SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Sacred Heart Secondary School, conducted as part of a whole-school evaluation. 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 deputy principal.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

In the current year the mathematics teaching team is large with nine teachers involved in the teaching of the subject. It is recommended that, over time, the number involved in the teaching of Mathematics be reduced through the development of a core team of mathematics teachers, each of whom is allocated significant contact time with the subject.

Teachers generally continue with classes from first year to third year and from fifth year to sixth year. This is good practice. However the lack of continuity from year one to year two of the Leaving Certificate Applied (LCA) programme needs to be addressed. In some instances, levels are rotated between members of the teaching team. The full rotation of teachers in the junior cycle is commended. In order to extend the expertise necessary for teaching higher level Leaving Certificate Mathematics, it is recommended that more teachers become involved at this level. This will enable the school to meet the changing needs of the curriculum in the coming years.

Mathematics classes in each year group are timetabled concurrently and this is good practice. Concurrent timetabling allows students to follow the highest level possible for as long as possible and facilitates change of level where necessary. During second year students’ progress is assessed and classes are re-formed to allow students to follow different levels. In some years students are assigned to mixed-ability groupings within levels and in other years the groups are set according to their abilities. This is appropriate as the decision is based on an evaluation of what is perceived to be best for the particular cohort of students in the year concerned.

Students who find Mathematics challenging are well catered for in the school. They are identified through psychological reports, assessments, contact with local primary schools and parents and through teachers’ monitoring during first year. Support is provided through the creation of a small class group in each year of junior cycle. Students have the option of following foundation level courses at junior and senior cycle. Students may also choose to follow the LCA programme having completed the compulsory Transition Year (TY) programme in the school.
Time allocated to Mathematics is good. All senior cycle classes having six lesson periods each week. The LCA students receive four periods of tuition in each of their two years. Three class periods are allocated to TY Mathematics. In first year, students have four periods of mathematics tuition each week and for the remainder of junior cycle are timetabled for five periods each week. In many instances lessons are distributed evenly throughout the school day and the school week. However, in the current year, both second-year and third-year groupings have two periods on a Friday. This should be avoided in future timetabling as ideally students should have contact with the subject each day.

The mathematics team has an annual budget for materials and photocopying. There is a variety of teaching resources available. These are stored in a classroom and are available to the team. Teachers have access to a computer room and a number of data projectors and laptops to support teaching. However there was little evidence of the use of information and communication technology (ICT) in the teaching of Mathematics during the evaluation. It is recommended that the team should plan for ways to integrate ICT more effectively into the teaching and learning of Mathematics.

The school is committed to the continuing professional development of its teaching team. It was apparent that 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). It is reported that activities are planned for Maths Week and World Maths Day in the coming year. 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.

The mathematics team undertakes some analysis of the school’s performance in the certificate examinations in Mathematics in relation to achievement and uptake levels and compares it with national norms. An analysis of results over recent years indicates strengths in both these areas. A substantial cohort of the students taking ordinary level Mathematics at Leaving Certificate is achieving high grades. It is recommended that the school look at ways of encouraging more of these students to take higher level.

**PLANNING AND PREPARATION**

The mathematics department is currently co-ordinated on a voluntary basis by a member of the team who is selected at the beginning of each year. This practice is positive as is the rotation of the role of co-ordinator among members of the team.

Whole-school formal planning and review meetings are scheduled around staff meeting and school planning days and occur about three times a year. Records are kept of such meetings and they show evidence of collaboration. Recent discussions have dealt with the implications of the introduction of the Project Maths strands from September 2010. The team itself has opportunities to meet regularly during the school year and it is good to note that records of these meetings are also retained in the mathematics-planning folder.

The mathematics team has made commendable progress in planning. The plan shows evidence of collaboration and review. The department plan includes overall aims and objectives for each mathematics programme taught within the school, organisational details of classes and teachers,
reference to methodologies and resources and cross-curricular planning, which is in line with good practice. The plan includes procedures for homework and assessment. The school’s mathematics folder also contains support service materials and details of the CPD courses attended.

The long-term plan contains a list of topics to be covered by each year group and level annually. It is recommended that the mathematics department continues this good work and further develops the long-term plan for Mathematics. This revised plan should include an outline of sections of the syllabus at junior and senior cycle and the key skills for students to acquire under each of these sections.

Mathematics planning for TY is good. It is also good to note that a module of Applied Mathematics is taught to each TY class. Within the plan, there needs to be a better balance between topics that consolidate the prior learning of students, some work that introduces elements of the Leaving Certificate programme in an innovative way and other topics.

Some teachers made individual planning and preparation materials available during the inspection. Included in these materials were schemes of work, examples of student worksheets and handouts, common examination questions and solutions. A folder containing a selection of these resources is available to members of the team. This level of co-operation and preparation for teaching is good.

**TEACHING AND LEARNING**

Teaching and learning observed was of a high standard. 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 create connections to new material being presented, thus helping to reinforce learning and to develop new ideas. Instruction began with a clear outline of the lesson content in most instances. This is positive. However this practice could be enhanced if the lesson content was presented as a learning objective for the students and was accompanied by a strategy to assess students’ learning at the end of the lesson. Adopting this methodology is worthwhile because it increases students’ motivation and involvement in the lesson and leads to a sense of accomplishment on achieving the day’s goal. Lessons progressed at a challenging pace appropriate to student’s abilities and good use was made of time. There were some good examples of the use of worksheets, pair work and relating learning to the experience of the students being used effectively.

Teaching observed was generally 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. However this teaching style can result in students being generally passive, dependant on the teacher and seeing their role as reproducing the method of solution in similar type problems. It is recommended that the team continues to broaden the range of teaching methodologies and includes strategies that involve students more and make them more active participants in their own learning. These could include: pair work; group work; investigation and consolidation activities; use of concrete materials; discussion; quiz activities and greater use of ICT and student project work. The incorporation of these and other methodologies into lessons can increase motivation and engage students more actively 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.

Teachers made use of both global and directed questioning, during the lessons observed. Best practice was observed when some more 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 lessons more frequently.

Classroom management was effective and discipline was well maintained. Teachers were affirming of the efforts of their students leading to positive interactions within the classroom. Teachers set appropriate high standards of expectation for their students and students responded to these expectations. There was a sense of mutual respect between teachers and students, creating an atmosphere that was conducive to learning.

In some classrooms, displays of students’ work or of mathematical posters were used to enhance the visual-learning environment. The display of such posters and students’ project work can be very helpful in motivating students and reminding 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 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

The school has devised homework and assessment policies. These have been adapted and are implemented by the mathematics team. This is good. Lessons generally began with the correction of homework and appropriate homework was assigned in all lessons visited, providing students with an opportunity to consolidate and practise mathematical concepts engaged with during the lesson. An examination of students’ copies and journals revealed that homework is regularly assigned, which is good practice and in line with the mathematics department policy. Copybooks contained work that was appropriate, relevant and well presented. There was evidence that teachers are monitoring students’ copies and that students also have a role in monitoring their own work which is good. In some instances the good practice of using positive comments 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. This is good practice as is the fact that in some instances parents are kept informed of their daughters’ progress in assessments by the recording of results in the students’ journal.

All first-year classes are assessed commonly at the end of the school year and prior to the reformation of classes for second year. Common assessment within levels also occurs in other year groups. All students have formal examinations at Christmas and summer or, in the case of examination classes, sit their ‘mock’ examinations during the second term. Teachers retain records of students’ achievements in assessments. 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 of a high standard.
- Students who find Mathematics challenging are well catered for in the school.
- The time allocated to Mathematics is good.
- The mathematics department encourages participation in co-curricular activities related to Mathematics.
- The mathematics team has made commendable 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.
- The school has devised homework and assessment policies.
- 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:

- The number of teachers involved in the teaching of Mathematics should be reduced to develop a core team of mathematics teachers, each of whom is allocated significant contact time with the subject.
- The school should encourage more of its students to take higher-level Mathematics at Leaving Certificate.
- 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.

Post-evaluation meetings were 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.

*Published June 2011*