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Making a success of human biology: The Sixth Form College Farnborough

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Brief description

This example explains the re-introduction of A-level human biology while ensuring that students are well aware of course requirements and are properly prepared for a challenging assessment regime. Providing good information about the course, a highly structured programme of study, and plenty of practice in assessment have been key components.

Overview – the college’s message

‘Students often have misconceptions about human biology at A level. They are attracted to the subject because they think that it will be easier than other sciences, and will help them with their main studies in, for example, physical education or social studies. Having ceased to offer the course in 2001, we wanted to re-introduce the subject for students who were particularly interested in this aspect of biology. At the same time, we wanted to make clear the strong medical, health and disease related slant, and the scientific rigour. Because human biology may be the only science that students take, we also needed to make extra sure that they were properly prepared for their exams, and for the demands associated with the assessment.’

Rob Ruxton, Head of Human Biology

The good practice in detail

Students who have taken human biology since its re-introduction have been very successful. In 2010, 120 students took AS human biology and 110 passed the examination, 48 with A or B grades. The same year, 63 students sat A2 human biology and 62 passed. Of these, 36 gained grades at A* to B. Of the 63 students who sat A2 in 2010, 21 went to university to study medically related subjects, and nine to study exercise and sports sciences. Value added was good, and those students whose only science was human biology did well. So how has this been achieved?

Comprehensive information and guidance

The process starts when prospective students attend the college open evenings and begin to think about their subject selections for AS level. The college has researched the degree subjects that students can take with an A level in human biology and displays these prominently in the publicity; this helps to raise awareness about the scientific content of the course. Presentations highlight the scientific demands and rigour of the subject and draw students' attention to the range of topics that is covered.

The [website](#) provides the following information for prospective students: 'Human Biology is an exciting and stimulating course that covers how the human body functions from a cellular level up to the physiology that keeps us functioning as living organisms. It explores the implications of recent scientific developments such as DNA technology and the roles of various health professionals. Practical procedures such as CPR and renal dialysis are covered. Much of the course delivery has a medical context – for example the studying of enzymes is linked to the blood-clotting cascade and the conditions for storing blood products.'



Entry requirements make clear the need for a strong scientific background. Students have at least a grade B in GCSE core and additional science or grade B in separate GCSE biology and grade B in chemistry. English (language) and mathematics at a grade B or above are considered highly desirable. Rob is particularly keen that students' English language grade is good. 'It's very important that students' literacy skills are good,' he says. 'They have to interpret complex ideas and carry out detailed analysis during the course. In the assessments, they have to work out what the examiner requires, and then express their answers clearly and in scientific detail to demonstrate their understanding. It requires a good level of comprehension and written work to answer examination questions well.'

A course that is well designed and taught

The course is carefully planned and scheduled to allow teachers to prepare the students for assessments. Lessons begin with a short review of recent topics, with students presenting their answers on mini-whiteboards. There is a constant drive, by teachers, to get students to provide scientific detail and analysis in their responses.

Rob explains: 'A question might be "What is the effect of high temperature on an enzyme's activity?" It isn't incorrect to say that, "it breaks up the enzyme and denatures it", but it's much stronger if that answer includes more scientific detail, by saying "high temperatures will denature enzymes by breaking the intermolecular bonds in the protein, such as hydrogen bonds and ionic bonds. This distorts the tertiary structure so the substrate molecules no longer fit into the active site and no product can be formed." The more detailed answer shows a much deeper knowledge and understanding of the subject. We find this approach helps students to think analytically and in sufficient scientific depth. It also helps us to check how well



students are doing in a particular topic.'



Students' progress is regularly reviewed and they are encouraged to reflect on their study habits and to learn how to revise. Teachers have high expectations that students will study independently and use a range of different independent study tasks to help students to learn. Consolidation of students' notes and practice with past papers are central to learning and teachers set tasks for students at the end of every lesson. A key change recently has been to provide course notes for each topic on the college [intranet](#), along with past examination questions which are catalogued to enable students to practice questions on specific topics. Resources are stored centrally, willingly shared and frequently discussed. If a student is struggling, teachers are able quickly and easily to direct them to resources that will help them to improve.

A key challenge at A2, particularly for students whose only science subject is human biology, is the extended investigation that students carry out as part of their assessment. The investigation covers both AS and A2 topics and the written reports of the investigation must be analytical, detailed and thorough. Many students have not experienced such a complete or lengthy task in science before, but it counts for 20% of the overall mark in the A2 assessment, so it is important. No drafting is allowed, and Rob is concerned that students may present findings that omit key points or are superficial. To help ensure that students cover the necessary ground, a writing frame has been developed for these investigations; guidance that helps students to organise their thinking and ensure that they write analytically and in sufficient depth and detail. 'It's essential that this assignment is the student's own work,' says Rob, 'so making sure that it is guidance is important. The [frame](#) helps students to focus on each creditable point and gives them generic advice. It provides an overall structure for the report and makes clear the expectations and requirements of the assessment.'



What the students think

Students find the course challenging and enjoyable. 'Teachers explanations are very good, and we get good training in how to identify the "hidden question" in human biology,' they say. Feedback on assignments is similarly well received: 'We get good information on what we've done well and what we need to do to improve, and we know where to find help when we need it.'

Managers are keen to point out that none of this would be possible without enthusiastic staff, good teamwork and excellent teaching. 'In our meetings, we focus mainly on teaching and learning,' says Rob. 'Above all, we expect to develop an ethos of independent, proactive study among our students, to raise their achievement.'

The college's background

The Sixth Form College, Farnborough is one of the top performing sixth form colleges in the country. It serves the needs of full-time students aged 16 to 19 in north-east Hampshire, south Berkshire and west Surrey. In the most recent Ofsted [inspection](#), the college was judged to be outstanding; the most recent [inspection](#) of science and mathematics provision also judged this curriculum area to be outstanding. The college recruits over 3,000 students annually. Of these, 98% study at least one advanced level course. More than 75% of second year students progress to higher education.

Are you thinking of putting these ideas into practice; or already doing something similar that could help other providers; or just interested? We'd welcome your views and ideas. Get in touch [here](#).

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