An Roinn Oideachais agus Eolaíochta

Department of Education and Science

Subject Inspection of Science
REPORT

Saint Fintan's CBS
Doon, County Limerick
Roll number: 64040V

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AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA | DEPARTMENT OF EDUCATION AND SCIENCE

REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN SCIENCE

This Subject Inspection report

This report has been written following a subject inspection in St Fintan's CBS, Doon. 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 on the findings and recommendations of the report; the board chose to accept the report without response.

Subject Provision and Whole School Support

St Fintan's CBS is located in the town of Doon, Co. Limerick. It is an all-boys' secondary school. It is noted that the school is preparing for a forthcoming amalgamation.

There are three Science teachers in this school. There are good procedures in place that support the induction of new teachers. These include meetings with the principal and deputy principal, provision of documentation on school policies, and support from subject colleagues.

There is good support for the study of Science as it is a core subject at junior cycle. There is a good range of Science subjects available at senior cycle. The subjects available are Leaving Certificate Agricultural Science, Biology, Chemistry, and Physics. Subject options at senior cycle are student driven. This is good practice. The school offers the Transition Year programme and this includes Science. This is good practice as it enables students to make more informed subject choices at senior cycle. There is good support for students in making their senior-cycle subject choices. The supports available to students include access to career guidance counselling individually and in a class setting, an information night on senior-cycle options and subjects, and advice to students from their subject teachers. The uptake of Science subjects at senior cycle is generally high. This evidences positive attitudes to Science among students.

The time allocation for Science is three single class periods in first year, and one double class period and two single class periods in each of second and third years. It is noted that the syllabus and circular letters M7/03 and M42/04 state "the syllabus is predicated on some 240-270 hours of class contact time over the three years of junior cycle (normally equivalent to four class periods per week)." In this regard, it is recommended that the school review the time allocation for Science to ensure that it meets with the recommendations of the syllabus and relevant circular letters. The provision of double class periods is wholly appropriate as it facilitates student performance of practical, investigative work on which the revised syllabus is predicated.

All Science classes are of mixed ability and classes generally retain the same teacher from year to year. This is good practice as it supports continuity of learning.

There is one laboratory in the school. It has an adjoining preparation area. These facilities were viewed during the evaluation. The laboratory was clean and generally well maintained. Some issues with plumbing within the laboratory were identified and these should be progressed.

The school has a health and safety statement. It is currently under review. A committee of staff members drives the review process. External expertise has also been accessed during the review. It is reported that staff meetings are used to facilitate regular review of the health and safety statement. This is good practice. It is recommended that the school complete the current review. Appropriate safety equipment such as first aid kit, fire extinguisher, and safety glasses is available in the laboratory.

There is good support for teachers' continuing professional development. Teachers have been facilitated in attending relevant in-service education courses for the revised Science syllabus and there is provision for ongoing whole-staff in-service education. Financial support is available from the board of management for teachers' continuing professional development.

There is a satisfactory level of ICT resources available in Science. The resources include a notebook computer, data logging equipment, and broadband internet access. Good use of these resources was observed. Ongoing sharing of experience and practice by the Science staff in the use and integration of ICT is encouraged.

The school strives to meet the needs of students with special educational needs. Interview with teachers revealed awareness of students' special educational needs. Support for students with special educational needs is evidenced by the use of resources to create smaller class groups and by provision of learning support to students studying Science.

It is reported that there is a budget for Science and that note of equipment and materials is kept on a stock list. These structures facilitate planning for equipment, chemicals, and resources and are commended.

Planning and Preparation

Good progress has been made in school development planning with policies in place in key areas such as admissions, code of conduct, homework, anti-bullying, substance misuse, pastoral care, Transition Year programme, and ICT.

The school has engaged in subject department planning and this is commended. Science teachers meet regularly, both formally and informally, to plan and prepare for their work. There is a good level of collaboration among the Science teachers and they share the work of organising and planning for the teaching and learning of Science. There is a year plan in place that details programme content, refers to resources and evaluation, and references syllabus objectives. This good work is commended and it is recommended that subject planning continues to drive and inform best practice in teaching and learning. Focus for future work in subject planning could include formal identification of developmental priorities including sharing and developing strategies and methodologies for use with mixed-ability groups and students with special educational needs. Specific syllabus references in the planning documentation viewed were

noted. The Science teachers intend to further develop this work and this is encouraged as good practice.

All lessons were appropriate to the syllabus. There was good preparation for the lessons observed. The high level of subject matter expertise demonstrated by teachers and the fact that all materials had been prepared in advance and were to hand evidenced this.

Teaching and Learning

A variety of methodologies was used. The methodologies included questioning, use of ICT-based presentations, repetition and reinforcement, explanation, pair work, group work, student performance of practical work, board work, use of video, use of worksheets, use of model, and general discussion.

Good practice was observed where students were made aware of the intended learning objectives and where the key learning points were emphasised, repeated, and reinforced regularly. Worksheets were beneficially used to assist reinforcement of students' learning. Good practice was observed where learning progressed, building from students' prior experiences and knowledge. In this regard, good use was made of the board to accept, collect, and group students' ideas and prior knowledge as a foundation for classwork.

Questioning styles included both directed and global questioning. The balance of questioning lay towards directed questioning. Directed questioning enabled teachers to pose questions to the entire class group and then to engage students individually. This facilitated teachers in receiving feedback on students' understanding and in varying levels of challenge for students in the questions posed.

Clear teacher-led explanation and exposition was noted in the lessons observed. Teachers sought feedback from students and provided opportunities for students to ask questions. This is good practice. Teachers circulated among students and offered advice and guidance on an individual basis. This is commended as it supports students' in their individual learning needs and facilitates feedback on students' learning.

Pair work and group work were used effectively. Student performance of practical work was conducted in groups. Students worked well together, were engaged, and on-task. During pair work and group work good practice was evidenced where instructions were given on how to complete the assigned tasks in advance of students getting the materials and equipment for the tasks.

Video was used effectively to stimulate students' interest and to provide a focus for learning intentions. Students completed a worksheet based on viewing the video. This appropriately focused students' observations and attention. The use of worksheet can also be integrated with practical work and might assist students in noting their observations as they work as well as providing a framework for students' write up of their experimental work.

There was good use of ICT-based presentations in the lessons observed. The ICT-based presentations were clear and provided visual stimuli for students. Copies of ICT-based presentations could be made available to students to facilitate note taking during presentations, where appropriate. The integration of ICT assists in engaging and motivating students in their learning and is commended.

There was a positive learning environment in the lessons observed. Students were addressed by name and involvement of all students was encouraged. Students were generally well disciplined and discipline was sensitively maintained. There was a generally calm, orderly atmosphere in the lessons observed. Positive attitudes to learning and classwork, lead by teachers, were noted.

It was noted that there were many charts and posters and some student work on display in the laboratory. This served to create a sense of a scientific learning space. The display of basic glassware and equipment should be considered where space permits. Such display would contribute further to the sense of a scientific learning space and could be used as a resource in reminding students of glassware and equipment as they arise during students' learning.

Students were attentive and engaged in their learning. Their work was affirmed and their participation encouraged throughout the lessons observed. Observation of students' responses to questions posed by teachers and interaction between students and the inspector showed that students' knowledge and understanding of the topics under study were generally good.

Assessment and Achievement

Formally, there is regular assessment of students with reports sent home periodically. This is appropriate. It is reported that in Transition Year there is currently no provision for formal year-group assessment of students. It would be useful to consider and review this practice when developing a whole-school assessment policy.

There are good structures that support communication between the school and home. These include parent-teacher meetings, letters, phone calls, newsletter, open nights, and meetings by appointment.

The school, for information purposes, undertakes analysis of State examination results. Such analysis in conjunction with relevant marking schema, examination papers, and chief examiners' reports could be used to inform the subject planning process. The development of this practice is encouraged.

Homework was assigned in the lessons observed. This is good practice as regular homework provides opportunities to reinforce knowledge, assess understanding, develop independent learning, and foster motivation among students. Use of a student journal system to record homework was noted and this is good practice. Samples of students' work were viewed during the evaluation. The copies viewed showed that students have completed a generally good amount of work. Regular correction of written work by students and annotation by teachers was noted. This is good practice. In building on this good practice, consideration should be given to further use of formative assessment for both written and practical work. Support and further information on formative assessment may be accessed from the Junior Science Support Service, www.juniorscience.ie or from the National Council for Curriculum and Assessment, www.ncca.ie.

Arrangements are in place for common assessment in Science at junior cycle. This practice is commended as it can inform planning for teaching and learning by facilitating evaluation of attainment across year groups.

Good practice was noted where students wrote up their experiments in their own words. In writing up their work, students should be encouraged to include a description of the planning undertaken.

Student activity in a range of science-related extra-curricular and co-curricular activities was noted. Such activities include ecology trips, visits to third-level institutions, visits to the National Ploughing Championships, and visits to an electricity generating station. Teachers' support of students' participation in these activities is acknowledged and commended.

Summary of Main Findings and Recommendations

The following are the main strengths and areas for development identified in the evaluation:

- There are good procedures in place that support the induction of new teachers.
- The time allocation for Science is three single class periods in first year, and one double class period and two single class periods in each of second and third years.
- The school's health and safety statement is currently under review.
- There is good support for teachers' continuing professional development.
- The school strives to meet the needs of students with special educational needs.
- Subject options at senior cycle are student driven and there is good support for students in making their senior-cycle subject choices.
- Good progress has been made in school development planning with policies in place in key areas and progress has been made in subject planning.
- Science teachers meet regularly, both formally and informally to plan for the teaching and learning of Science.
- Good use was made of ICT in the lessons observed.
- All lessons were appropriate to the syllabus and there was good preparation for the lessons observed.
- Students were affirmed in their work and there was a positive learning environment in the lessons observed.
- Teachers provided individual assistance to students as appropriate.
- Students' knowledge and understanding of the topics under study were generally good.
- Arrangements are in place for common assessment in Science at junior cycle.
- Regular correction of written work by students and annotation by teachers was noted.
- Teachers' support for students' participation in science-related extra-curricular and co-curricular activities is acknowledged and commended.

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

- It is recommended that the school review the time allocation for Science to ensure that it meets with the recommendations of the syllabus and relevant circular letters.
- It is recommended that the school complete the review of its health and safety statement.
- It is recommended that subject planning continues to drive and inform best practice in teaching and learning with focus for future work including formal identification of key developmental priorities and the sharing and development of strategies and methodologies for use with mixed-ability groups and students with special educational needs.

- Consideration should be given to further use of formative assessment for both written and practical work.

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.