SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in St Enda’s Community 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, 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.

SUBJECT PROVISION AND WHOLE SCHOOL SUPPORT

The mathematics teaching team currently consists of seven members, a very low number of whom have a specialist qualification in the subject and many of whom have limited involvement in teaching the subject at present. It is acknowledged that the school’s current position whereby it exceeds its quota of teachers is a significant factor leading to this situation. Long term planning for staff requirements should address this issue. In the interim, the school should identify a core group of teachers who will be involved in the teaching of the subject in the coming years. These teachers should then be facilitated to attend all continuing professional development (CPD) events relating to Project Maths and any other relevant mathematics courses that become available. A strong focus for subject department meetings should be collective discussion and planning for the implementation of this new learning.

Time allocated to Mathematics in the timetable is good. There are three class groups in each year up to Junior Certificate level. First-year, third-year and all senior cycle class groups have five periods of Mathematics per week and second-year groups have six periods. Mathematics classes are concurrent in each year group apart from third year. One small group in third year has its mathematics programme delivered by three different teachers. This should be avoided in future timetabling. Teachers are assigned to classes by management and generally continue with classes from first to third year and from fifth to sixth year. Such continuity for students is good.

Students who find Mathematics particularly challenging are identified through a pre-entry assessment taken by all incoming first-years. All students receive a further assessment after entry and teachers observe and monitor progress during first year. Students identified as needing additional support are aided through the formation of a smaller class group in each year in junior cycle. Some students receive extra tuition through withdrawal from subjects other than Mathematics. Students also have access to homework clubs within the school. A further initiative, ‘Class of 2014’, in co-operation with the University of Limerick (UL) provides support to
students currently in third year. This support involves interventions whereby students are given additional tuition to aid them in the completion of their homework in a range of subjects. Further support is provided by the Limerick Area Partnership where students can source extra tuition outside of school time.

Incoming students are assigned to classes on the basis of their performance in assessments. This leads to the creation of a higher level and ordinary level class in first year. A third smaller group are following the foundation level course. As this structure assigns students to levels on entry to the school, it is recommended that this practice be reviewed. In doing this, the acknowledged benefits of having a variety of models of support for students should be considered and the current supports in Mathematics should be reviewed. The opportunities offered by assigning first-year students to mixed-ability groupings with in-class support or team teaching along with appropriate withdrawal should be trialled and assessed in the context of this review. This would encourage higher examination aspirations for candidates, one of the school’s objectives as part of its involvement in the Delivering Equality of Opportunity in Schools (DEIS) action plan. Also, given that there will be no foundation level syllabus from 2011/12 onwards in Project Maths, changes to the current arrangement will need to be made.

There is a range of resources within the school to enhance the learning experience of students. All classrooms are broadband enabled. Each mathematics classroom has been equipped with a computer and data projector. It is important that the teachers of Mathematics would collectively plan how to integrate the available information and communication technology (ICT) into the teaching and learning of the subject within classrooms. The school has also acquired a selection of learning support materials relevant to Mathematics. Further resources should be acquired as part of the preparation for Project Maths. These include concrete materials, models, educational software and manipulatives.

Management is supportive of the CPD of teachers and facilitates opportunities to attend in-service courses in Mathematics. Teachers have received training in whole-school approaches to numeracy delivered by the JCSP Support Service. Some mathematics teachers have also attended mathematics courses organised by the Project Maths Development Team (PMDT).

Students are given some opportunities to participate in mathematics-related activities outside of the formal curriculum. In some instances, parents have been invited into the mathematics classroom and have engaged in a number of JCSP mathematical activities with the students. All the teachers involved are praised for their commitment to the students and to the subject.

It is noted that some discussion of examination level uptake rates, as well as results, are conducted within the school. This is good practice and should be used as a regular and natural part of the planning activities of the mathematics department. Issues that need to be addressed are the low uptake of higher level and the high uptake of foundation level in both Junior and Leaving Certificate examinations.

**Planning and Preparation**

There is currently no identified subject co-ordinator for Mathematics. Some aspects of the role of co-ordinator are undertaken by an experienced member of the team. Given the co-ordination and planning that the roll out of Project Maths will require in the coming years, it is recommended that a more formal mathematics department structure be put in place. The role of the subject co-
ordinator should be agreed and set down in the subject plan. Ideally, the co-ordinator’s role should be adopted by different members of the team, on a rotational or agreed basis. Records of formal meetings and decisions taken should be retained and included in the mathematics department plan. This approach would help in the development of wider leadership experience across the entire mathematics team and would strengthen the school’s capacity to set, and act on, DEIS targets for whole-school numeracy development.

The mathematics team holds a number of informal meetings during the year. It is recommended that some formal meeting time be set aside, by senior management, for the team to collectively share and evaluate learning from CPD sessions attended and to progress the other issues raised in this report. The team has made progress in planning. In line with good practice the department plan includes a mission statement, overall aims and objectives for mathematics education within the school, organisational details, an outline of termly programmes of work for each year group and level, reference to a variety of methodologies, and a description of provision for students with special educational needs. To build on this solid foundation, a review of programmes of work should see them expanded to include not only lists of topics, but also key skills and key terms for students to know and understand. The linking of content and skills through a learning-goal oriented approach would allow for a smoother transition to the new syllabuses that are being gradually introduced. The resources in place to assist students in acquiring such key skills should also be listed in the plan and ideally linked to relevant mathematical topics. The common introductory course supplied to schools as part of the Project Maths syllabus documentation could prove a useful template in this regard. Further potentially useful resources for this work are the learning-targets statements for JCSP which are available at www.jcsp.ie. In addition the teaching and learning plans available on the website of PMDT, www.projectmaths.ie should be consulted in this regard.

It is suggested that subject plans emphasise teaching and learning. For example, areas such as in-class support, team-teaching, co-operative learning and assessment for learning could continue to be explored and developed. The integration of ICT to support the teaching and learning of the subject should also be included in plans for all year groups.

All teachers presented individual planning documents that detailed the topics to be taught and a timeframe for their delivery. In addition, teachers had developed individual assessment materials, handouts and other supplementary materials and these were accessed and used during lessons visited. This is good practice.

**TEACHING AND LEARNING**

The quality of teaching and learning observed generally ranged from fair to good. In most instances teachers’ presentation of work was clear and preparation for teaching was evident. Examples of good practice in mathematics teaching observed included the highlighting of key mathematical terminology, the relating of learning to students’ experiences, the use of clear methods in arriving at solutions, the appropriate use of mathematical language by both teachers and students, on-going review of concepts, reviewing of previous learning and high levels of attention to individual students. In one instance, where students were working individually through a set of questions and receiving some individual attention during the lesson, some whole class teaching and more interaction with the group would have been more beneficial.
The common method used in lessons saw the teacher demonstrating a technique at the board and students individually repeating the method on similar type questions. It is recommended that the teachers add to this traditional approach and introduce students to a range of methodologies which would help to increase confidence and self-esteem, to encourage them to take responsibility for their own learning and to support independent thinking. In this context, practical work, discussion, group work, and quiz activities or investigative work could be considered. The teaching and learning plans available on the PMDT website, www.projectmaths.ie, as well as the sharing of experience within the team would also support the realisation of this aim.

In general, textbooks, work sheets and past examination papers were the main resources used in lessons. In some instances, where the literacy demands of textbooks posed a challenge for the students, some good examples of the use of prepared worksheets to enhance learning were observed. Such good practice can ensure that all students are encouraged to work to the best of their abilities and to engage with the learning activities in lessons.

Interaction between teacher and students generally took the form of brief answers by the students to closed questions from the teacher. Questioning focused mostly on finding the next steps in the solution of a problem. There were some good examples where teachers built on their students’ answers, exploited the learning potential of incorrect answers and encouraged them to explain and justify their methods and thinking. This is good practice as it helps students to consolidate their learning and maintain their engagement with the topic. It is recommended, therefore, that a varied range of questioning strategies be employed in all lessons.

In interactions with the inspector, students generally demonstrated an understanding of concepts engaged with during the lessons. In many instances they were able to answer questions posed to them in a confident manner. In a minority of cases students did not demonstrate an ability to make connections between related topics.

Classroom management was effective and appropriate, and students were kept on task. Students were generally attentive to their work. There was a sense of mutual respect between teachers and students, creating an atmosphere that was conducive to learning.

The teaching team utilises workbooks, posters and resources produced by the JCSP support service, as well as some resources that they have created and developed themselves. A range of posters was displayed to create a visually-stimulating mathematical environment in some classrooms. It is recommended that student-generated posters and displays of students’ work be used to further enhance these displays.

**ASSESSMENT**

The mathematics department-plan includes homework guidelines for the subject. This is positive and recognises that homework plays an important role in the learning process. Homework was assigned in the majority of lessons observed. In general, homework was appropriate in terms of the quantity and its relevance to work done during the lesson. The student journal is also used on an on-going basis as a means of two-way communication between school and home.

An examination of students’ copybooks revealed work that was appropriate, relevant and reasonably well presented. There was evidence that teachers are monitoring students’ copybooks, and that, in some instances, students also have a role in monitoring their own work which is good. Students should be further encouraged to review, assess, and evaluate their own work. The good
practice of using positive comment-based feedback to encourage students’ efforts was noted in a few instances and should be adopted by all members of the team.

The use of JCSP statements was noted. The regular use of these statements can play an important part in increasing students’ confidence and motivation.

Teachers record students’ attendance and performance in assessments. Some teachers also retain daily records of work undertaken in class and of homework assigned. This is an indication that teachers are cognisant of the implications of students’ attendance and absence for their learning and progress.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- The provision for Mathematics in the timetable is good.
- Junior-cycle students are supported through the use of JCSP resources, statements and initiatives.
- The mathematics team has made progress in planning.
- In many instances, students demonstrated a clear understanding of concepts engaged with during the lessons.
- In the lessons observed, classroom management was effective and appropriate, and students were kept on task.
- A range of posters is displayed to create a visually-stimulating mathematical environment in some classrooms.
- ICT resources are in place to aid in the teaching of Mathematics.

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

- Long term planning of staff requirements should seek to increase the number of qualified teachers who hold specialist qualification in Mathematics in the school.
- The procedures for allocating incoming first-year students to classes and the structure of support for students should be reviewed.
- The mathematics department’s plans should continue to be developed in order to link content, teaching methodologies and skills required from students through a learning-goal oriented approach.
- The mathematics team should agree a formal subject department co-ordination structure and should trial, share and evaluate learning from continuing professional development sessions.
- Teachers should add to their traditional teaching and questioning approaches and introduce students to a range of methodologies which will help to increase confidence and self-esteem, to encourage students to take responsibility for their own learning and to support independent thinking.
- Student-generated posters and displays of students’ work should be mounted in classrooms.
A post-evaluation meeting was held with the principal, deputy principal and the teachers of Mathematics at the conclusion of the evaluation when the draft findings and recommendations of the evaluation were presented and discussed.

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