Subject Inspection of Mathematics
REPORT

Presentation Secondary School
Kildare, County Kildare
Roll number: 61701B

Date of inspection: 5 May 2010
REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN MATHEMATICS

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Presentation Secondary School. 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, 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. 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

The arrangements in place to facilitate student transfer from the feeder primary schools are very good. The mathematical capabilities of the incoming students are assessed during the transfer programme using appropriate standardised tests. Following an analysis of the outcomes of the assessments mixed-ability classes are formed. These classes follow a common mathematics programme throughout first year and student performance in a series of common assessments informs the composition of mathematics classes when they are set at the end of the year. The existing assessment procedures for incoming students could be further enhanced through the use of a dedicated mathematics test designed to establish the students’ mathematical skills set. The outcomes of this assessment should inform the content of the first-year mathematics programme and should act as a benchmark against which student progress in first year can be measured.

Timetabling provision for Mathematics in junior cycle is in need of review. Currently, all junior cycle classes are provided with four periods of Mathematics per week. This allocation is less than optimal and it is recommended that every effort be made to increase the number of periods of Mathematics in second and third year to five per week.

Timetabling provision for Mathematics in senior cycle is very good. The school is keen to promote higher-level Mathematics and, despite the resource implications, maintains higher-level classes in both fifth and sixth year. The scheduling of mathematics classes in junior and senior cycle is designed to allow students to change levels without any disruption to the timetable. This is very good practice.

The provision for students with special educational needs or in need of learning support in Mathematics is good. The students’ educational and other needs are identified as part of the transfer programme and the range of supports available to them is detailed in the school’s special educational needs policy. Learning support in Mathematics is primarily provided through the provision of additional class groupings timetabled concurrently with the mainstream classes. If it is deemed necessary, more intensive support is also provided during small-group and individual withdrawal from classes other than Mathematics. While the existing model is working well, there
is scope to enhance the support provided for first-year students. At the time of the inspection, there was very little evidence of additional mathematics support in first year and no reference was made to it in the school’s policy document. It is recommended therefore that the learning-support provision for Mathematics in first year be reviewed and that a sustainable model be put in place as soon as is practicable. The school’s special educational needs policy should then be appropriately amended.

Mathematics teachers are assigned to levels by rotation and it is policy that teachers retain the same class group from second to third year and from fifth into sixth year. This is good practice. The mathematics department comprises seven teachers, only three of whom have an appropriate qualification in Mathematics. Therefore, management should endeavour to redress this imbalance and to enhance the qualifications profile of the department in the coming years.

The school’s information and communication technology (ICT) infrastructure has undergone sustained development in recent times and the mathematics teachers have access to laptops and data projectors and to the school’s computer room. The subject department plan also makes reference to other resources available to assist in teaching and learning Mathematics. However, a definitive inventory of the resources available to the teachers was not available during the inspection. Therefore, an audit of existing resources should be conducted and an updated inventory of resources should be added to the subject department plan for Mathematics. Arrangements for storing and sharing the resources should also be specified in the plan.

Management is very supportive of teacher participation in ongoing professional development. Attendance at in-service training is readily facilitated and the school’s board of management provides funding for those teachers wishing to pursue further studies. For their part, the teachers have embraced the opportunities provided and all have attended the various Project Maths workshops while a number have also gained additional postgraduate qualifications in their own time.

PLANNING AND PREPARATION

Subject department planning in Mathematics is well established. Regular formal and informal meetings are held and the minutes of the formal meetings are contained in the department’s planning folder. The role of planning co-ordinator rotates between the members of the department. This is very good practice as it provides each member of the department with an opportunity to lead the development of the department and to become familiar with the challenges associated with subject department planning.

A subject-department plan for Mathematics is in place. The plan, which provides a valuable foundation to support ongoing department planning, is in need of further development. In developing the plan, particular emphasis should be placed on the existing schemes of work. Currently, the schemes detail the curricular content for each year and level and provide an approximate delivery schedule. The schemes which evolve should detail the expected learning outcomes for students and should incorporate cross-curricular planning, effective teaching methods and assessment into one matrix. This will ensure consistency in curriculum delivery and enhance the students’ understanding and appreciation of Mathematics.

Individual teacher planning for lessons is very good. A range of resources, including handouts, worksheets and models, was effectively integrated into the lessons observed during the inspection while ICT was also used to very good effect in one lesson. Given the recent investment in the school’s ICT infrastructure, it is recommended that the integration of ICT into teaching and
learning Mathematics be adopted as the primary focus of the department’s ongoing continuing professional development activities.

TEACHING AND LEARNING

The quality of teaching observed during the inspection was very good. The teachers were well prepared for their lessons and taught with enthusiasm and clarity. The lessons had a good structure and very good links were established with the students’ prior learning and with their everyday experiences. In addition, the teachers made very good use of proper procedure when modelling solutions on the board. This served to enhance the students’ understanding of the material in hand and to equip them to tackle the more intricate problems they would encounter as the lessons unfolded.

ICT was integrated to great effect in a lesson investigating fractions, ratio and proportion. Presentation software was used to present the topic in a visually stimulating fashion and to facilitate effective teacher movement. The material chosen to illustrate the various principles was drawn from a survey conducted amongst the school’s first year students. This proved to be a very effective approach as the relevance to the lesson became immediately obvious to the students and their enjoyment of the lesson was greatly enhanced as a result.

A lesson exploring concepts in geometry was very effectively facilitated by the use of models. The lesson, which featured group work, involved students in investigating the properties of triangles. Different groups were presented with different types of triangles and were expected to establish the particular properties attaching to the triangles in each case and to report their finding to the larger group. The lesson presented the students with very good opportunities for independent and shared learning and allowed them to hypothesise and to explain their reasoning. Very good progression was also evident as the students used algebra in solving more difficult problems towards the end of the lesson.

Classroom management and student engagement and behaviour were of a very high standard. The approach adopted by the teachers meant that they did not spend the majority of class time at the blackboard but were free to support individuals or small groups of students when the need arose. This was achieved through the use of graduated worksheets and other materials and had the additional benefit that there was very little reliance on the textbook as the primary classroom resource. Good use was also made of teacher questioning, which served to reinforce the achievement of the lessons’ objectives, to include as many students as possible in the lesson, and to encourage higher-order thinking.

The quality of student learning, as evidenced from the students’ homework copies, their answering during lessons and their interactions with the inspector, was very good. Student performance in the state examinations, when due account is taken of the context in which the school operates, is also very satisfactory.

ASSESSMENT

Practices in relation to homework are very good. The school’s homework policy is clear and unambiguous and is being uniformly implemented by the mathematics teachers. Homework is regularly assigned and corrected and very good verbal feedback is provided to the students while homework is being corrected in class. The students’ homework copybooks are well maintained and contain teacher comments and corrections. In some cases the copybooks contain evidence of students amending their own work. This very good practice should be uniformly adopted.
The common programme in first year is assessed using a series of co-ordinated common assessments. This is good practice as it means that the performance of each student can be compared to that of the entire cohort. However, the arrangements for the remaining non-examination classes are in need of review. At present, students in second and fifth year have one formal examination just prior to the summer holidays each year, otherwise their progress is assessed through the use of class tests. It is recommended, therefore, that an additional formal examination be provided for these classes at Christmas and that the results are incorporated into the report that is sent to parents at this time.

Students in examinations classes have formal examinations at Christmas and sit mock examinations early in the second term. Written reports issue to the parents after each of these events. An additional written report, detailing student progress, is sent to parents of sixth-year students in November each year. This is very good practice and should be extended to include the third-year student cohort.

Very good use is made of the student diary in communicating with parents and the teacher diary is used very effectively to record student attendance, homework completion and student performance is class tests.

**SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- The quality of teaching and learning was very good.
- Classroom management and student engagement with the lesson was of a very high quality.
- Management is committed to the ongoing development of the school’s ICT infrastructure and to the continuing professional development of its staff. For their part, the members of the mathematics department have embraced the opportunities provided and all have attended the various Project Maths workshops while a number have also gained additional postgraduate qualifications in their own time.
- Individual teacher lesson planning is very good and planning for the inclusion of resources in lesson delivery is particularly good.
- Practices in relation to homework are very good.

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

- In order to enhance the timetabling provision for Mathematics in junior cycle, it is recommended that every effort should be made to increase the number of periods of Mathematics in second and third year to five per week.
- There is scope to enhance the learning-support provision for Mathematics for first-year students and therefore it is recommended that the current provision in first year be reviewed and that a sustainable model be put in place as soon as is practicable. The school’s special educational needs policy should then be appropriately amended.
- It is recommended that the integration of ICT into teaching and learning Mathematics be adopted as the primary focus of the department’s ongoing continuing professional development activities.
- It is recommended that an additional formal examination be provided for classes in second and fifth year at Christmas and that the results are incorporated into the report that is sent to parents at this time.
A post-evaluation meeting was 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.