Computers have been part of the resources in schools in Tasmania for many years. Although some computer courses date back more than a decade, the spread of computing as a subject in the curriculum should probably be counted from the inception of the Elizabeth Computer Centre (ECC) in 1976. At that time some colleges and schools were able to write programs in BASIC and use either batch or on-line facilities on central PDP-8 computers. Over the years the role of ECC changed, and the facilities it provided expanded. A big change started with the advent of micro-computers, and support for these was based around a team of consultants. These consultants were generally classroom teachers who were recognised as experts in their subjects, and able to give support for the use of computers across the curriculum and across the age range.

At the beginning of 1991, the role of ECC changed. It had always been the provider of computing resources for the administration of the education department, and in many ways the symbiosis with educational objectives had benefited both parties. However, links with other educational initiatives were missing, and the mission of the centre was clarified as part of a total re-organisation of the department. ECC's role is now restricted to support for administration whilst educational computing is supported by a Principal Curriculum Officer and three other curriculum officers in the regions.

This change is not quite the complete break that it might sound. As micro-computers are used more frequently in schools for administration, ECC has been developing systems based upon Archimedes computers. It also provides support for centrally based school record keeping and timetabling, with databases that can be copied into local micros for school-specific purposes. Educational computing on the other hand, also uses the TASnet communications system for school work on databases and international, as well as local, electronic communication.

In October 1985, the Education Department published the COPE report - a position statement on Computers in Primary Schools. This recognised the explosive growth of computers in primary schools, and anticipated many of the changes in teaching and learning that the technology could bring. The document looked at computers as modeling the real world, seeing the potential of using the computer to model real events, and viewed the school office in particular as becoming 'more real' as the staff used computers. Databases of student information would be mirrored in the classroom by student-created databases relevant to student learning.

The COPE report also made a point of the standardisation of computers in Tasmanian education. The BBC computer had been adopted in virtually all schools. Ratios varied from a computer per three classes to one per 11 classes. The importance of word processing was recognised, whilst higher ratios were seen as vital for this to spread. ECC was developing educational software at this time. Many titles are still available.

Three further major policy statements have had an impact upon computing in schools. The first is 'Secondary Education: the Future' published in 1987. This has been joined by 'Our Children: the Future' giving grounding for primary school education in 1991. The change with most impact for computing courses has come in the introduction of the Tasmanian Certificate of Education (TCE). The Schools Board introduced this in 1990 for grade 9 students, and it will become effective for all school leavers at grade 12 by the end of 1993.

'Secondary Education: the Future' (SETF) described education in a time of increasing social, economic and technological change. Technology was seen as pervasive, affecting most of our lives. The electronic media were having a major role in shaping lives, values and cultures. Certain competencies were identified as being essential for life and work in society. Of these, acquiring information referred to gathering data from computer information systems.

The role of technology was not limited to the competencies. In the fields of knowledge outlined in the statement, technology was to be studied through practical experience as well as through its social effects.

'O our Children: the Future' (OCTF) is a series of five booklets, and there is a supporting video. It builds upon previous policy statements, emphasising the role of language in the primary school (Kindergarten to grade 6). It looks at the emphasis on the 'whole child' and the provision of an integrated and balanced curriculum. The nature of successful schools is explored. The rapid changes in society from SETF are noted again. Mention is made of the increased locational mobility, and economic instability that are seen. Technological advances, including an explosion of access to information of all kinds are seen as having far-reaching changes in Australian society.

Any educational policy needs to have a theory of learning at its heart. OCTF takes a constructivist approach. This can accommodate creativity whilst
also probing into problem-solving behaviours. It also acknowledges that children set in motion their own learning in response to environmental stimuli. The curriculum is described in terms of seven fields of learning, which includes Technology, where children design, make and appraise. A whole section is devoted to the impact of technology, particularly the television. The importance of computers in education is acknowledged, but they are seen to be in a context of a broad and balanced curriculum.

Tasmanian Certificate of Education Courses
The broad cross-curriculum support for computers can be seen in many of the TCE courses currently studied or being planned. The courses are designed in a framework pattern. Grade 9 provides 3 neighbouring courses in Computers and Information, whilst there are two in grade 10. Each of the TCE courses is assessed by achievement of certain criteria, which characterise the courses.

The 9IF146B course requires students to cover 'Computer Applications in the Home' and three optional topics. This course is aimed at children with special needs. The next course, 9IF147B, requires 'The Developing Information Society'. The higher course, 9IF148B, requires 'The Information Society' (leading to year 10 work), 'Information Retrieval' (leading to 'File handling in year 10), and 'Introduction to Programming'. The list of optional modules at this level is very wide as follows:

- Monitoring and Control
- Computer Application Case Study
- Information Transfer
- Drawing with Computers
- Computers and Music
- Graphics and Publishing
- Intermediate Word Processing
- Advanced Word Processing
- Database Creation
- Spreadsheet Management
- Robotics
- Peripheral Devices
- and Programming.

Courses at grade 9 and 10 are assessed within the school, with regional moderation. A recent move is to make the grade 9 one year courses also available in grade 10.

In Grade 10, a similar pattern of study units is seen, building on the work of the previous year. In the 10IF448B course, for instance, students have to cover 'Social Issues of the Information Society' and 'Information Management' together with two optional topics. Once again, the pattern of optional topics for the neighbouring courses is very wide. Note the emphasis upon the effects of computers, and the lack of compulsion to cover traditional computer programming. The criteria for the 10IF448B Computers and Information course look at the degree to which the student:

- can integrate a range of software packages;
- can evaluate the strengths and weaknesses of a range of software packages and hardware devices;
- can describe and compare a range of uses of computers in today's society;
- can identify and discuss the social and ethical issues associated with computer use;
- knows and understands what happens when programming commands are executed;
- can demonstrate the ability to identify and refine relevant information from a variety of sources, using computers where appropriate;
- undertakes computer-based tasks that require the ability to logically sequence operations;
- can find and communicate information and ideas;
- can work productively as a member of a group.

In 1992 and onwards, the draft syllabuses for TCE at grade 11 and 12 will be used for the first time. Currently there are three neighbouring syllabuses for Applied Computing for grades 11 and 12, and specialist courses in Computer Science and Information Systems in Grade 12. The Applied Computing courses are B courses - they should take 100 hours of study, as in the main courses at grades 9/10. The specialist courses are C courses - they should take 150 hours of study. Both of these are pre-tertiary courses with 'safety net' neighbouring syllabuses.

The Applied Computing courses require students to take 'Computers in Business' and one of 'Practical Programming' or 'Creative Computing'. The 'Creative Computing' unit allows students to negotiate a project based on their personal interests. It is designed to let them explore the wide range of application areas mentioned in the grade 9/10 courses, or even to delve into Expert Systems etc. The accent here is on a hands-on approach.

The specialist course on Information Systems contains a compulsory core of 100 hours, and two optional topics needing 25 hours of study each. The core work covers hardware, applications, communications, integration, social issues and legal issues. The options ask that students use computers in relation to some other course they are studying. They also have to do a project.

The specialist course on Computer Science is preparation for those going on to further courses in computing, engineering and the sciences. The course content covers (in decreasing time allocation); programming, representation of data, data modeling, propositional logic, computer hardware, language theory, representation of algorithms and algorithm analysis. Some of the criteria are to be assessed externally, but all the criteria are also assessed internally.

It is worth noting that several other TCE syllabuses at this level require the use of computers. This takes in English and Mathematics, as well as several other areas that would not have necessarily been taught using technology before. The Writer's Workshop course in particular, presumes the use of computers.

Hardware
The installed hardware in Tasmanian schools still shows a large number of Acorn computers. The trusty BBC model B computers are still there, and new Acorn A5000 models are being purchased. The networks based on eonet are being joined by ethernet spines, and in some cases Unix box R 140s are being installed. This gives excellent connectivity, even to Internet. However, there are now entire schools operating on PC
compatible equipment, and Apple Macintoshes have proven very popular in the last couple of years. A very significant investment has been made by the Department of Education and the Arts in computer equipment for business and commerce departments.

Conclusion
There are many steps to be taken with computers in education, not just in Tasmania, but throughout the world. It is already a fact that students have far more access to computer technology in general outside school, and curricula have to be framed to recognise this. However, it is still widely regarded by the community and parents that computer skills are a necessary part of education, as a general part of life, and as a tooling for work as well. Students in Tasmanian schools have an enviably good chance to learn practical skills using computers, and to become conversant with their potential.

References
Computers in Primary Schools - a position statement, Education Department of Tasmania, October 1985.


Further Information
Further information on the Department of Education and the Arts policies can be sought from the Curriculum Services Branch, 71 Letitia Street, North Hobart, phone 002 307291.

Further information on the Tasmanian Certificate of Education can be sought from the Schools Board of Tasmania, PO Box 147, Sandy Bay, Tasmania 7005.

Streams
Post Secondary
Vocational/Training
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Computers in Subject Areas
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Special Education
Research
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10th Australian Computers in Education Conference
ACEC '92
Melbourne
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The 10th Australian Computers in Education Conference is being hosted by the Computer Education Group of Victoria at the Radisson President Conference Centre, 65 Queens Road, Melbourne. Keynote speakers and presenters from the UK, USA and Asia, representation from industry, educational research and the classroom go towards making an exciting, up to the minute program.

For further information contact the ACEC'92 Secretary - phone 03 529 7311

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