

An Roinn Oideachais agus Scileanna
Department of Education and Skills

Subject Inspection in Science & Physics

REPORT

Ainm na scoile/ School name	Saint Patrick's Comprehensive School
Seoladh na scoile School address	Shannon Co Clare
Uimhir rolla/ Roll number	81007U

Date of Inspection: 24-01-2017



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 & Physics 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

Date of inspection	24-01-2017
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 five class periods• Examination of students' work• Feedback to principal and relevant staff

SCHOOL CONTEXT

Saint Patrick's Comprehensive School is a co-educational school with a current enrolment of 647 students. The school operates under the joint trusteeship of the Bishop of Killaloe and the Limerick and Clare Education and Training Board. The school offers students an optional transition year (TY) programme, the Leaving Certificate Applied programme, and the Leaving Certificate Vocational Programme in addition to the Junior Certificate and Leaving Certificate.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS:

FINDINGS

- The quality of teaching in Science and Physics was generally good or very good, though there was a need in some lessons for teaching methodologies to support differentiation better.
- The quality of student learning was good overall, however there is scope to increase the emphasis on discovery-based and active learning.
- Lessons were well prepared, learning intentions were clear and some good use of information and communications technology (ICT) was observed.
- Science is a core subject at junior cycle and Physics is one of four science subjects that students can choose to study at senior cycle.
- The school has four well-resourced laboratories with another under construction, and most science lessons take place in these laboratories.
- The science teachers work very effectively with each other and good schemes of work for the new first-year science course have been collaboratively developed.

RECOMMENDATIONS

- The science department should increase the emphasis on discovery-based learning and teachers should ensure that all lessons have a good balance between teacher instruction and student activity.
- Questioning strategies employed by teachers should be better structured so that they can be used to check on students' learning.
- To provide better class contact for students of Physics, three single periods and one double period, spread out across the week should be provided as soon as it is practicable to do so.
- The schemes of work for all year groups should be developed further in the same manner as the first-year schemes.

DETAILED FINDINGS AND RECOMMENDATIONS

1. TEACHING AND LEARNING

- During the evaluation, the quality of the teaching observed ranged from satisfactory to very good. The lessons of very good quality made effective use of active learning and other student-centred methodologies such as discovery learning. Those of satisfactory quality were more teacher-centred and needed a greater balance between the time spent on teacher instruction and student activity. The science department needs to focus on practices that promote active and discovery learning in all lessons so that student passivity in lessons is minimised.
- The quality of learning was good overall. Lessons were well prepared and teachers used ICT and other resources to try to enhance student learning. The learning intentions of all the lessons were clear, however the science teachers should be more consistent in utilising these intentions. In some lessons, intentions were used to summarise the main points at the end. This needs to be a feature of all lessons.
- A range of teaching methodologies was observed during the inspection. These included checking prior learning at the start, clear teacher instruction, student performance of experimental work, think-pair-share exercises, group and individual tasks, and some very good examples of student research. While some presentation software was used to enhance discovery learning, in other cases there was too much content presented which reduced the opportunities for student engagement and this practice should be avoided.
- Classroom management was very good. The laboratories and classrooms in which science and physics lessons were conducted had good scientific posters and charts on the walls and samples of students' work were on display. A respectful student-teacher rapport was evident during the lessons and teachers positively affirmed students for their efforts.
- Science and physics classes are of mixed ability and very good differentiation of teaching was observed in most lessons. Teachers skilfully engaged and challenged students when suitable tasks were set or when active learning occurred. In the lessons where teacher instruction dominated there were less opportunities to differentiate. Teachers should select methodologies that cater for students of all abilities and maximise engagement in learning.
- Good assessment strategies were used to check on learning. Questioning was the main form of in-class assessment. In one lesson good use was made of show-me boards which enabled the teacher to quickly ascertain engagement in learning. In some cases, there was an over-reliance on chorus responses or the teachers did not wait long enough for responses. There is a need for the science department to place better structures on questioning practices to gain essential insights into students' progress.
- Homework is assigned, monitored and corrected regularly. Students were provided with oral and written formative feedback. It is suggested that the science department collectively agrees on where it is best to provide this written formative feedback consistently to students. Teachers should also ensure that students write up their practical work in their own words rather than transcribing from a template.
- Literacy and numeracy strategies were observed in lessons throughout the inspection. Difficult words were explained and an importance was placed on units in some lessons. This is good practice.

2. SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- Whole-school support for the sciences is good. Science is a core subject in the junior cycle and Physics is one of four science subjects offered to students for the Leaving Certificate. The uptake of Physics in the school is good.
- The time allocation for Physics and Science is in line with syllabus and specification guidelines. Currently one single and two double periods are provided for Physics in fifth and sixth year. Senior management should instead, endeavour to give Physics three single periods and one double period, spread out across the week, to provide better class contact for students in this subject as soon as it is practicable to do so.
- The school has four well-resourced science laboratories and at the time of the evaluation another laboratory was in the process of being built in time for the next academic year. The laboratories have appropriate health and safety equipment and chemicals are stored correctly. The teachers also carry out risk assessments of these rooms.
- While teachers and management collaborate to ensure that as many lessons as is possible are held in these laboratories, a number of lessons occur in classrooms. This is partly due to the concurrent timetabling of second and third-year Science lessons, however it was reported that this practice is being phased out. This, along with the completion of the new laboratory should reduce the amount of science lessons that occur in classrooms.
- Teachers are facilitated in attending continuing professional development (CPD) courses by senior management. Students are encouraged to partake in a range of science related extra-curricular activities such as An Taisce's National Spring Clean, SciFest, Intel's Women in Technology scholarships and educational visits to hear from astronaut Al Worden.
- Common assessments occur at Christmas and summer. In accordance with good practice, the science department provides a percentage score for students' attainment in practical work during the year as part of this process.

3. PLANNING AND PREPARATION

- The quality of planning and preparation is good. Teachers work effectively with each other and share teaching and learning resources on a shared server. Formal meetings are held regularly and records of these meetings are maintained. A record of the CPD that the teachers undertake each year is also kept.
- The science department has collaborated on the first-year schemes of work for the new Science specification. The schemes they have produced are good. In some cases more detail would be beneficial in describing the activities that pertain to the learning outcomes. The schemes of work for all other year groups should be developed further in the same manner as the current first-year schemes.
- The science department conducts an analysis of certificate examination results. The analysis should provide the context of the year group so that board members have a clearer understanding of these results when comparing them to national averages. Time-bound strategies should then be agreed to try to improve student attainment. The analysis should be discussed at department meetings and recorded in the minutes.

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 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;