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Mrs G Comber  
Headteacher  
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Dear Mrs Comber

### **Ofsted 2010–11 subject survey inspection programme: science and mathematics**

Thank you for your hospitality and cooperation, and that of the staff and students, during my visit with Stephen Abbott HMI on 24 and 25 January 2011 to look at work in science 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 without their consent.

The evidence used to inform the judgements included: interviews with staff and students; scrutiny of relevant documentation; analysis of students' work; observation of seven science and 10 mathematics lessons.

The overall effectiveness of both science and mathematics is satisfactory.

#### **Achievement in science**

Achievement in science is satisfactory.

- Students' attainment is average and improving. The percentage of students attaining two or more A\* to C GCSE grades in science has risen from being significantly below average in 2008 to just above average in 2010.
- The percentage of Year 9 students attaining the expected Level 5 and the higher Level 6 was similar to the national average in 2010. The percentage of students attaining A\* to C GCSE grades across the range of science courses offered in Key Stage 4 was also broadly average.
- The progress made by students is satisfactory and improving. However, the progress made by different groups of students varies. For example,

students with lower prior attainment and those with special education needs and/or disabilities make better progress than their peers.

- Sixth form students make satisfactory progress on AS and A2 science courses attaining broadly average examination results.
- Students' enjoyment of science has increased in recent years and this is evident in the increasing numbers who are choosing to study three separate science subjects in Key Stage 4 and at least one A-level science in the sixth form.
- Students behave well in lessons and readily participate in practical activities and group work.

### **Quality of teaching in science**

The quality of teaching in science is satisfactory.

- Teachers are enthusiastic about the teaching of science and they introduce new work to students using contexts that are interesting and relevant.
- Lessons are well planned around clear learning outcomes. However, at times, teachers talk for too long during lessons or spend too long on activities and this slows the pace of learning.
- All the lessons observed during this visit were characterised by good relationships between staff and students. Older students appreciated the extra support they were given outside of lessons to help them prepare for examinations.
- In the best lessons, careful consideration is given to matching activities to the full ability range of students in the class and students' progress is thoroughly checked through careful, targeted questioning.
- In the less successful lessons, work is not well matched to the ability of all students in the class, particularly the more able.
- In some lessons, questioning is only used to check students' knowledge and does not delve deeper to check and develop students' understanding.

### **Quality of the curriculum in science**

The quality of the curriculum in science is outstanding.

- The curriculum has been developed very well over the past few years. The changes made have had a significant impact on raising students' attainment.
- The school offers a wide range of both academic and vocational science courses in Key Stage 4 and the sixth form that meet students' needs and aspirations extremely well.
- The curriculum is regularly reviewed and changed each year to match the ability and learning needs of individual cohorts.
- The curriculum has been creatively developed in Years 7 and 8 so that new science content is being delivered through thematic topics that are

interesting and relevant to students and make links to learning in other subjects.

- The development of students' skills of scientific enquiry is firmly embedded in the curriculum.
- A broad range of curriculum initiatives and extra-curricular activities effectively promote students' enjoyment of science.

### **Effectiveness of leadership and management in science**

Leadership and management in science are good.

- After some years of disruption in the leadership and management of science the current head of department is providing the subject with strong leadership. She is successfully improving students' progress and raising attainment.
- Teaching is monitored well and increasingly effective advice and support are being given to teachers in order to improve their practice.
- The department's high expectations are reflected in the challenging targets that are set for students. A good system to monitor the progress of students towards these targets is in place and underachieving students are quickly identified and provided with support.
- The head of science has a good understanding of the strengths and weaknesses in science provision and outcomes. A good plan is in place to drive further improvement.

### **Areas for improvement, which we discussed, include:**

- improving the progress made by more able students by ensuring that all lessons provide them with a suitable level of challenge
- increasing the percentage of lessons in which teaching is good or better by further developing the strategies for sharing the best teaching practice in the department.

### **Achievement in mathematics**

Achievement in mathematics is satisfactory.

- Students' attainment on entry is a little below average, reflecting the selective system operating locally. Standards in GCSE mathematics are broadly average, with a very large majority of students gaining grades A\* to E. Students who took GCSEs in 2010 had made satisfactory progress since Year 7 and the two previous cohorts had made good progress.
- During the inspection, students made slower than expected progress in two lessons. In one case, this was because several students were doing the wrong exercise; in the other, the work was too easy. However, it is apparent from other lesson observations and from students' books that learning and progress are usually satisfactory and occasionally good. Where the teaching is good, students respond enthusiastically. In

satisfactory lessons, students are given a passive role and some are slow to engage.

- Students with special educational needs are taught in small groups that allow them to focus on areas of weakness. Good adaptations for students with hearing impairment and those with physical disabilities enable them to access the curriculum. While the most able students enjoy mathematics and develop satisfactory understanding, their skills are sometimes fragile in higher level topics such as algebra and trigonometry.
- Mathematics is a popular choice in the sixth form. However, progress in Year 12 is inadequate and too many students are unsuccessful in their AS mathematics examinations. Consequently, retention to Year 13 is low. For those who complete the full A-level course, attainment is satisfactory.
- Although teachers are trying to encourage sixth-form students to take more responsibility for their own learning, it is clear that this does not work for all. Some well-motivated students revise topics independently and tackle extra exercises to boost their skills and understanding, but too many Year 12 students are failing to hand in assignments.

### **Quality of teaching in mathematics**

The quality of teaching in mathematics is satisfactory.

- The quality of teaching observed during the inspection was variable, being good in three lessons, satisfactory in five and inadequate in two. The teaching seen in sixth-form lessons was satisfactory. However, the school's own lesson observations, which are well-documented, indicate that teaching is normally rather better.
- Assessment was a weakness in five of the 10 lessons observed. Teachers did not monitor sufficiently as students worked, for example to address misconceptions, give feedback or to provide additional challenge. As a result, the pace of learning slowed.
- In the best lessons, teachers plan activities that encourage students to discuss ideas with each other. They set exercises with different starting points to meet the full range of students' needs. Once students are working independently, the teachers assess students informally and modify their lessons accordingly. In the less effective lessons, teachers explain what to do in considerable detail, leaving less to the students' own initiative. All students then tackle the same work, irrespective of need.
- The quality and frequency of marking in exercise books is inconsistent, even among students in the same class. This is partly because some students do not hand in their books for marking. In contrast, tests are set and marked regularly, and the outcomes used to monitor students' progress and to identify where each needs to improve. Extra support is provided for students in danger of underachieving. In addition, all students benefit from teachers' willingness to provide extra help outside lessons.

### **Quality of the curriculum in mathematics**

The quality of the curriculum in mathematics is satisfactory.

- The schemes of work for mathematics form a satisfactory basis for lesson planning, by indicating which topics should be covered and when. They include appropriate links to textbooks and to resources for the electronic whiteboard. However, they do not specify in enough detail what should be taught in the various ability sets. This sometimes leads to inequity. For example, students in one of two top sets in Year 8 are being stretched more than those in the other.
- The department has a clear examination entry policy, in which the majority of students follow the higher level specification. They take final examinations rather than modules, to encourage long-term retention of learning. Further mathematics is available via a sixth-form partnership.
- Support for students who want to improve their work is good. All students have access to a website that contains explanations and practice exercises on every topic they might need. Teachers can monitor each student's website activity, including online homework.
- The Key Stage 4 curriculum is working well for students working at average and below average levels, but is not providing a good enough preparation for those progressing to A level. Some Key Stage 3 topics are repeated unnecessarily in Key Stage 4, and other topics are started too late, such as trigonometry. As a result, some students do not master topics that form the foundation of further study, such as algebra and graphs. This helps to explain the low success rates in Year 12.

### **Effectiveness of leadership and management in mathematics**

Leadership and management in mathematics are satisfactory.

- Under the present leadership, results in GCSE mathematics have represented satisfactory and often good progress compared to students' starting points. There is a good team spirit in the mathematics department. Teachers give willingly of their time to support students.
- The department is active in trying to improve its effectiveness. For example, teachers often share ideas with each other. However, the department does not have a mechanism to agree common approaches to different topics to ensure smooth progression from year to year.
- Senior leaders monitor the mathematics department via 'learning walks' and twice-yearly lesson observations for each teacher. The quality of lesson observation is good and leads to useful feedback to teachers. The head of department undertakes some work scrutiny, but there is still some inconsistency in the marking of exercise books.
- The departmental improvement plan reflects whole-school priorities, but the link to self-evaluation is less clear. For example, the low success rate in AS mathematics is not specifically mentioned. The issue has been partly resolved through better advice and guidance, including a sixth-form taster programme. However, some students with A\* grades at GCSE still struggle with AS mathematics.

## **Areas for improvement, which we discussed, include:**

- increasing the level of challenge for the highest attaining students in Key Stage 4 and improving success rates in Year 12 by:
  - eliminating unnecessary repetition of Key Stage 3 work in Key Stage 4
  - ensuring that prospective A-level students develop a high level of competence in topics like algebra, trigonometry and graph work
  - ensuring that sixth-formers stay up to date with assignments
- improving the guidance to students on how to improve their work by:
  - ensuring that every student's exercise book is taken in and marked regularly, with suitable follow-up for incomplete or incorrect work
  - improving teachers' expertise in assessing students' work in class to match the best practice
- improving the coherence of students' learning by:
  - agreeing consistent teaching approaches to each topic so that learning builds progressively over time
  - specifying the scheme of work for each teaching set.

I hope that these observations are useful as you continue to develop science 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

**Peter Sanderson**  
**Her Majesty's Inspector**