

**An Roinn Oideachais agus Scileanna**

**Department of Education and Skills**

**Subject Inspection of Mathematics  
REPORT**

**Mountmellick Community School  
Mountmellick, County Laois  
Roll number: 91426A**

**Date of inspection: 2 March 2010**



**AN ROINN | DEPARTMENT  
OIDEACHAIS | OF EDUCATION  
AGUS SCILEANNA | AND SKILLS**

# **REPORT ON THE QUALITY OF LEARNING AND TEACHING IN MATHEMATICS**

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## **SUBJECT INSPECTION REPORT**

This report has been written following a subject inspection in Mountmellick Community 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 to the principal. 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 mathematics department in Mountmellick Community School is very well organised, its activities are underpinned by collaboration and it enjoys the strong support of the school's senior management. The structures in place in the school facilitate effective subject department planning, efficient and uniform assessment procedures and the ongoing continuing professional development (CPD) of its teachers. The mathematics teachers have been proactive in accessing appropriate CPD and the number of teachers in the department who are in a position to teach higher-level Mathematics in senior cycle has grown appreciably as a result.

Mathematics teachers are assigned to levels by rotation and following consultation with management and it is policy that teachers retain the same class group from second to third year and from fifth into sixth year. This is very good practice as it facilitates long-term planning and ensures continuity and uniformity in curriculum delivery. Newly appointed teachers benefit from a mentoring programme managed by a member of the school's middle management and with inputs from the principal and deputy principal. A member of the mathematics department is also assigned to support teachers newly assigned to the department

The time allocated to Mathematics and the scheduling of mathematics classes are both very good. All classes in junior and senior cycle are provided with five periods of Mathematics per week. All classes in junior and senior cycle are provided with five periods of Mathematics per week with sixth-year students being provided with additional mathematics class two out every three weeks. While recognising the demands on the timetable and acknowledging the very good allocation already being made, it is suggested that those students following higher-level in fifth and sixth year for be provided with six periods of Mathematics each week.

Students entering first year sit appropriate standardised tests and, following an analysis of the outcomes, mixed-ability classes are formed. These classes follow a common programme until Christmas in second year, when classes are set. The programme is well laid out with clear

delivery and assessment schedules and contains schemes of work written in terms of student learning outcomes. Minutes of mathematics department meetings indicate that the members of the department would prefer if the setting of classes were to take place earlier than is currently the case. This is a good idea but, if it is to happen, the existing programme must be reviewed. It is recommended that the review examine the rationale for the content of the existing programme and agree on the key skills that should be imparted to students taking the programme. The selection of the key skills should be informed by a common assessment designed following consultation with the feeder primary schools and delivered once the students have settled into school in first year. The programme should also be supported by more regular scheduled common assessments than is currently the case. These assessments will enhance the degree to which the delivery of the programme is synchronised across the class groups.

Procedures in place to identify and support students with special educational needs or in need of learning support are very good. The special educational needs of incoming students are established through the use of appropriate standardised tests, and consultation with parents and the feeder primary schools. Learning support in Mathematics is provided during individual and small group withdrawal from classes other than Mathematics. The students' response to the material covered during withdrawal and agreed targets for subsequent lessons are meticulously recorded. The records are securely stored and provide a valuable mechanism for informing parents and class teachers of the progress being made by the learning-support cohort in the school. The school's special educational needs policy also outlines the provision for the exceptionally able students. This element of the policy is in need of review and should detail any subject-specific extracurricular or co-curricular interventions available to students in the school and should also provide guidelines as to how lessons should be differentiated to cater for the needs of these students.

The mathematics department is very well resourced and while it is not provided with an annual budget, a range of resources to facilitate active teaching and learning has recently been purchased. These resources are centrally located and are accessible by all of the members of the department. The department should conduct an audit of the available resources and should, if necessary, procure sufficient additional resources to facilitate the efficient implementation of Project Maths in the coming academic year. The teachers of Mathematics have access to the school's growing information and communication technology (ICT) infrastructure. More than half of the classrooms are equipped with computers and data projectors and an interactive whiteboard is also available when required. A member of the mathematics department has ICT usage as part of their role in subject department planning. This is good practice. The responsibilities attached to the role need to be more clearly specified and should include identifying suitable ICT resources and recommending strategies for their integration into teaching and learning.

## **PLANNING AND PREPARATION**

Subject department planning is very well established and is supported by a planning template outlining the responsibility of each subject department team. The team addresses each of the areas outlined in the template and assigns responsibilities and agrees schedules for their completion. The mathematics team meet regularly and the minutes of the meeting bear testimony to the detailed nature of their deliberations and to an impressive degree of collaboration in managing the department's activities. The minutes of each department meeting are circulated to each member of the department and any amendments agreed. The revised minutes are then submitted to the principal.

Analysis of student performance in the state examinations is conducted annually. This very good practice is in place for a number of years and it is evident from the minutes of the department meetings that very good use is made of the outcomes of the analysis in informing ongoing planning.

The subject department plan contains detailed schemes of work, together with an associated delivery schedule, for each year and level. The schemes which are written in terms of student learning outcomes are clear and comprehensive. The order in which the higher-level programme in senior cycle is delivered should be reviewed: in particular, scheduling complex numbers and vectors in advance of trigonometry in fifth year should be reconsidered. The imminent roll out of Project Maths means that all of the schemes of work will need to be overhauled. The scheduling issue in fifth year can be addressed as part of this process.

Individual teacher lesson planning is very good. Comprehensive planning documentation was made available to the inspector and resources, designed to enhance the quality of lesson delivery and the students' learning, were seamlessly integrated into the lessons observed during the inspection.

## **TEACHING AND LEARNING**

The quality of teaching was, in almost all cases, very good. In the best cases, the teachers were well prepared for their classes and presented the content in an accessible and structured manner. The use of a handout explaining the meaning of key-words that frequently occur in algebra and the preparation of a booklet of worksheets for first-year mathematics classes are just two examples of the considered approach adopted by the teachers in planning their lessons. Very good links were forged with the students' prior learning and the relevance of the material being covered remained in focus throughout the lessons. The lessons proceeded at a suitable pace and there was a good balance between teacher input and student activity. The existing good practice in lesson delivery could be further enhanced if the intended learning outcomes were agreed at the outset of the lessons and if time were set aside prior to the lessons' conclusion to reflect on the extent to which they were achieved. Given that the schemes of work in the subject department plan are written in terms of learning outcomes, incorporating these routinely into lesson delivery is a logical and necessary extension of the department's work.

The mathematics department is prepared to engage in innovative practice. This was particularly evident in a lesson utilising team teaching as the key vehicle in differentiating the lesson content and in facilitating a range of student-centred activities. The teachers worked very effectively and provided independent and combined inputs as appropriate. A key feature of this lesson was the degree to which individual students were supported and challenged. It is recommended that the lessons learned by this initiative, especially in relation to differentiating lesson content for the more able students, form a central part of future department planning.

ICT and other audio-visual resources were productively incorporated into most of the lessons observed during the inspection. The resources were used primarily to present lesson content in a more visually stimulating manner. However in a few instances the resources served to significantly enhance the students' understanding of the material in hand and, through the use of animation, served to stimulate the students' imagination and deepen their insights into the application of Mathematics in the wider world.

Classroom management and student engagement were, in all cases, very good. The lessons were purposeful and productive and were characterised by respectful and warm interactions. Teacher questioning was a key vehicle in directing learning and in enabling student input. While teacher questioning served to involve all of the students in the lessons, there is scope to extend the degree to which students are challenged through the use of open-ended and higher-order questions.

The quality of student learning was good. The students coped very well with the tasks assigned to them and responded confidently to teacher questions and during their interactions with the inspector. The quality of the work contained in the students' homework copybooks and notebooks was very good as was their ability to communicate using appropriate mathematical language.

## **ASSESSMENT**

Homework and assessment practices in the school are very good. Interlinked homework, assessment and attainment policies are in place. These policies provide a robust framework to support the work of individual departments in agreeing achievable goals with the students and in managing homework and assessment procedures.

Homework is assigned and corrected as an integral part of classroom activity in Mathematics. The students' homework copies are maintained to a very high standard and are regularly monitored. In almost all instances, very good written and verbal feedback was provided to students on the quality of their work. This means that homework exercises provide students with valuable opportunities to review the material being covered in lessons, to participate in shared learning and to evaluate their own progress.

The school's assessment policy details the practices in relation to ongoing periodic student assessments and formal examinations. Student performance in periodic assessments, which include an evaluation of homework, student contribution in class as well as the outcomes of written class tests, are centrally collated and contribute to the reports that issue to parents in advance of parent-teacher meetings. The policy also outlines the approach to be adopted in setting and correcting papers for the formal examinations and sets targets in relation to the amount of revision material to be included for students in examination classes. This very good practice ensures that revision schedules are set and form a central part of subject department planning.

## **SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- The mathematics department in Mountmellick Community School is very well organised, its activities are underpinned by collaboration and it enjoys the strong support of the school's senior management.
- The time allocated to Mathematics and the scheduling of mathematics classes are both very good.
- Subject department planning and individual teacher lesson planning are very good.
- Procedures in place to identify and support students with special educational needs or in need of learning support are very good.
- The mathematics department is open to innovative practice, is willing to deploy a range of teaching methods and is proactive in evaluating its own practice.
- Homework and assessment practices in the school are very good.

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

- The common programme in first year is in need of review. The review should examine the rationale for the content of the existing programme and focus on the delivery of key skills. The selection of the key skills should be informed by a common assessment designed following consultation with the feeder primary schools and delivered once the students have settled into school in first year. The programme should also be supported by more regular scheduled common assessments than is currently the case
- In order to build on the existing good practice in lesson delivery, the intended learning outcomes for each lesson should be agreed at the outset and time should be set aside prior to the lessons' conclusion to reflect on the extent to which they were achieved.
- It is recommended that the lessons learned through the use of team teaching in first year, especially in relation to differentiating lesson content for the more able students, be recorded and form a central part of future department planning.

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

# **Appendix**

**SCHOOL RESPONSE TO THE REPORT**

**Submitted by the Board of Management**

**Area 1 Observations on the content of the inspection report**

The Board wishes to congratulate the principal, staff of the Mathematics Department and students on this excellent report.

**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 Board will continue to provide the necessary support and resources that will facilitate the Principal and staff in the implementation of the findings and recommendations of the inspection report.