

Document extract

Title of chapter/article	Cactus: Teaching Strategies
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Copyright owner	The Australian Association of Mathematics Teachers (AAMT) Inc.
Published in	The Australian Mathematics Teacher vol. 54 no. 3
Year of publication	1998
Page range	22–23
ISBN/ISSN	0045-0685

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AAMT—supporting and enhancing the work of teachers

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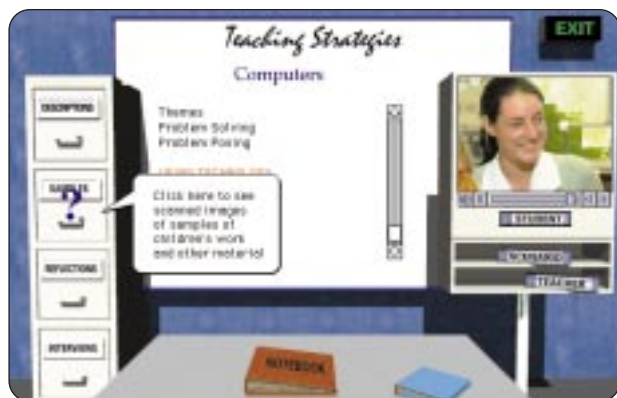


Calculator And Computer Technology User Service

with guest writer Maria Northcote m.northcote@cowan.edu.au and edited by Hartley Hyde hhyde@terra.net.au

Teaching strategies

Investigating teaching strategies in mathematics classrooms by Tony Herrington, Len Sparrow, Jan Herrington and Ron Oliver is a CD-ROM product designed for both experienced and inexperienced primary and secondary mathematics teachers. It is a significant contribution to the professional development of mathematics teachers. We have chosen illustrations from the computing section. The companion publication *Investigating assessment strategies in mathematics classrooms* was reviewed enthusiastically by Bob Dengate in our March edition. Our guest writer, Maria Northcote, an experienced classroom teacher who has returned to university studies, reviews this product:



Composite view showing aspects of the Classroom Metaphor

In the beginning there were numbers and once relationships were found between them, the field of mathematics began to emerge. With the birth of mathematics, came the problem of how to teach it.

Since the days of Pythagoras, educators have been searching for better ways to teach mathematics. How can we make it more interesting, easier to understand and more relevant? How can students' skills be improved and how can the latest technology be used most effectively?

Some of the most successful mathematics teachers have been those who struggled with mathematics during their own school days. By overcoming their own difficulties, teachers often seem to get through to students. Like these skilled teachers, this CD-ROM recognises the importance of the way mathematics is taught.

Curriculum documents are usually formulated according to content and learning outcomes. *Investigating teaching strategies in mathematics classrooms* shifts the emphasis back to the importance of teaching strategies. Hooray for a mathematics teaching resource that promotes method above content!

This product has the potential to improve and diversify teacher education. Teachers are given the opportunity to observe real primary and secondary mathematics teachers who are effectively teaching real mathematics in real classrooms. Authentic examples of twenty-eight teaching strategies collected across eleven schools are demonstrated, without the usual constraints of timetabling, cost and venue selection. This innovative approach fosters an interest in the subject, retention of knowledge and integration of mathematics into real life. It gives busy teachers a pot of ideas to dip into at the beginning, middle or end of a teaching term.

Plenty of opportunities are given for collaboration to occur amongst teaching staff, making it ideal for use in professional development situations. Teachers work together to investigate real problems related to teaching mathematics across schools and within classrooms.

The versatility of the product is impressive as it caters for a variety of audiences. Single teachers can take advantage of a self-paced learning style while groups can use the product as a focus of teacher education.

The CD-ROM's portability makes it ideal for use in remote schools. Across a school, it could unify the staff's approach to mathematics teaching while challenging experienced teachers to review, update and diversify their current teaching practices.

A combination of sound, video, text and graphic examples gives the program a realistic atmosphere which echoes the setting of a modern school. The video clips and text examples used in the program were carefully selected according to relevance and quality. The recorded voices are clear and the sound effects are quirky without being intrusive.

The simplicity of the main screen is a clever feature and makes it easy to select and find information. While not as eye-catching as some 'edutainment' products, the design is functional and clear. The icons and graphics are based on familiar objects and simulate a teaching and learning environment. The screen metaphor represents a typical classroom with the central whiteboard providing a choice of teaching strategies to explore.

Beyond the home screen, information and examples are contained in a filing cabinet and video player. Different video clips of students, teachers and classrooms are shown for each teaching strategy. More detailed textual information is provided in four filing cabinet drawers labelled Descriptions, Samples, Reflections and Interviews.

Two binder files are available for selection on a table within the main menu. The help tool is represented

by one file. Once selected, the cursor changes to a familiar question mark which provides specific help information on each feature. In the second file teachers are given the chance to make their own notes or collect information from the examples provided by using the notebook facility. Extra, real life activities are provided behind the Problem Solving and Investigations tabs.

As a teaching tool of the 1990s, political correctness and internationalisation of the product have not been ignored. Although incidental to its content, a variety of ages, genders and cultures are present within this resource.

A teacher using this product would not need a high level of computer literacy. The main screen is intuitive, in that it provides clear choices for even the novice user. Although moving around the program is straightforward, the user is given a high degree of control over pace and sequencing. Conveniently, the level of user forgiveness is high as serious consequences do not follow incorrect choices. Pathways between screens are direct and reversible and screen layouts are consistent. These elements make it difficult to get lost, as the main screen is always just one or two mouse clicks away.

Trigonometric equations

Use the computer to find solutions to the trigonometric equation:

$$2 \sin (\theta / 2) = \cos \theta$$

for $0^{\circ} \leq \theta \leq 360^{\circ}$

An example of a not so simple learning task

Although feedback to the user is not a strong feature of this product, this does not restrict its success. Performance monitoring is not a feature of the electronic version but ideas within the manual are offered for peer assessment.

Extended learner support tools are not provided in this software and the opportunity was missed to include some form of support whereby links are made to curriculum documents, student outcome statements or internet sites. Similarly, critics will note the absence of a glossary to clarify the terms relating to each teaching strategy which would be helpful for less experienced teachers.

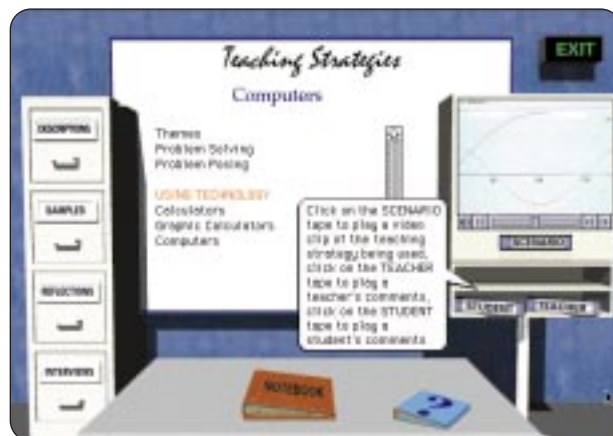


An interview with Charles Lovitt

What advice would you give to teachers using computers in a classroom?

If there is any lesson a teacher is trying to make, or communicate, for the students all the available resources that will facilitate learning, and the computer is obviously one of those. And in deciding when and how to use the computer you've got to really go through a mental checklist of "will this computer or this particular bit of software make the learning for these kids effective, more enjoyable, more interesting?" If the answer is yes then go ahead and use it, if the answer is no then don't use it. It's not always applicable but we have to slowly but surely acquire a set of criteria that helps us to recognize when to use it and when not to. There are more illustrations of it being used wonderfully, and there are some illustrations of it being used poorly used. We have to learn to discriminate.

This is a sample of a page which has been contributed by an expert in the field. These pages can be copied to your hard disk as html files.



This composite shows a portion of a video clip in which students discuss and perform the learning task described above. There is a close-up of the students typing, the curves being drawn and the intersection points being identified. There are 84 video clips which take up 607 MB of the 617 MB CD.

However, in terms of cost, availability and easy installation, this product is very user-friendly. The publishing medium chosen (CD-ROM plus manual) makes it widely accessible. It can be installed in a matter of seconds on a choice of Mac (12 MB RAM) or PC (16 MB RAM) platforms but is not suitable for Windows 3.1. It is an affordable resource for schools and is good value for teachers looking to expand their own professional library.

The product's main weakness lies in its lack of customised information. In future versions, it would be helpful if some form of branching system was offered to cater for different levels of teacher experience and interest. The option of viewing an introductory section would be helpful for new users. However, this information is provided within the printed manual which is well set out and indexed.

The product's overall strength is that it adopts a style which is based on sound learning principles. The strategies promoted within the resource are apparent in the product. Discussion, observation, collaboration and modelling encourage the transfer of knowledge and skills to the classroom.

In summary, this product has more than earned its praise within the educational arena. Its success so far seems to be linked to its ability to provide practical advice to teachers within a short period of time.

Its authenticity and the fact that it reflects contemporary educational research makes it a credible teaching resource. Even if we are only reminded of the importance of using a variety of strategies to teach mathematics, it has fulfilled a purpose. Mathematics teachers from all backgrounds would find it well worthwhile and, unlike the regular classroom, there is always a quick way out! A simple click on the suitably located exit, sign at the top right hand corner of the main menu will bring the user back from the virtual school created within this CD-ROM.

Investigating teaching strategies in mathematics classrooms is available for \$40 from AAMT. Highly recommended for any school or university education department.

