Subject Inspection of Mathematics
REPORT

Saint Aloysius School,
Saint Maries Of The Isle, Cork
Roll number: 62630J

Date of inspection: 02 December 2010
REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN MATHEMATICS

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Saint Aloysius 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 and examined students’ work. 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 mathematics 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

Saint Aloysius, a city centre school with an open enrolment policy, has a wide catchment area and provides mathematics education, to girls, appropriate to their needs in a caring environment. The school currently offers the Junior Certificate, an optional Transition Year (TY), the Leaving Certificate Vocational Programme (LCVP), and the established Leaving Certificate (LC) programmes to its students.

Teachers generally continue with classes from first year to third year and from fifth year to sixth year. This is good practice. In general, levels are rotated between members of the teaching team. The full rotation of teachers in the junior cycle is praised as is the current level of capacity necessary for teaching higher-level Leaving Certificate Mathematics.

Mathematics classes in each year group are timetabled concurrently and this is good practice. First-year classes are taught on a mixed-ability basis. From second year on students are assigned to higher, ordinary or foundation-level classes. This helps to ensure that the wide variety of mathematical abilities of the student cohort is effectively catered for. Students may change level if they wish following a consultation process involving parents, the school guidance counsellor and the principal.

Students who find Mathematics challenging are well catered for in the school. They are identified through psychological reports, pre-entry assessments, contact with local primary schools, and parents and teacher monitoring during first year. Support is provided through the creation of a small class group in each year. Further support is provided along traditional lines, that is, through the provision of individual and small-group tuition during withdrawal from subjects other than Mathematics. Learning support can continue throughout the school life of the students if necessary. Mathematics learning support is provided by members of the mathematics team. There are informal links between the mathematics teachers of the full class group and those who are
providing learning support. They consult each other on a regular basis to ensure that uniformity of content and approach is observed. This collaboration is praised.

Time allocated to Mathematics is good. All senior cycle classes having six lesson periods each week. Three class periods are allocated to TY Mathematics. Junior cycle classes are timetabled for five periods each week. Further, these mathematics lessons are distributed evenly throughout the school day and the school week.

A variety of teaching resources have been purchased. These are available to the team. It is planned to upgrade the mathematics room in the school. Teachers have access to a computer room, and a number of data projectors and laptops to support teaching have recently been purchased and were awaiting installation during the evaluation. This should contribute to the increased use of information and communication technology (ICT) in the teaching of Mathematics. It is recommended that the team should plan for ways to integrate this ICT equipment effectively into the teaching and learning of Mathematics.

The school is committed to the continuing professional development of its teaching team. Teachers had attended workshops on Project Maths and had undertaken courses organised by the Mathematics Support Service (MSS). This is positive.

The mathematics department encourages participation in the Team Maths competition and the Irish Junior Mathematics competition organised nationally by the Irish Mathematics Teachers’ Association (IMTA). This is good practice as it raises the profile of the subject within the school and enables students to enjoy and appreciate Mathematics outside of the classroom setting.

**PLANNING AND PREPARATION**

The mathematics department is currently co-ordinated on a voluntary basis by a member of the mathematics team. This practice is positive as is the rotation of the role of co-ordinator among members of the team at the beginning of each year. The duties associated with the role have been agreed among the members of the team.

Formal planning and review meetings are scheduled at the beginning of the school year. Records are kept of such meetings. Recent discussions have dealt with the implications of the introduction of the Project Maths strands from September 2010, the deployment of ICT resources and the upgrading of the mathematics room. The team also meets on an informal basis during the course of the school year.

The mathematics team has made progress in planning. The plan shows evidence of collaboration and review. The department plan includes overall aims and objectives for the mathematics programmes taught within the school and organisational details and this is in line with good practice. It was positive to note that the first-year plan includes the *common introductory course* outlined as part of the Project Maths rollout along with other material to complete the first-year course.

The long-term plan for other years contains a list of topics to be covered by each year group and level annually. It is recommended that the mathematics department continue their good work and further develop the long-term plan for Mathematics. This revised plan should follow on from the first-year plan and be written in the form of learning outcomes to be achieved by the students. These outcomes should be linked to available resources and to teaching methodologies.
Mathematics planning for TY is good. There is an emphasis on problem solving, logical thinking and on the “why” of Mathematics. Assessment is by way of a series of tests and project work. As part of the learning process a class group of students prepared a survey on how students spend their time. The survey was than completed by a school in France, another in Nepal and one in Ireland. The analysis of the results should prove interesting.

Teachers made individual planning and preparation materials available during the inspection. Included in these materials were schemes of work incorporating in many cases timeframes for completion of topics, examples of student worksheets and handouts, common examination questions and solutions. A folder containing a selection of these resources along with ICT resources is available to members of the team. This level of co-operation and preparation for teaching is good.

TEACHING AND LEARNING

The quality of teaching and learning observed was generally good. A good pace appropriate to students’ abilities was set in lessons through teachers being active in the teaching of the class and in providing individual support to students. The work-oriented, supportive and constructive atmosphere in lessons was conducive to learning taking place in the classroom.

In the classes visited, lessons were well structured and purposeful, and preparation for teaching was evident through the use of concrete materials and prepared worksheets and handouts. It is good that effort was made to review work previously done and to build on students’ own experiences in order to create connections to new material being presented. This helped to reinforce learning and to provide the tools to develop new ideas. There were some good examples of the effective use of worksheets, pair work and relating learning to the experience of the students.

Examples of good practice included the use of loop cards as a method of consolidating learning, the use of comment-based feedback on copybooks to encourage students and demonstrate correct procedures, use of pair work, an emphasis on the appropriate use of mathematical terminology and the demonstration of clear procedures in the solutions of problems.

While a range of methodologies were employed, teaching observed was in many instances conducted through the presentation of work at the board, followed by the setting of exercises where individual students practised what they had seen, while the teacher provided assistance to students as required. Within this structure, the teaching was effective in conveying the “how” of mathematics. It is recommended that the team continue to broaden the range of teaching methodologies, in particular those already mentioned in relation to the TY programme in the school and seen in some lessons, and include strategies that involve students more and make them more active participants in their own learning. The teaching and learning plans available on the Project Maths Development Teams’ website www.projectmaths.ie should not be overlooked in this regard along with the sharing of the good practice seen in lessons.

Teachers made use of a range of questioning strategies, during the lessons observed. In many instances open and probing questions were included to encourage students to think for themselves. As this type of questioning is so beneficial to learning, it is suggested that it be incorporated into all lessons more frequently.
Teachers were affirming of the efforts of their students thus creating positive interactions within the classroom and leading to an atmosphere that was conducive to learning. Classroom management was effective and discipline was well maintained. Teachers set appropriate high standards of expectation for their students and students responded to these expectations.

In some classrooms, displays of students’ work and materials or of mathematical posters were used to enhance the visual-learning environment. The display of such posters and students’ project work can be effectively used to motivate students and remind them of key mathematical concepts or formulae. It is suggested that more use be made of students’ own work, through projects or examples of high-quality work, to engage students further.

Learning was evident as students were able to apply procedures, learned in class, to similar type problems from the textbook. In many instances they also engaged effectively in their own learning through asking questions and offering suggestions and ideas from their own experiences. In interactions with the inspector students used appropriate mathematical terminology. They also showed understanding of the concepts taught and displayed clear mathematical knowledge. They provided answers; justified solutions to questions posed to them and made relevant connections between topics.

**ASSESSMENT**

Lessons generally began with the correction of homework. Students were provided with an opportunity to consolidate and practise mathematical concepts engaged with during the lesson through the appropriate assignment of homework in all lessons visited. An examination of students’ copybooks and journals revealed that homework is regularly assigned, and this is good practice. Copybooks contained work that was appropriate, relevant and reasonably well presented. There was evidence that teachers are monitoring students’ copybooks and that students also have a role in monitoring their own work. This is good. The good practice of using positive comment-based feedback to encourage students’ efforts was noted.

Students’ progress is monitored on a regular basis through questioning in class, review of homework and written assessments following the completion of a topic. Teachers retain records of the results of these assessments.

All first-year classes have a common assessment at the end of the school year and another prior to the re-formation of classes for second year. All students have formal examinations at Christmas and summer or, in the case of examination classes, sit their ‘mock’ examinations during the second term. Progress is formally reported to parents twice each year. Each year group has a parent-teacher meeting annually. This level of communication with parents is good.

**SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS**

The following are the main strengths identified in the evaluation:

- Teaching and learning observed was generally of a high standard.
- Students who find Mathematics challenging are well catered for in the school.
- The time allocated to Mathematics is good.
- The focus of the TY mathematics programme is good.
• The mathematics department encourages participation in co-curricular activities related to Mathematics.
• The mathematics team has made progress in planning.
• Teachers had high expectations of the students and the students responded accordingly.
• Teachers made good use of both global and directed questioning.
• Students’ progress is monitored on a regular basis.
• The level of communication with parents is good.

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

• Teachers should broaden the range of teaching methodologies and include strategies that involve students more and make them more active participants in their own learning.
• It is recommended that the team should plan for ways to integrate ICT effectively into the teaching and learning of Mathematics.

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.

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Appendix

SCHOOL RESPONSE TO THE REPORT

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

Key recommendations are already being implemented:

- ICT is now available in all classrooms.
- Internet access through schools’ broadband is available in all classrooms to enable direct access to project Maths materials for class work.
- The subject plan for Mathematics is being up-dated to provide for the integration of ICT into the teaching of Mathematics.
- All Mathematics teachers are availing of project Maths in-service and of courses provided by the Mathematics Association.