INTRODUCTION

In the Northern Territory, Computing Studies is available formally in years 11 and 12 through a number of certificates offered in conjunction with the South Australian Public Examinations Board. In the junior secondary area, a number of schools develop programs, though soon, they will be able to offer a program being developed by the Department of Education. A Curriculum Framework Team is currently developing an outcomes approach to the key learning areas. Information and Communication Technology will be included in the framework within the key learning area of Technology.

There are issues involved in junior secondary computer studies which flavour attitudes and approaches in schools. The Department of Education recommends that, in the first three years of high school, use of information technology be integrated into other key learning areas rather than taught in isolation. However, schools have autonomy to decide how to approach computing courses and a range of IT elective units are offered in the junior secondary years.

Year 11 subjects are called Stage 1 subjects. Their titles are Applications of Computing A, Applications of Computing B, Computing Systems and Computing Systems Development. Some Northern Territory teachers would like to have greater input to this Stage 1 program, and believe the alignment into year 12 restricts local teachers seeking to address local needs. The Stage 2 subjects, in year 12 are named Information Technology Studies and Computing Applications. Students may also elect to participate in Certificate II in Information Technology, a TAFE/VET option.

DEMOGRAPHICS

Enrolments in Stage 1, Year 11 programs increased steadily from 1992-1997 with 1149 students enrolled in formal courses in 1997. Since then numbers have declined with only a total enrolment of 933 in 1999. These students selected subjects as follows.

1999

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject Name</th>
<th>No. of students</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12508</td>
<td>Applications of Computing A</td>
<td>183</td>
<td>234</td>
<td>417</td>
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<tr>
<td>12509</td>
<td>Applications of Computing B</td>
<td>167</td>
<td>185</td>
<td>352</td>
<td></td>
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<tr>
<td>12506</td>
<td>Computing Systems</td>
<td>70</td>
<td>38</td>
<td>108</td>
<td></td>
</tr>
<tr>
<td>12507</td>
<td>Computing Systems Development</td>
<td>34</td>
<td>22</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>454</td>
<td>479</td>
<td>933</td>
<td></td>
</tr>
</tbody>
</table>

Male and female participation has been steady and approximately equal since 1992. Participation in Stage 2 subjects has been erratic since 1992, due to multiple changes in offerings. Numbers however have increased slightly in recent years. Again, total participation by males and females is even.

1999

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject Name</th>
<th>No. of students</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2350C</td>
<td>Computing Applications</td>
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<td>7</td>
<td></td>
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<tr>
<td>22502</td>
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<td>20</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>22504</td>
<td>Information Technology Studies</td>
<td>35</td>
<td>16</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>44</td>
<td>42</td>
<td>86</td>
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</tbody>
</table>
Teacher availability is a concern as always. The numbers of teachers is not large.

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>17</td>
<td>17</td>
<td>37</td>
</tr>
<tr>
<td>Stage 2</td>
<td>10</td>
<td>12</td>
<td>22</td>
</tr>
</tbody>
</table>

Disclaimer from Assessment & Certification, Northern Territory Department of Education

‘The information contained in this report is for student enrolments in Stage 1 and 2 Computing Subjects. It does not include VET enrolments. Although every precaution has been taken in the collection of this data, numbers are affected by date of data extraction as the electronic record of student details can be entered/ altered at any time.’

COMPUTING SUBJECTS IN N.T. SCHOOLS

Structure of Computing programs Stage 1 & 2

The following diagram illustrates the progression of subjects in years 11 and 12.

Application of Computing A

This subject provides students with an opportunity to use computer applications in a creative, productive and innovative manner. Students develop computer technology skills in practical applications relevant to current issues.

Content includes:
Selected modules such as desktop publishing.

Application of Computing B

This subject enables students to continue studying applications of computing, that is, using computer applications in a creative, productive and innovative manner.

Content includes:
Selected modules such as desktop publishing.

Computing Systems

This subject introduces the formal study of computers and their operation. It emphasises the interaction between hardware, software and people in computer systems.

Content includes:
word processing systems, flat file data base systems, programming fundamentals, and operating system of a computer.

Computing Systems Development

This subject stresses the design and development of information systems through the study of the Systems Development Lifecycle.

Content includes:
the Systems Development Lifecycle of an information system, relational databases, functional components of a computer system, number and coding systems, storage of data.

Information Technology Studies

This subject aims to provide students with an understanding of Information Technology and its effect on individuals and society. The case study approach to Information Systems includes the use of the Systems Development Lifecycle for the production of computing solutions. This subject has a significant theory component. Students are required to explain concepts underlying relational databases, communications technology and programming.

Content includes:
Information Systems, Systems Development Lifecycle, communications, programming, social issues.

Computing Applications

This subject involves students in the use of the design process of investigate, devise, produce and evaluate to communicate information in a variety of ways.

Content includes:
Word processing, desktop publishing, graphics presentation, database, spreadsheets, multimedia, other appropriate related knowledge.
Certificate II in Information Technology

This is an accredited TAFE/VET Course to be undertaken in a semester. The course aims to provide students with information technology skills to enhance and provide direct entry into information technology based employment and/or further vocational training.

Professional development for computer studies teachers is problematic because the department’s priorities lie with the integration of communication and information technology into KLA curriculum.

Priorities for professional development are determined for the most part by schools themselves. If the school has not identified Information Technology Studies as a priority professional development area, attracting teacher release time and/or relief staff funding is extremely difficult. However, individual teachers are still able to make arrangements to:

• attend workshops after hours;
• attend activities during stand down; or
• undertake correspondence, Internet-based, or formal tertiary studies in their own time.

For some years the Department has provided additional funding specifically to promote professional development in the Learning Technology area. Some computer studies teachers may have been able to take advantage of this program. Supported activities include:

• funding for external contractors and Departmental advisory staff to run IT workshops and 1:1 training;
• full time paid release - usually for one term - to undertake formal study or personal professional development activities in IT-related areas; and
• special program funding for professional associations and schools which can include a PD component.

The Department’s Open Learning Support Unit (OLSU) provides or organises a range of IT professional development opportunities which are available to all teachers. Although the emphasis of most of these courses or workshops is on learning with technology, more advanced, specialised workshops are conducted for specialist IT teachers or local area network managers. These are normally restricted to one or two day intensive activities.

From July 2000, the Northern Territory Government has funded a major new initiative to upgrade educational computer resources in schools. This program includes significant funding for teacher professional development in learning technology. It remains to be seen whether computer studies teachers obtain new opportunities to renew and develop their professional knowledge.

Additional information, including access to the educational projects and publications including Internet Insights for Teachers, is available on the Department’s OLSU website, http://www.schools.nt.edu.au/olsu/

Computer Education Group

ITEANT - the Information Technology Educators Association of the Northern Territory was constituted as a new professional association on February 16, 2000. ITEANT has a commitment to the furthering of education in the field of information technology and developing a community of educators dedicated to improving personal competence and the pedagogy of IT use in the classroom. ITEANT is committed to the provision of professional development in information technology for all teachers in the NT including computer studies teachers.

In the span of 6 months the Association has undertaken a range of activities, both social and professional, and has attracted a gradual increase in the number of members throughout the year as an outcome of these activities. The Association has members from primary and secondary schools, both Government...
and Non Government, as well as the tertiary sector and is, increasingly, attracting school members. It is hoped that ITEANT attracts a community of specialist computer studies teachers.

**PROFESSIONAL DEVELOPMENT**

In the first half of 2000, ITEANT commenced a program of meetings for primary teachers to share experiences and skills, as well as inaugurating a series of professional development activities in the Darwin region, with some extension to Alice Springs mid year. In the second half of the year professional development programs continue in Darwin and will also take in Katherine. These programs, several of which have been conducted in conjunction with OLSU, have included *Tinkering with Technology* and *Dream Weaver*. Additionally a workshop *The World of Publishing* will be held jointly with the Business Educators Association, to meet the needs of Stage 1 and 2 teachers who teach either Computer Applications or Information Processing.

ITEANT’s affiliation with the Australian Council for Computers in Education (ACCE) means that the views of Northern Territory teachers can now be represented at the national level. The NT voice has been missing now for many years. ITEANT is currently represented on the Australian Council for Computers in Education by the President, Marg Littler. It is hoped that computer studies will continue to be significant on the ACCE agenda.

**ISSUES ABOUT COMPUTER STUDIES IN THE NORTHERN TERRITORY**

The major issues in the NT reflect those reported by various national bodies. Computer studies (and the general usage of computers across all teaching and learning areas) will continue to be affected because of concerns in three major areas. These are:

- **BANDWIDTH**
  Computer studies students rely increas-ingly on resources based on-line, and with such resourcing usually also requiring large file sizes.

  Bandwidth is critical to ensure that all students have equity of access. It is easy enough in the large metropolitan areas of the South East corner to assume that internet and other on-line access is high speed and reliable, but in the NT such assumptions cannot be made.

- **ONLINE MATERIAL**
  As the field changes rapidly, curriculum does not tend to keep up with current practices in terms of computer studies or the wider areas of computer usage. Very few syllabus documents list extensive online or even CD-ROM resources. Various initiatives (including that of the Curriculum Corporation) are starting to address these issues, but materials available tend to reflect practices of up to a decade ago.

- **SUITABLY SKILLED TEACHERS**
  With skilled teachers being sought by industry and government, there is a recognised shortage of qualified teachers across the country. The growth of ‘trade qualifications’ such as Microsoft and Novell certification has also led to different career paths for young graduates and school leavers. The shortage of sufficient trained and experienced teachers, has led to a situation where staff are directed into this area without the skills and knowledge to teach well.

  The level of knowledge is demanding. Computer studies entails a holistic and theoretical consideration of information systems, the concepts underlying communications and information software, and the effect of IT on society. Providing highly experienced and knowledgeable staff to teach Information Technology studies places high demands on the teachers.

  Thus, in terms of the issues facing computer studies teachers, professional development is perhaps the greatest. CEANT favour the approach adopted in industry where teachers may have access to up to 10 days per year professional development and recognition is provided for additional skills. It is hoped that ACCE can continue to forward arguments to systems about the significant erosion of professional development opportunities for computer studies teachers.

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