Introducing CAL

A practical guide to writing

Computer-Assisted Learning programs

*TO
JUNE, STEVE,
SUE AND MAX*

Introducing C A L

*A practical guide to writing
Computer-Assisted Learning programs*

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Preface

It is often the case – perhaps more often than not – that new ideas arrive long before there is the means to clothe and deliver them. We can think of Leonardo da Vinci's drawings of helicopters and submarines among many other examples.

Computer-Assisted Learning (CAL) is an example of an idea which has had a particularly long gestation. As I will illustrate early in the book, the principles of CAL were really first discovered by Socrates. As a formal method of teaching, the Socratic method disappeared for over two millennia until the 1950s. It was then revived in the form of Programmed Learning (PL) which resulted from the researches of B. F. Skinner at Harvard University.

Even then, PL was premature. In the 1950s and 60s, methods were devised, such as teaching machines and various sorts of PL text books, and there was a mushrooming of PL publishing at that time. For a complex of reasons – economic, logistical and technical – PL also largely disappeared from the mid-60s, although it continued in a few specialized areas of teaching and industrial training. However, during the same period, PL quietly transformed itself into CAL. But the computerized form was not capable of mass dissemination until recently because personal microcomputers did not have sufficient internal memory sizes. That situation has now changed very dramatically and 128K microcomputers are becoming cheap and widely available. Cheap memory chips of 256K and 1024K cannot be far away, either.

A considerable quantity of so-called educational software is now being written. Some CAL programs have been brilliant and inventive, but many have been of indifferent quality because they have been but bowdlerized, computerized versions of text-book material or lecture notes. Few CAL program writers appear to have paid much attention to the important features of the human learning process now being clearly identified by scientific research in several fields.

CAL, therefore, still suffers from vagueness of definition. As yet, there is still no unambiguous name for the fundamental method of teaching as exemplified by Socrates and developed by Skinner. The most accurate

description which also precisely defines the sort of CAL discussed in this book is: self-paced, constructed-response, immediate-feedback, learning program. I have avoided the temptation to foist yet another acronym on the world but no doubt, as the whole gamut of educational software grows and clarifies, a simple name will emerge in due course.

The early iron ships were not made by traditional shipwrights but by bridge-builders. The microcomputer did not emerge from the large computer companies but from small enterprises selling products to do-it-yourself electronics enthusiasts. In the same way, it is entirely possible that teachers and other people involved in traditional training methods will not predominate in the educational software industry that is now growing apace. The field is so new, and the prospects are so enormous, that many writers of intelligence, discipline and creativity will be attracted to this exciting and satisfying activity from many other walks of life.

My original interest in CAL – in its PL form – began in the late 1950s when I read the original papers of American behavioural psychologists. I did not return to the subject until recent years, by which time my initial fascination with PL had been augmented by my studies in brain physiology and the human learning process. I have been influenced by findings from other disciplines, of course, but my principal acknowledgements are to Professor B. F. Skinner and Professor D. H. Hubel, from behavioural psychology and neurobiology respectively, both of whom have been helpful in correspondence.

I must also acknowledge my thanks to my publisher Richard Stileman, and also Claire Gooding, who were keen on the book in its first draft and midwived it during its later stages. Finally, my thanks also to Irene Jenkins, my hard-working and versatile research assistant and to Jane Ross at Chapman and Hall.

If the book has merit I share it with those above; if the book has faults I incline my head alone.

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