An Roinn Oideachais agus Scileanna

Department of Education and Skills

Subject Inspection in Mathematics

REPORT

Ainm na scoile / School name	Saint Mary's College
Seoladh na scoile / School address	Nicholas Street Dundalk County Louth
Uimhir rolla / Roll number	63890R

Date of Inspection: 23-02-2018

AN ROINN OIDEACHAIS AGUS SCILEANNA | DEPARTMENT OF EDUCATION AND SKILLS

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 Mathematics under the following headings:

1. Teaching, learning 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.

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.

SUBJECT INSPECTION

INSPECTION ACTIVITIES

Dates of inspection	22 and 23-02-2018
Inspection activities undertaken • Review of relevant documents • Discussion with principal and key staff • Interaction with students	• Observation of teaching and learning during eight class periods • Examination of students' work • Feedback to principal, deputy principals and relevant staff

School context

Saint Mary's College is a co-educational school under the trusteeship of the Marist Education Authority. There are 735 students enrolled currently: 454 boys and 281 girls. It provides the Junior Certificate, Leaving Certificate, Leaving Certificate Vocational Programme, and an optional Transition Year (TY) programme.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS:

Findings

- Teaching and learning were good, overall; while excellent practice was noted in a significant minority of lessons, there was scope for some improvement in most lessons.
- Assessment was very good in all lessons.
- Student-teacher relationships were observed to be very positive.
- Subject provision and whole-school support for Mathematics are very good.
- The quality of subject planning and preparation is good, overall; collaborative practices are effective but the programmes of work require attention.
- There is an over-emphasis on Leaving Certificate material in the TY mathematics plan.

Recommendations

- The mathematics teachers should work together to extend the good practices of encouraging students to think for themselves, teaching concepts in their full mathematical context, maintaining high expectations and providing appropriate levels of challenge for individual learners.
- The programmes of work for Mathematics should be reviewed to better reflect how the subject is examined in the certificate examinations.
- Non-syllabus material should be emphasised as a means of developing key mathematical skills in TY.

DETAILED FINDINGS AND RECOMMENDATIONS

1. TEACHING, LEARNING, AND ASSESSMENT

- Teaching and learning were good, overall. While excellent practice was noted in a significant minority of lessons, there was scope for improvement in most lessons.
- Warm-up exercises were used to very good effect in some lessons. Information and communications technology (ICT), in the form of geometry software, quizzes and electronic slides, were used effectively to enhance learning.
- In most lessons, new learning built very effectively on prior learning. There was scope in a minority of lessons for students' existing knowledge to be taken into account further in lesson planning. It is good practice that students complete a mathematical competency test at the beginning of first year. However, better use should be made of the information from this test to ensure that learning is pitched appropriately for individual learners.
- A variety of worthwhile methodologies was observed including high-quality teacher instruction, students completing questions, group and pair work, problem solving, quizzes, and investigations. Learning was most effective when there was a good balance between student activities and teacher input to consolidate learning. In a few lessons, there was scope for a better balance.
- In most lessons, the students participated very well, demonstrated good understanding of the key concepts and good use of mathematical language. However, the predominant focus in some lessons was on students developing procedural proficiency without fully understanding the underlying Mathematics. Procedural skills should be taught in a manner that allows students to connect mathematical methods to their conceptual meanings.
- Highly effective practice was observed where students explored ideas in various appropriate mathematical contexts. An example of this practice occurred when important properties of the polar form of a complex number were explored through investigation of multiplication and division of complex numbers in Cartesian form. This excellent methodology enabled the students to examine the ideas from a variety of perspectives, thus enhancing the quality and depth of their understanding.
- Well-designed lesson tasks served to lead students through the key learning without over-reliance on teacher input, in a significant minority of lessons. The students worked independently and developed confidence in their ability to think and problem solve. There was scope in some lessons for students to be given further opportunities to think for themselves.
- In some lessons, students very effectively discussed Mathematics and articulated their reasoning. This very good practice was supported by the facilitation of group or pair work. In half of the lessons observed, there was scope to facilitate students to further develop the essential skills that will enable them to explain their reasoning.
- Most teachers had appropriately high expectations for students' learning and these were reflected in the use of effective differentiation strategies. Highly effective practice was noted where tasks were open-ended and facilitated further challenge and where the methodology allowed students to work at their own pace. In some lessons, there was scope for additional challenge to be provided for some students.
- The quality of assessment was very good in all lessons. Mini-white boards, monitoring and questioning were used effectively to assess students' progress. Very good practice was

observed when teachers adapted instruction on foot of assessment. Additionally, there was highly effective practice around the giving, checking and correcting of homework.

- Questioning was particularly effective when it was used as a stimulus to encourage students to develop their thinking. Some teachers were very skilful in not always giving answers directly and in enabling students to persist and develop resilience. In a few lessons, teachers over-prompted and this encouraged students to become too dependent on teacher input; this should be avoided.
- Student-teacher relationships were observed to be very good. Teachers affirmed students' efforts regularly.

2. SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- Subject provision and whole school support for Mathematics are very good. There is a very good range of resources available for the subject, including ICT.
- There is just one teacher involved in teaching higher-level Leaving Certificate Mathematics at present. The school has a plan in place to increase the number of teachers at this level; this would be a welcome development.
- The mathematics teachers participate extensively in continuing professional development (CPD) which is very well supported by the board of management. Some teachers have participated in *Reflections on Practice*; an initiative to promote collaborative lesson planning and peer review. This expertise should be exploited further as a formal mechanism for sharing lesson ideas and for extending good practice.
- A useful academic mentoring system is in place to encourage students to reach their potential. The mathematics teachers provide additional assistance to students preparing for the certificate examinations.
- Valuable extra-curricular opportunities are provided for students to experience Mathematics for fun, to extend learning and to provide additional challenge for very able students.

3. PLANNING AND PREPARATION

- The quality of planning and preparation is good, overall. The subject plan contains programmes of work which outline content and timeframes for each year group and level. It is recommended that the programmes of work be reviewed, over time, to better reflect how the subject is examined in the certificate examinations. This work will involve identifying links across topics and adjusting the work plans to ensure that each concept is taught in as full a mathematical context as possible.
- Teachers' collective practice is co-ordinated in a highly effective manner by two appointed coordinators; one for the junior cycle and one for the senior cycle. There is very effective collaboration in the development of the subject action plan, the analysis of student outcomes, and amongst some teachers in developing lesson plans through the *Reflections on Practice* process.
- Student outcomes in Mathematics in the certificate examinations are analysed against national norms and student intake data, and effectively inform planning. For example, on foot of this analysis the school is considering the introduction of the Leaving Certificate Applied (LCA) programme. This would be a very worthwhile action.

- The TY plan comprises mainly Leaving Certificate material and this should be reviewed. Non-syllabus material should be favoured for developing key mathematical skills: for example, aspects of Applied Mathematics, financial Mathematics, or budgeting. Additionally, methodologies and resources that engage students and generate an enthusiasm for the subject should be outlined in the TY plan and further used in lessons.

4. CHILD PROTECTION

During the evaluation, the following checks in relation to the school's child protection procedures were conducted:

1. The school principal is aware that revised child protection procedures for primary and post-primary schools came into effect on 11 December 2017 and arrangements are in place to begin the process of implementing these procedures.
2. The name of the designated liaison person for child protection matters was prominently displayed in the school's reception area.
3. The school has a Child Safeguarding Statement in place.
4. All teachers are aware that they are mandated persons and of their responsibilities in that regard.

The school met the requirements in relation to 1, 2 and 3 above and plans were in place at the time of the evaluation to provide training to all staff in relation to 4.

The draft findings and recommendations arising out of this evaluation were discussed with the principal, deputy principals, and subject teachers at the conclusion of the evaluation.

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 of 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 *very good* 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;