



**The Association  
for Science Education**

## **REVITALISING SCIENCE LABORATORIES: Laboratory Design for Teaching and Learning**

### **Summary**

Building new science laboratories or refurbishing old ones can be a nightmare. What results is not always the most suitable for modern science teaching and learning. Teachers are not always involved in the development of the design and have to make do with whatever they are presented with. The **Laboratory Design for Teaching and Learning software** aims to address this issue. As an easy to use Laboratory Design tool for schools & Colleges, it will be launched at the **ASE Annual Meeting at Reading University which takes place from Thursday 8<sup>th</sup> to Saturday 10 January 2004.**

The software will enable both 2D and 3D images of science laboratories and prep rooms to be created by teachers and technicians. It will be a communications tool that allows the sharing of ideas between science departments, architects and designers.

The software also includes case studies and vignettes, and all the current national guidance on building and fitting out laboratories and prep rooms will be made available through a website and CD.

The software for this project has been developed by 3T Productions, managed by The Association for Science Education and funded by Planet Science and the Royal Society

### **The project**

Good laboratory design in schools involves the science department from the outset and ensures that **teaching and learning is central to the design process**. The practical experience of science teachers and technicians can also help avoid costly mistakes in both design and fitting out.

**Communication** between architects, designers and manufacturers, on the one hand, and science teachers and technicians, on the other, is essential for developing science provision for the highest standards of teaching and learning. This project aims to facilitate that communication by making all the national guidance available in one place and providing software that all can use and understand.

The software developed especially for this project provides an easy-to-use design tool that teachers and technicians can use to explore their ideas. It enables the

traditional 2D design to be easily drawn out with a range of over 80 items of laboratory furniture and equipment available on drop-down menus. Not everyone can visualise what a 2D plan will look like so one click of the mouse then renders the design in 3-D. An aerial view gives a good overall view of the design and the full 3D view can be rotated and manipulated at will to enable a 'walk-through' of the design.

Once the design has been created, it can be populated with pupils and teachers to show clearly what the design will look like in use. Those who plan and use laboratories and prep rooms will know that the distances between benches and other furniture are crucial to circulation, health and safety and even to the discipline of the class. This software therefore takes the guidance on such distances and creates an 'aura' around each object so that the distances can be easily checked.

The design tool can be used to **create designs for new laboratories or the refurbishment of existing laboratories**. Different designs of pupil bench are available, from the normal rectangles and squares to octagons, circles and even teardrops. A range of objects are included to enable prep rooms and chemical stores to be designed as well, for example: dishwasher, fridge, freezer, still. Also included are health and safety 'objects' to ensure that this aspect is not overlooked at the design stage.

It is also possible to draw up plans of existing laboratories and then use these to plan **alternative teaching and learning arrangements** for the furniture and see what the results will be like without having to physically heave all the furniture around. It may be that examples of arrangements could be used for INSET for teachers. Pupils could also use the software to make their own input into what designs they feel work for their own learning.

The guidance for designing, building and fitting out science laboratories and prep rooms comes from three main sources; the DfES, CLEAPSS and the ASE. These institutions have worked together to enable all their guidance to be made available through this project.

### **Accessing the project software:**

Copies of the CD with the full application will be sent, free of charge to every secondary school in February 2004 and every secondary member of the ASE with the March issue of School Science Review. This has been possible with funding from The Royal Society. Some 2000 preview copies will also be made available at the ASE Annual Meeting in Reading and the BETT Conference in London in January.

#### **The full application can be downloaded from the ASE website:**

[www.ase.org.uk/ldtl/](http://www.ase.org.uk/ldtl/). This will become "live" to teachers on 8<sup>th</sup> January on the ASE site, but reviewers can access the software from this URL now (from 20<sup>th</sup> December) for review purposes. However, this is a large file and only a broadband connection will be able to download it in a reasonable length of time.

In case of difficulty, a CD version of the software can be obtained from ASE or by contacting John Lawrence, Project Manager, after the 5<sup>th</sup> January on [info@ase.org.uk](mailto:info@ase.org.uk)

While stocks last, copies of the CD can be obtained from ASE Booksales on-line (see below); a handling charge of £5 applies. Personal orders can be paid for by credit

card. School orders may need to provide an official order number. To order from outside the UK, please contact ASE Booksales in advance.

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**Contact details:**

**The Association for Science Education (ASE) [www.ase.org.uk](http://www.ase.org.uk)**

The Association for Science Education is the largest subject association in the UK for teachers, technicians and others interested in science education. Working closely with the science professional bodies, industry and business, ASE provides, a UK-wide network bringing together individuals and organizations to share good ideas, tackle challenges in science teaching, develop resources and foster high quality continuing professional development.

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**Planet Science [www.planet-science.com](http://www.planet-science.com)**

Planet Science was the extension of Science Year, the Government's initiative to increase young people's interest and engagement in science, which ran from September 2001 to August 2002. The project finished on the 31<sup>st</sup> July 2003.

The Planet Science legacy programme is delivered by NESTA (National Endowment for Science, Technology and the Arts) on behalf of the Department for Education and Skills. For more information on NESTA go to [www.nesta.org.uk](http://www.nesta.org.uk)

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**The Royal Society [www.royalsoc.ac.uk](http://www.royalsoc.ac.uk)**

The Royal Society is the world's oldest scientific academy, having been at the forefront of enquiry and discovery since its foundation in 1660. The backbone of the Society is its Fellowship of the most eminent scientists of the day elected by peer review and entitled to use FRS after their name. Throughout its history, the Society

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- promote scholarship and encourage research into the history of science

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**School Building and Design Unit, Department for Education and Skills (DfES)**  
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Schools Building and Design Unit (SBDU) in the Department for Education and Skills is a multi-disciplinary group of building professionals (architects, engineers, quantity surveyors and a furniture designer) who provide advice on the design, use and management of school buildings. SBDU regularly publishes design guidance, details of which can be found together with other information on school building design on its website: [www.teachernet.gov.uk/schoolbuildings](http://www.teachernet.gov.uk/schoolbuildings).

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