Using CATALYST magazine to enhance secondary science teaching

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CATALYST: Secondary Science Review is a science magazine aimed mainly at students aged 14-16, studying for GCSE, IGCSE or Standard Grade exams. The magazine has been published now for 19 years and our electronic archive of more than 100 articles as PDFs from the last seven years is freely available at www.sep.org.uk/CATALYST.

Each issue contains four major articles describing some aspect of science, usually linked to current developments and often written by one of the scientists or engineers involved. These articles typically cover physics, chemistry and biology, with the fourth article being cross-disciplinary (like so much of today's scientific research). The centre-spread is usually an inspiring double-page image with an associated explanatory article. There are also shorter articles looking at broader issues in science, as well as science-related careers and ideas for experiments to try at home.

CATALYST is published four times a year by the Gatsby Science Enhancement Programme (SEP). Each new issue is offered free to all SEP Teacher Associates upon request during a limited period before the issue launch. (You can find out how to become an SEP Teacher Associate at www.sep.org.uk.) Academic year subscriptions are also available - bulk subscriptions are often purchased by teachers who wish to use class sets of CATALYST or sell individual copies to students.

Here we outline some of the many different uses teachers have found for what we believe is a very valuable resource. All articles relate to some aspect of the science curriculum, so teachers may wish to select articles relating to a specific topic. However, as you will see from some of the ideas below, students can gain a lot from looking at an issue of the magazine (or indeed the whole archive) from a more general perspective.

www.sep.org.uk/CATALYST

Subscription requests: subscriptions@sep.org.uk

Feedback to the Catalyst editorial team: CATALYST@sep.org.uk

Introductory activities

Select an article from CATALYST for students to study as an introduction to a new topic, thereby establishing a context for their studies.

Students read an article as a starter for an extended investigation, project or case study.

Interpreting an article

Select an article related to a current topic and write a set of comprehension questions to go with it.

Students write a 100-word summary of an article.

Students draw a concept map or other diagram to summarise an article.

Students prepare a 1-minute talk based on an article to present to the class.

Students annotate an article to make it more accessible to younger students or to their parents.

Students look at how data is presented in articles; there are graphs, charts and diagrams. They discuss whether the best method has been chosen and produce alternatives.

Present students with a text-only version of an article and ask them to enhance it with their own visual ideas.

Careers-related activities

Download careers-related articles and pass them on to the careers guidance teacher in your school.

Students find and read articles concerning careers in an area of science which might be of interest to them.

Students choose a careers-related article and list the good and bad points of working in this area.

How scientists work

Students search articles for ideas about aspects of how scientists work, e.g. how scientists communicate their results, how they make their work known to a wider audience.

Students prepare for a visiting scientist by reading articles in which scientists describe their careers and how they work.

Students research the institutional background of the author of an article to learn more about the places where scientists work.

Students debate the value of the scientific research described in an article.

Changing the science department

Keep a stock of past issues or articles in the corner of the lab for students to browse at odd times.

Set up a 'quiet reading' zone in the science department with magazines or individual articles.

Discuss with the school librarian how the library and the department can run shared activities involving CATALYST. Parents might also be involved.

Take out subscriptions to CATALYST magazine for younger (key stage 3) students who have been identified as gifted and talented.

Use the centre-spread photographs and accompanying articles for wall displays in the lab and (better still) in areas where students and visitors wait.

Project an article or an image at the start or end of a lesson to enhance the impression that science is more than just what goes on in the school lab or classroom.

IT-based activities

Build an electronic archive of past articles which students can search.

Set a task in which students search the online or local archive to find articles on a particular topic.

Learning Skills for Post-16 Sciences (LSS)

Although primarily written for a pre-16 audience and used in the original Key Stage 4 Learning Skills for Science programme, CATALYST articles are used to support the development of high-order skills including enquiry and problem-solving skills, thinking skills and learning skills within the Gatsby Learning Skills for Post-16 Sciences programme.

The programme focuses on six 'Skill Areas' of information retrieval, listening and observing, scientific reading, data representation, scientific writing and knowledge presentation. Activities which develop these skills and incorporate a number of Catalyst articles have been mapped to the content of the 2008 GCE science specifications, including Biology, Chemistry, Physics, Applied Science and Science in Society. Visit **www.sep.org.uk/lss.asp** to find out more about the Learning Skills for Science Programme.