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Miss M Utton
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Dear Miss Utton

Ofsted 2012–13 subject survey inspection programme: science

Thank you for your hospitality and cooperation, and that of your staff and students, during my visit on 25 and 26 February to look at work in science.

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 without their consent.

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 science is good.

Achievement in science

Achievement in science is good.

- Through Key Stage 3 and 4, students make good progress from above average starting points and attain very high standards in GCSE examinations. Most are studying separate sciences, the rest take the core plus additional course, with both groups studying at the same time.
- Progress for sixth form students is good overall, although a few students with relatively low GCSE grade starting points did not do as well as expected. Department leaders are adapting sixth form teaching to better accommodate the different starting points of students.
- In most lessons students have great freedom to explore scientific ideas practically for themselves. They enjoy this because it gives them some ownership of their learning, develops their independence and initiative,

and, as one sixth form student said it 'teaches them to become real scientists'.

- A few older students were not always sure why they were doing a particular activity. Despite the genuine and much appreciated enthusiasm of their teachers, these students looked for clearer connections between the activity itself, its underlying 'big idea' and its relevance.

Quality of teaching in science

The quality of teaching in science is good.

- Teachers' subject knowledge is very good, allowing them to sustain very high academic challenge for students and is a major reason for the high attainment. Their subject expertise is sustained through systematic training and development, helped by their role as trainers themselves.
- The determined principle driving the approach to most teaching is for students to discover the scientific concept and knowledge through practical enquiry. The prime intention is to help students understand the science, not simply learn a set of facts. This develops very good scientific attitudes amongst students, and effectively maximises their opportunities to link different science ideas with complex applications.
- Teachers give good verbal and written feedback to students, with detailed coaching on examination mark schemes. Students often write long answers to explain their thinking, which allow teachers to diagnose their understanding of the scientific principles accurately.
- Information and communication technology supports research projects, although lack of interactive white boards is limiting teachers' exploitation of modern multi-media resources. Fortunately students get plenty of real science practical experiences.
- All laboratories and science department corridors contain excellent examples of students' work alongside commercial displays, which contribute to learning, and set a strong historical context showing the development of the big ideas.

Quality of the curriculum in science

The quality of the curriculum in science is good.

- The challenging and academically demanding triple science or dual award for all works well, because of very good resources, practical resources, extension tasks, extended research projects, good academic links, and additional science options at GCSE such as Astronomy and Human Physiology.
- There is a strong, cross-curriculum engineering 'Greenpower Formula 24' electric car project that involves large numbers of girls. There are science clubs, extra revision sessions, good local university liaison visits, and some useful visiting experts. However, there is no formal whole school science based trip for Key Stage three students.

- The philosophy (enquiry based learning) underpinning the schools Technology College status remains a key feature of the school, with design and technology still compulsory at Key Stage 4; this is made possible by delivering science within two 'GCSE slots' in the timetable.

Effectiveness of leadership in, and management of, science

The effectiveness of leadership in, and management of, science is good.

- The head of science, in close collaboration with senior line managers, conducts accurate self-reviews that errs on the side of caution. His commitment to teaching science for understanding through practical enquiry is embodied in his own teaching, and shared by the department. As a result they want to teach science, make it as interesting as possible, yet do what is necessary to ensure students also know what the various examination specifications require.
- Very good, well planned professional development for science teachers, and technical staff, is helped through the school's teacher training responsibilities, and its close association with the regional science learning centre.
- Technical staff play an active teaching role in the complex A level research projects.

Areas for improvement, which we discussed, include:

- keeping sixth form provision, including the impact of differentiated lesson activities, under review through assessment and conversations with students
- making sure students are aware of the links between the practical experiments they do, the science principle being revealed, and the value of that idea to themselves and society.

I hope that these observations are useful as you continue to develop science in the school. As 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. A copy of this letter is also being sent to your local authority.

Yours sincerely

Brian Cartwright
Her Majesty's Inspector