

**An Roinn Oideachais agus Scileanna**

**Department of Education and Skills**

**Subject Inspection of Science  
REPORT**

**Ennistymon Vocational School  
Ennistymon, County Clare  
Roll number: 70840Q**

**Date of inspection: 09 December 2009**



**AN ROINN OIDEACHAIS AGUS SCILEANNA | DEPARTMENT OF EDUCATION AND SKILLS**

**REPORT  
ON  
THE QUALITY OF LEARNING AND TEACHING IN SCIENCE**

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**SUBJECT INSPECTION REPORT**

This report has been written following a subject inspection in Ennistymon Vocational School. It presents the findings of an evaluation of the quality of teaching and learning in Science and makes recommendations for the further development of the teaching of this subject in the school. The evaluation was conducted over one day during which the inspector visited classrooms and observed teaching and learning. The inspector interacted with students and teachers, examined students' work, and had discussions with the teachers. The inspector reviewed school planning documentation and teachers' written preparation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and subject teachers. The board of management of the school 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.

**SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT**

Ennistymon Vocational School operates under the auspices of County Clare Vocational Education Committee. The school co-operates with neighbouring schools in the town in providing the greatest possible curricular choice for its students. This is particularly the case for science subjects as reciprocal arrangements are in place to enable students to access subjects not available in their own school by attending lessons in one of the other schools in the town. The school's context is shaped by the fact that it serves a student body with a wide diversity of abilities and learning needs. The school strives to support each student and to provide the greatest possible level of assistance to help each student reach his or her full potential. At the time of the inspection the school was undergoing building work which included the science laboratory.

There is good support for the study of Science as it is a core subject at junior cycle. At senior cycle, the school provides for access to a broad range of science subjects. It is good practice that the subject options available to students are based on their choices rather than being drawn from pre-generated subject blocks as open choice enables the students to choose the subjects that best suit them. In relative terms the uptake of senior-cycle science subjects is generally good but because of the size of the school's enrolment some subjects have very small class groups. While it is commendable that the school strives to enable students to have access to the broadest possible range of science subjects it is advisable that the uptake levels are continuously monitored to ensure that class groups and subject options make maximum use of the available personnel and resources.

The time allocated to Science meets with the syllabus requirements. It was noted, however, that this year the third-year students have two double lesson periods each week. The syllabus

recommends the provision of one double period weekly to facilitate the performance of experimental work. Having two double periods means that third-year students have only two class contact points weekly for Science. The inspector discussed this arrangement during the feedback and it was evident that the school had given consideration to trialling the current timetabling arrangements. Based on the discussion with the teachers during the feedback, the context of a student cohort where students span a wide range of abilities and learning needs, and the fact that revision for the Junior Certificate examination forms a significant part of teachers' work in third year, it would be advisable to allocate three class contact points weekly (one double period and two single periods). Three class contact periods would be helpful to students and to the teachers in supporting the continuity of the students' learning by facilitating more frequent reinforcement of their learning and by facilitating teachers to teach content in smaller discrete amounts. It is recognised that the school's ability to move to three class contact points weekly for Science is dependent on overcoming any timetabling constraints that might exist. Transition Year Science currently has one lesson weekly. The principal and the science teachers recognise the limitations associated with this time allocation and the school intends to address this matter for future academic years. A measure that the school has taken to address this matter currently is to put in place a taster programme in the third term of Transition Year.

The school has a range of supports in place for students with special educational needs. In Science these supports include the use of team teaching, a focus on terminology and key words during resource lessons, and the deployment of special-needs assistants where required. The in-service support that has been provided by the school for the staff has been particularly valuable in focusing on teaching and learning strategies for students with diverse learning needs.

There is one science laboratory with an adjacent preparation room. Currently, the school has plans to refurbish the laboratory and preparation area. This is an indication of the school's commitment to providing the best possible facilities to aid students' learning. Notwithstanding the plans to upgrade the science facilities, the laboratory in its current state is operational and its infrastructure is suitable for the teaching and learning of Science. The preparation area has ample storage space available and is functionally suitable for its purpose.

The resources available to support teaching and learning Science are sufficient. The laboratory is equipped with a good level of information and communication technology (ICT) resources. These resources were used well during lessons that were observed.

There is good support for the teachers' continuing professional development as they are encouraged by the school to attend the relevant in-service courses and to become a member of the relevant subject association. In documentation supplied for the inspection the school indicated ways in which it had been flexible in supporting teachers' continuing professional development. The support for the development of the professional and pedagogical expertise of school staff is a very positive aspect of the school's work.

The science teachers support students' participation in a range of science-related extracurricular activities such as a trip to the Young Scientist and Technology Exhibition, the ECO-UNESCO competition, water testing, habitat studies, and lectures and fieldtrips by visiting speakers. This support is valuable because it can significantly enhance the students' experiences in learning science.

## **PLANNING AND PREPARATION**

School development planning is continuing to progress in this school and there are appropriate structures in place to support subject planning. For example, the teachers meet informally frequently and they meet formally periodically. In addition, the subject department has recently adopted the practice of minuting its meetings and this is good practice because it helps to ensure a developmental focus by keeping key priorities, decisions taken and required actions to the fore. The teachers work together in a collaborative manner and the atmosphere among the staff throughout the inspection was one of professional collegiality.

The construction of the timetables for Science was discussed during the feedback session and it was advised by the inspector that there is currently scope that allows for all science classes to be taught by the two main science teachers. This would ensure that the timetabling arrangements optimise the deployment of teachers and class groups.

The subject planning documentation that was viewed was of a high quality and showed the staff's high level of commitment to planning and preparing for their work. Of particular note was the documentation that referred to cross-curricular linkages with subjects such as Home Economics, Mathematics, and Metalwork. Such linkages help to support students' understanding of the concepts being taught by making them applicable to the widest range of situations possible.

The lessons that were observed were well prepared and all requisite materials were readily to hand. The teachers showed a high level of subject matter expertise and they dealt expertly with any questions that were raised by the students.

## **TEACHING AND LEARNING**

The management of all lessons that were observed was good. There were good standards of discipline and these were supported by mutual respect between students and teachers. Students' efforts and their answers to questions posed by their teachers were acknowledged and affirmed positively. The atmosphere in each lesson was supportive of learning and of the students and their needs. It was evident that the students felt comfortable in their classes as they volunteered ideas and answers freely and in an open manner.

Where practical work was observed it was effective in aiding the students' learning as it helped them to better understand the theory being taught. Interaction between the inspector and the students while they worked revealed that they enjoyed their practical work and found that it helped them to develop a fuller understanding of the underpinning scientific concepts. The practical work was well organised and it was obvious that the students were familiar with laboratory procedures. Good practice was noted where each group's observations and results were shared with the whole class during a plenary session following the experimental work.

In each of the lessons good use was made of questioning to ascertain students' level of knowledge and understanding of the topic being taught, to motivate them to consider and think about new ideas, and to reinforce the content that had been taught.

Some very good practices were noted where there was regular reinforcement of the material that had been taught, where the students were encouraged to volunteer ideas related to the topic under

study and where ICT was used effectively to provide clear visual stimulus and support for lessons.

In the main, when students were not engaged in practical work the lessons were teacher-led with the teacher acting as the source of information and directing the students in their activities. Teacher-led lessons are very effective particularly when introducing new material and guiding students in activities that they have not previously experienced. The challenge, however, particularly given the school's context and the needs of its cohort of students is to achieve a balance between teacher input and student activity. It is only by careful planning in advance of lessons and reflection on the outcomes of lessons that such a balance may be found. Given the high quality of the planning documentation that was presented during the inspection there is no doubt regarding the level of care and consideration that is given to preparing for lessons. It is in this context of a professional approach by the science staff to their work that they are to be encouraged to further develop the range of methodologies they use with students and to seek to include to the greatest possible extent activities that are student-driven and, particularly as students gain greater levels of skill in Science, that enable the students to work together with support from the teacher. Subject planning meetings provide an appropriate forum in which this priority issue may be discussed by the teachers, where they can share their expertise in using different methodologies and where they can agree to try, and report on, new methods that they have used when teaching. In this way the sharing of the professional expertise and experiences of each of the science staff helps to develop new teaching practices that further improve students' learning.

## **ASSESSMENT**

There are appropriate arrangements in place to regularly assess students and to formally report to parents periodically. It is particularly noteworthy that those students who are given a reasonable accommodation during the State examinations have access provided by the school during formal school mid-term, Christmas and summer examinations to the same accommodation.

An examination of the students' copybooks and their homework journals showed that a generally satisfactory amount of experimental work had been completed relative to the students' year group and the time of the year. However, one area that would benefit from prioritisation is that of developing agreed practices around homework. The samples of students' work that were viewed showed that their teachers monitor the work periodically but that visible correction of the work by the students needs in some instances to be significantly improved. When the science teachers are addressing the topic of homework it would be beneficial to develop an agreement regarding the frequency with which homework is to be assigned, corrected and monitored, and the type of homework that students are asked to undertake. The students reported that the majority of their homework consisted of questions from the end of the chapter in the book and the write up of experiments. Given the investigative nature of Science there is scope to expand these types of homework to more frequently include activities of an exploratory or creative nature. The benefit for the science staff in developing agreement on these issues is that it is of great support to any new teacher coming to the school, while the process of discussing the issues when developing the agreement supports professional dialogue among the existing teachers and facilitates the sharing of current practices and the trialling of new ideas.

Documentation supplied by the school for the inspection showed that a range of assessment modes is used in Science. It was evident from classroom observation that when students perform

their experimental work they are supported, guided and advised by their teacher. In the course of working with students their teacher provides developmental, formative feedback on the students' experimental work. In addition, it was reported that students are graded on the work in their experimental copybooks. These good practices provide an opportunity to further develop the feedback given by teachers so that at a number of points in the school year students are formally assessed on the practical skills they have developed in Science. During the feedback session the idea of building on the current good practices by developing the range of methods used to assess students' scientific skills was discussed.

The school reports that students' outcomes from the State examinations are analysed by the principal and the teachers and are compared with national norms. This effective practice is used to help students to improve their learning.

### **SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- The science teachers are committed and professional in their work.
- There is good support for the study of science subjects at junior cycle and at senior cycle.
- Planning for lessons and the planning documentation that was viewed were of a high quality.
- The management of lessons was good and there was a positive atmosphere in each lesson.
- The students were supported in their learning by their teachers.

As a means of building on these strengths and to address areas for development, the following key recommendations are made:

- The science department should prioritise work on clarifying and developing its homework practices.
- The science teachers should further develop the range of methodologies they use with students with a view to optimising the range of student-driven activities.

Post-evaluation meetings were held with the teachers of Science and with the principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

# **Appendix**

**SCHOOL RESPONSE TO THE REPORT**

**Submitted by the Board of Management**

**Area 1 Observations on the content of the inspection report**

The school will continue to monitor class group sizes and subject options viz a viz Science at senior level in order to provide Science for all.

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

Homework practices will be reviewed as per our Homework Policy.