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Mr David Baker
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Dear Mr Baker

Ofsted 2010–11 subject survey inspection programme: design and technology (D&T) and mathematics

Thank you for your hospitality and cooperation, and that of the staff and students, during my visit with Stephen Abbott HMI on 6 and 7 December 2010 to look at work in D&T and 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.

The evidence used to inform the judgements included: interviews with staff and learners; scrutiny of relevant documentation; analysis of students' work; and observation of seven lessons in D&T and nine lessons in mathematics.

Design and technology

The overall effectiveness of D&T is satisfactory.

Achievement in D&T

Pupils' achievement in D&T is satisfactory.

- Students enter the school with a variety of experiences in D&T and attainment on entry is slightly below the national average. By the end of Key Stage 4 students attain below national expectations and too few students reached the highest grades.

- The legacy of low achievement is steadily being addressed. Students are proud of their work and achieve a high quality of finish in products that they have made. Their work shows satisfactory progress. The majority of students know the level or grade that they are aiming for, but they are not always clear about what they need to do to improve their current work. Lower and middle attaining students are not always able to explain their ideas well. Sixth form students are clear about how to improve their work and apply this well. Their use of models enables them to develop, explain and test their ideas effectively.

Quality of teaching of D&T

The quality of teaching of D&T is satisfactory.

- Teachers use their good subject knowledge well to interest students in work in D&T. Practical activities are emphasised and students' capabilities in making are well developed. Students' understanding of the importance of how products are designed is not as well developed. They are enthusiastic and rightly proud of their work. They explained how much they liked D&T and how well teachers help and support them.
- The impact of assessment practice is inconsistent. Teachers always explain learning objectives. In the best lessons teachers have begun to use students' self- and peer-assessment effectively to share assessment criteria and this approach promotes good learning. Too often teachers do not plan work that challenges students to achieve more ambitious targets or takes sufficient account of students' different starting points. Teachers miss opportunities to develop students' confidence in using technical language and talking about their work in order to improve their written explanations. Thus, high expectations for literacy are not promoted consistently. In less effective lessons opportunities were missed to deepen students' understanding of their learning by probing their responses. Behaviour is good in all lessons, particularly as students move around activities.

Quality of the curriculum in D&T

The quality of the curriculum in D&T is satisfactory with good features.

- A broad and balanced curriculum is provided at Key Stage 3. Projects such as the air buggy and lamps are chosen well to interest both boys and girls. They provide a satisfactory base for the next key stage. Developments in the curriculum at Key Stage 4, in response to students' demands, have begun to attract greater numbers of higher attaining students. Increased opportunities are provided for vocational courses such as catering and hospitality, which provide a curriculum more tailored to students' interests and meet their learning needs. Cross-curricular links are well established.

These increasingly allow students to apply their knowledge of science and mathematics well. A rich variety of extra-curricular activities enhances the students' experience of D&T and promotes higher standards of work.

Effectiveness of leadership and management in D&T

Leadership and management in D&T are satisfactory.

- The subject leader has a passion and vision for the department which is shared by his team. They work very effectively together. They have tried to develop a wide variety of initiatives but the impact of these has been diluted because there are too many for a small department to implement effectively.
- The subject leader understands the department's strengths and weaknesses and this underpins development planning. They use collaboration with local schools well to share expertise and promote good practice. This is beginning to improve the department's work and its use of assessment to promote students' greater independence in their work.
- The department tracks students' progress carefully and this is used to identify those students who are under-performing and to ensure that they have carefully matched interventions. They are beginning to identify those students who are exceeding their targets and ensure that they are challenged appropriately.

Areas for improvement, which we discussed, include:

- ensure that all groups of students make satisfactory or better progress by improving the consistency of teachers' use of assessment to develop students' designing capabilities, and thus enable them to achieve higher grades
- ensure that teachers plan opportunities to develop students' skills in using technical language when talking about their work and to improve the quality of their writing.

Mathematics

The overall effectiveness of mathematics is satisfactory.

Achievement in mathematics

Achievement in mathematics is satisfactory.

- Attainment in mathematics has improved steadily over the last four years. The proportion of students gaining grades A* to C is now above average, though when results at all grades are taken into consideration, they are still marginally below average. At A level there has been an improving trend in recent years and results are above average.
- Students' progress in lessons is currently satisfactory in the main school and good in the sixth form. Students' progress in the mixed ability Year 7 and 8 classes is uneven, for the reasons explained in the teaching and curriculum sections. Sixth-form students showed good understanding, but a few were too casual with their graph-sketching and written proofs.
- Students learn appropriate mathematical methods and develop their competence by working through plenty of exercises, albeit of a mainly routine nature. They generally understand the methods they are shown, but are less confident in developing their own solutions or explaining their reasoning. Many are rather passive in lessons. Some lower attaining students find it difficult to put their understanding into words.
- Learning is reinforced by strong revision and intervention programmes. Students have access to a web-based revision package when they need to improve in a particular area of mathematics. They also appreciate the extra support provided by their teachers outside lessons.

Quality of teaching of mathematics

The quality of teaching of mathematics is satisfactory.

- The predominant teaching style is one of exposition and practise of the demonstrated method. Problem-solving approaches, where students are challenged to use their existing knowledge to devise their own methods, are less frequent. Consequently, students do not develop strong enough independent learning skills in mathematics.
- Teaching was good in five of the nine lessons observed and satisfactory in the remainder. In an effective sixth-form lesson, the teacher encouraged students to be self-reliant, think for themselves and refer to their own notes where necessary. Group work promoted discussion among students.
- Most lessons feature a well-crafted exposition from the teacher. Ideas are developed in a logical order and methods carefully explained. In the best lessons, the teacher's input is delivered in brief, well-focused chunks, often supported by visual aids. Students are then set exercises to help

them consolidate their learning. This approach is more effective for classes that are set by ability. In mixed-ability classes, the teaching does not take enough account of students' different starting points.

- Some teachers assess students' understanding well during the lesson and address the issues that arise. Other teachers take most answers from volunteers without checking that others understand, which is less effective. When students are working individually or in groups, teachers circulate to check on their progress and to give support where necessary. In the best cases, the teacher intervenes by guiding the students to think for themselves, but occasionally this support is too directive, with the teacher doing much of the talking.
- Although tests and homework assignments are marked, the quality and quantity of class-work marking are too variable. Although some students get regular feedback on their class work and the opportunity to check all their answers, others have many unchecked answers. Some class work books have not been marked at all by the teacher.

Quality of the mathematics curriculum

The quality of the mathematics curriculum is satisfactory.

- The school is committed to an inclusive approach in which all students are entered for an appropriate mathematics qualification. Extra resources are deployed in Year 11 to maximise students' chances of success. Some students have extra mathematics lessons and one fewer optional subject.
- Enrichment for the most able students includes regular involvement in the various UK School Mathematics Challenges. Teachers also give up free time to maintain a Further Mathematics option in the sixth form. This has enabled a recent student to win a place at Oxford University.
- Schemes of work indicate the learning objectives for each year and include links to text books, interactive-whiteboard presentations and other resources. There are suggestions for investigations and rich mathematical tasks to develop functional skills. However, the schemes do not provide a progressive development of skills in using and applying mathematics.
- The school is in the process of adapting the schemes of work to reflect recent changes in examination specifications. Those for Years 9 to 11 provide a satisfactory basis for lesson planning because they are matched to students' prior attainment. In contrast, the schemes for Years 7 and 8 do not. There is no guidance about which learning objectives to prioritise for students with different levels of prior attainment. Furthermore, not enough learning objectives are relevant to the lowest attaining students.

Effectiveness of leadership and management of mathematics

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

- The head of department has established a strong team spirit and an ethos in which teachers expect to talk regularly about teaching and learning to share good practice. A strategic decision to provide a graduate trainee place each year has contributed to professional development for all staff. Links with the senior leadership team are strong.
- The department benefits from some well-focused monitoring and evaluation, such as the recent whole-school 'learning improvement cycle' to review provision for lower attaining students in Year 9. Lesson observation and work scrutiny are undertaken from time to time. However, this has not secured consistency in marking.
- Departmental documentation is well organised and students' progress is tracked carefully. Information from the assessment programme is used to identify students who need extra support to meet their targets.
- The school uses two main performance indicators to measure its success in securing improvements in GCSE mathematics. These are: the proportion of students gaining grade C or better; and the proportion of students meeting the national target for expected progress. The rising trends in these indicators demonstrate the department's capacity for improvement. However, less attention has been paid to value-added measures based on the average GCSE points score for all students and for specific groups, which give a more precise measure of improvement.

Areas for improvement, which we discussed, include:

- revising the schemes of work in order to provide
 - an appropriate set of learning objectives for each level of prior attainment in Years 7 and 8
 - a suitable progression of learning objectives from the 'using and applying mathematics' attainment target, for all year groups
- increasing the impact of leadership and management by
 - widening the range of performance measures, to include those based on the average performance of all students in a group
 - increasing the regularity of work scrutiny, for example to ensure consistency in marking
 - introducing mathematics-specific 'learning improvement cycles', for example to enhance teachers' skills in assessing students' understanding and developing their independent learning skills.

I hope that these observations are useful as you continue to develop D&T and mathematics in the school.

As I explained previously, a copy of this letter will be published on the Ofsted website. It may be used to inform decisions about any future inspection. Except in the case of academies, a copy of this letter is also being sent to your local authority.

Yours sincerely

Michelle Parker
Her Majesty's Inspector