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Dear Mr Panayi

Ofsted 2008-09 subject survey inspection programme: mathematics

Thank you for your hospitality and co-operation, and that of your staff, during my visit on 4 and 5 March 2009 to look at work in mathematics.

As outlined in our initial letter, as well as looking at key areas of the subject, the visit had a particular focus on the effectiveness of the school's approaches to improving the quality of teaching and learning in mathematics.

The visit provided valuable information which will contribute to our national evaluation and reporting. Published reports are likely to list the names of the contributing institutions but individual institutions will not be identified in the main text. All feedback letters will be published on the Ofsted website at the end of each half-term.

The evidence used to inform the judgements made included interviews with staff and students, scrutiny of relevant documentation, analysis of students' work and observation of eight lessons.

The overall effectiveness of the subject, mathematics, was judged to be satisfactory.

Achievement and standards

Achievement in mathematics is good. Standards are average overall: they are above average in Key Stage 3.

- Students arrive at the start of Year 7 with standards in mathematics that are broadly average overall. Most make good progress during Key Stage 3 where the unvalidated 2008 results show 88% attained Level 5 in National Curriculum tests. However, despite an increase in the number attaining the highest level, the proportion gaining above average levels overall, particularly for girls, was lower than in previous years.
- Progress during Years 10 and 11 is satisfactory. Whilst the proportion gaining Grade C or better has been consistently well above that attained nationally, in

2008 it was average, although still representing good achievement given that year group's attainment on entry to the school. The performance of boys and girls has varied recently. In 2007, the proportions attaining grade C or better were similar, although significantly more girls attained the highest grades A* or A. The results of both fell in 2008, most dramatically for boys. However, boys attained better in mathematics than they did overall in their other subjects, whilst girls' attainment was similar in mathematics to their results overall. Results in statistics GCSE taken at the end of Year 10 by the two top ability classes were also considerably lower in 2008 than in previous years.

- Achievement post-16 is satisfactory and standards are generally average. Most years, all those entered pass at A level. In 2008, however, whilst 40% attained grades A or B, 30% failed. In part this was a consequence of significant underachievement at AS in 2007 when 12 candidates failed. Results at AS improved greatly in 2008 with over two thirds attaining grades A to C. However, in the current Year 12, about a third of those who started the course in September have dropped out.
- Students' attitudes to mathematics vary. They generally behave well, but without displaying much enthusiasm in most lessons.

Quality of teaching and learning of mathematics

The quality of teaching and learning of mathematics is satisfactory.

- The mathematics department contains well qualified teachers who have a range of experience. However, as was reported by the school's own review of the department, 'there is inconsistency in the quality of learning and teaching' and students find the common format of lessons dull. They said that some lessons lack pace and not all students pay sufficient attention to their work.
- Some students experience good teaching, but even in these lessons they have insufficient opportunities to collaborate and investigate. For example, in a Year 11 lesson on exponential growth, students started with an activity which encouraged paired discussion, but then wasted too much time drawing similar graphs. Too many lessons are uninspiring, with students completing repetitive exercises to practise mathematical routines rather than developing conceptual understanding. A Year 10 class, for example, completed routine exercises in a lesson on addition and subtraction of fractions, a topic that they had met many times before.
- Satisfactory use is made of projectors linked to whiteboards, but only one room has a board with interactive features. Whilst teachers use graph-plotting software effectively, students rarely have opportunities to use information and communication technology (ICT) themselves in lessons. During the inspection, however, students logged onto the internet to participate in numerical tests as part of 'World Maths Day'. Sixth form students indicated they had some use of graphical calculators. Some teachers do access websites occasionally and make use of video clips, which students enjoy.
- Whilst some aspects of assessment are rigorous, with students' progress tracked carefully, assessment in lessons is less effective. In a Year 13 lesson on differential equations the teacher picked up on students' misconceptions very quickly. But this was a small group. Students indicate that little use is made of mini-whiteboards and other techniques which enable the teacher to address misconceptions immediately within larger classes.

Quality of the mathematics curriculum

The quality of the mathematics curriculum is satisfactory.

- Schemes of work are sound. That for Key Stage 3 contains appropriate references to activities using ICT and related to developing thinking skills. The Year 7 curriculum has yet to be revised fully, as the department is considering moving to a three-year Key Stage 4. Whilst none of the schemes are interactive planning tools, those for the sixth form are much more detailed than is often found for A level and contain some good examples of suggested teaching activities.
- Able students have the opportunity to broaden their curriculum by entering statistics in Year 10 and AS further mathematics in Year 13. They are also encouraged to enter competitions, including some international tests. One girl in the sixth form spoke enthusiastically about reaching the European round of the Mathematics Challenge.
- There are good programmes of enrichment and targeted intervention for students of all abilities. As part of the school's programme as a specialist college in mathematics and computing, two members of the department work each week in local primary schools.

Leadership and management of mathematics

The leadership and management of mathematics are satisfactory.

- Senior and departmental leaders are aware of the strengths and weaknesses within the department. They carried out a review earlier this term and correctly identified that more rigorous monitoring was needed to bring about greater consistency in practice. Whilst there are some extremely experienced teachers within the department, the head of department is relatively new in post. Over the last few years managers have not been quick enough to spot potential underachievement within some teaching groups, which resulted in a decline in results in 2008.
- The views of students were also sought during the departmental review. They have a clear understanding of the department's strengths and weaknesses and would welcome more regular opportunities to contribute constructively to identifying areas for development.

Subject issue: the effectiveness of the school's approaches to improving the quality of teaching and learning in mathematics

- Historically, the mathematics department has been 'a flagship for the school.' Senior leadership has monitored the quality of teaching and learning through biannual reviews and regular line-management meetings. As a consequence of the recent review and concerns that standards within mathematics were 'slipping', the head of department has initiated a programme of training focused on improving teaching and learning. In addition, some teachers have been given support by advanced skills teachers from within the school, to improve aspects of their teaching, including behaviour management. These initiatives are beginning to have an impact, but have yet to influence all teachers to adopt a broader range of teaching strategies.

Areas for improvement, which we discussed, included:

- encourage all teachers to broaden their repertoire of teaching strategies, including more opportunities for discussion, collaboration and investigative activities, to enhance students' understanding
- review the curriculum to ensure all students receive sufficient opportunities to use ICT and appreciate the applications of their mathematics.

I hope these observations are useful as you continue to develop mathematics in the school.

As explained in our previous letter, a copy of this letter will be sent to your local authority and will be published on the Ofsted website. It will also be available to the team for your next institutional inspection.

Yours sincerely

David Bain
Additional Inspector