Subject Inspection of Mathematics
REPORT

Glenamaddy Community School
Glenamaddy, County Galway
Roll number: 91514U

Date of inspection: 16 February 2011
SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Glenamaddy 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 of the evaluation to the principal, deputy 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

Students transferring from the school’s nine feeder primary schools benefit from a comprehensive, student-centred transfer programme. The learning-support department plays a central role in the programme and the educational and other needs of the incoming students are well established prior to their entry to first year. The mathematical capabilities of the incoming students are measured using an assessment instrument assembled by the learning-support department from a range of existing standardised tests. It would be preferable if a more appropriate assessment tool were available and it is therefore recommended that it be replaced with a mathematics competency test, created by the mathematics department in partnership with the feeder primary schools. The assessment should not only identify those students experiencing difficulties with Mathematics but should also establish the overall skill set of the incoming cohort and should, as a result, inform the content, delivery and assessment of the first-year mathematics programme. The timing of the entrance assessments should also be reviewed. It would be more appropriate if they were conducted in April each year rather than in September as is currently the case.

Learning support in Mathematics is very well managed. The learning-support department is comprised of a number of appropriately qualified teachers and a range of learning-support models including withdrawal, team teaching and the formation of small classes in each year is being implemented. Very good links are maintained between the learning-support and mathematics departments and the needs of individual students and improvements in student performance are effectively communicated.

Timetabling provision for Mathematics is very good. The time allocated is generous and the concurrent scheduling of classes within each year is designed to facilitate student movement between levels and to allow the students to follow higher level for as long as possible.
The mathematics department is very well resourced. All classrooms are equipped with a computer and data projector, and in order to support the implementation of Project Maths, the mathematics classes in first and fifth year have timetabled access to the school’s main computer room. Additional equipment, to facilitate the active teaching and learning advocated by Project Maths has also recently been purchased.

The mathematics department is comprised of seven teachers all of whom have an appropriate qualification in Mathematics. Capacity building over the years means that at least four of the teachers are in a position to teach higher-level Mathematics in senior cycle, thus ensuring that the school will have no difficulty in catering for the expected increase in the number of students taking higher level when Project Maths is fully embedded. Arrangements for facilitating attendance at appropriate continuing professional development courses are very good and all of the members of the department have attended the various workshops provided as part of Project Maths. However, the approaches to teaching Mathematics promoted by Project Maths and the integration of resources provided at the workshops have not been uniformly adopted across the department; it is therefore recommended that this anomaly be addressed at the earliest opportunity.

**PLANNING AND PREPARATION**

Subject department planning in Mathematics is well advanced. Responsibility for co-ordinating the department’s activities rotates between the members of the department, regular planning meetings are held and a very good subject department plan is in place. The department has recently begun to use the school’s information and communication technology (ICT) infrastructure to share teaching resources and planning materials and while there is still a great deal of work to be done in this regard, this innovative approach to planning is very welcome.

The subject department plan features a very good template which enables the schemes of work for each year and level to be contained in a single matrix. The schemes themselves are in need of further development and the matrix should be extended to include the intended learning outcomes, to specify the resources to be used in lesson delivery and the approaches to be adopted in carrying out key mathematical operations such as factoring the quadratic and solving simultaneous equations.

The biggest challenge facing the department is the implementation of Project Maths and the consequent modification in subject-department planning and in lesson delivery that this will entail. In particular, the department will have to agree the most effective manner in which the students’ problem-solving and synthesis skills can be developed. In order to support the work of the co-ordinator in this regard it is recommended that one member of the department takes responsibility for liaising with the Project Maths development team and the Irish Mathematics Teachers’ Association in relation to the implementation of the project in the school and that a second assume the role of Mathematics ICT co-ordinator. The ICT co-ordinator should identify suitable ICT resources, recommend strategies for their integration into teaching and learning and source appropriate training.

A separate plan for Mathematics in transition year (TY) is in place. The TY mathematics class is mixed ability and emphasis is placed on remediation and confidence building. A range of approaches to teaching and learning is advocated and the course content is ideally suited to equipping the students with the key skills they will need for the remainder of senior cycle. The schemes of work detailed in the plan should be reviewed to reflect the changes in the senior-cycle
curriculum, to specify the intended learning outcomes and the modes of assessment to be employed.

TEACHING AND LEARNING

The quality of teaching was generally good and in some instances was of the very highest quality. All of the teachers taught with enthusiasm and clarity and were well prepared for their lessons. In the best cases, a range of strategies was employed to engage the students actively in their own learning and to develop their understanding. There was very little reliance on the textbook as the primary teaching resource or on teacher exposition at the board. In other instances, while the quality of teacher input was good, the lessons would have benefited from a greater balance between such input and student activity and from more variety in type of questions considered during the lessons.

A lesson exploring the properties of fractions was greatly enhanced by the selective use of ICT and the integration of a graduated worksheet. The challenging nature of the lesson content and the clear context in which it was presented ensured that even the most able students remained engaged throughout. Very good teacher questioning and insistence on robust procedures when carrying out calculations served to enhance the students’ appreciation and understanding of the principles underlying the lesson content.

ICT was also used to very good effect in another lesson to review the area of compound shapes, and to introduce Simpson’s rule. The core of the lesson, which involved finding the land mass of one of the continents, served to contextualise Simpson’s rule and provided ideal links to other areas of the course. The use of ICT allowed the concepts underpinning the lesson to be clearly illustrated and the key elements in the calculations to be revisited as often as was necessary to ensure that they were clearly understood.

Positive student behaviour was evident in all of the lessons observed. The lessons proceeded in an atmosphere of mutual respect and empathy for the needs of the students. The teachers were affirming of the students’ efforts and had high expectations of their behaviour and attainment. Student engagement was very good and they contributed positively to the lessons by asking relevant questions and proposing alternative approaches to problem solving. In most cases, teachers made good use of questioning to elicit factual responses to specific questions. There was, however, an over reliance on global questioning and not enough emphasis was placed on encouraging students to hypothesise and engage in higher-order thinking.

The quality of student learning was very good. The students responded confidently when questioned by the teachers and during their interactions with the inspector. The quality of the written work in the students’ copybooks and their performance in class and house examinations was also very good. Student attainment and the number of students taking the higher level in the certificate examinations are also very good.
ASSESSMENT

Practices in relation to assessing student’s work are a particular strength in the school. A separate copybook containing class tests only is maintained by each student. These copybooks, which contain corrections, amendments and teacher comments, are a valuable resource and are particularly useful in helping students prepare for the house and certificate examinations. Class tests are held regularly and examination classes sit formal examinations in November and the mock examinations early in the second term each year. The remaining students have formal examinations at Christmas and just prior to the summer holidays. The teachers maintain very good records of student performance in the class tests and house examinations and procedures for communication with parents are also most satisfactory.

Ongoing assessment also takes place through teacher questioning in class and the assignment and correction of homework. Homework is assigned in each lesson and difficulties encountered by students in completing assignments serve to inform how subsequent lessons unfold and provide opportunities for shared learning. The students’ copybooks are very well maintained and are appropriately monitored.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- Students transferring into first year are provided with a comprehensive, student-centred transfer programme during which their educational and other needs are well established.
- Mathematics is very well supported by school management. Timetabling provision, the allocation of resources to the mathematics department and the arrangements to facilitate the continuing professional development of the members of the department are all very good.
- The structures in place to support subject department planning are very good and subject department planning in Mathematics is well advanced.
- The quality of teaching was good and in some instances was of the very highest quality. The quality of student learning was also very good.

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

- The mathematics department should uniformly adopt the teaching approaches advocated by Project Maths and should agree the most effective manner in which the students’ problem-solving and synthesis skills can be developed. In order to support the work of the co-ordinator in this regard, one member of the department should assume the role of Project Maths officer while a second should assume the role of Mathematics ICT co-ordinator.
- The matrix containing the schemes of work should be extended to include the intended learning outcomes, to specify the resources to be used in lesson delivery and the approaches to be adopted in carrying out key mathematical operations.
- The assessment instrument being used to determine the mathematical capabilities of students entering first year should be replaced with a mathematics competency test, created by the mathematics department in partnership with the feeder primary schools. The entrance assessments should be held in April each year rather than in September as is currently the case.
Post-evaluation meetings were held with the teachers of Mathematics and 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.
Appendix

School response to the report

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

The Board is happy to accept this very positive Mathematics Inspection Report which recognises the strengths of teaching and the quality of student learning. The Board is pleased that the Report acknowledges that Mathematics is very well supported by school management, particularly in timetabling provision, allocation of resources and support for continuing professional development. The Board is pleased that the level of subject department planning and the use of ICT is recognised as very good.

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 and the Mathematics Department accept the recommendations of the Report. The recommendation on entrance assessment for students entering first year has already been undertaken in April of this year by the Mathematics Department in conjunction with the Learning Support Department. In addition new templates for schemes of work are being drawn up to include learning outcomes. It has also been agreed that uniform methods will be adopted with incoming first years in delivering subject material. Increased use of ICT in sharing of resources has already been implemented and this will be further developed in the coming year.