In control: Young children learning with computers.

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INTRODUCTION
Any review of suitable computer activities for young children is fraught with difficulty because of the bewildering array of titles that are available. But, in fact, this is why the early childhood educator needs a book such as this one which focused on examples that have been tried by others and thus can confidently purchased, with the hope of maximum benefit for learning opportunities for young children. What makes this book more attractive is the ways in which the authors have used the case study method to inform the reader of the specific titles that are discussed and the ways in which they have been implemented in a given context. This will be appealing and informative to many practitioners.

OVERVIEW
The book begins with the authors explaining the format to their readers and this proves to be a particularly useful framework. The book has been divided into five sections each of which contains case studies and focus points. The topics are:

- a framework for planning;
- exploring diversity;
- exploring the technology;
- moving into the classroom — classroom management and organisation and;
- using software to promote learning.

Finally the appendices provide some practical information about various examples of software and advice on organisations that may be of assistance to the teacher who wants to incorporate technology into their learning environments.

COMMENT
In the opening section, a framework for planning, three case studies are reported in brief and then commented upon and referred to in the context of different aspects of using technology with young children. The style of writing is easy to read and should be valuable to both undergraduate students and practising early childhood educators. It was refreshing to read authors who put their descriptions of learning before launching into descriptions of software. Additionally, this section considered the introduction of computers in the context of broader educational and pedagogical issues as well as exploring the links between home and school learning.

I particularly liked the ways in which the authors presented their new perspective of distinguishing between types of software in section five. They did this by considering them in relation to the areas of:

- images
- sounds
- text
- stories and ideas
- facts and figures
- consequences.

This was then supplemented with descriptions on the ways in which each category was relevant to early childhood learning environments. Additionally, examples of specific titles were provided in an appendix (c) for each area that was delineated. On reflection it would have been useful to have this section 'up front' to provide a framework for the case studies.

One area that is requiring increasing attention is that of the ways in which computer applications can assist teachers with children who do not have English as their first language. This was discussed in the second section of the book, together with considering how technology can assist in the teaching and learning of children with specific learning needs. With reference to the first of the groups, the authors state, one in four of all children in Australian schools speak English as their second language and in urban areas the statistics may be even higher. The case studies of teachers (Carmel; 1.3) and children, Sam (2.1) suggest ways in which teachers can successfully organise learning environments that use technology to enhance the learning opportunities while the focus on the child explicitly details ways in which this has been achieved. The implications for teachers are made clear, for all children. They are that we should provide:

- a supporting learning environment
- opportunities to use language for meaningful learning
- opportunities for meaningful interaction between peers
- opportunities for children to be problem-solvers rather than receivers of information
- a range of different models of language
- time for frequent interactions between teachers and individual children.

In their discussion of the role of technology with children who have learning difficulties, the authors note that computer based learning experiences often have the ability to hold the attention of normally distractive children (p. 57). This is further noted in their case studies of Martin (2.1) and Laura (1.1). The authors suggest that children with learning difficulties often participate in activities in which the control is external to them. They recommend that "open-ended" software would allow such children to change this loci of control and that this would be beneficial to their learning. At this stage some specific examples would have reinforced this argument considerably before turning to children with physical disabilities.

The use of technology with children who have physical disabilities has long proved to be particularly supportive for their learning. This section succinctly summarises some peripheral devices that minimise the use of the computer keyboard for those who have restricted use of fine motor skills. The case study of Mark (2.2) provided a useful reference...
of how technology impacted on the learning process.

Section four should be valuable to those who need advice about how to organise and maintain a learning environment that contains computers. It is important to consider the different contexts of pre-school and school based learning and to recognise the different arrangements that are possible, as far as the simple task of location is concerned. Again, the case studies provide examples of successful practice, that will assist those early childhood educators who have just purchased machines and are wondering what to do with them! One of the most valuable parts of this section pertains to a consideration of assessing children’s learning. The section looks at why we need to assess what learning is occurring with the computer and appropriate methods of assessment. For teachers who are used to these categories, the emphasis on computer examples should prove to be valuable. For example, suggestions are given for observable behaviours that could be recorded on a checklist. These could also be extended with reference to particular software examples.

**RECOMMENDATION**

The content of the book is broad enough to have appeal for practitioners and undergraduate students. Many of the topics would benefit from the further readings that the authors suggest and the Appendices provide information that will direct users of technology to places that should assist them. 

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**Software Review**

**Stream Scan**

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**INTRODUCTION**

*Stream Scan* is a computer-aided learning package which has been designed to introduce students to the ecology of freshwater streams. Although the audience age is not specified, it is assumed, from the material contained in the package and the approach adopted, that this package would be aimed at Year 11 or later biology students. The package can be used on stand-alone or networked machines and the site licence ‘gives the purchaser the right to make as many copies of the StreamScan software, Student Workbook and Instructor’s Guide as are required WITHIN an INDIVIDUAL CAMPUS of a school or institution’ (Instructor’s Guide, p. 6, sic).

**Positive features**

As a person who is interested in the pedagogical procedures of a curriculum package as well as the content of that package, I find that there are many features of this package which I find highly commendable.

*This is definitely a learning package in the constructionist sense of learning even though the authors only claim a Piagetian transfer of ‘concrete’ to ‘abstract’ in their provision of materials. While there is an ample supply of information for students, the package focuses on encouraging students to use that information in the generation of their own knowledge. This is achieved in many ways. Firstly, the package consists of 8 modules which progress from introductory modules in which students are able to rely heavily upon the package for direction and information to the final two modules in which they must take responsibility for their own involvement and learning. Secondly, in all modules there appears to be a range of questions which emphasise student thought rather than the regurgitation of information. Thirdly, students are encouraged to see beyond the immediacy of learning only for classroom examinations through the emphasis of the package on activities which have relevance not only for themselves, but also for their society. This relevance for everyday living and the attraction of limnology as a possible future career are enhanced through the reference to and use of current Australian scientists and the papers they have published. Librarians are directed towards these references along with other relevant resources. Fourthly, there is an emphasis on scientific communication which encourages students to be responsible for their own learning.*

The package is designed to be ‘teacher-friendly’. That is, even though the authors claim that it could be undertaken as an independent study. I believe that it would best be implemented and controlled by a competent teacher. Such a teacher would readily be able to capitalise upon the aspects of the package which allow for individual activities, such as classifying organisms and deriving stream quality and diversity indices but also ensure that major class activities such as a directed...
field study (module 3), and a self-designed experiment in a fresh water environment (module 7), could be coordinated to fit the constraints of the school. At the same time, beginning teachers who are unfamiliar with local areas, will find that this package gives a great deal of information which will readily give them confidence in their approach to field work.

The package is unashamedly a scientific study. There are no apologies for the usage of scientific terminology and through the use of hypertext capabilities, features such as a glossary and detailed information on organisms are readily available. Simple indices, such as a Stream Quality Index and a Diversity Index allow students to quantify their studies and a recommendation to standardise procedures with other schools, while expressed in fairly general terms, does allow for findings to be published, a procedure which is strongly advocated by the authors. There is a strong implied expectation that students who complete this package will be able to communicate scientifically in a meaningful fashion. For example, it takes the emotive arguments out of a topic such as pollution and replaces them with the catalogued presence of indicator species and abiotic measurements. This emphasis is highly significant because many students seem to regard Biology as no more than a minor extension of everyday language. This package shows that Biology is a discipline in its own right and should be treated accordingly.

The biological content of the package is clear and well presented. While the authors have restricted themselves in the number of organisms which they have dealt with, I am confident that most of the organisms most commonly found by students in their field studies would be able to be identified. Certainly, if used in conjunction with Williams (1980) Australian Freshwater Life, as suggested by the authors, there should be little difficulty in using this package in the eastern States of Australia. (I cannot comment about southern or western States as I have no knowledge of stream studies in those areas.)

The package is user-friendly. It is easy to load and use, operating on a consistent set of rules which are self-evident in a set of buttons on the bottom of each screen.

The graphics, when using an appropriate monitor, are clear and in most cases informative.

**Negative features**

At the same time, there are some aspects of the package about which I do have some reservations.

The motivation for students to undertake the activities in this package appears to draw heavily on the authors’ inference that all students want to study Biology at this level. As a person who has undertaken a great deal of field work, I can readily identify with the excitement that the authors derive from their own field studies but I believe that the lack of a compromise position for those students who take biology as their sixth subject or because it is the best of the worst subjects offered by the school, may alienate them even further from studying the discipline of biology. Ironically, it is one of the strengths of the package from a biologists point of view which may make it unattractive to some students. It is evident that this is a position which the authors have adopted and users need to be aware of it before choosing the package. This also reinforces my claim that teachers need to be involved with the implementation of this package and not abrogate all control of the biology program to the package.

There is very little use made of the dynamic power of the computer. Other than a model of predation, maps of organisms found in specific habitats and a wriggling worm, the package presents little information which could not be presented in a written text. Of course, the cost of a site licence is far below the cost of an equivalent class set of texts but most use of the computer capabilities appear to be restricted to the fairly mundane supply of information in text form and its immediate recall or explanation using the glossary, stream maps or information sheets. At the same time, the absence of computer gimmicks and over-elaborate contorted images is certainly worthy of praise.

There are no built in testing facilities for students. This is acknowledged by the authors and I accept their position about the reports and teacher observations being sufficient for assessment purposes. However, the package does introduce students to a wide range of new terminology and some form of formative testing would, I believe, enhance students’ usage of this terminology in their other communications.

The authors have recommended that students work in groups. I accept that this appears to encourage group co-operation, but realistically, I have found from experience that unless some system is invoked whereby all students are required to take their turn in recording of data and writing up a report, that some will successfully find ways of avoiding practising scientific communication. Perhaps this is one area in which teachers could be encouraged to make sure that all students participate.

Field safety is not stressed. This environment is potentially hazardous with slippery surfaces and some dangerous organisms. Safe practices should be included. Some are implied in the instructions with regard to conservation and mention is made of appropriate clothing for field studies, but these references do not serve to emphasise the need for care and responsible behaviour.

There is no reference to night studies of this environment. I accept that evening field studies pose logistic problems for schools, but from a biological point of view, the focus on daytime ecology only gives half of the picture, especially where food webs are constructed.

There are some minor problems of overlying of text when different coloured text is used and the age of some of the children used in some of the illustrations appears to be incongruous with the age of students who will be using the package. These, however, are minor irritations and do not detract significantly from the quality of the package.

**CONCLUSION**

Overall, my impression of Stream Scan is that for the serious biology teacher the positives far outweigh the negatives with respect to this learning package. Provided teachers accept that the package is not designed to replace them and that their role in implementing the package is highly significant for the package’s success in promoting learning in a meaningful manner in the context of modern society, then I have no hesitation in recommending its use as an introduction to ecology suitable for upper secondary students.