

An Roinn Oideachais agus Scileanna
Department of Education and Skills

Subject Inspection in Mathematics

REPORT

Ainm na scoile / School name	Dominican College Muckross Park
Seoladh na scoile / School address	Donnybrook Dublin 4
Uimhir rolla / Roll number	60710U

Date of Inspection: 08-12-2016



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. 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	08-12-2016
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 seven class periods• Examination of students' work• Feedback to principal and relevant staff

SCHOOL CONTEXT

Dominican College, Muckcross Park, currently has 713 girls enrolled. The school provides the Junior Certificate and the established Leaving Certificate programmes. Transition year (TY) is a compulsory programme in the school.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS:

FINDINGS

- The quality of teaching and learning in most lessons was very good with many examples of excellent practice; in the best lessons, students were thinking, doing, problem solving, and interacting with their teacher and with each other.
- Teachers demonstrated a high level of mathematical and information and communications technology (ICT) expertise.
- The assessment practices used in the lessons observed were satisfactory overall.
- Mathematics is very well supported at whole-school level: but there is scope for improvement in the way class groups are arranged and in the way decisions about learning support are made.
- The quality of planning for Mathematics is satisfactory.

RECOMMENDATIONS

- The mathematics teachers should collaborate in order to share good teaching and learning practice.
- The teachers should plan lesson activities so as to ensure that assessment is a more integral part of the learning process for students.
- The creation of higher and ordinary-level classes for Mathematics should be delayed.
- All the available relevant data should be included in this decision-making process for the provision of learning support and in evaluating its effectiveness.
- The mathematics subject plan should be developed to ensure that it effectively supports teaching and learning.

DETAILED FINDINGS AND RECOMMENDATIONS

1. TEACHING AND LEARNING

- The quality of teaching and learning in most lessons was very good with many examples of excellent practice. There were evident weaknesses that impacted on students' learning in one lesson. Most lessons were well planned and a variety of teaching approaches was used. It is recommended that teachers work together to share good teaching and learning practice.
- Teacher explanations were clear, conceptual, and facilitated learning effectively in most lessons. Learning activities that allowed students to progress the mathematical concepts logically, from the concrete to the abstract, were particularly successful. There was a need for greater clarity in the explanations of one lesson.
- Excellent practice was evident when new learning was presented as a problem to be solved rather than through a teacher example to be copied. Where this practice occurred the students had to extensively think for themselves. In some lessons teachers provided too much support for students and this should be avoided.
- Discovery and investigation strategies were used very effectively in a number of lessons. In these cases students were enthusiastic, enjoyed Mathematics and the quality of learning was very high. A good example of this approach was seen in a lesson where the teacher guided students through a structured discovery of patterns, compound interest and functions.
- In the best lessons, students were thinking, doing, problem solving, and interacting with their teacher and with each other. Teacher exposition was used successfully to engage students' interest and stimulate learning. Some lessons over-relied on teacher input and there were deficiencies in relation to differentiating learning and to assessing all students' progress.
- There was excellent use of geometry software to explore complex mathematical ideas and to develop students' understanding. Teachers demonstrated a very high level of mathematical and ICT expertise in the lessons observed. The members of the subject department should work on sharing this expertise.
- The effectiveness of teacher questioning varied across the lessons observed. While all teachers used questioning to assess progress and to explore ideas, in some lessons not all students were involved in this process. Questioning strategies that engage all students should be used in lessons.
- The assessment practices used in the lessons observed were satisfactory overall. The student copybooks reviewed in one lesson highlighted a need for greater monitoring. The best assessment occurred in lessons where the methodology allowed teachers to observe and provide feedback as students worked. Lessons should be planned to ensure that assessment is a more integral part of the learning process for students.

2. SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

- Mathematics is very well supported at whole-school level. Timetable allocation is very good and there is a wide range of resources provided for Mathematics. The provision of electronic tablet devices for teachers to promote the use of ICT in the classroom is a positive development.
- The procedure for assigning students to levels in first year for Mathematics needs to be reviewed. Currently students are placed in mixed-ability classes at the start of first year and are streamed according to ability in the first week of September. It was evident from the review of standardised assessment data that the students would more than likely benefit from

being kept in mixed-ability classes until the end of second year. It is therefore recommended that the creation of higher and ordinary level classes for Mathematics be delayed.

- The current practice of streaming within levels also needs to be reviewed. In all year groups there is a top higher-level class, second from the top and so on. This practice communicates lower expectations to students who are not in the top class and has the potential to negatively impact on self-efficacy and achievement. It is recommended that class groups within higher and ordinary levels should be of mixed ability.
- Insufficient use is currently being made of available data to make decisions about learning support in Mathematics. Students are assigned to a small class group in first year on the basis of their achievement on a maths competency test alone. The data reviewed as part of the evaluation highlighted the need for a more comprehensive evidence base for these decisions. It is recommended that all the available relevant data, for example standardised test scores and Sten scores from the primary schools, be included in this decision-making process and in reviewing the effectiveness of the learning support provided.
- It is very good that team teaching has been recently introduced to facilitate in-class support for students experiencing difficulty with the subject. Training in the use of team teaching and designing differentiated lessons should be provided to support this development.
- A range of valuable opportunities is provided for students to participate in extracurricular mathematics activities. There is a very vibrant *Maths Week* celebrated in the school.
- There is good monitoring of student achievement in Mathematics in the certificate examinations. The results indicate that the students are performing well. The subject department completes an analysis of student achievement against national norms. It is recommended that an analysis of achievement against intake data also be completed.

3. PLANNING AND PREPARATION

- The quality of planning for Mathematics is satisfactory. The subject plan should be developed to include an action plan for improvement, programmes of work that genuinely support teaching and a comprehensive commentary on student achievement. A plan for differentiated teaching in order to meet students' individual needs should be included also.
- The teachers work well together to discuss the operational aspects of planning for Mathematics. In order to share good teaching and learning practice, it is recommended that the teachers collaboratively plan lessons, and that they teach, observe and amend the planned lessons. The (Project) Maths Development Team is currently providing *Reflections on Practice*: an initiative to promote teacher collaboration on lesson planning. The subject department should consider availing of this initiative.
- There is scope for improvement in the programmes of work for Mathematics. The current programmes comprise of a list of topics for each year group and level, and this is not in keeping with how the subject is examined. To redesign the programmes of work the teachers should engage in professional discussion to identify links between topics, and the skills students need to achieve well.
- There is scope for improvement in planning for transition year (TY) Mathematics. The programme of work currently comprises of a list of Leaving Certificate topics to be covered for the year. Consideration should be given to designing the TY programme around a number of projects that will facilitate students in developing their skills in real life and mathematical contexts. Beneficial aspects of this approach should then be used across all year groups.

The draft findings and recommendations arising out of this evaluation were discussed with the principal, deputy 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;