TY) programme.

### SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS:

#### Findings

- The quality of teaching, learning and assessment ranged from good to very good; some elements of each lesson were exemplary although some possibilities for improvement were also evident.
- Positive classroom interactions supported a co-operative and productive learning environment.
- Teachers meaningfully differentiated lesson content and activities in order to cater for the varying needs and abilities of students.
- Where there was scope for development, teacher instruction was too dominant, some students were not participating purposefully, and there was insufficient focus on inquiry-based learning or on formative assessment practices.
- The overall quality of individual teacher planning and collaborative planning is very good; there is scope to improve balanced development of science education.
- Subject provision and whole-school support for junior Science is good.

#### Recommendations

- Teaching approaches should be reviewed in some lessons so that there is a more appropriate balance between teacher instruction and student activity.
- Teachers should plan and collaborate to ensure that inquiry-based learning is maximised and that all students have the opportunity to lead learning.
- Developmental formative written feedback should be planned and implemented for all students.
- Current science planning should be extended to include strategic planning for future balanced development of science education in the school.

## DETAILED FINDINGS AND RECOMMENDATIONS

### 1. TEACHING, LEARNING, AND ASSESSMENT

- The quality of teaching, learning and assessment ranged from good to very good; some elements of each lesson were exemplary although some possibilities for improvement were also evident.
- Students were motivated to learn through positive classroom interactions that supported a co-operative and productive learning environment. There were respectful interactions and experiences. In some lessons, students had a clear sense of attainable and challenging learning outcomes; this aspect of lessons required development in some cases.
- The quality of individual teacher planning for lessons was very good overall. This resulted in well-structured lessons. Teachers effectively planned and organised student activities on the periodic table, acids and bases, and energy.
- When student practical work was convened, the activities advanced learning and understanding. In all cases, practical work was carried out safely and efficiently. Second-year students had recently completed a range of practical investigations as part of their Classroom Based Assessment (CBA) in Science. Students demonstrated numeracy skills in using data accurately to draw graphs, and to interpret trends and relationships. Students applied their skills to solve science-based problems.
- Students generally experienced an appropriate level of challenge, though there was insufficient focus on scientific inquiry in some cases. Teachers should plan and collaborate to ensure that inquiry-based learning, in line with the new specification in Science, is maximised, and that all students have the opportunity to lead learning. Students should have more opportunities to predict the outcomes of activities.
- Students made good use of laminated boards to feed back information during some activities; this methodology was effective during the team teaching lesson on energy to third-year students, for example. Teachers made expert use of the board to collate student input during lessons.
- When examined, students relayed good levels of knowledge and understanding overall. Best practice was observed when students were encouraged to reflect on their learning and when teachers modified their approach taking account of student feedback.
- Teachers generally fostered an inclusive student-centred learning environment. First-year students demonstrated very good ownership of and responsibility for learning during the lesson on acids and bases.
- In some cases, teaching approaches should be reviewed so that there is more appropriate balance between teacher instruction and student activity.
- Teachers, through their own enthusiasm and enjoyment of their subject area, motivated students to engage in their learning. Teachers showed very good classroom management skills. This was very evident during the team teaching lesson; students were actively, appropriately and seamlessly supported by both teachers through well-planned interventions and activities. The appropriate short clear inputs aided student understanding.
- There was very good focus on prior learning, whereby student knowledge and recall was used to advance learning outcomes, and contributed positively to lesson development.
- Teachers meaningfully differentiated lesson content and activities in order to cater for the varying needs and abilities of students. Very good practice in this regard was observed during the task on the periodic table undertaken by second year students. In some lessons, some students were not participating purposefully. Teachers should actively plan for universal participation of all students through pair work, group work and active student-led presentations.

- Teachers purposefully developed literacy and numeracy skills during all lessons. This was particularly appropriate and supportive since all students take the JCSP. The development of scientific literacy should be extended to all students.
- Teachers successfully used information and communication technology (ICT) to develop and support student learning in some lessons; this practice should be extended.
- Teachers used various modes of assessment to advance learning during lessons. Assessment for learning strategies were used successfully in many cases, though there was limited use of higher-order questioning strategies and the provision of developmental written feedback to students. Developmental formative written feedback should be planned and implemented for all students. Questioning strategies worked best when higher-order questions were directed at individual students, including those without their hands raised, so that participation in learning was maximised.
- Appropriate homework that supported consolidation of lesson themes was assigned during lessons. It is recommended that students be set a short research task in advance of the introduction of a new topic so that they can make a greater contribution to lesson development.

## **2. SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT**

- Subject provision and whole-school support for junior Science is good overall. Junior Science is offered as a core subject. Time allocation and timetabling of Science is good and the one-hour lessons are working well. All classes are of mixed ability.
- Biology, Agricultural Science and Chemistry are offered at senior cycle. There is currently a good uptake of Biology and Agricultural Science; however, uptake of Chemistry has not been sufficient to provide it in fifth year. School management, in collaboration with the guidance and science departments, is encouraged to promote a senior physical science subject as a viable option for students. The school has been chosen to pilot the new subject Computer Science from the next academic year.
- The school offers Science and Agricultural Science in TY. There is some overlap of subject content and there is insufficient focus on the physical sciences in TY. School management and teachers are encouraged to develop TY science so that the full spectrum of science subjects is adequately reflected in the TY subject plan.
- The school has three science laboratories. Chemical storage has improved since the last science inspection. However, further actions are required by school management so that chemicals are stored in accordance with best practice and Department guidelines.
- Students are encouraged to partake in various co-curricular and extra-curricular activities, including participation in paired science activities, the SciFest science fair and collaboration with Calmast at Waterford Institute of Technology.
- Regular reports are sent to parents following school assessments. State examination results are analysed and form part of science planning. Teachers should engage in ongoing contextual reflection on examination trends and outcomes in an effort to ensure that each student is reaching their potential.

## **3. PLANNING AND PREPARATION**

- The overall quality of individual teacher planning and collaborative planning is very good.
- The current Science curricular plan has been collaboratively developed and appropriately integrates the new specification for junior cycle Science. It is very good that student activity, assessment and reflection are comprehensively included. There is appropriate planning for the implementation of the current classroom based assessment (CBA) tasks in second year and, at the time of the evaluation, teachers were planning for their collaborative subject learning and assessment review meeting (SLAR).

- The subject department action plan outlines key science department developmental priorities. Shared learning methodologies are recorded, outlining important active strategies that improve student engagement in learning. This is very good practice.
- Teachers value and engage in professional development and collaboration and work closely together to devise learning opportunities for students. Records of teacher professional development should be included in the science plan.
- School self-evaluation strategies are integrated into science planning. There is evidence that student questionnaires are successful in encouraging students to reflect on their learning, and are useful for teachers to adapt learning strategies to better meet student learning needs.
- Current science planning should be extended to include strategic planning for future balanced development of science education in the school. This is particularly relevant to the development of TY science and the senior physical science subjects. Reference should be made to the Department of Education and Skills STEM Education Policy Statement 2017-2026 and STEM Education Implementation Plan 2017-2019.

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 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 of quality the school's provision of each area.

Level	Description	Example of descriptive terms
<b>Very Good</b>	<b>Very good</b> 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 <b>outstanding</b> and provides an example for other schools of exceptionally high standards of provision.	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
<b>Good</b>	<b>Good</b> 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 <i>very good</i> standard.	Good; good quality; valuable; effective practice; competent; useful; commendable; good standard; some areas for improvement
<b>Satisfactory</b>	<b>Satisfactory</b> 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.	Satisfactory; adequate; appropriate provision although some possibilities for improvement exist; acceptable level of quality; improvement needed in some areas
<b>Fair</b>	<b>Fair</b> 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.	Fair; evident weaknesses that are impacting on pupils' learning; less than satisfactory; experiencing difficulty; must improve in specified areas; action required to improve
<b>Weak</b>	<b>Weak</b> 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.	Weak; unsatisfactory; insufficient; ineffective; poor; requiring significant change, development or improvement; experiencing significant difficulties;