

An Roinn Oideachais agus Scileanna
Department of Education and Skills

Subject Inspection in Science & Chemistry

REPORT

Ainm na scoile / School name	Cashel Community School
Seoladh na scoile / School address	Dualla Road Cashel Co Tipperary
Uimhir rolla / Roll number	91497A

Date of Inspection: 13-10-2016



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

Dates of inspection	12 and 13 October 2016
Inspection activities undertaken <ul style="list-style-type: none">• Review of relevant documents• Discussion with principal and key staff• Interaction with students	<ul style="list-style-type: none">• Observation of teaching and learning during seven class periods• Examination of students' work• Feedback to principal and relevant staff

SCHOOL CONTEXT

Cashel Community School is a co-educational school operating under the combined trusteeship of the Christian Brothers, the Presentation Sisters and Tipperary Education and Training Board (ETB). The curriculum offered to the students is as follows: Junior Certificate, Transition Year (TY), the established Leaving Certificate and the Leaving Certificate Vocational Programme (LCVP).

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS:

FINDINGS

- The quality of teaching and learning varied from fair to very good.
- In some lessons, student learning was enhanced by references to experiences from the students' own environment.
- In these lessons, clear explanations provided visual images to support students' understanding.
- In almost all lessons, a very good teacher-student rapport pertained and teachers' interactions with students were very positive, thus enhancing students' learning experiences.
- In some lessons, students were encouraged and facilitated to be active participants in their learning through the effective use of cooperative learning strategies.
- Student input is key to the TY programme in Science and this is a very good approach

RECOMMENDATIONS

- In some instances, it was recommended that greater consideration be given to students' abilities and the related elements of pitch and pace when planning lessons, in order that students are sufficiently challenged.
- Active learning methodologies and formative assessment strategies should be used to a greater extent in lessons.
- It is recommended that double lessons be included in the timetable for junior cycle classes in order to support the use of the investigative approach to science teaching.
- Matters relating to the learning environment in the laboratories and the storage of chemicals should be addressed.

DETAILED FINDINGS AND RECOMMENDATIONS

1. TEACHING AND LEARNING

- The quality of teaching and learning varied from fair to very good.
- A number of lessons were very well structured. These lessons illustrated very good planning and preparation. In these lessons, new learning was well supported and students were enabled to offer opinions and hypothesise in a safe, secure environment.
- Students' learning was at a maximum in those lessons where; students were engaged in purposeful, challenging, learning activities; lesson content was pitched at an appropriate level; cognisance was taken of prior learning and students were given responsibility to progress their own learning.
- Some very good examples of connecting learning to the students' own environment included referencing a cement mixer and a washing machine in order to illustrate how the food churned in the stomach.
- Clear explanations, in some lessons, provided visual images to support students' understanding. For example, in one lesson, valuable discussion on how food moves through the digestive system if one was doing a handstand enhanced students' understanding of peristalsis.
- In another lesson, the quality of learning was significantly enhanced through very clear teacher demonstration and explanation, using a home-made filtration model. Student engagement and levels of learning were, as a result, very high. Students clearly understood their task and collaborated successfully to produce their own filtration system. Commendably, students then analysed the effectiveness of their own products.
- In some lessons, students' capacity for new learning was underestimated. In these instances, it was recommended that greater consideration be given to students' abilities and the related elements of pitch and pace when planning lessons, in order that both more-able students and those who require greater support and direction, are sufficiently challenged.
- In almost all instances, a very good teacher-student rapport pertained and teachers' interactions with students were very positive, thus enhancing students' learning experiences.
- In one lesson, in order to facilitate learning, classroom management required significant improvement. In this instance, it was recommended that routines be highly structured and implemented consistently so that students can engage purposefully in meaningful learning activities.
- In some lessons, students were encouraged and facilitated to be active participants in their learning. In one lesson, students used a mind map effectively to review previous learning and consolidate new learning. Cooperative learning strategies, such as placemat and snowball, should be integrated into lessons when appropriate.
- Elements of formative feedback were observed through questioning and in constructive written comments provided to students in their written work. Student learning would be further enhanced through the use of other aspects of formative assessment, such as peer feedback. To be effective in providing peer feedback, students would have to learn how to identify success criteria that are related to learning intentions. Such learning would enable the students to become more skilled in assessing their own and other students' work.

- Questioning is a key classroom strategy in the science department. Best practice was where teachers equally distributed questions, discouraged chorus answering, promoted a blend of lower and higher-order thinking, allowed time for students to formulate answers, and encouraged, prompted and affirmed students. To support the less confident student, varying the method of student answering should be considered. Further incorporation of strategies such as think-pair-share, whiteboards, and brainstorming would be useful in this regard.
- Animations and short video clips should be used, where appropriate, to support the teaching, learning and consolidation of new concepts.
- In some lessons, a very good focus on developing subject specific vocabulary was observed. In these instances, good questioning effectively supported students' scientific oral language development. This approach should be extended across the department. The literacy environment should be enhanced. For example, key words currently being learned should be displayed more prominently and referred to during lessons.
- Increased use of the investigative approach to science teaching is recommended. Such an approach would also support numeracy development.

2. SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- Whole-school support for the sciences is good. Junior Certificate Science is a core subject and all students who choose TY study Science. Agricultural Science, Biology, and Physics and Chemistry are offered as optional subjects in senior cycle.
- The time allocation for the science subjects and the spread of classes across the week is appropriate.
- Currently, many Junior Certificate science classes are only timetabled for single lessons each week. It is recommended that double lessons be included in the timetable for junior cycle classes in order to support the use of the investigative approach to science teaching.
- The school is well resourced for the teaching of the sciences, with four, well-equipped laboratories, a demonstration room and adjoining storage and preparation areas. However, management should ensure that the laboratories provide positive learning environments. Repairs identified during the evaluation should be carried out.
- The practice of organising equipment into 'topic kits' is commended.
- The safety equipment available in the laboratories is appropriate. Some work has been undertaken to ensure that chemicals are safely stored. However, all chemicals should be segregated in accordance with Departmental guidelines and colour-coded to facilitate easy, safe storage. Obsolete chemicals should be removed.
- A good level of provision is made for co-curricular and extracurricular science activities, including participation in science week activities. Those involved are to be praised for their commitment to facilitating these educational activities. Particularly noteworthy is the recently introduced second-year science project, which, in addition to stimulating students' interest in Science, provides an opportunity to enhance their skills in research and presentation.

3. PLANNING AND PREPARATION

- The quality of planning and preparation is satisfactory. It is noteworthy that department meetings facilitate collaborative planning. It is recommended that teaching and learning be

included as an item on the agenda of subject department meetings. This would facilitate the sharing of expertise. An electronic folder should also be set up in order to facilitate sharing of useful resources.

- Commendably, the science department analyses student attainment in certificate examinations and has identified strategies to help improve student performance.
- The science plan contains a good level of general information related to teaching Science. The first-year science programme of work is in development. As this work is further developed, the department should identify aspects of Science learned in primary school in order to take cognisance of, and fully maximise, students' previous learning when planning lessons.
- The chemistry plan furnished during the inspection was incomplete. In addition to general information such as expected outcomes, it contained an outline of topics covered in fifth year and mandatory experiments listed by number for both fifth year and sixth year. The sixth-year programme should be included.
- In addition to timeframes, all subject plans should identify learning outcomes and link these to appropriate teaching and learning methodologies and the resources to be used.
- Student input is central to the TY programme in Science. Besides lessons relating to Genetics, work for the BT Young Scientist Competition and environmental issues, students are also asked to identify scientific topics that they would be interested in studying. This is very good.
- Preparation for observed lessons varied, with some very good practice evident.

The draft findings and recommendations arising out of this evaluation were discussed with the principal, deputy principal, co-ordinator and two 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.

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.

Level	Description	Example of descriptive terms
Very Good	Very good 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 outstanding 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
Good	Good 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
Satisfactory	Satisfactory 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
Fair	Fair 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
Weak	Weak 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;