

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

**Subject Inspection of Chemistry
REPORT**

**Coláiste Mhuire
Askeaton, County Limerick
Roll number: 71700F**

Date of inspection: 16 March 2010

[Subject inspection report](#)
[Subject provision and whole school support](#)
[Planning and preparation](#)
[Teaching and learning](#)
[Assessment](#)
[Summary of main findings and recommendations](#)

REPORT ON THE QUALITY OF LEARNING AND TEACHING IN CHEMISTRY

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Coláiste Mhuire, Askeaton. It presents the findings of an evaluation of the quality of teaching and learning in Chemistry 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 examined the students' work. The inspector reviewed school planning documentation and related subject documentation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal. The board of management of the school was given an opportunity to comment on the findings and recommendations of the report; the board chose to accept the report without response.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

There is good support for the study of science subjects in this school as Science is a core subject at junior cycle and Physics, Chemistry and Biology are offered to students at senior cycle. The total time allocated to Chemistry is appropriate and meets with the syllabus guidelines. It is commendable that Chemistry forms a part of the school's Transition Year (TY) programme and that ample time is allocated to the subject.

The school has good procedures for students' access to subjects at senior cycle. The subject option blocks are composed based on the students' preferences and this is good practice. The

school provided an outline of the structures that it has in place to support students at times of transition and these were seen to be wholly appropriate. It is commendable that each subject area has contributed to a booklet on senior cycle options and this booklet is given to students and parents. In addition, the school is part of the Guidance Enhancement Initiative and the principal outlined how this resource is used to promote the study of science subjects.

There are three science laboratories in this school. The laboratories are in very good condition, well maintained, clean and bright. The atmosphere in the laboratories is of an appealing scientific learning space. There is very good provision of information and communication technology (ICT) in the laboratories and it was evident that ICT was being used in the teaching and learning of Chemistry. The preparation areas are also in very good condition. The science staff has done a lot of work in organising the storage of materials and chemicals and this work is to be commended.

There is very good support by the school for the teachers' continuing professional development (CPD). The teachers have engaged enthusiastically in their own CPD by attending relevant in-service courses, participating in the relevant subject association and by undertaking further study in their own time. It is commendable that the science staff has engaged in formal training in mentoring newly qualified teachers.

The whole-school in-service that has most recently been provided to all staff members has focused on issues related to teaching and learning and, most particularly on strategies for working with students with special educational needs. This focus is wholly appropriate. The subject- planning documentation that was viewed showed the positive impact of the in-service as it included a comprehensive handbook on strategies for working with students with special educational needs. The good work done by the science staff in contributing to and implementing these strategies is to be commended.

The science staff supports students' participation in a wide range of co-curricular and extracurricular science-related activities. By participating in activities such as the Young Scientist and Technology Exhibition, Science Week, industrial visits and science quizzes the students gain valuable exposure to the world of Science. The commitment shown by the science staff in enabling and supporting students to participate in these and other science activities is to be commended.

PLANNING AND PREPARATION

The chemistry plan that was viewed was of a very high quality. It showed that considerable thought and work had gone into its production. It was notable that the plans for science subjects are reviewed annually. This was evident as copies of past plans were presented for inspection. This commitment to on-going review and improvement is indicative of the professional dedication of the staff and is to be commended.

All of the science and chemistry subject materials and plans have been placed on the school' s intranet and are readily available to all of the teachers. This is a very good use of the available ICT infrastructure.

All of the lessons that were observed were well prepared. The requisite materials were to hand and had been prepared in advance. The teacher demonstrated a very high level of subject-matter expertise. The outcome of this advance planning and preparation was that lessons ran smoothly and that students achieved the learning objectives for the lessons.

TEACHING AND LEARNING

The quality of teaching and learning in the lessons that were observed was very good. Classroom management was of a very high standard. Attendance was taken in each lesson. Discipline was well maintained and the atmosphere was one of mutual respect between students and their teacher. Students were kept on task and were motivated and challenged to participate in the lessons. The teacher moved among the students and provided motivation, affirmation and a high level of individual support where this was needed.

All of the lessons had a clear purpose, were well paced and employed a variety of teaching and learning methods. While there was no sense of learning being rushed, it was obvious that each lesson had clear objectives and the teacher systematically lead the students in their learning to achieve these objectives. ICT was used effectively during the lessons. The students were involved in pair work and group work and it was obvious that they were used to working like this. It was also evident that they worked well together. The teacher's explanations were clear and concise. All the students' questions were answered positively and completely by the teacher. Where boardwork was used, it was precise and good practice was evident in the manner in which calculations were explained and demonstrated to the students. It is particularly commendable that the students used ICT (data-logging equipment) during their learning and that they showed good skills and familiarity in using the equipment. Of note also was the manner in which the students were encouraged to consider new ideas, to hypothesise and to think in an independent manner. This focus on encouraging students to develop their thinking skills is very good practice.

The atmosphere during lessons was very positive and was most conducive to learning. The physical environment provided a suitable learning space. There was a very good relationship between the students and their teacher. The students were all addressed by their first name and they were comfortable in speaking with and asking questions of the teacher. The teacher dealt affirmatively with all of the students. This affirmation of the students and their contributions helped to support a positive learning atmosphere.

Interaction between the inspector and the students showed that they had achieved the intended learning objectives. They showed good levels of interest in Chemistry and they were motivated in their work. An examination of students' work showed that they had completed a satisfactory volume of work relative to their year group and the time of year.

An analysis of the results obtained by students in the certificate examinations revealed that attainment in Junior Certificate Science is generally very good with a significant number of students taking the subject at the higher level. The uptake of Chemistry by students is also good and an analysis of the students' results in the Leaving Certificate Chemistry examination showed good results. Because a smaller number of students take Chemistry than take Science, the analysis of results for Chemistry is mainly indicative of trends. However, the overall trend that is evident from the results analysis is that students in this school who study Science at junior cycle and Chemistry at senior cycle perform well in the certificate examinations.

ASSESSMENT

There are appropriate arrangements in place to assess students' progress regularly and to report on it to parents periodically. The students' results in the certificate examinations are analysed by the teachers and the results of the analysis are shared with parents and the board of management. The results of this analysis is also used to inform subject planning and this is to be commended.

The students' homework journals were examined and they showed that homework is a regular feature of students' learning in Chemistry. The students' copybooks were generally of a high standard and they revealed that the homework is corrected regularly. It was evident from the

copybooks that a good volume of work has been completed across a range of syllabus topics. In addition, a good volume of experimental work has also been completed by the students. The principal reported that embedding assessment for learning practices is a focus for future subject planning. This is to be encouraged as such practices will help students to maximise the benefit they gain from the feedback provided by their teachers.

In this school, the science staff gives students a percentage of the marks in end-of-term examinations for completing the write-up of experimental work. While the students undertake experimental work, the teacher circulates guiding and advising them. These are the principal methods the school uses to assess students' experimental skills. During the inspection, it was noted that the next step in building on these practices is to provide a form of assessment and formal feedback to students on the skills gained during experimental work. Doing this will help to position the school for the possible future inclusion of a component of practical assessment in senior-cycle science subjects such as is being trialled currently by the National Council for Curriculum and Assessment. In addition, it will further motivate students in their study of science subjects by rewarding them for, not just the completion of experimental work, but also for the skills they demonstrate while undertaking the work.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- The chemistry staff is professional, dedicated and committed in its work.
- There is very good support by the school for the study of science subjects with ample resources, fine facilities, appropriate procedures for subject choices and good support for the teachers' CPD.
- Students' outcomes in Science and in Chemistry in the State examinations are positive.
- The quality of planning for Chemistry was very good.
- The quality of teaching and learning in the lessons that were observed was very good.

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

- In building on the existing good assessment practices for science subjects in this school, the next step, of developing a form of assessment and formal feedback to students on the skills gained during experimental work, is recommended.

A post-evaluation meeting was held with principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

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