THE COMPUTER AS A CONTROL DEVICE

An increasing number of children throughout Australia are at present able to experience "real world" computing by doing sustained work with such major applications as word processing, databases, spreadsheets, and graphics. Fewer, but also growing, are applications using communications. These experiences are a substantial advance on the older courses which relied heavily on teaching BASIC and Logo as the route to computer literacy. Considering that this has occurred in only a few years, it is a remarkable achievement.

There is another area of computing, however, which promises not only another important avenue to computer literacy but, like many of the above applications, also offers impressive returns for the general intellectual development of children. This area is the computer as a control device, hitherto generally only available to children in schools able to afford a turtle robot, or who have teachers able to build their own interfacing devices. This may be about to change.

The Lego company will shortly release additions to their Technic range of products which will allow children access to new "microworlds" in which they can design, build, and control (via a computer) such projects as ferris wheels (which can keep track of the number of passengers and the number of rotations and stop appropriately), washing machines, automatic doors, elevators, conveyor belts and assembly lines, traffic lights, and robots with varying degrees of freedom and equipped with an electronic eye.

The philosophy of this material is firmly grounded in the ideas of Seymour Papert, and it has been developed in close liaison with the M.I.T. group. It can be expected to be readily received by teachers already enthusiastic about teaching with turtles, but it may well find acceptance with "non-Logo" teachers, as the command language is straightforward, and the applications go well beyond mathematics lessons.

The kits are designed to provide high levels of motivation with 'concrete' materials which encourage children to pursue the modelling task until it succeeds. As the measure of success is that it 'works', teacher commendation becomes an afterthought. The tasks lend themselves to group activities (beware, noisy!) and the Lego consultants claim that the level of motivation leads to high levels of involvement and ownership of the models. This in turn generates reading and related research activities which can be exploited to stimulate expressive and communication work as well as investigation activities. The computer-driven materials are designed for upper primary and junior secondary, but the system is flexible enough for appropriate adaptations to be made for both younger and older age groups.

Initially it will be available for use with the BBC computer, but it is planned to have interfaces available for at least Apple and Microbee as well. The response from teachers who have seen the kits is considerable, and it may well be that shortly NC, CAD, CAM, AI will become as common as ROM, RAM, WP, and DB.

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