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Dear Mr Brierley

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 24 and 25 February 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 and other senior staff, the head of faculty, an experienced 'post-threshold' mathematics teacher, and groups of sixth-form and Year 8 students. I scrutinised relevant documentation, analysed students' work and observed parts of 12 lessons.

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

Achievement and standards

Achievement in mathematics is satisfactory. Standards are above average in Key Stages 3 and 4 and average in the sixth form.

- Attainment on entry to Year 7 is above average, but by a margin that has decreased in recent years. Standards in national Key Stage 3 tests have been significantly above average for several years. However, progress students make over this key stage has consistently been a little below what might be expected given students' starting points.
- The faculty has focused strongly on improving results at GCSE and, in 2008, 70% of students gained A* to C grades with over 20% being awarded the highest A/A* grades. Many students made good progress to catch up on ground lost in

earlier years in the school. A small group of able students also studied GCSE statistics in after-school sessions and reached high standards in the examination. The improvements in GCSE mathematics are part of a clear picture of rising standards within the school at Key Stage 4.

- Standards at A level rose in 2008. All students passed, building successfully on their AS mathematics grades. The picture in the lower-sixth was more mixed. Too many students, nearly one third, failed to pass AS and this is unsatisfactory.
- A new whole-school system for tracking students' progress, coupled with a range of intervention strategies, is helping the faculty to raise standards further. However, the system requires some refinement. Currently, some students are said to be well on track when recent assessments suggest this is not so.
- Standards in 'using and applying mathematics' are lower than in other areas of the mathematics curriculum. Students of all ages and abilities would benefit from more opportunities to tackle tasks that develop their reasoning and promote independent learning. A couple of good examples of pair and practical work that encouraged mathematical discussion were observed.
- Students' behaviour in lessons is generally good. Most want to do well. They listen attentively and ask when unsure, appreciating the help staff provide. In some classes, students are passive learners who have developed a dependence on their teachers rather than a confidence in thinking things through for themselves. This is most evident where teaching focuses on skills or methods in isolation rather than on building understanding of the underpinning concepts.

Quality of teaching and learning of mathematics

The quality of teaching and learning of mathematics is satisfactory.

- The quality of teaching varies from good to unsatisfactory. Much is good or satisfactory with good features. Strengths include teachers' secure subject knowledge which is evident in their accurate use of mathematical language and explanations. Good classroom relationships allow unobtrusive management of students' behaviour. Most teachers make effective use of interactive whiteboards when explaining methods or developing new ideas, but opportunities for students to use information and communication technology (ICT) are limited.
- The quality of teachers' planning varies. It follows the three-part lesson format but learning objectives identified for groups of students are rarely supported by tasks tailored appropriately to those students' needs. In most lessons, all the students tackle the same work.
- In a minority of lessons, students' lack of fluency in number or gaps in their earlier learning slows their progress. Some lower-sixth students lack in confidence: staff need to develop their independence more strongly.
- The most effective questioning draws answers skilfully from students and capitalises on their responses to make teaching points. In the better lessons, teachers anticipate potential misconceptions, circulating while students work to check on their progress, intervening in a timely way to keep learning moving forward. Occasionally, teachers provide opportunities for students to discuss ideas or tackle tasks in pairs, but mathematical talk is limited in many lessons.
- A key area for improvement is teachers' focus on developing students' conceptual understanding. Students' exercise books reflect a heavy emphasis on the practising of taught techniques, which students often find dull. Sixth-form students were generally more positive about their learning in mathematics.

- The quality of marking varies. Good practice includes examples where teachers identify the source of errors and point the way forward, although students do not generally follow up teachers' helpful comments. Other marking is cursory and misses errors and misconceptions. Students' marking of their own work is not always accurate.
- Many students in Key Stages 3 and 4 are hazy about their end-of-key-stage targets and what they should do to attain them. The use of assessment for learning is a planned area for development for the faculty.

Quality of the mathematics curriculum

The quality of the mathematics curriculum is satisfactory.

- The curriculum is increasingly responsive to the needs of groups of students. For instance, additional lessons on numeracy are provided for low attaining students in Key Stage 3 and, at GCSE, an additional teaching group has been introduced for middle ability students. The use of early entry for these students is intended to bolster their confidence by aiming to secure the critical grade C.
- Schemes of work ensure students study mathematical content appropriate to their age or aligned with the qualification they will be taking. The improved scheme for Year 7 identifies resources and software for the interactive whiteboard and notes some good enrichment activities. Greater emphasis is required on developing the key process skills that lie at the heart of the new National Curriculum, together with guidance on teaching approaches. At present, students' minimum entitlement to 'using and applying mathematics' and ICT is not stated. Best practice in these areas needs embedding in the faculty's work.
- Sixth-form students are able to choose from pure mathematics with statistics or with mechanics, and a small group also study further mathematics. The school might usefully explore the opportunities offered through the network of further mathematics centres. The sixth form is a focus of whole-school improvement this year: the importance of ensuring that teaching meets students' needs and abilities and develops their independence as learners is clearly recognised. Specific improvements in mathematics include the quality of guidance onto and during advanced-level courses and the monitoring of students' progress.
- The faculty organises support for students preparing for tests and examinations. There are a range of enrichment activities, mostly for the most able. Sixth-form students spoke enthusiastically about taking part in the engineering challenge.

Leadership and management of mathematics

The leadership and management of mathematics are good.

- The improvement in standards at GCSE is underpinned by a combination of the head of faculty's effective and reflective leadership, supported by her team of mathematics teachers, and the knowledgeable and practical input from senior leaders. The foundations for sustained development are being laid: the capacity for further improvement is good.
- The head of faculty leads by example. She has high expectations of herself, her faculty team and of the students that they teach. She has a good grasp of the priorities for development: these are rooted in improving outcomes for students, and focus mainly on curricular development and use of intervention to improve examination performance. A crucial link that is currently underemphasised is

attention to improving the quality of teaching and learning. A systematic approach that makes the most of good practice within the faculty while tackling areas of inconsistency or relative weakness offers considerable potential.
- The school has recently introduced a system of self-evaluation by faculties. In mathematics, this is informed by appropriate monitoring activities, such as lesson observations, scrutiny of students' work and teachers' marking, and thorough analysis of assessment information. There is scope to sharpen such management activity to increase its influence on driving improvement.

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

- There are few specific approaches to improving teaching and learning in mathematics. Teachers benefit from whole-school training and some attend a range of mathematics courses and training. Several members of the faculty have experience of supporting newly qualified or graduate trainee teachers. Good working relationships lead to teachers providing support for each other on an informal basis, for instance on the use of software. Sometimes, teachers share ideas or new resources in faculty meetings. The faculty is suitably placed to develop a collaborative approach to improving teaching and learning.
- The school has introduced a detailed proforma for recording evidence during lesson observations. Previous records show a tendency to emphasise features of teaching rather than students' gains in learning. In joint observations with HMI, however, the head of faculty's and deputy headteacher's evaluations of teaching clearly focused on its impact on students' progress.

Areas for improvement, which we discussed, included:

- developing schemes of work further, ensuring all students have rich opportunities to use and apply mathematics and to utilize ICT to enhance their learning
- improving teachers' repertoire of effective teaching strategies so that students of all ages and abilities make consistently good (or better) progress
- developing the use of monitoring and collaborative working to drive improvement through pinpointing and tackling shortcomings and inconsistencies and embedding best practice.

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 local Learning and Skills Council 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