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Mr B Baxter
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Dear Mr Baxter

Ofsted 2009-10 subject survey inspection programme: mathematics

Thank you for your hospitality and cooperation, and that of your staff, during my visit on 7 and 8 October 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 included interviews with staff and students, scrutiny of relevant documentation, analysis of students' work and observation of nine lessons.

The overall effectiveness of the subject is satisfactory.

Achievement in mathematics

Achievement in mathematics is satisfactory.

- The proportion of students gaining A* to C grades improved markedly in 2009, as did the average grade for the cohort. These provisional GCSE results indicate that students are beginning to make better progress. Attainment in mathematics at age 16 is now close to the national average, having been below average for the previous two years. As a result, the proportion of students gaining five GCSE A* to C passes, including English and mathematics, rose to 51% in 2009.
- In recent years, students' attainment on entry to the school has been, on average, about half a term behind the expected level for their age. Apart

from a dip in 2008, students' progress by age 16 has been satisfactory, with no significant variations in the progress of different groups of students. The school's internal assessments show that progress has also improved in Key Stage 3.

- Some of the most able students are entered for GCSE in Year 10 allowing them to follow an additional mathematics course in Year 11. This helps to motivate them and to prepare them for further study. However, less than half demonstrated their mastery of GCSE topics by gaining A* or A grades in 2009, suggesting that it might be more productive for students to take both qualifications in Year 11.
- The quality of students' learning in lessons is good at times, but ultimately satisfactory. Innovative teaching approaches provide students with good opportunities to explore new topics for themselves and thereby develop their understanding. However, students do not always learn to use the associated mathematical techniques reliably.

Quality of teaching of mathematics

The quality of teaching of mathematics is satisfactory.

- The department has a good mix of experienced teachers and newer recruits. Some have considerable subject expertise, which is evident in their use of probing questions and their ability to adapt their teaching to take account of students' responses, as occurred in a lesson on map scales.
- The school's own lesson observation records show that the quality of mathematics teaching has improved over the last two years. There has been an increasing emphasis on promoting understanding, backed up with better use of assessment to identify students who are not making the expected progress.
- The lessons seen during the inspection suggest that many teachers are now good at providing exploratory activities to get students thinking about the relevant mathematical concepts. For example, students were seen exploring number patterns in the 'hundred square'; conducting practical trials in probability; tackling a variety of coordinate geometry problems; testing different nets to see which would fold to make a cube; working in groups to fit triangular cards together so that statements matched on adjacent edges. Students post sticky notes on boards to highlight discussions and use whiteboards to develop ideas. The use of these encourages them not to worry about making mistakes.
- However, teachers do not always follow up these activities sufficiently to secure good learning. For example, students do not always get enough individual practice to make sure that they can apply their new learning reliably in a variety of contexts. This was evident in students' exercise books: most questions on Pythagoras' Theorem and on collecting like terms in algebra were very straightforward, with insufficient variation to make students think; work on number patterns featured many calculations but made no link with algebraic representation.

- Teachers' use of visual aids is variable. One teacher brought a 2kg weight for students to handle, to help appreciate a pressure of $2\text{kg}/\text{mm}^2$; another used grids to represent square numbers but not to show why $7 \times 6 = 5 \times 6 + 2 \times 6$.
- Marking is mostly conscientious and helps students to see how to improve. Students are also involved in assessing their own learning, for example, by indicating to their teachers how well they feel they have understood.

Quality of the mathematics curriculum

The quality of the mathematics curriculum is good.

- The schemes of work for Years 7 and 8 take into account the revised national curriculum. Each module now includes at least one rich mathematical task that promotes creativity. Functional mathematics is being incorporated in Key Stage 4, so students learn how mathematics is used in the outside world. Students' positive attitudes and behaviour reflect their enjoyment of mathematics.
- Teachers make good use of information and communication technology, including graphical calculators, computer software and hand-held student response devices. Occasionally, a more traditional option might be better: for example, it would have been more instructive for students to handle a real cube made from interlocking squares, than to see a video clip of a cube.
- A good variety of qualifications are available to meet students' needs, including GCSE mathematics and a BTEC Level 1 certificate for lower attaining students and Level 2 for higher attaining students not wishing to move on to additional mathematics. The department provides good support to help students meet their examination targets, including after-school classes for those who want to retake a module, and access to a variety of electronic resources.

Effectiveness of leadership and management of mathematics

The effectiveness of the leadership and management of mathematics is good.

- There is clear evidence that the senior team and the departmental leaders have driven forward improvements in mathematics teaching. Rigorous monitoring and evaluation gives them a good understanding of the department's strengths and weaknesses. For example, the head of department identified and addressed some inconsistencies in marking and record keeping.
- There is a natural lag before the impact of improvements in provision becomes evident in student outcomes, but there are some encouraging signs, such as more students making good progress in Key Stage 3, a sharp improvement in GCSE results in 2009 and more students on target for good results next year. Achievement in mathematics has improved to be securely satisfactory and attainment has improved from low to average.

The department has therefore evinced a good capacity for further improvement.

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

- The school has a good approach to improving mathematics. The reasons for the improvement it has achieved so far include: changes to the schemes of work and to the teaching culture, which have put more emphasis on building mathematical understanding; a strong emphasis on academic support and intervention with underachieving students; well-chosen professional development activity, such as the work with a local authority consultant; an increased focus on teaching and learning in departmental meetings; good mentoring arrangements for inexperienced teachers; and the recruitment of additional well-qualified staff, including a higher level teaching assistant for mathematics.
- The school is making sensible arrangements to prepare staff to teach mathematics in the forthcoming sixth-form.

Areas for improvement, which we discussed, include:

- continuing to improve teaching by sharing subject-specific expertise, such as:
 - how algebra can be developed from exploratory work with numbers
 - how appropriate resources and visual aids can support learning
 - how assessing students, as they work, can inform the next part of the lesson
- further raising attainment by ensuring that the innovative teaching approaches that promote understanding are followed up with a sufficient quantity and variety of exercises to secure the intended learning.

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

Stephen Abbott
Her Majesty's Inspector