Subject Inspection of Mathematics
REPORT

Moyle Park College
Clondalkin Dublin 22
Roll number: 60121B

Date of inspection: 8 March 2010
REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN MATHEMATICS

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Moyle Park College. 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 and subject teachers. The board of management of the school was given an opportunity to comment in writing on the findings and recommendations of the report, and the response of the board will be found in the appendix of this report.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

The school’s recently-appointed senior management team has clear understanding of, and empathy for, the operation of the mathematics department. The department is very well organised, models very positive attitudes to Mathematics and approaches its activities in a collaborative and open manner. The members of the department are proactive in attending continuing professional development courses and teachers pursuing additional postgraduate qualifications receive financial support from the school’s board of management. The members of the department are deployed in line with their qualifications. However there is scope to rationalise the numbers of teachers currently teaching the subject. There are a number of teachers who teach Mathematics to just one class group each week and management should strive to reduce this number in order to enhance the level of cohesion in curriculum delivery.

Timetabling provision for Mathematics is very good. All classes in junior cycle are provided with five classes of Mathematics per week. The mathematics classes are timetabled concurrently in each year of the junior cycle. This is very good practice as it allows students to follow the highest level possible for as long as possible and it means that change of level can be facilitated with very little disruption to the students’ timetables.

Students entering senior cycle have the option of entering transition year (TY) or going directly into fifth year. Currently there is one mixed-ability class in TY and it is expected that this will grow to two class groups in the coming year. Timetabling provision for Mathematics in TY is very good. There are four classes of Mathematics per week and a programme reflecting the aims and objectives of TY is in place and is being delivered in a manner that is in keeping with best practice.

Fifth-year students can follow the established Leaving Certificate or the Leaving Certificate Applied (LCA) programme. There are six periods of Mathematics per week in fifth and sixth year while LCA students are provided with three classes of Mathematical Applications per week in
both years. The very good practice in relation to concurrent timetabling of classes evident in junior cycle is replicated in senior cycle.

The arrangements in place to facilitate the transfer of students from the feeder primary schools are very good. The school works very closely with the primary schools to ensure that the students transferring into first year receive appropriate support and that their educational and other needs are adequately catered for. The mathematical capabilities of the incoming students are established through the use of standardised tests, consultation with the relevant teachers in the feeder primary schools and a mathematics competency test. The majority of students are then assigned to mixed-ability classes. These classes follow a common programme in mathematics throughout the first term. Setting of mathematics classes then takes place following the house examinations at Christmas. In order to ensure that the analysis of the entrance assessments is used to best effect, it is recommended that the learning-support and mathematics departments collaborate in interpreting the outcome of the assessments, in agreeing the rationale for the content of the programme and for the order in which the content is delivered. It is further recommended that the consultation between the learning-support team and the members of the mathematics department focus on the development of key mathematical skills and on integrating strategies to engage the students in critical thinking, analysis and independent and collaborative learning.

Students with special educational needs or in need of learning support in Mathematics receive very good support. The learning-support team operates in a cohesive and effective manner and is keenly aware of the numeracy needs of the students in the school. A small discrete class group is formed in each year of the junior cycle. These groups receive additional support in mathematics and their progress is monitored closely by the learning-support team. The concurrent timetabling of mathematics classes in each year allows students to rejoin the mainstream classes if it is deemed appropriate. Short-term targeted withdrawal is also provided to students experiencing difficulties in the mainstream classes. The withdrawal classes are delivered by learning-support specialists who liaise closely with the class teachers. To build on the existing good work, consideration should be given to the implementation of additional learning-support models including team teaching and in-class co-operative support. Consideration should also be given to the design and delivery of a focussed whole-school programme to challenge and support the more able students in the school.

The school’s information and communication technology (ICT) infrastructure is very good and management is committed to its ongoing development. Management is anxious to make ICT resources widely available across the school. Already a good number of computers and data projectors have been installed while interactive whiteboards are available in three classrooms. Furthermore, management intends that each subject department should have an ICT champion to promote the integration of ICT in teaching and learning and to source appropriate resources and training. This is a very good idea. The mathematics department already uses ICT as a teaching and learning tool and the support of an active ICT advocate in the department will provide an ideal focus for future developments in this area.

The mathematics department has access to an impressive array of resources to enhance lesson delivery. The department should conduct an appraisal of the resources that are available to the department in order to ensure that the existing provision is sufficient to facilitate the introduction of Project Maths in the coming year. Any shortfall should be identified and arrangements for the purchase of requisite resources should be put in place.
PLANNING AND PREPARATION

The structures in place to support subject department planning are very good. Regular planning meetings are facilitated by management, co-ordinators are in place and management has identified developmental priorities for each department. In addition to the ICT advocate mentioned above, management also proposes that each department identifies one member to liaise with the appropriate subject association. This is a very welcome development, particularly in Mathematics where the Irish Mathematics Teachers Association (IMTA) is centrally involved in delivering ongoing training in support of the national roll out of Project Maths. The appointment of a liaison officer would maximise the benefits accruing to the department from the IMTA’s activities and would further enhance the culture of collaboration already in evidence in subject department planning in Mathematics.

The mathematics department has developed a comprehensive subject department plan. The plan contains detailed schemes of work for each year and level. The schemes, which are written in the form of learning outcomes, reflect the innovative and reflective approach adopted by the department to subject planning. In order to build on this good practice, it is advised that the schemes of work be amended to detail, in an integrated fashion, the strategies to be used in achieving the learning outcomes, agreed procedures for carrying out common mathematical operations and assessment procedures.

Management conducts an annual analysis of student attainment in the state examinations. The outcomes of the analysis are then circulated to the different subject departments. The mathematics planning folder contains the details of the analyses for the past number of years. This is very good practice. However it would be preferable if responsibility for the analysis devolved to the individual subject departments and a short report detailing the outcomes of the analysis were then prepared and submitted to management.

A comprehensive and innovative TY mathematics plan is in place. The TY mathematics programme detailed in the plan reflects the aims and objectives of TY. The programme is designed to engage the students with unusual and interesting Mathematics and to develop their understanding and appreciation of the history and development of the subject.

Individual teacher planning for lessons is very good. Comprehensive written planning materials were provided by all of the mathematics teachers and resources to support the lessons’ objectives were skilfully integrated into the lessons observed during the inspection.

TEACHING AND LEARNING

The lessons observed during the inspection were well prepared. The teachers taught with clarity and enthusiasm. Very good links were established with the students’ prior learning and, in a number of instances, the context for the material being covered was discussed in detail. This very good practice should be adopted as standard across the department. In some instances the intended learning outcomes were discussed and agreed at the outset of the lesson. This practice, which is a logical extension of the department’s planning activities, should inform the conduct of each mathematics lesson.

A range of teaching methods was in evidence during the inspection. ICT was successfully integrated into a lesson involving factorising with grouping. Presentation software, utilising
innovative colour-coding to identify the common factors, created a visually stimulating environment and enabled the teacher to repeatedly review the correct procedure when students experienced difficulties. ICT, including the use of the interactive whiteboard, also featured in a number of other lessons and it is clear that the degree to which ICT is utilised in mathematics lessons will increase over time. In order to enhance the effectiveness of ICT integration and to inform the work of the ICT advocate when he or she is appointed, it is recommended that the department consider how ICT can be successfully exploited to enhance differentiation in lesson delivery, to facilitate investigation, to prompt discussion and speculation and to actively engage students in their own learning.

Worksheets, flash cards, and the overhead projector also featured in the lessons observed during the inspection. This helped to reduce the reliance on the textbook as the primary classroom resource. The resources produced by the teachers were student friendly and relevant and allowed the teachers to customise the lesson content to meet the needs and abilities of the students.

Classroom management and student behaviour and engagement were, in all cases, very good. The atmosphere in the classrooms was warm, and the rapport between the teachers and students was respectful and contributed to a positive and purposeful learning environment. There was very good use of directed teacher questioning, which served to involve all of the students in the lessons and to maintain a clear focus on the lesson content. The use of higher-order questioning was less common and opportunities for students to propose alternative approaches to problem solving, and to explain their reasoning, should be more widely adopted as an integral element of lesson delivery.

The quality of student learning was, in almost all cases, very good. The students responded readily to teacher questioning and were well able to carry out any tasks assigned by the teachers. The quality of the students’ homework copies was very good and the performance of the students in class tests and in the state examinations, when the school’s context is taken into account, offered further evidence of the high quality of student learning.

ASSESSMENT

A whole-school homework policy has yet to be developed, however practices in relation to assigning and correcting homework are very good. In some instances Assessment for Learning strategies were in evidence and, in these cases, the quality of the work evident in the students’ homework copies was exemplary.

Ongoing informal assessment occurs through teacher questioning in class, through the assignment and correction of homework and class tests. Non-examination classes sit formal examinations at Christmas and just prior to the summer holidays each year. Common papers, corrected in accordance with an agreed marking scheme, are provided for the Christmas examination in second year to inform the setting of classes. Otherwise, teachers set formal examinations independently. In order to create a more uniform approach to student assessment, it is recommended that a whole-school homework and assessment policy be developed. In developing the policy, consideration should be given to the particular requirements of the mathematics department and to the need to have a schedule of common assessments to support the delivery of the mathematics programme in first year and to provide graduated common assessment thereafter.

Practices in relation to monitoring student attendance and attainment in class and formal examinations are very good. Roll call is taken at the beginning of each lesson and the results of
class and formal tests, and compliance with homework assignments, are kept in the teachers’ diaries. The school communicates very effectively with parents. Regular contact is maintained though the student diary and telephone calls to the home. Written reports also issue to parents after each formal examination. Each class group has one parent-teacher meeting per year.

**SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- The mathematics department is very well organised, models very positive attitudes to Mathematics and approaches its activities in a collaborative and open manner.
- The mathematics department is well supported by management and timetabling provision for Mathematics is very good.
- Students with special educational needs or in need of learning support in Mathematics receive very good support. The learning-support team operates in a cohesive and effective manner and is keenly aware of the numeracy needs of the students in the school.
- The school’s ICT infrastructure is very good and the mathematics department is very well resourced.
- There are very good structures in place to support subject department planning. Individual teacher planning for lessons is very good.

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

- It is recommended that the learning-support and mathematics departments collaborate in interpreting the outcome of the entrance assessments.
- It is recommended that the consultation between the learning-support team and the mathematics department focus on the development of key mathematical skills and on integrating strategies to engage the students in critical thinking, analysis and independent and collaborative learning.
- It is recommended that the mathematics department consider how ICT can be successfully exploited to enhance differentiation, to facilitate investigation, to prompt discussion and speculation and to actively engage students in their own learning.
- It is recommended that a whole-school homework and assessment policy be developed, giving consideration to the particular needs of the mathematics department and to the need to have a schedule of common assessments in first year.

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

*Published, November 2010*
Appendix

School Response to the Report

Submitted by the Board of Management
Area 1  Observations on the content of the inspection report

The Board of Management of Moyle Park College is very pleased to welcome this positive evaluation. We are happy to see that the dedication of the teachers of Mathematics has been recognised and affirmed. We would also like to comment positively on the professional and supportive manner in which the evaluation was carried out by the Inspectorate.

Area 2  Follow-up actions planned or undertaken since the completion of the inspection activity to implement the findings and recommendations of the inspection.

The following recommendations are being examined within the context of the resources currently available:

- The allocation of sufficient Learning Support Resources
- The review of the existing Homework Policy

The core team has begun the process of:

- Utilising ICT rooms for the allocation of classes (1st and 5th Year) in conjunction with the introduction of the new Project Maths Course
- Reviewing the existing Homework and Assessment policy with the intention of developing a more cohesive structure
- Introducing Geogebra into Senior Maths Curriculum
- Liaising with the Special Needs Department to devise strategies to create a learning environment most conducive to developing the critical thinking skills of the students
- The Maths Department and Special Needs Department have begun to collaborate in interpreting the outcomes of the entrance exams
- Allocating, where possible, extra hours of basic maths tuition (Organised between the special needs department and the maths department). Students will be withdrawn for extra maths classes during one period of religion and two periods of Irish per week, where the timetable allows.