Subject Inspection of Mathematics
REPORT

St Gerald’s College
Castlebar, County Mayo
Roll number: 64580H

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REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN MATHEMATICS

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in St Gerald’s College, conducted as part of a whole school evaluation. It presents the findings of an evaluation of the quality of teaching and learning in Mathematics and makes recommendations for the further development of the teaching of this subject in the school. The evaluation was conducted over two days during which the inspector visited classrooms and observed teaching and learning. The inspector interacted with students and teachers and examined students’ work. The inspector reviewed school planning documentation. Following the evaluation visit, the inspector provided oral feedback on the outcomes of the evaluation to the principal and deputy principal.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

Mathematics receives very strong support from the school management and enjoys a very high profile in the school. The students demonstrate very positive attitudes towards Mathematics and it is evident that they regard Mathematics as a subject which is enjoyable and at which they can be successful.

Timetabling provision for Mathematics in junior cycle is very good. All classes are provided with five periods of Mathematics per week. Mathematics classes are mixed-ability in first year and are set in second and third year. Mathematics classes are timetabled concurrently in both second and third year. This is very good practice as it facilitates movement of students between levels and enables students to follow the highest level possible for as long as possible.

First-year students follow a common programme in first year. While this is good practice and informs the composition of the classes when setting takes place at the end of the year, the content of the course and the degree to which the delivery of the programme is synchronised is in need of review. The review should be informed by the common first-year programme contained in the Project Maths syllabus and should result in an agreed delivery schedule supported by an agreed schedule of common assessments. The approach to the classroom implementation of the programme should be modelled on the teaching and learning strategies espoused by Project Maths.

Upon completion of the junior cycle, all students enter Transition Year. Mathematics classes are set in Transition Year and there are four classes of Mathematics per week. Formerly, the Transition Year mathematics classes were mixed ability and followed a common course. Following consultation with the various stakeholders, the decision to set the classes was made. This decision should be reviewed and arrangements should be put in place to allow elements of the Transition Year programme to be delivered in a mixed-ability setting. The model of programme implementation currently in place at ordinary level could be extended for at least part of the year to include all Transition Year students.
Higher and ordinary-level students in fifth and sixth year are provided with six classers of Mathematics per week. It is advised that the need for six classes per week at ordinary level in both fifth and sixth year be discussed and the possibility of reducing the provision by one class per week in each year be considered.

Students with a special educational need or requiring learning support in Mathematics receive very good support in the school. These students are identified through the use of a formal group standardised test, individual diagnostic tests, referral from mainstream mathematics teachers and following consultation with the class and learning-support teachers in the feeder primary schools. A small discrete class group is formed in first year to support students with identified special educational needs and they receive additional support in Mathematics during withdrawal from subjects from which they are exempt. Small-group withdrawal is also employed in second and third year. Students in need of learning support receive short-term targeted interventions during withdrawal from mathematics classes. The material covered during withdrawal is agreed with the class teachers and is designed to dovetail with ongoing classroom activities while addressing any underlying issues.

The mathematics department is comprised of ten teachers, most of whom have an appropriate qualification in Mathematics. The teachers are assigned to classes by rotation and following consultation with management. Management has recently broadened the base of teachers willing to teach higher-level Mathematics in senior cycle. This proactive approach to addressing the future needs of the department is very good practice. Furthermore, it is policy that teachers retain the same class group from second to third year and from fifth to sixth year. This commendable practice ensures continuity of approach and facilitates long-term planning.

The school has been proactive in developing its information and communication technology (ICT) facilities. Many of the classrooms are equipped with a computer and a ceiling-mounted data projector. The mathematics department also has access to a laptop and portable data projector. In addition the technology infrastructure supports a virtual learning environment which is designed to enable collaboration in lesson and department planning, resource development and assessment. The degree to which ICT is being integrated into mathematics teaching and learning is limited and in order to address this, it is recommended that at least one member of department be chosen to identify suitable ICT resources and to recommend strategies for their integration into teaching and learning.

The department also needs to procure a range of resources to facilitate active teaching and learning. Management is committed to supporting the decisions made by the department in this regard and advice on the most appropriate resources to be acquired is available at the in-service courses currently being delivered as part of the rollout of Project Maths.

Students with exceptional abilities in Mathematics are encouraged to participate in the annual mathematics Olympiad and a number of the students from the school have performed with distinction in the Olympiad over the years.

**Planning and Preparation**

Subject department planning has been an integral part of the department’s activities for a number of years. Regular planning meetings are facilitated by management and the department’s planning documentation details the proceedings of these meetings. A subject department plan has evolved. The plan is in need of review to reflect the changing environment precipitated by the national
implementation of Project Maths and to accurately describe the infrastructural and other requirements of the department. In order to facilitate the review and to manage ongoing collaborative planning it is recommended that a co-ordinator be appointed from within the department. Responsibility for co-ordinating the department’s activities should then rotate between the members of the department.

A key element to be addressed in conducting the review is the design of the schemes of work. The existing schemes take the form of chapter lists with associated delivery schedules. The review should extend their scope to include key learning outcomes and should begin the process of detailing the classroom approaches to be adopted in achieving these outcomes.

Analysis of student performance in the state examinations has recently been incorporated into school development planning and management has assumed responsibility for the process. This is a very welcome development and as it is an important metric in informing subject department planning, it is advised that responsibility for analysing student performance in Mathematics devolve to the mathematics department and form an integral part of the department’s ongoing planning.

Individual teacher planning is very good. All of the classes visited during the inspection were well planned, had clear aims and objectives, and incorporated appropriate assessment procedures.

A separate plan for Mathematics in Transition Year is in place. The arrangements described in this for those following ordinary-level Mathematics are very good. The ordinary-level course comprises three modules which are delivered concurrently. The teachers rotate from group to group upon completion of each module. The content of the modules and the suggested delivery modes are appropriate to the aims and objectives of Transition Year. The plan for higher-level Mathematics lacks the breadth of the ordinary-level course and its content is modelled very closely on the Leaving Certificate higher-level programme. It is recommended that the TY plan be reviewed, that the modular approach in place at ordinary level be replicated at higher level, and that some of the modules are common to both levels and can be delivered, in part, in mixed-ability settings.

**TEACHING AND LEARNING**

The quality of teaching and learning in Mathematics was very good. The lessons observed during the inspection were well structured, were inclusive of all of the students and there was very good adherence to correct procedure when calculations were being carried out. Very good links were established with the students’ prior learning and the relevance of the material being covered was continually emphasised. The teachers provided the students with very good strategies to avoid common pitfalls and to identify the correct approaches to be used in problem solving. In a small number of cases, the pace of the lessons could have been less pedestrian and the degree to which the more able students were challenged by the lesson content could have been enhanced.

Traditional teaching, involving teacher exposition at the board followed by individual student activity on assigned tasks, was the method most in evidence during the inspection. However, in one instance, resources were successfully integrated into a lesson where the students were investigating measure and the most appropriate units to use in expressing their answers. The lesson was facilitated by effective teacher movement and excellent differentiation. This student-centred implementation model is precisely as advocated by Project Maths and should be more widely adopted by the department as a whole.
Classroom management was excellent. Very good teacher questioning served to underpin the lessons’ learning goals, prompted classroom discussions and reinforced the students’ understanding of the material in hand. The rapport between teachers and students provided clear evidence of their shared enthusiasm for the subject and of mutual respect that characterised the lessons.

The quality of student learning as demonstrated by students’ responses to questions, the quality of their written work, their ability to solve the most challenging problems and their ability to express themselves using appropriate mathematical language was most impressive. Analysis of the uptake rates and student attainment in the state examinations provided further evidence of the very high quality of student learning.

**ASSESSMENT**

Assessment practices in the school are very good. Ongoing assessment occurs through teacher questioning in class, the provision of in-class tests at the end of each topic and formal examinations. A homework policy has been developed and is being implemented by all of the members of the mathematics department. Homework was regularly assigned and corrected in all of the lessons visited during the inspection. The verbal feedback given to students while homework was being corrected was of the highest quality. In order to support this good practice it is advised that the mathematics department customise the existing homework policy to formalise the role of homework in providing opportunities for shared learning and to remind the students of the need to amend their own work while homework is being corrected in class.

Formal examinations are held for non-examination classes in December and again in May. Common papers with common agreed marking schemes are provided within levels for all formal examinations. The layout and standard of the papers set for the formal examinations are similar to those that students will encounter in the certificate examinations. This is very good practice. Students in examination classes sit formal examinations in November each year and are provided with further in-class assessments prior to Christmas. Examination classes also sit mock examinations early in the second term each year.

Practice in relation to recording student attendance and attainment in class and formal tests is very good. Roll call is taken at the beginning of class and is noted in the teacher’s diary. Students’ compliance with homework completion and their performance in class and formal tests are also recorded.

**SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- The quality of teaching and learning is very good.
- Mathematics receives very strong support from the school management and enjoys a very high profile in the school. Timetabling provision for Mathematics is very good.
- Students with special educational need or requiring learning support in Mathematics receive very good support.
• Individual teacher planning was very good. All of the classes visited during the inspection were well planned, had clear aims and objectives, and incorporated appropriate assessment procedures.
• Classroom management was excellent. Very good teacher questioning served to underpin the lessons’ learning goals, prompted classroom discussions, and reinforced the students’ understanding of the material in hand. The rapport between teachers and students provided clear evidence of their shared enthusiasm for the subject and of the mutual respect that characterised the lessons.
• Assessment practices in the school are very good. Homework was regularly assigned and corrected in all of the lessons visited during the inspection. The verbal feedback given to students while homework was being corrected was of the highest quality.

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

• In order to facilitate the review of the subject department plan and to manage ongoing collaborative planning it is recommended that a co-ordinator be appointed from within the department. Responsibility for co-ordinating the department’s activities should then rotate between the members of the department. In addition, responsibility for analysing student performance in Mathematics should devolve to the mathematics department and form an integral part of the department’s ongoing planning.
• The Transition Year mathematics programme is in need of review. The revised programme should adopt the modular approach currently in place for ordinary-level students and should have a number of modules that can be delivered in mixed-ability settings.
• It is recommended that at least one member of the department be chosen to identify suitable ICT resources and to recommend strategies for their integration into teaching and learning. Furthermore, the student-centred approaches to teaching and learning advocated by Project Maths should be more widely adopted by the mathematics department.

Post-evaluation meetings were held with the principal and deputy principal at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

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