

Cite as: Jones, K. (2002), Book review: Teaching Mathematics with ICT, written by Adrian Oldknow and Ron Taylor, *MicroMath*, 18(1), 40-41.

# Micro Math

# Reviews

## Teaching Mathematics with ICT

Reviewer: **Keith Jones**

Teaching Mathematics with ICT  
*Adrian Oldknow and Ron Taylor*

Published by  
Continuum Publishing

Price £18.99  
(published 2000, paperback ISBN  
0-8264-4806-2)

Open this book just about anywhere and you could easily find yourself getting drawn into doing some mathematics. That is one of the strengths of this book. Its focus is on the mathematics. The technologies used and explained are tools in the service of mathematics rather than the mathematics being used solely as a vehicle for learning technological skills. The book is primarily aimed at teachers of mathematics in the secondary age-range, although teachers working outside this age-range should find plenty of food for thought.

As might be anticipated, given that the book is written by two knowledgeable authors, it covers a good range of technologies (computers, graphing calculators, interactive white boards, the internet). Yet it is their passion for mathematics that stands out. Almost half of the book is devoted to a series of mathematical tasks, each one tackled with carefully-chosen technology, structured to illustrate how technology can serve teaching across and beyond the mathematics curriculum. As well as reasonably familiar approaches, such as using a spreadsheet to explore number sequences, tasks include using logo to create a numberline *microworld* and using

dynamic geometry software to do algebraic modelling and explore iterative processes. There are also numerous examples of applications of mathematics, including cross-curricular possibilities such as the mechanics of the steering mechanism for cars.

Being drawn into tackling some of these mathematical tasks, and trying the approaches suggested, is part of the process of knowing how to turn these ideas into lessons. One thing the book does not attempt to provide is “off-the-shelf” lessons. This is a book that demands attention over a period of time and can be safely returned to time after time to inspire and intrigue. In supporting the development of lessons, another major chapter of the book contains a range of detailed descriptions of a variety of actual mathematics lessons, each of which uses technology to support the teaching and learning of mathematics. In some cases, these come complete with lesson plans, in others there are accompanying comments from the teacher and often from pupils.

In terms of practicalities, the book comes complete with CD-ROM which provides trial versions of some of the software applications utilised in the book (such as the algebra software *Derive* and the dynamic geometry software *Cabri*). There is also support material on the CD for graphing calculators and add-ons such as data-loggers. Usefully, a range of additional materials, including versions of all the program files referred to in the book, is available

on a website provided by Texas Instruments, see:  
<http://education.ti.com>

An engaging feature of the book is the writing style. This is a journey and the writers are right beside you. For example, chapter 1, which delves into what resources are (and soon will be) available, reassuringly begins “this chapter is for you to work on privately” (which is very helpful if you feel you ought to know about every variety of hardware but find it difficult to keep up with developments) while the chapter on planning lessons ends with the authors saying “good luck” as if they mean it (and would be interested in hearing how you get on).

It is quite a feat to write a book like this. Technology changes rapidly, and any reference to Government documents quickly dates too, as one initiative follows another. I think I would have preferred a little less use of lists of bullet points extracted from various UK Government publications. It is understandable that UK teachers will look for mentions of the National Curriculum, yet if they look for the Key Stage 3 Framework they will find nothing (presumably the book was already in press). As the mathematics covered in the book mostly transcends particular policy implementations, maybe some of the references to Government documents would be best left to an appendix (which could be updated on a dedicated website). Similarly, the use of extracts from the TTA “ICT needs identification”, in its

tendency to promote a tick-box approach to ICT skills, is hardly an inspiring document and, as such, tends, for me, to undermine the main aspirations of the book.

A relatively minor role in the book is given to research on the use of ICT in teaching mathematics. At times, it can seem like the authors are saying no more than “and here’s something else you could do” without any substantiated evidence that this is any more useful than a different approach (and perhaps using a different technology, such as pencil and paper). The book does make passing reference to the enormous

amount of research that has been published, and it includes a useful bibliography, yet, in this age of evidence-informed practice, the evidence for the approaches advocated in the book is rather underplayed. Also a little underplayed are the educational complexities illuminated by rapidly changing technology, such as questions about the nature of mathematics, and what mathematics can be taught. The introduction to the book does refer to some of these complex questions, and returns to them in the final chapter, yet they remain relatively hidden. While, as the authors indicate, “most teachers do

not have a great deal of control over the curriculum they teach”, a little more could have been done to stimulate some creative thinking and a greater sense of ownership.

This is a book that should certainly appeal to mathematics teachers. It is not an easy book with instant answers but a book that will reward working with over time.

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**Keith Jones** works at the Centre for Research in Mathematics Education at the University of Southampton, UK, see: <http://www.crme.soton.ac.uk>

Changes in the teaching/learning technology to enhance teaching of mathematics, what other obstacles based tools for learning can | Sustainable student retention: gender issues in maths for ICT - Improve the student recruitment, retention and advancement in ICT study by means Problem with Special Attention to e-Learning, Zane L. Berge, Yi-Ping Huang | PowerPoint PPT presentation | free to view. Description: Mathematics Ice Breaker game. Copyright: © All Rights Reserved. the online math games on Sporcle are actually fun! Test your arithmetic with the addition quiz or division quiz find quizzes from the order of operations to prime numbers. eHow <http://www.ehow.com> [http://www.ehow.com/list\\_6559009\\_math-icebreaker-games.htm](http://www.ehow.com/list_6559009_math-icebreaker-games.htm). Math icebreakers can. show students that math can be fun and relevant to their lives. About.com <http://712educators.about.com> <http://712educators.about.com/cs/icebreakers/a/icebreakers.htm>. Although ice breakers can seem. frivolous, they are an important first step to getting student buy- in. Using technology to teach maths can be beneficial to both students and teachers, but only if used correctly. The benefits of technology in education can only be harvested and unlocked in the classroom if teachers are trained with ICT teaching strategies that will impact student learning. The Importance of ICT in Maths. One of the first ICT tools for mathematics that comes to mind is the spreadsheet. Teaching with and about spreadsheets you in the following activities: Selecting appropriate opportunities “ this means finding activities in the learning area where spreadsheets can enhance, facilitate or extend children’s learning. An example of an opportunity could be exploring number patterns. Teacher preparation programmes for teaching mathematics in the Senior High School. The SHS mathematics curriculum in Ghana focuses on attaining one crucial goal: to enable all Ghanaian young persons to acquire the mathematical skills, insights, attitudes and values that they will need to be successful in their chosen careers and daily lives (MOESS 2007). Becta (2003) reiterated that teachers can maximize the impact of ICT in maths teaching by using ICT as a tool in working towards learning objectives. For mathematics educators, defining the most effective uses of ICT in the teaching of mathematics can certainly be described as a “wicked problem,” as represented by Mishra and Koehler (2006).