

Science in context for young people and the links to vocational science for adults.

There has been much work on science in context for schools and young people. The Nuffield Foundation and the Science Education Group at the University of York have developed a number of courses to present science in a meaningful context (e.g. Salters A' levels in Biology, Chemistry and Physics, GCSE 21st century science). The contention has been that presenting science in context is motivating and makes sense to the learner as they can see why what they are learning is useful and how it relates to their everyday experiences. The contexts also provide examples of occupational roles that are available through study of the subject.

In the late 1990s City and Islington College shifted from a traditional approach to A' level physics to a context based approach. There was a fear that the students would become bound to the context in which a topic was taught and would find it difficult to apply general principles to an unfamiliar context. However, experience indicates that the reverse was true and that learning science in a particular context made the application of science to real world contexts explicit and showed that this was not a dry academic exercise. At the time, staff taught both A' levels and general vocational qualifications and found that it was easy to adapt the same ideas for teaching on both courses.

All A' level sciences at City and Islington College are taught using the Salters contextual approach. Over the years the college has used visiting specialists to help teach some aspect of the course. For example material science in physics is taught in the context of medical engineering and has been enriched with the help of academics from the medical engineering department at Queen Mary, University of London. Before this approach no one applied to study medical engineering from the course, since this approach a small but steady number of students have chosen this path. It seems that the context provided an example of a career path that was previously hidden from the students; this approach has been used for a number of other contexts including chemical engineering in A' level chemistry.

General vocational qualifications like the BTEC National Applied Science require the teaching of general principals in a realistic context. It would seem reasonable to deduce that the learners on these courses derive similar benefits to the A' levels in context provided that these are used in a similarly rigorous manner but the teachers of these courses will not have the experience of shifting from a context free style to see a change and so be quite so struck by the advantage of teaching in context. Vocational courses in science should provide a more meaningful science education for the majority of learners who need the application and use of the science to be made explicit. Vocational science courses should also provide examples of possible career paths. However, the principles taught in general vocational science qualifications are mostly generic and can lead to a very wide number of possible career paths. It is important that learners are aware of the breadth of opportunities available through the study of these courses and even courses with very particular vocational titles can lead to a very wide range of possible futures, many of them apparently unrelated to the title of the course (e.g. BTEC forensic science to BSc Biochemistry). It may be that the clear line of sight a vocational course provides to a particular profession attracts learners onto the course but this should not limit their developing visions of the future as many courses provide those scientific skills, knowledge understanding and scientific culture required for a broad range of future paths.

Destinations data from UCAS shows that the general vocational qualification BTEC National Science provides a strong enough general scientific base for acceptance onto a large number of HE science courses as well as the skills and knowledge needed for employment in a range of science jobs. BTEC national were accepted as entry for 18% of entrants for HE science courses in 2011 (see Education in Science, June 2012) showing that the vocational context was not in opposition to acquiring the necessary theoretical understanding for higher study.

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