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Mr P Walters  
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Dear Mr Walters

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 12 and 13 January 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 you, the deputy and two assistant headteachers, the Secondary National Strategy manager, the head of mathematics, an experienced 'post-threshold' mathematics teacher, and groups of students in Years 8 and 11. I scrutinised relevant documents, analysed students' work, observed parts of seven lessons and briefly visited the '24 club'.

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

#### Achievement and standards

Achievement in mathematics is good. Standards are well above average.

- On joining the school, students' attainment in mathematics is generally above average, except in Year 8 where students' results in national Key Stage 2 tests were average. Around 10% of the students speak home languages other than English, most often Polish. They are at different stages of learning to speak English.
- Results of Key Stage 3 tests and GCSE examinations over the last few years have consistently reflected the good progress that students make in mathematics throughout their time in the school. There is some variation from one year to the next between the achievement of boys and girls.

- Standards are significantly above national averages with an upward trend at Key Stage 3. The more able students achieve particularly strongly: in the last two years, nearly half of the Year 9 students reached the high Levels 7/8, and over a quarter of Year 11 students gained A/A\* grades at GCSE. The unvalidated 2008 results, however, indicate a dip at both key stages. Nevertheless, the school's targets as a specialist mathematics and computing college were broadly met.
- Standards in GCSE statistics, taken by sets 1 and 2, are very high.
- In 'using and applying mathematics', standards are variable although there is evidence of an increased focus on it in Year 7. Some teachers integrate it into day-to-day learning more effectively than others.
- Students' behaviour and attitudes to learning mathematics are very good. Relationships are harmonious, enabling time to be used productively and allowing students to develop their self-confidence although not all readily offer answers to teachers' questions. Students listen attentively to their teachers and each other. They work conscientiously on set exercises and on the completion of twice-weekly homework. Students emphasised how approachable and helpful they found their teachers on the occasions they sought help.

### Quality of teaching and learning of mathematics

The quality of teaching and learning of mathematics is good.

- Teachers are well organised and sequence learning with care. Lessons generally follow a similar pattern: a starter activity, an introduction to the main section of the lesson, worked examples and then practice, and a concluding plenary. Teachers' very good questioning skills and well utilised subject knowledge means this approach works effectively. Most teachers build on students' responses by asking follow-up questions that probe their understanding, making teaching points from atypical responses. They circulate to check on each student's progress, picking up on errors and misconceptions.
- Teachers have high expectations of the students and pay close attention to precise use of mathematical language and notation. There are some good displays of students' work in each classroom. Teachers use interactive whiteboards appropriately to build careful explanations and aid visualisation, for instance of 3D shapes. However, they were rarely used by the students.
- An area for development in the teaching is to increase opportunities for students to discuss their thinking. Students' books show that much of their time is spent completing exercises from text books: this was confirmed in discussion with students who recognise the importance of mastering new learning. There was limited evidence of problems that required students to make links across areas of mathematics or develop their reasoning and ability to generalise. Examples of good practice in these respects were observed during the inspection.
- Most work is marked by teachers or by students under teachers' guidance and is supplemented by dialogue with teachers and follow-up in future lessons. On its own, however, the marking varies in its usefulness in moving students' learning on as there are few comments or pointers that illuminate the source of mistakes or demonstrate next steps. Minor slips and more important conceptual errors are often marked in the same way. The teachers might review how marking could better aid students' progress and later independent work.
- Although students are set individual targets for their performance, these are not always sufficiently challenging. Not all students were clear about their targets. Those in Key Stage 3 liked the simply expressed level-by-level checklists.

## Quality of the mathematics curriculum

The quality of the mathematics curriculum is good.

- Strengths include the range of courses which meet students' needs: low attaining students have additional numeracy lessons and all Year 10 students now study statistics in addition to GCSE mathematics. There is anecdotal evidence of many students going on to study mathematics at advanced level. Appropriate advice is given during Year 11. Investigative tasks have been introduced into the Year 7 with the intention of greater integration of the key process skills over the next couple of years.
- The department is close knit and very supportive: ideas are readily shared. The scheme of work is up-to-date and identifies textbook resources and software for the interactive whiteboard. Drawing on teachers' expertise to add guidance on approaches and suitable activities would strengthen its usefulness. There is a need to improve opportunities for 'using and applying mathematics' and use of information and communication technology (ICT) to enrich all students' learning.
- The school's specialist mathematics and computing status has had good impact. It has enabled flexibility in mathematics staffing and increased ICT hardware and software. Good educational partnerships, including primary outreach work, have been developed and community links, such as the successful Bentley project, forged. The department is involved in the introduction of 'opening minds'.
- The department makes appropriate use of National Strategy materials and courses organised by the local authority's mathematics team.
- Students' enjoyment of mathematics is enriched through extra-curricular activities such as the '24 club' and entry to mathematics competitions.

## Leadership and management of mathematics

The leadership and management of mathematics are good.

- The head of department provides experienced and determined leadership: she leads by example. There is a good team ethos and a shared commitment to promoting students' enjoyment and achievement in mathematics among the teachers in this hard-working department.
- The head of department's assessment of the quality of provision is accurate. There is good capacity for improvement.
- Management is good: systems are well organised and documented, and good use made of resources and accommodation. Students' progress is tracked and data is analysed. Teachers are given responsibility for analysing the results of their classes, with the overview and commentary provided by the head of department. This analysis should be extended to include all minority groups who appear, currently, to achieve slightly less well than their peers.
- Monitoring is carried out when the need is perceived. It would be timely now to carry out focused observations or monitoring on areas such as the development of the key process skills in Year 7.
- The mathematics development plan sits within the school's specialist plan. This has some weaknesses: actions are sometimes confused with objectives, and success criteria are not always well defined. There are no details of how actions are to be monitored or evaluated. It could prove beneficial to supplement this document with a separate improvement plan for mathematics.

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

- There is no specific approach to improving teaching and learning in mathematics although the department's stated aim is to make them outstanding. Teachers benefit from whole-school training and attendance at courses that include national developments such as functional skills. Records of lesson observations capture the lesson's essence but contain less about students' mathematical progress.
- The fortnightly 'developing good practice' sessions are an important strength and provide a useful vehicle for further improvement.

Areas for improvement, which we discussed, included:

- enriching the scheme of work to ensure all students have rich opportunities to use and apply mathematics and to use ICT to enhance their learning
- refining the analysis of data and outcomes of monitoring to pinpoint areas for further development in teaching and learning, assessment, and the curriculum
- improving development planning.

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

Jane Jones  
Her Majesty's Inspector