

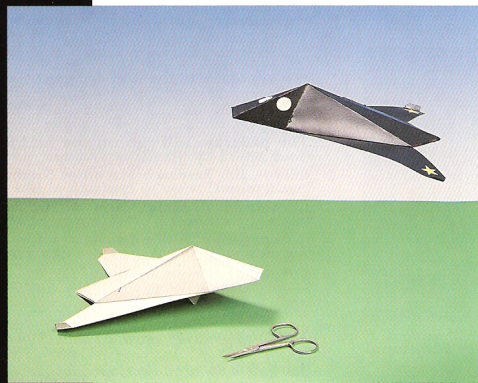
OPEN LEARNING

Three-Dee World Builder

A COMPUTER-PRODUCED 3D TEACHING AID

THE BACKGROUND

The problem of successfully illustrating on a sheet of paper or a blackboard items which are intrinsically three-dimensional is not a new one. There are many topics in the school syllabus which defy successful two-dimensional illustration and most of a child's creative efforts are also channelled towards two-dimensional expression. Similarly, two-dimensional information such as maps, graphs and pictures are used to explain and define elements of our three-dimensional world. That



leap from two-dimensional to three-dimensional expression is mastered comparatively late, if at all. There is a marked shortage of school-leavers in Britain who want careers in engineering and product design - careers which use 3-D visualisation skills. Evidently, there is a need to de-mystify three-dimensional techniques.

THE SOLUTION

Funding from the Employment Department has allowed the development of THREE-DEE WORLD BUILDER, a high quality computer package which can be used to illustrate the 3-D items and concepts encountered in the many subjects across the curriculum involving three-dimensional expression, such as maths, science and geography. Designs for the making of appropriate models are provided.



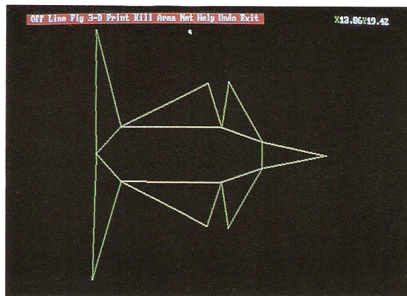
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LEARNING METHODS CASE STUDY

There is also provision for students to experiment with original designs of their own, creating anything from the simplest three-dimensional constructs to sophisticated scale models, using raw materials which are cheap, versatile and safe to work with unsupervised.



THE FORMAT

The format had to be suitable for schoolchildren. Although there are existing sophisticated industrial Computer Aided Design (CAD) packages, which are available in some secondary schools, they are difficult to master and require extensive training, even for experienced adults. Their use in schools is, understandably, infrequent. A further problem is that making something designed on these systems requires considerable additional resources, for instance machine tools.

THREE-DEE WORLD BUILDER addresses these problems, in that it:

- is capable of being mastered to a productive level in just a few minutes;
- facilitates the physical production of any model designed, with the ability to 'unfold' 3-D designs and print them onto paper or card using a standard graph plotter or dot matrix printer;
- provides hundreds of sample models illustrating useful topics;
- works on the types of computer most widely used in schools, homes, industry and commerce;
- is affordable by the intended users.

The program will run on the Archimedes micros, the Research Machines Nimbus-186, Commodore Amiga and IBM pcs and Compatibles. A Windows-3 version of the program will also be available.

A 120-page user manual and 300-model database have been developed for use with the program. The manual contains two self-teach lessons, predominantly for teachers, and classroom exercises covering specified aspects of biology, chemistry, design and technology, geography, history and mathematics.

THE BENEFITS

The package has been piloted by teachers and teacher training students, who used it in workshops; and by schools and City Technology Colleges used as test sites. Feedback has been highly favourable.

For schools

The program will develop pupils' ability to visualise three-dimensionally, improve 3-D geometry, trigonometry and scientific subjects which require 3-D illustration, and give hands-on experience of a CAD package similar to those used in industry. In addition, pupils will get to grips with creative problem-solving and, with increased motivation, work more successfully in classroom groups.

For pupils

A version aimed specifically at home users comes with a database of open "fun-to-make" models as appetisers. Students (or their parents) are encouraged to buy the full educational database and manual as an additional option.

For colleges

Substantial interest has been shown in using the package at tertiary education level in the context of engineering training, and by the Open University.

For industry

The ultimate objective of the package is to encourage a higher proportion of young people into careers in three-dimensional work (product design, structural and mechanical engineering and architecture, for example). The general opinion from pre-release test sites is that the program will succeed in this major aim.

