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Mr R Robson
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Dear Mr Robson

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 10 and 11 November 2008 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 lessons.

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

Achievement and standards

Achievement in mathematics is satisfactory and standards are below average.

- Progress during Key Stage 4 is broadly average, having improved from being significantly below average in 2005. Standards are below average and did not meet the mathematics targets set within the engineering specialist status. A low proportion of students reached grades A* and A. Students with low prior attainment make the best progress.
- Standards at Key Stage 3 have been broadly average in recent years with the unvalidated 2008 results indicating a slight rise. Students' progress during Key Stage 3, only the final year of which is spent at the school, fell to below average in 2007.

- Students apply themselves in lessons, listening well to the teacher, but do not develop independence. They find some lessons boring - those that concentrate mainly on exercises from books or worksheets.
- In the sixth form, progress at AS level, A level and in further mathematics is satisfactory. Standards at AS level were below average in 2007 and 2008. At A level, they were broadly average in 2007 and 2008, although fewer students reached the top grades than nationally while slightly more reached at least grade C. Entries were low in 2008, but increased numbers are currently studying the courses.

Quality of teaching and learning of mathematics

The quality of teaching and learning of mathematics is satisfactory.

- Teachers use their knowledge of the subject and examination specifications soundly to explain methods clearly and support students in their work. They use interactive whiteboards to provide clear explanations. They manage behaviour effectively, but there are occasions when learning is slowed through off-task activity.
- In the best lessons, students are given problems that help them to think about possible misconceptions and overcome them. Discussion in small groups helps them to clarify their thoughts and understand the work better. Teachers use their good subject knowledge to plan carefully structured lessons during which they diagnose and build on students' strengths and areas for development and convey concepts well. They listen well to the students, recognising their misconceptions and prompting them to think. Students enjoy this challenging work and rise to it.
- The quality of teaching varies, with some that is inadequate. Features of the weaker teaching are that teachers do not match work well enough to students' differing needs and do not focus on understanding. Students learn and can replicate methods but they do not understand why they work. The ideas have not been introduced conceptually, such as with practical apparatus to illustrate the volume of a cuboid. Even where good activities or equipment have been prepared, they have not been used in a way that obtains the best from them. Teachers have not checked students' responses carefully, with the clear aim of identifying and overcoming misconceptions, or raising the quality of response. There are some mathematical weaknesses, partly because teachers and teaching assistants do not have enough guidance in the scheme of work.
- Students in Year 11 have an overview of the expectation for each grade, but it is not used consistently for assessing their attainment or to help them set targets. This approach is not consistent across years. Students do not have targets to help them improve in specific areas of mathematics. Some marking, particularly for the sixth form, gives constructive feedback on how to improve but much is merely a tick or self-marked.

Quality of the mathematics curriculum

The quality of the mathematics curriculum is satisfactory.

- The published texts for class and homework, accompanied by teachers' guides and a timeline for sequencing the work, with some references to additional material, form a sound basis for delivering the GCSE and A-level courses. Nevertheless, they do not provide guidance on ways for introducing topics that

underpin students' understanding of the concepts and methods. A requirement for using and applying mathematics is not built in although the materials include some such work. A number of good information and communication technology (ICT) activities and demonstrations are used. However, they are not compulsory so not every student receives an entitlement to hands-on use of ICT across the full range of the mathematics curriculum.

- Students start on their GCSE course at the beginning of Year 9 which gives them a good opportunity to study it in depth. Previous delivery of the course within one year, after taking statistics in Year 10, may well have contributed to lower proportions of students reaching the top grade and this strategy has been discontinued.
- Diagnostic assessment has been introduced in Year 11 to identify areas of students' strength and weakness. It is being used soundly to plan future work that focuses more on the areas of weakness. This includes online homework tasks. Such tasks are also used to differing extents across the school.
- The numbers taking mathematics AS and A level have increased substantially this year. Further mathematics A-level provision in Year 13 is supporting students in applying to read mathematics at university, including Cambridge. However, no Year 12 students are currently studying further mathematics although it is being offered next year.

Leadership and management of mathematics

The leadership and management of mathematics are satisfactory.

- Senior managers have made a clear and accurate analysis of the current quality of provision and of leadership and management. They have correctly identified the need for sharper evaluation and improved teaching quality in order to raise standards and progress, and have put procedures in place to achieve them. Plans for improvement are adequate, although the range of measurable targets is narrow.
- Monitoring of lesson quality is accurate but the key factors contributing to students' progress are not always evaluated so the areas identified for development do not consistently ensure that quality is improved or link to targeted professional development.
- Evaluation and planning within the department are underdeveloped. They do not focus enough on critical evaluation of teaching and learning or on planning how the department will work together to improve them. A number of staff share their expertise well with others but co-ordination, monitoring, handbook guidance and job descriptions are not in place to support staff in developing consistency and equity.
- Staff have been deployed appropriately to provide support where teaching is weak, a focus on students with the potential to attain grade C, and a match of expertise to need.
- The school has correctly recognised that GCSE grade targets set hitherto were insufficiently challenging and has introduced a new system incorporating greater demand. Nevertheless, some students find their A-level targets insufficiently challenging. The system's lack of focus on the degree of progress against targets each term and year contributed to past underperformance across year groups.
- The engineering specialism has contributed to provision of interactive whiteboards that are used satisfactorily in lessons and to work in a partner middle school that has made a good impact on transition.

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

- The training school status has had a beneficial effect on mathematics teaching. Through mentoring trainee teachers, staff have broadened their styles. The mathematics advanced skills teacher has introduced activities and approaches that the staff have used effectively to develop students' thinking skills.
- Teachers' potential for high quality teaching has been identified and developed well through careful selection of external courses and in-school support. Nevertheless, some teaching has not improved fast enough.

Areas for improvement, which we discussed, included:

- improving progress and standards, particularly for higher attainers
- monitoring and increasing students' understanding more effectively in lessons
- providing key activities to aid understanding and guidance for staff on their use
- involving students more in self-assessment and setting targets
- increasing the impact of monitoring on raising teaching quality
- evaluating more critically and planning more precisely to meet measurable targets.

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

Gill Close
Her Majesty's Inspector