An Roinn Oideachais agus Scileanna

Department of Education and Skills

Subject Inspection of Mathematics
REPORT

Leixlip Community School
Leixlip, County Kildare
Roll number: 91371B

Date of inspection: 10 November 2009

AN ROINN OIDEACHAIS AGUS SCILEANNA | DEPARTMENT OF EDUCATION AND SKILLS

REPORT
ON
THE QUALITY OF LEARNING AND TEACHING IN MATHEMATICS

SUBJECT INSPECTION REPORT

This report has been written following a subject inspection in Leixlip 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 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

Mathematics enjoys a very high profile in Leixlip Community School and teachers, students and school management displayed very positive attitudes towards the subject. Mathematics is regarded as a subject in which students can be successful and one where they can participate in an enjoyable and productive fashion. The profile enjoyed by Mathematics is due to the quality of support it receives from management and to the enthusiasm and skill with which the department has been co-ordinated over the years.

Timetabling provision for Mathematics is very good. There are five classes of Mathematics per week in junior cycle. Upon completion of junior cycle, students can opt to enter Transition Year (TY), go directly into fifth year or take the Leaving Certificate Applied Programme (LCA). There are four classes of Mathematics per week in TY and there are six per week in fifth and sixth year. LCA students are provided with four classes of Mathematical Applications per week in fifth and sixth year.

Arrangements for enabling students to select the most appropriate level at which to study Mathematics, and to enable them to change level if the need arises, are very good. Mathematics classes are banded into two groups in first year. Two mainstream classes and one discrete learning-support class are formed within each band. All of the mainstream classes follow a common course and sit a number of differentiated common assessments throughout the year. Student performance in these assessments is carefully collated and classes are then set following a final common assessment in October of second year. Mathematics classes are timetabled concurrently in each year for the remainder of the junior cycle. The use of concurrent timetabling, which enables ease of movement between levels, is replicated in fifth and sixth year and is very good practice.

The learning-support classes are timetabled concurrently with the mainstream classes in each year and the students in these classes receive additional support in Mathematics for the duration of

junior cycle. Students in need of learning support in senior cycle receive individual targeted interventions during withdrawal or as part of the LCA programme.

The mathematical abilities of students entering first year are ascertained as part of the transfer process. All incoming students sit a range of appropriate standardised tests and the abilities and needs of the students are also determined through communication with parents and the relevant teachers in the primary schools. Completed psychological assessments are collected and requests for additional resources are submitted to the Department of Education and Science for consideration. Additional psychological assessments can also be arranged if it is deemed necessary. The learning-support co-ordinator plays a central role in the transfer process and the composition of the learning-support cohort is also decided at this stage. In order to enhance the procedures already in place, it is recommended that a competence test in Mathematics be included as part of the entrance assessments. The test should be designed in collaboration with the class teachers in the feeder primary schools and should seek to determine the strengths and weaknesses in the mathematics skill set of the incoming students and should then be used to inform the content and mode of delivery of the first-year mathematics programme.

The mathematics department is very well resourced. Some of the resources available to the department are listed in the subject department plan. However, an audit of available resources should be conducted and a complete list, together with the arrangements for storing and sharing the resources, should be included in the subject department plan. The department does not have an annual budget, but management is very supportive in facilitating the procurement of appropriate resources.

The school's information and communications technology (ICT) infrastructure is very good. Each classroom is equipped with a computer and data projector and is connected to the school's local area network and to the internet. In addition, classes have access to the school's two computer rooms and it is intended that staff members with expertise in the use of ICT will deliver in-service training to the remaining members of staff in the coming months. This enlightened approach to encouraging the integration of ICT into the work of the school is very good practice.

The mathematics department comprises six teachers, all of whom have an appropriate qualification in Mathematics. The members of the department have been proactive in attending continuing professional development courses and those wishing to pursue further studies receive financial assistance from the school's board of management.

Positive attitudes towards Mathematics are encouraged through the provision of a range of co-curricular activities. These activities include the Junior Certificate Mathematics and Prism competitions, Team Maths and the Hamilton Mathematics Competition run annually by NUI Maynooth. The mathematics department has access to a dedicated laptop thanks to its success in the Hamilton Competition in the last two years. It is particularly noteworthy that an after-school mathematics workshop is also available to students. Here, students can hone their skills, play mathematics games, solve puzzles and develop their interest in different branches of Mathematics. The mathematics department should be proud of the breadth and scope of the co-curricular activities available to students in the school.

PLANNING AND PREPARATION

The mathematics department is very well organised and very good systems have been established in relation to holding and recording subject department meetings. Responsibility for co-ordinating the activities of the department rotate between the members of the department and a new co-ordinator has recently been appointed. The roles and responsibilities of the co-ordinator are clearly detailed in the subject department plan. This is very good practice.

A comprehensive subject department plan is in place. A key feature of the planning documentation is the exhaustive tracking of student performance in the house and state examinations. The profile of each student that emerges as a result is very instructive and provides a very useful vehicle in informing department planning.

The subject department plan contains schemes of work for each year and level and, in light of the forthcoming developments in the mathematics syllabuses, it is recommended that the schemes of work be developed to include clear learning outcomes and to detail the teaching methods to be employed in delivering them. The amended schemes of work should also include standard approaches to be adopted in carrying out key mathematical operations. These developments will serve to ensure a more cohesive approach to teaching and learning and will guarantee that existing expertise within the department is captured and used to enhance ongoing curriculum delivery.

A separate plan for Mathematics in TY is in place. The TY mathematics programme is innovative and comprises a large number of modules from which the material most appropriate to the needs and interests of the students can be selected. The TY mathematics plan details the range of teaching methods to be employed in delivering the programme and outlines the different learning opportunities available to students. The quality of the work produced by the students in this and former years is a testament to the quality of the programme and its success in including all of the participants in the programme's activities.

Individual teacher planning for lessons was very good and the lessons observed during the inspection were well prepared and were in keeping with the schedule outlined in the subject department plan.

TEACHING AND LEARNING

The quality of teaching and learning observed during the inspection was very good. The teachers were clear, taught with enthusiasm and insisted that correct procedures were followed in carrying out calculations and in solving problems. In the best cases, the students were explicitly informed of the rationale for the approach being adopted and for the techniques being used.

The lessons had a good structure: good links were made with the students' earlier learning and with their everyday interests and experiences. In some instances, the lesson's objectives were shared with the students at the outset and time was set aside, prior to the conclusion, to discuss the degree to which the objectives were met. This very good practice should be adopted as standard practice across the department.

Traditional teaching methods were exclusively in evidence and, while this worked very well, it is now appropriate to begin to explore more active teaching methods and the integration of

resources, including ICT resources, into lesson delivery. It is therefore recommended that, as part of the in-service programme mentioned earlier in this report, the teachers of Mathematics receive training in ICT integration in teaching and learning Mathematics. It is further recommended that a member of the department be identified to source appropriate ICT resources and expertise to deliver subject-specific training if it is deemed necessary.

Very good classroom management was in evidence during the inspection. Effective use was made of teacher questioning which served to elicit factual responses to questions, to engage the students in higher-order thinking and to review the material being covered during the lesson. Positive student behaviour was evident throughout. High expectations were set regarding student engagement and active involvement with the lessons. These expectations were generally realised and, in some instances, they were exceeded.

Student learning was very good. The quality of the students' written work, their response to teacher questioning and their confident answers when interacting with the inspector, were all of a very high standard. The attainment of students in the state examinations is very good and the uptake of higher-level Mathematics in the Junior Certificate and Leaving Certificate examinations is most satisfactory.

ASSESSMENT

A draft homework policy, which is just about to be ratified by the school's board of management, is in place and is being implemented. Homework is assigned at the end of each lesson and corrected at the outset of the following lesson. In some instances, the teachers held a short question and answer session in relation to the material assigned in the previous night's homework at the beginning of the lesson. This worked very well as it established whether the students understood the material covered in earlier lessons rather than just checking for compliance with completion of the homework assignments. The process also provided ideal opportunities for shared learning and it also meant that each student was actively involved in the lesson from the outset.

Class tests are scheduled regularly. The performance of students in these tests is monitored closely and they are provided with very good feedback regarding their performance. Areas for improvement and common avoidable errors are particularly highlighted. This is very good practice.

Practices in relation to the formal assessment of students have just been reviewed and are very good. There are three formal examinations each year. These take place in November, February and just prior to the summer break. Reports issue to parents after each of these events. Mathematics students are provided with common assessments within levels and these are corrected using agreed and common marking schemes. The standard of the questions and the layout of the papers are of a very high standard. The papers produced for students in the learning-support classes are student friendly and contain graduated questions, designed to engage the students with the process and to increase their confidence.

Particular care is taken in recording and collating the performance of students in class tests and in the formal examinations. The teachers' diaries contain details of attendance, homework compliance and attainment in the various assessments. In addition, the co-ordinator of the department maintains records of student attainment in all formal examinations. Using these records, it is possible to track the progress of individual students as they move through the school.

The maintenance of these records highlights the importance placed by the mathematics department on student performance and their commitment to ensuing that the students are well informed when choosing the level they will take in the state examinations.

Very good use is made of the student diary in communicating with parents. The diaries are used to record homework and other assignments and are monitored regularly. The diaries are also used to alert parents to any compliance issues and to record and affirm student achievement. Regular contact is also maintained through the class tutors, year heads and senior management. Each year group has one parent-teacher meeting per year.

SUMMARY OF MAIN FINDINGS AND RECOMMENDATIONS

The following are the main strengths identified in the evaluation:

- The quality of teaching and learning in Mathematics is very good. Mathematics enjoys a very positive profile in the school and is regarded as a subject in which students can be successful and one where they can participate in an enjoyable and productive fashion. The range of co-curricular activities provided to students is extensive and innovative.
- Mathematics is well supported by management, timetabling provision is very good, the department is very well resourced and has access to the school's extensive ICT facilities.
- The mathematic department works as a very cohesive unit. It is well co-ordinated and benefits from good leadership. The members of the department approach their work in a positive and enlightened fashion.
- Subject department planning is very well advanced and is informed by ongoing analysis of student performance in the house and state examinations. The TY mathematics plan is particularly good.

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

- It is recommended that a competence test in Mathematics be included as part of the school's entrance assessments. The test should be designed in collaboration with the class teachers in the feeder primary schools and should seek to determine the strengths and weaknesses in the mathematics skill set of the students and should then be used to inform the content and mode of delivery of the first-year mathematics programme
- It is recommended that the schemes of work, included in the subject development plan for Mathematics, be developed to include clear learning outcomes and to detail the teaching methods to be employed in delivering them. The amended schemes of work should also include standard approaches to be adopted in carrying out key mathematical operations.
- It is recommended that, as part of the proposed locally-delivered in-service programme, the teachers of Mathematics receive training in ICT integration in teaching and learning Mathematics. It is further recommended that a member of the department be identified to source appropriate ICT resources and expertise to deliver subject-specific training if it is deemed necessary.

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 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 of Management welcomes this report and intends to build on the good practices identified and engage with the recommendations.