Young Girls ICT

Into Computing Too

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# Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ASISTM</td>
<td>Australian School Innovation in Science, Technology and Mathematics</td>
</tr>
<tr>
<td>AWE</td>
<td>Association of Women Educators</td>
</tr>
<tr>
<td>AWISE</td>
<td>Australian Women in IT and Science Entity</td>
</tr>
<tr>
<td>DET</td>
<td>Department of Education and Training</td>
</tr>
<tr>
<td>DEST</td>
<td>Department of Education, Science and Training</td>
</tr>
<tr>
<td>EXITE</td>
<td>EXploring Interests In Technology and Engineering</td>
</tr>
<tr>
<td>FITT</td>
<td>Females in Information Technology and Telecommunications</td>
</tr>
<tr>
<td>GIFTS</td>
<td>Girls In For Technology and Science</td>
</tr>
<tr>
<td>GIGGLET</td>
<td>Girls Into Gizmos and Gigabytes Learning and Enjoying Technology Skills</td>
</tr>
<tr>
<td>GLITTER</td>
<td>Girls Learning IT TogetHER</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technologies</td>
</tr>
<tr>
<td>IP&amp;M</td>
<td>Information Processing and Management</td>
</tr>
<tr>
<td>IS</td>
<td>Information Systems</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>KITE</td>
<td>Kids Information Technology Education</td>
</tr>
<tr>
<td>MCEETYA</td>
<td>Ministerial Council on Education, Employment, Training and Youth Affairs</td>
</tr>
<tr>
<td>Techno</td>
<td>Technology Enhancing Chances, Hopes and New Opportunities</td>
</tr>
<tr>
<td>VCE</td>
<td>Victorian Certificate of Education</td>
</tr>
<tr>
<td>VELS</td>
<td>Victorian Essential Learning Standards</td>
</tr>
<tr>
<td>WIT</td>
<td>Women in Technology</td>
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</table>
Executive Summary

According to recent Australian Bureau of Statistics figures only 15 percent of the 348,200 ICT workers in 2005-06 were female (ABS, 2006). This under-representation of women remains a serious issue for the ICT industry as it fails to benefit from diverse employees with different skill sets and perspectives that the industry much needs.

Traditional ICT curricula are failing to attract girls as gender-based perceptions about subjects and careers persist. Consequently the number of female students undertaking ICT related subjects and courses continues to decline.

Much of the research indicates that it is the early years that influence children's decisions regarding career choice. In their early years of schooling many girls are interested and engaged with ICT; however this fades as they reach higher levels. The reasons for this decline in interest stems from multiple factors including the perception that the area is ‘geeky’, male dominated and does not lead to a people-focused career. By the time students leave the secondary education system there is a large gap between girls and boys undertaking computing subjects and those who are interested in pursuing a computing career.

Strategies that can be used to help address this issue include adopting inclusive teaching practises within schools and creating specific intervention programmes to encourage girls to think and work positively with computers. Historically intervention programmes have been focused at secondary and tertiary levels of education. While there have been many initiatives most have been localised, poorly funded and few detailed evaluations have emerged.

This research shows that hardly any intervention programmes currently operate in primary schools across Australia, with less than 5 percent providing resources or programmes for their female students. Those that do operate are generally through the enthusiasm of one key individual or a small group of teachers and are often extra-curricula therefore requiring a commitment at lunch time or after school. Relatively few evaluations of these programmes are available due to a lack of resources, including skills, time and money.

The lack of intervention programmes within schools can be attributed to the many competing demands for teacher attention as well as a lack of resources. Anecdotal evidence suggests that in many schools there is little understanding of the seriousness of the flow-on effect if girls fail to develop an interest and enthusiasm for ICT. In many instances teachers are doing their best just to overcome their own lack of confidence in their use of technology and in keeping abreast with the rapidly changing technology itself.

The one exception to the lack of a cohesive approach is in Queensland, where there were notably more programmes which specifically target young girls and their interaction with, or attitudes to, ICT. The planned approach adopted in Queensland includes the provision of resources and the appointment of a Senior Project Officer; this has had demonstrable benefits. Other States and Territories would benefit from adopting this model.
There is a need for a positive approach to raising the awareness of educators regarding the subtle discrimination and dis-encouragement that occurs with respect to attitudes towards ICT. ICT curricula need to be truly inclusive and more intervention programmes are required to ensure equity of outcomes. There is a need to support teachers with quality resources to be able to run such programmes as well as providing appropriate resources to enable evaluation and dissemination of the results. Good programmes need to become embedded into the school curriculum rather than being dependent upon one key individual’s enthusiasm.

A lasting and strategic cultural change is likely to be effected if more initiatives are targeted early in the pipeline – such as at the upper primary school and lower secondary levels. A large scale government initiated intervention programme, directed at large populations however, may be what is required.
1. Introduction

Traditional Information and Communication Technology (ICT) curricula are failing to attract girls into computing courses and careers (Edmiston, 2004). Strategies to address this issue include adopting inclusive teaching practices as well as specific intervention programmes. Inclusive curricula attempt to engage all students, including girls, by taking into account girls’ ways of knowing (Edmiston, 2004). Intervention programmes (in the context of this report) are projects that have specifically been designed to address the issues of girls and ICT. The focus of this report is on intervention programmes that attempt to engage young girls in thinking and working positively with computers.

Primary data for this report was collected through telephone interviews with staff from 280 primary schools around Australia. Schools were chosen from all States and Territories. Educators were also contacted through requests in appropriate publications and teacher communities, inviting them to contribute strategies that they were involved in. Secondary data was collected from public documents and websites. A workshop was held with 14 educators who operate intervention programmes to develop tools for the evaluation of such programmes which could be shared with others. Further details about the data collection methods and the evaluation workshop are outlined in Appendix 1.

The following sections will describe the rationale behind the need to have strategies that increase the level of engagement of girls with ICTs. The issues of women in computing in Australia and the education pipeline will be explored. Specific programmes that operate within the primary and secondary sectors will be described as well as recent intervention programmes operating from outside the primary and secondary education sectors.

Issues relating to the lack of existing strategies and the evaluation of programmes will be explored. Evaluation tools and templates to measure programme outcomes are provided.

Finally, recommendations to help increase the provision and evaluation of intervention programmes are suggested.

1 The English spelling of programme has been used to differentiate it from a computer ‘program’.
2. Concern about the Gender Gap

That there are fewer women than men in the Australian ICT industry is a situation well described in the literature (Maslog-Levis, 2005; Poole, 2005; Craig, 2005; Byrne and Staehr, 2005; von Hellens and Neilson, 2001). In the ICT workforce women are paid less than men in similar positions and women are less likely to hold senior management positions (Byrne and Staehr 2005). However, female ICT workers record the highest average earnings for all female occupations (Clayton, 2005).

Many factors have been identified that contribute to the lack of women choosing to undertake a career in ICT. These factors can be loosely grouped into three categories: those relating to the computing discipline and the profession (including public image, an alienating culture and constant change); those relating to educational institutions (including the unconscious promotion of gender stereotypes, a perception of computing as a male domain and how computing subjects are taught); and factors relating to the individual (including family background, lack of role models and a lack of knowledge about computing careers). Figure 1 shows the full range of factors that the literature has revealed as well as the effects of girls not choosing computing. The outcome of the gender imbalance in the ICT workforce is not simply one of inequality of numbers. A lack of diversity in development teams, for example, results in products that fail to meet the needs of all, processes not being invented and products not being built.

It is necessary to bring diversity into the technology development and design arena as women will bring with them different life experiences as well as different skills. The literature shows the impact of the absence of a diverse group of workers in the design and development of ICTs. For example, a video conferencing system was built based on voice recognition software that was inadvertently calibrated for male voices. Consequently the camera that was to focus on the person speaking could not hear the women’s voices and therefore the women were also not shown (Margolis and Fisher, 2002).

There are many examples from science and engineering which also demonstrate the problems that can occur when development groups are not representative of users. One is the number of women and children who were killed or injured by the first airbags that had only been tested on an average 176 cm male driver (Margolis and Fisher, 2002). If there had been more women involved in the development of airbags the fatal flaws may have been avoided. It is reasonable to assume that a similar situation is being replicated in the computer industry.

Without diversity in boardrooms technology companies may also create products that may or may not be what women want; mirrors on mobile phones or lipstick memory sticks. As Twist (2004) suggests, there is a fine line between making appealing technologies and patronising an audience with products that do very little.

If more women are not attracted and retained in technology industries then females are also not having a say as to how technology shapes society. Additionally, women may miss out on emerging jobs of the future, which ultimately will lessen their economic security and choices.
Figure 1: The causes and effects of the lack of girls choosing computing
3. The ICT Pipeline

Preliminary findings from a study conducted by the Department for Women reveal that the number of girls taking ICT subjects falls by half from Year 8 to Year 10 (35% to 17% of girls).\(^2\)

To increase the number of women in the ICT industry, more females are needed throughout the ‘education pipeline’; more girls interested in computing at primary level then more high school girls choosing computing subjects followed by more female students enrolling and successfully completing tertiary computing courses (Camp, 2002).

The Real Time—Computers, Change and Schooling report published in 1999 was the first national study of the information technology skills of Australian school students (Meredyth, Russell, Blackwood, Thomas, and Wise, 1999). The goal of the study was to provide baseline data to enable future monitoring of Goal 6d of the 1989 Common and Agreed National Goals for Schooling which was: ‘to develop in students skills of information processing and computing’.

Findings from the report include:

- **Teachers should pay particular attention to the study aspirations of girls and the relevance of information technology to tertiary level study** (p.25).
- **Indigenous students, students from rural locations and lower socio-economic backgrounds and girls generally have less access to computers** (p.25).
- **Boys have more of the advanced skill range than girls do, although their basic skills are on a par. They are also more confident about their ability to use computers** (p.28).
- **Both boys and girls are more likely to have gained their computer know-how at home, but this pattern is more pronounced for boys, particularly for the more advanced skills, which girls tend to acquire at school** (p.29).
- **Girls are falling behind boys in the advanced information technology skills, despite showing considerable interest and skill in other applications. Girls tend to develop basic skills at school. However, many of the advanced skills are not taught in some schools. Where girls do not learn advanced computer skills at home, they tend not to acquire them at all** (p.29).

Seven years later and the situation has not improved, with current figures indicating that the number of girls prepared to consider a computing career is still in decline.

The National Report on Schooling in Australia is an annual report on the progress of Australian schools. Five reports\(^3\) covering the years from 2000 to 2004 show the decreasing trend in enrolments by girls in technology subjects at senior secondary school (see Tables 1 and 2). Further along the pipeline, statistics from higher education show the poor uptake by female students of information technology courses

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(see Tables 3 and 4). In 2005, female students in tertiary computing courses were down to 20%.

Table 1: Year 12 students enrolled in at least one technology subject 2000–2004

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>50,159</td>
<td>58,603</td>
<td>43,504</td>
<td>38,718</td>
<td>42,078</td>
</tr>
<tr>
<td>Females</td>
<td>34,605</td>
<td>37,764</td>
<td>32,207</td>
<td>26,212</td>
<td>23,240</td>
</tr>
<tr>
<td>Total</td>
<td>84,764</td>
<td>96,367</td>
<td>75,711</td>
<td>64,930</td>
<td>65,318</td>
</tr>
</tbody>
</table>

Table 2: Year 12 female students undertaking technology 2000–2004

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females undertaking 1+ technology subject</td>
<td>34,605</td>
<td>37,764</td>
<td>32,207</td>
<td>26,212</td>
<td>23,240</td>
</tr>
<tr>
<td>Total female students</td>
<td>98,592</td>
<td>98,870</td>
<td>101,713</td>
<td>101,202</td>
<td>101,167</td>
</tr>
<tr>
<td>% of females undertaking technology</td>
<td>35%</td>
<td>38%</td>
<td>32%</td>
<td>26%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Table 3: All students by level of course, broad field of education and gender, full year 2005

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>56,873</td>
<td>51,362</td>
</tr>
<tr>
<td>Female</td>
<td>15,861</td>
<td>13,037</td>
</tr>
<tr>
<td>Total</td>
<td>72,734</td>
<td>64,399</td>
</tr>
</tbody>
</table>

Table 4: Commencing students by level of course, broad field of education and gender, full year 2005

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>20,926</td>
<td>16,981</td>
</tr>
<tr>
<td>Female</td>
<td>5,132</td>
<td>4,173</td>
</tr>
<tr>
<td>Total</td>
<td>26,058</td>
<td>21,154</td>
</tr>
</tbody>
</table>

Research into the attitudes of young people (14–19 year olds) towards ICT careers in 2004 revealed that;
- 86% agreed that specialising in ICT opens doors to careers in many types of industries or businesses;
- 87% felt their schools were well resourced with computers and equipment;
- 85% of Year 12 students were planning tertiary education.

Despite these positive statements, only 6% of students surveyed planned to do an ICT course at university, and none of these were female.

Such reports, along with the worsening statistics, have resulted in numerous attempts to improve participation across the pipeline through intervention programmes. These

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4 http://www.dest.gov.au/sectors/higher_education/publications_resources/profiles/students_2005_selected_higher_education_statistics.htm (Extract from Table 21)
5 http://www.dest.gov.au/sectors/higher_education/publications_resources/profiles/students_2005_selected_higher_education_statistics.htm (Extract from Table 3)
include activities such as the creation of videos, ‘girls in computing’ days, camps, showcases, and computer clubs for girls (Craig, Scollary and Fisher, 2003). Most of these activities have been focused on girls in secondary schools.

To improve the pipeline flow the major focus of this project is on primary computing education where the prevailing attitudes to computing seem to become entrenched and from which attitudes are hard to change. This project sought to identify what initiatives or programmes currently operate that attempt to engage primary school girls in thinking about and working positively with computers. It also explored the development of evaluation tools that would enable meaningful comparisons to be made.

3.1 Education in Australian Schools

The Constitution of Australia allocates responsibility for school education to State and Territory governments all of whom provide and manage government schools and also provide support for non-government schools. Most government schools are coeducational though a significant number of non-government schools are single-sex schools. School commencement age varies across the nation, as does the distribution of year levels which are classified as primary education or secondary education (see Appendix 2).

3.2 Gender Equity in Australian Schools

The report Gender Equity: A Framework for Australian Schools was endorsed by Ministers at the 5th MCEETYA (Ministerial Council on Education, Employment, Training and Youth Affairs) meeting in 1996. The Framework was prepared by the Taskforce responsible for providing advice to enable improved educational outcomes for girls and boys in Australian schools.

The Framework was designed to be used by schools, education practitioners, parents and school communities nationally. One of the report’s strategic directions indicated that ‘Curriculum is fundamental to change, and should be continually trialed, examined and adapted to ensure that it is appropriate’ (p.14). It further suggested that an outcome of school education should be to:

Provide both girls and boys with a powerful basis for engaging in the emerging areas of the curriculum by:

- enabling all groups of girls and all groups of boys to become competent and confident users of all aspects of information technology
- ensuring that the development and delivery of the civics and citizenship curriculum acknowledges and incorporates gender equity principles
- ensuring that enterprise education initiatives with business and industry acknowledge and include gender equity principles and understandings

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ICT education is not the only area of the curriculum that requires specific support to ensure equity of outcomes. Currently for example, the NSW Department of Education and Training provides resources for three areas of gender education:

- Girls, Sport and Physical activity
- Girls and ICT
- Boys and literacy.

### 3.3 ICT in Australian Schools

*Arguably, the beliefs and behaviour patterns developed by boys and girls prior to schooling may result in, for example, boys being disinterested in reading, the humanities or arts. Or that girls may underplay their talents in mathematics, science and technology. Programs for Boys and Girls aim to challenge these notions and provide opportunities to re-dress them.* (DEST, NSW)

Within each State and Territory, ministers, departments, statutory authorities, and in the case of non-government schools, individual schools, have the authority to establish policies and practices for curriculum, course accreditation, student assessment, resource allocation and utilisation, and teacher employment and professional development. Consequently the approach to curriculum varies across the different states and territories.

In Victoria for example, the *Victorian Essential Learning Standards* (VELS) define what students should know and be able to do at different stages of learning from Prep to Year 10. School implementation of the VELS commenced at the beginning of 2006. Schools, however, have the flexibility to construct programmes that are appropriate to their local circumstances. The *Information and Communication Technology Standards* therefore do not mandate how and where students will acquire their ICT knowledge and skills, but they do state the standards that must be demonstrated by students at progressive levels of learning. Schools are able to construct coherent programs that enable students to acquire and apply this ICT knowledge and skills. School choices are influenced by factors such as the location and quantity of computer resources, the ICT expertise of teachers, preferred teaching methods and learning styles and the opportunities offered by timetabling arrangements. The three common learning arrangements are:

- **dedicated** ICT classes enabling students to apply their ICT knowledge and skills to all other areas of learning (common practice in secondary schools)
- **a distributed approach** where ICT is not a timetabled class, instead ICT expertise is brought into other learning environments (a common practice in many primary schools) and
- **combined** where some ICT teaching is delivered through dedicated offerings and the remainder becomes the responsibility of other classroom teachers.

---

In 2005, at Senior Secondary level in Victoria, girls represented 30.8% of students who completed VCE Information Processing and Management (IP&M) and 8.3% of VCE Information Systems (IS) students. In actual numbers this means that from over 26,000 girls undertaking the VCE, only 158 girls satisfactorily completed the Information Systems course\textsuperscript{14} and only 1882 girls satisfactorily completed the IP&M course\textsuperscript{15}. A new curriculum for these subjects will be implemented in 2007. Girls’ attitudes to ICT have been taken into consideration in the redesign of this curriculum with the inclusion of collaborative problem-solving tasks and an approach which encourages students to ‘visualise their thinking’ (Mitchell, 2006). The VCAA will make available research about the issues on its website as it becomes available (vcaa.vic.edu.au).

However the barriers to girls contemplating ICT careers are set by the time girls are in late primary or lower secondary schools (Newmarch, Taylor-Steele and Cumpston, 2000). Newmarch et. al. (2000) argue that how ICT subjects are taught in schools has a major impact on girls’ attitudes towards ICT. For example, many girls considered these subjects to be ‘too theoretical, rigidly structured and boring’ (p.9). Girls were more positive towards ICT when the curriculum incorporated group work or cooperative assignments rather than individual projects. Curriculum focusing on the use of software packages that girls associated with secretarial work was found to be a disincentive for interest in ICT subjects.

While teaching and curriculum are not the only factors discouraging girls from ICT (see Figure 1), an important component of the solution is that appropriate strategies are put into place in schools to address these issues. Rogers and Duffied (2000) argue that teachers and teaching have a significant impact on girls’ choices.

To achieve greater consistency in curriculum across Australia, Statements of Learning have been developed. Statements of Learning describe essential skills, knowledge, understandings and capacities that all young Australians should have the opportunity to learn by the end of Years 3, 5, 7 and 9\textsuperscript{16}. Statements of Learning are intended for use by State and Territory departments and curriculum authorities to guide the future development of relevant curriculum documents. Ministers approved the Statements of Learning for mathematics, science, civics and citizenship and ICT in August 2006\textsuperscript{17}.

These are statements of learning rather than pedagogy. Thus they discuss ‘all young Australians’ and do not make mention of the particular issues that may arise for students who currently experience barriers to the use of ICTs in their daily learning or to their participation in ICT-based subjects.

States and Territories will need to adapt their own methods to ensure that all students are able to meet these standards.

\textsuperscript{16} http://www.curriculum.edu.au/consistency/national.php
\textsuperscript{17} Available from http://www.curriculum.edu.au/consistency/ict_06.pdf
4. Considering Gender—Approaches

The States and Territories have approached the issue of ICT and girls with differing responses. These include:
- suggesting strategies that teachers can use to engage girls
- supplying access to current research on girls and ICTs
- providing professional development activities for staff
- providing curriculum which supports the engagement of girls
- providing appropriate resources to support intervention programmes
- developing a framework for action within the state to address the issues.

For example the Department of Education and Training NSW suggest that the following strategies\textsuperscript{18} can be used: ‘
- introduce students to a wide variety of computing applications in order to develop an appreciation of the possible uses of computers
- dispel inaccurate images of computers and IT careers through direct experience with positive role models
- make explicit to students the connections between ICT subject content and the world of work (Scott, 1996)
- integrate computer use across the curriculum to invite more girls into technology through a broad range of subjects
- communicate to students the information that all jobs in the future will involve the use of more and more ICT
- challenge and critique stereotypes about gender and ICT (Chalmers and Price, 2000)’.

They also suggest that schools can support girls in the area of ICT in levels K–6 by\textsuperscript{19}: ‘
- ensuring girls play an equal role in the classroom with ICT
- providing choices for types of ICT projects to be undertaken
- giving equal credit for design and technical aspects of student work
- ensuring equitable time is given to girls and boys for the use of ICT
- providing opportunities for students to undertake individual, paired and group work
- establishing peer mentoring programs to enable students with more advanced skills to assist the development of these in others
- providing information for students about the world of work which challenges stereotyped perceptions of suitable careers and jobs for women in the area of ICT’.

Schools are encouraged to support girls in levels 7–12 by\textsuperscript{20}: ‘
- providing a forum for prospective ICT students to discuss courses with current students
- organising for mentoring of girls by women from the ICT industry
- providing information to students and their parents about ICT careers and jobs that include the use of ICT

\textsuperscript{18} http://www.schools.nsw.edu.au/learning/yrk12focusareas/gendered/girlsictrsrch.php
\textsuperscript{20} http://www.schools.nsw.edu.au/learning/yrk12focusareas/gendered/gict710.php
• making the connections for students between classroom activities and careers using ICT
• planning activities and tasks that are appealing to girls
• ensuring girls have equal access to computers
• ensuring girls undertake a variety of roles when using ICT’.

Education Queensland\textsuperscript{21} has adopted a proactive approach to ensure that girls are actively recruited and promoted into ICT studies. Their suggestions include:
• establishing mentoring programs with women who work or study with ICTs
• staging role-model events
• initiating girls’ computer clubs
• promoting ICT careers and subjects in schools
• actively encouraging girls to take up ICT subjects.

Teachers need to adopt practices that will challenge students’ perceptions of ICTs and be more inclusive of girls and other under-represented student groups\textsuperscript{21}. Examples of these practices include:
• using ICTs in ways that develop solutions to local or personal issues
• moving the focus beyond ICT skills to encompass such issues as usability, scalability, flexibility, and design and layout
• encouraging interest among girls at an early age making ICTs projects sensory by, for example, using audio, text and video
• Making ICTs projects multidisciplinary within a social context
• recognising that boys tend to have more ICTs experience than girls, therefore ensuring that classes cater for students with less prior experience (less prior experience does not necessarily indicate less ability)
• ensuring the purpose of each activity is known to students (that is, move beyond the development of skills for skills’ sake)
• using experts, when needed’.

While some of these ideas can be incorporated into the curriculum (resulting in inclusive curriculum) others are best accomplished through specific intervention programmes which enable girls to engage, think and work positively with computers. It is left to individual teachers to decide how best to address the issues for their girls.

4.1 Considering Gender—Intervention Programmes in Schools

This research has found that there are few programmes specifically tailored to meet the gender equity concerns regarding ICT being conducted within primary schools across Australia. Programmes that operate do so because of the passion, enthusiasm or dedication of a particular teacher rather than because of a holistic school approach.

Primary schools (chosen at random) from each State and Territory were contacted by telephone (see Appendix 1 for a description of the data collection). In total, staff from 280 schools participated in short interviews. The aim of the research was to find out how many schools ran specific intervention programmes which attempted to engage girls in working positively with ICTs at the primary school level.

Of the schools participating in this study, only 12 (4.3%) consciously provided resources or intervention programmes for their female students;

- Ten of these schools (3.6%) indicated that they attempted to choose appropriate software for girls to interact with:
  - We have software that interests girls, which they are able to use during their spare time.
  - The school has girl-related software they can use before school.
  - Have programs that girls like more than boys.
  - Girl-related software available.
  - Have programs that are directed at girls, but no specific times they can use this by themselves.
- Two schools (0.7%) provided ‘girls only’ access to their computer facilities at least one lunch time per week.
  - Our Grade 6 teacher runs a girl computer club one lunchtime a week.

That an intervention activity relies on the enthusiasm of an individual teacher was demonstrated when two schools indicated that in the past there had been a computer club or group for girls within their school. However when the teacher had left, or was moved to a different role within the school, the group had not continued.

Lack of understanding of the issues was also evident with one teacher dismissing the need for interventions with the comment ‘but students are allowed to use computers during their spare time’.

Issues surrounding a crowded curriculum also surfaced:

- When creating units of work I am conscious of the girls and that they are less likely to participate if we are not careful, but I just can’t do separate things for the girls.

- I have two computers in my classroom. I am pretty good with them but there is not much time to teach individual children on the PCs when you have 25 students.

- Yes girls need to be engaged and encouraged to participate. However boys also need engagement or else there are behaviour issues. It’s hard to do everything.

### 4.2 Do Intervention Programmes Work?

Evaluation is defined by the Australasian Evaluation Society (2002) ‘as the process of obtaining and disseminating information of use in describing or understanding the particular programme, or making judgements and decisions relating to past, existing or potential programmes’.

The scholarly literature shows a clear lack of published evaluations on intervention programmes established to encourage more females into computing. However, Rogers (2002, p.3) warns that ‘If tiny, uncoordinated projects are implemented and evaluated without reference to the need to make the larger service system work better,
there is a risk of concluding that “nothing works” – because we have evidence that, by themselves, each piece of the jigsaw is ineffective.

Many programmes have been initiated with very good intentions. These are often costly, such as the case of producing a video. Several videos, for example, have been produced over recent years to provide girls with up-to-date information and have them consider a computing career (Clarke and Teague, 1993; Craig et al., 1998). One day ‘Girls in Computing’ workshops are another popular way to encourage girls to consider computing as a field of study. This type of activity implicitly assumes that girls may change their expectations and career plans after a four hour positive experience with computing (Lindley, 1995). However, limited evaluations have been published to establish the extent to which these programs have achieved their objectives. Evaluations are also frequently of a short-term nature and do not measure the longer-term impact of intervention programmes.

After a comprehensive investigation into such intervention programmes, Teague (1999, p.63) advises that the supporting data of enrolments in computing courses indicate that most interventions are ‘restricted to very small populations and/or are not very successful’. She suggests that what is needed is interventions that are large-scale, government initiatives, directed at large populations.

A study is currently underway by a group of researchers at James Cook University involving approximately 1500 girls from Years 11 and 12 to determine the factors that influence girls in their decisions regarding computing and future careers.

The project includes a study of the effects of intervention programmes such as computer camps and information evenings. Preliminary findings from the study indicate that girls who participated in intervention programmes were more positive about careers in computing, whether they undertook higher level ICT subjects or not, and were more likely to consider enrolling in university computer science courses (Anderson, Lankshear, Courtney and Timms, 2006).

Individual programmes need to be carefully evaluated and the results of the evaluation disseminated. This will enable successful programmes to be replicated and less successful programmes to be improved or discarded. However the larger ‘system’ may also need to be improved which may require interventions on a bigger scale being provided for larger populations.

A lack of resources, including skill, time and money, are frequent causes behind the lack of actual programme evaluations. For many educators, evaluation is also not a priority as it is the actual programme that they are focused on.

To support individual teachers to be able to consider why and how to evaluate their programmes, a workshop was conducted with 14 educators. There are many different types of evaluation and the focus of the workshop was on the evaluation of outcomes from intervention programmes for girls and computing. An outcome is a change that is expected to come about after a girl has participated in the intervention programme. Immediate outcomes may include the learning of new skills, greater awareness of the use of computers or a greater interest in computing. Appendix 1 provides further details of the workshop and Appendix 4 provides the sample instruments that were
generated. These instruments may be copied and modified by other educators to suite their individual programmes.

4.3 The Lack of Intervention Programmes in Schools

The rapid growth of computers in the classroom has resulted in many competing demands for resources. Many innovative programmes operate at schools that focus on improving teaching and learning with ICTs. For example, programmes have been created to:

- develop higher order thinking
- facilitate collaborative learning
- improve learning outcomes for all students
- provide support for disengaged students
- provide extension for talented and gifted students
- support students with special needs
- engage language students
- engage deaf students
- use Kahootz in the classroom
- better use electronic whiteboards
- support audio blogging and pod casting
- improve online learning
- increase student awareness of the Internet
- use learning objects
- and many more.

To demonstrate the competing demands surrounding technology and schools the Australian School Innovation in Science, Technology and Mathematics (ASISTM) project was examined. Of all 116 funded projects, only two (1.7%) had a gender and ICT focus. This situation is replicated elsewhere. Since 2003 the Technology School of the Future, South Australia has awarded 70 research grants to enhance and enrich learning and/or teaching via ICTs. None of these projects have specifically had a focus of girls and ICTs (see Appendix 3).

Not only are there competing demands, but some staff are not yet confident in their own use of the technology. The following comments were offered by teachers who indicated that they were either reluctant to use computers or not confident in their use:

*It can take so long to help a student on the computer. I am getting better. But there is so much I can’t do and this worries me.*

*I don’t use the computers with my class. I take Judy’s class for sport once a week while she takes my grade for computing.*

The rapidly changing nature of computing makes it difficult for any school to focus on all areas. Being proactive in the area of girls and ICTs, is just one of many issues that schools are attempting to address. Consequently it is frequently left up to individual teachers resulting in less than 5% of primary schools actively providing resources or intervention programmes for girls and ICTs.
If a greater difference is to be made then a coordinated approach is required to raise awareness of the issues amongst teachers and support them in their endeavours.
5. Specific Schools and Specific Programmes

The following schools provided publicly accessible information via the internet. Notably there appear to be many more projects and programmes running in Queensland than any other area.

In Queensland the Government has been trying to improve the representation of a number of groups in the ICT area including indigenous students, students with disabilities and school girls. Their Girls and ICT Strategy aims to ‘help make ICT integral to learning by ensuring schoolgirls have appropriate access to rich ICT opportunities that retain their interest in ICT, so they become competent and confident creators with, and users of, ICT’\(^{22}\). Furthermore they have:

- released a *Girls and ICTs Framework for Action 2003–2004*\(^{23}\) that offered a plan for coordinated action by schools to increase girls’ participation in ICT subjects and create a more inclusive culture of learning with technologies
- worked with other government agencies and private industry to facilitate access to ICTs for under-represented students
- appointed a Senior Project Officer to oversee work in this area
- established a Girls and ICT Queensland State Reference Group
- financially supported programmes in this area and
- developed a *Girls and ICT Strategy 2005–2008*\(^{24}\)

Their approach has certainly been successful with many more teachers not only aware of the issues but also actively running intervention programmes.

5.1 Primary School Programmes

Primary Schools throughout Australia that are currently operating a programme, or have done so in the recent past, include the following (all are in Queensland except where noted):

- Ascot State School
- Atherton State School
- Bulimba State School
- Calamvale Community College (P-12)\(^{25}\)
- Clare State School
- Cleveland District State School
- Coniston Public School (NSW)
- Crescent Lagoon State School
- Eimeo Road State School
- Fernvale State School
- Gin Gin State School
- Gumdale State School


\(^{25}\) See Calamvale Community College in Section 5.2
• Herberton State School
• Ironside State School
• Junction Park State School
• Kuranda State School
• Kimberley Park State School
• Marshall Road State School
• Mount Gravatt State School
• Normanton State School
• Peachester State School
• Pullenvale State School
• Ravenshoe State School
• Trinity Beach State School
• Tingoora State School
• Townsville South State School
• Upper Coomera State College (P-12)
• Wellers Hill State School
• Woree State School

A description of some of these programmes follows.

**Atherton State School**

An intervention program running at Atherton State School is GIGGLETS (Girls Into Gizmos & Gigabytes Learning & Enjoying Technology Skills). The computer club offers a ‘girl-friendly’ ICT experience to a group of upper primary school girls partially in school time and partially in the students own time. The girls meet once a week for ten weeks for a series of workshops that provide a wide range of ICT experiences. The girls are then encouraged to mentor other girls, provide workshops for younger students, assist teachers and provide workshops for mums. The school received an *ICT Innovators Grant* of $28,250 to support a cluster of schools including Herberton State School, from the Atherton area to run GIGGLETS Go Global. The aim of the project was to empower primary school girls to be ICT leaders in their community, by increasing their knowledge of ICTs and encouraging them to consider ICT careers and study opportunities.

In 2004 a one day Girls ICT Conference was held for 100 primary schoolgirls from the far northern districts of Queensland. The conference was organised by staff from **Atherton State School, Kuranda State School, Trinity Beach State School, and LDC Technology – Woree**. Girls heard from women who use technology in their chosen careers and participated in hands-on workshops with a variety of technological gadgets and gizmos used for work and play. This conference aimed to support the development of additional girls and ICT groups in the Far Northern District by providing professional development, networking and collegial support from existing girls’ group facilitators. This event was run again in 2006 in Cairns. (Contacts are Kim Johnson, Nicola House and Nicola Schulz).

26 See Indooroopilly State High School in Section 5.2
27 See Appendix 3 ASISTM Project 1036
28 See Appendix 3 ASISTM Project 1036
29 See Appendix 3 ASISTM Project 1036
Bulimba State School
Bulimba State School received a $2000 Student ICT Pacesetters grant in 2006. This project will enable students to use digital video cameras to develop projects that capture their interest in new technologies. The school hopes that through this work more girls will become interested in learning about ICT. The girls will use the digital video cameras as part of a computer club established last year by the school to encourage more girls to use ICT. Contacts: Patrice Ramsay and Diane Lyons.

Source:

Clare State School
Clare State School received a $6800 ICT Innovators Grant to enhance the design, engineering and computer skills of schoolgirls in the local area. Through the Robotics Cluster program, girls designed robotics modules that demonstrated to students in Years 5 to 7 how simple programming and communication can control the behaviour of robots. Contact: Patric Brady

Source:

Coniston Public School
School-based research indicated that 90% of the children accessing the computer laboratory at lunchtime were boys. Strategies were therefore put into place to assist in developing positive attitudes to computer usage, particularly focusing on giving girls the confidence to access ICTs. Professional development activities were held for all staff to raise awareness of gender equity issues and to provide ideas for teaching and learning programs to incorporate ICT usage. Rosters were used in classrooms to ensure equal access to the computers for both girls and boys and 'girls only' computer lab days were introduced. A wide variety of computer software was used to cater for the needs and interests of all students.

Source:

Eimeo Road State School
At Eimeo Road State School a computer club for girls in Years 6 and 7 has been established. The girls have been developing their skills in photography and movie-making, downloading photos and movies to the school network,
editing photos and movies in appropriate software, composing captions to accompany their images and graphically designing the CD cover. The girls will design, produce and market a CD of significant events in the 2006 school year. The students also mentor and tutor school staff, other students and their parents in digital photography and movie making. This project received a $2717 ICT for Every Student Grant. Contact: Robin Van Iersel.

Sources:

Fernvale State School
At Fernvale State School a project was created where girls can work in a creative environment with laptop computers, music-making software and a Midi keyboard to produce music and voice recordings. These activities operated during lunch times and supported the school’s choir, instrumental band as well as presentations and school productions. The objective of the project was to increase the involvement of the girls with ICT. An ICT for Every Student grant of $2413 supports this project. Contact: Doug Roach.

Sources:

Gin Gin State School
Gin Gin State School received a $7800 ICT Innovators Grant to develop international cross-cultural links and promote student work. Each year, the school hosts students and teachers from the USA. Through the Community and Cultural Exchange Goes Digital project, girls and indigenous students create a multimedia presentation to showcase the school, community and local indigenous culture to the following year's visitors. Local community representatives contribute to the project by sharing historical knowledge. Contact: Trevor Boyd.

Source:

Gumdale State School
Gumdale State School created the ‘Girls of the Future Telling Stories of the Past’ project for girls from years 6 and 7. Through this project the girls developed the skills and knowledge to compile a multimedia history of the local area. They conducted and recorded interviews with people of interest in the local area, became familiar with aspects of "Front Page", used a digital still camera and a digital video camera, and created a movie using "Moviemaker". A $2029 ICT for Every Student Grant supported this project. Contact: Adrienne Anthony.

Sources:
• http://education.qld.gov.au/smartclassrooms/strategy/tsdis_everystudent-2006schools.html#gundale
Kimberley Park State School
Kimberley Park State School has an extensive robotics program. To encourage girls to take on the challenge of being the programmer, an all-girls team is entered in the Robocup. In 2006 one of the all-girls team will represent Australia in international competition in Bremen, Germany. Contact: Annette Wilson

Source:
• Wilson A. (2006) Robocup Australian Robotics Titles All girls team – the next generation programmers

Mount Gravatt State School
A number of girls participated in the Brisbane Girls and ICT events held at Cavendish Rd State High School. This event was the stimulus for the Year 6 girls to create an ICT interest group with assistance from visiting pre-service teachers from Griffith University. The group meets twice a week during lunch times. Contact: Bronwyn Smith.

Source:

Peachester State School
A new project has been implemented to enable girls to play a key role in uniting their school with their local community through the use of computers, MP3 players, digital video cameras and the Internet. The development of podcasts and information pages on the school website will promote the school and the local community to a worldwide audience. The school has received a $950 ICT for Every Student Grant to launch Peachester Community Podcasts. Contact: Craig Gason.

Sources:

Pullenvale State School
To enhance the ICT skills of girls in Years 5 to 7, a girls-only multimedia group, the SpirIT-Ed Sisters was created. This followed school-based research that showed that while 99% of girls in Years 4 to 7 had computers at home, only 7% used them for activities other than games. The SpirIT-Ed Sisters enables the girls to learn ICT skills from each other in a girl-friendly environment including video editing, music production, web production and animation to create digital materials. Pullenvale State School received a $9000 ICT Innovators Grant to support this work. Contact: Sarah Cole.

Sources:
Ravenshoe State School
Ravenshoe State School received an *ICT Innovators Grant* of $14,000 to run a project titled "A Local Area Study: Ravenshoe—Home of the Jirrbal People". The goal of the project was to inspire the school’s female indigenous students in Year 8 to access and gain skills in ICTs within a familiar and experienced context. Contact: Cam Wallace.

Source:

Tingoora State School
At Tingoora State School, robotics technology is being used to encourage more girls to use and study ICT. Once their skills have advanced, the girls share their robotics kits with other schools in the local area and then mentor girls from these schools in robotics. The girls sustain their face-to-face mentoring relationships through an online project room, using web forums, online chats and blogs to develop two-way communication between schools. The entire project will culminate with the Kingaroy Schools Robotics Teams Challenge, where students will work on a common design problem using the robotics kits and their networks. Tingoora State School has received a $7500 *ICT for Every Student Grant* to launch the Robotics Project Group. Contact: Jason Wyeth.

Source:

Townsville South State School
The TECHNO Angels program was designed to provide Year 7 girls with increased ICT access by engaging them in a multimedia program, and developing their awareness of careers in ICTs. Activities included planning, writing and producing a short film. An *ICT Innovators Grant* of $7,200 supported this project. Contact: Natasha Hampton.

Sources:

Trinity Beach State School
The Kids Information Technology Education (KITE) club is a girls’ only after-school computer club held weekly at Trinity Beach State School. Established in 2004, the club caters for girls in grades 6 and 7 interested in extending their ICT knowledge and confidence. Contact: Kim Johnson.

Sources:

Upper Coomera State College
Upper Coomera State College received an $8500 *ICT Innovators Grant* in 2005 to encourage more schoolgirls and female teachers to use ICTs. A week-long ICT conference was organised for 30 girls from years six to ten. The
Edith Clark ICT Conference for Girls was supported by Griffith University, the Gold Coast Institute of TAFE and members of the Coomera Education Precinct. Keynote speakers and workshops provided the girls with the skills needed to create a school radio station and develop computer games for Year 2 students. The education institutions will also launch a network of highly skilled female teachers who will mentor and support schoolgirls to use and study ICTs. The girls were presenters at the GIDGITS/WIT/Griffith University annual “I.T. Can Take You Anywhere” day, where they delivered a workshop on what they had learnt during the Edith Clark Conference. Six of the older girls were also invited to participate in the IBM EXITE camp. Contact: Jacqueline Lewis.

Sources:

**Woree State School**

Woree State School is home to the Far North Queensland Learning Development Centre for ICT. The centre provides professional development opportunities for both state and private school staff throughout the Far Northern Districts. The Educational Coordinators also travel to locations throughout the districts to run practicums and workshops for school clusters.

The GIDGITS (Girls Into Doing Great Information Technology Society) is both an association and club and is coordinated from the centre. It was created to help girls learn about ICTs and to provide information about careers in the ICT industry. A number of events have been run including a three day ‘girls into games’ camp in 2005 and the 2006 Gidgits conference for girls in years 8 to 10. The Go Go GIDGITS Online Club for girls operates throughout the state. The club aims to increase girls’ experience, confidence and competence with ICTs and enable them to have fun whilst doing it. It also aims to expose girls to what it is like working in the ICTs industry. Go Go GIDGITS activities have been designed by Year 5 student Jessica Brooks (Wamuran State School) and Year 12 student leaders. The founding student leaders are Suzanne Conkas and Kylie Martin (Stanthorpe State High School), and Year 8 student Megan McCubbin (Cannon Hill Anglican College). Colleen Stieler from Education Queensland organises GIDGITS activities around the state and ensures the online computer club runs smoothly. GIDGITs Multimedia Workshops target Year 9 and 10 girls and include an introduction to multimedia, content development, design concepts, digital video editing and multimedia authoring. Contacts: Kristine Kopelke and Kim Johnson.

Sources:
- http://www.gidgits.org/
5.2 Secondary Schools Programmes

Co-education Secondary Schools throughout Australia that are currently operating an intervention programme or have done so in the recent past include the following (all are in Queensland except where noted):

- Banksia Secondary College (VIC)\textsuperscript{30}
- Blayney High School (NSW)
- Bundoora Secondary College (VIC)\textsuperscript{31}
- Cavendish Rd State High School
- Calamvale Community College (P-12)
- Cleveland District State High School
- Earnshaw State College
- Ferny Grove State High School
- Fitzroy Crossing District High School (WA)\textsuperscript{32}
- Fitzroy High School (VIC)\textsuperscript{33}
- Forest Lake State High School
- Hervey Bay State High School
- Holland Park State High School\textsuperscript{34}
- Indooroopilly State High School
- La Trobe Secondary College (VIC)\textsuperscript{35}
- Maroochydore State High School
- Merrilands College (VIC)\textsuperscript{36}
- Morayfield State High School
- Nyanda State High School
- Pioneer State High School
- Redbank Plains State High School
- Shepparton High School (VIC)\textsuperscript{37}
- Smithfield State High School
- Toowoomba State High School
- Upper Coomera State College (P-12)\textsuperscript{38}
- Warrandyte High School (VIC)\textsuperscript{39}
- Wesley College (P-12, VIC)\textsuperscript{40}

A description of some of these programmes follows.
**Blayney High School**

School-based research showed that while girls were keen to undertake ICT studies at lower levels within the school, numbers dropped off at senior level. A review of the Year 9 course content was undertaken with teaching and learning programs modified to include explicit connections with subject content and work-related skills. Better links were made between subject content and the world of work as well as providing greater awareness of the variety of jobs involving ICT, and of the relevance of skills in this area. Teachers became aware of the attitudes of girls towards ICT when choosing subjects for the senior years and were able to work to dispel any myths that existed.

Source:

**Cavendish Rd State High School**

An ICT event was held to actively engage Year 8, 9 and 10 female students in the Brisbane area to consider ICT-related courses and careers. The girls had the opportunity to hold discussions with prominent fellow students and members of the Community on Girls and ICTs. A second event provided parents and teachers with ideas on how to increase engagement of girls with ICTs. Contact: Tanja Obstoj.

Source:

**Calamvale Community College**

A GIDGITS group was launched in 2003 at the College. New skills were developed resulting in the production of Flash movies and animated gifs. New drawing tools enabled the design of t-shirt logos for GIDGITS with the resulting shirts worn with pride at an ICT careers for girls information event. For the girls, a career in the ICT industry has now become an exciting option that most had previously not considered. Contact: Bruce Lee.

Source:

**Cleveland District State High School**

A computer club for Year 8 girls called GiTECH meets regularly to enable the girls to participate in a range of ICT experiences including: programming through robotics; RoboCup robotics; using digital cameras and Photoshop to manipulate and enhance their photos; investigating career paths; and using comic chat. The club evolved to address the issue of the low enrolments by girls in senior ICT subjects and to increase the girls’ awareness of pathways to ICT careers. Cleveland State School has had strong links with Cleveland District State High School regarding the GiTECH project. Cleveland District State High School was the recipient in 2004 of $8950 for a *ICT Innovators Grant* to support this work. Contact: Lynne Cannell.
Sources:
• http://education.qld.gov.au/learningplace/communication/chat/comic

Earnshaw State College
A project was created to engage middle school students, especially girls, in digital storytelling. The aim was to improve girls' interest in using ICTs and increase the number of girls pursuing ICT subjects in senior school. The project produced a permanent multimedia archive of local veterans' memories and memorabilia. The launch of this archive will be part of commemorative celebrations being held for the 60th anniversary of the Banyo RSL Sub-branch. Contact: Colleen Hills and Christine Gordon.

Source:

Forest Lake State High School
The Girls and ICTs Only Club was launched in 2004. Participants experimented with some of the programs and applications that were not used in the normal classroom environment such as FrontPage, LOGO, Flash, and Inspiration. All the girls enjoyed the brief contact they had with each of the applications and were keen to explore individual programs in depth as the year progressed. Contact: Kev Bishop.

Source:

Hervey Bay State High School
Through a ‘Digital Capture’ project, girls will learn about the art of digital photography, image manipulation and printing to create digital folios of images depicting the local built and natural environments. The school hopes to help students develop lifelong skills for future work and recreation activities. A $7391 ICT for Every Student Grant was awarded to the school in 2006 to develop this project. Contact: Cheryl Dundas-Eiritz.

Sources:

Indooroopilly State High School
A Girls in ICTs Memory Bank CD was developed at Indooroopilly State High School. Girls from Years 6 to 11 worked with the Brisbane City Council to create digital 'albums' of residents' memories which formed part of an historical database. The school also worked with girls from Ironside State School to create a digital 'year book'. Indooroopilly State High School
received an ICT Innovators Grant of $10,000 to support this work. Contact: Sylvia Moretto.

Source:

Maroochydore State High School
Maroochy WAI-VES (Women Accessing ICT) project aims to increase the participation, confidence and profile of Years 8 and 9 girls in using and studying ICT. Through a project-based approach to learning, the girls will use new technologies to raise funds and awareness for a local charity, the Sunshine Coast Animal Refuge. Over a 12 month timeframe, the students will be challenged to use and understand new technologies to create products including webpages, multimedia presentations, e-newsletters, emails, online discussions and webcasts. To actively engage their peers, the girls will organise podcasts, global positioning systems, scavenger hunts and web trivia competitions. Through purposeful and meaningful interactions with technology, the school aims to motivate the schoolgirls to pursue ICT studies in Years 10 to 12. A $7000 ICT for Every Student Grant provides support for this project. Contact: Shona Liddy.

Source:

Morayfield State High School
An ICT Pacesetters Grant of $956 will enable a unit for girls to be established where they will undertake their own ICT project. Girls will be able to apply for a placement within the class while their actual project will need to be negotiated. A second grant of $1750 will enable girls from within the school to use software packages, digital still and video cameras to create multi-media 'living history' to celebrate the school's 25th anniversary. The final results of the project will be used for school parades, 25th anniversary celebrations, parent evenings and school visits. Contacts: Kyle McCutcheon & Anne Nunan.

Source:
• http://education.qld.gov.au/smartclassrooms/strategy/tsdis_studpacessetters2006.html#morayfield

Nyanda State High School
Since 2000, Techno-G has been running as an extra-curricular ICT program for girls in Years 8 to 12. Techno-G aims to build the knowledge, confidence and competence of girls in the ICT field. Activities have included:
• IT Workshops for 60 Girls from Years 6 and 7
• Hosting of an ignITe breakfast for 200 attendees
• Developing a formal presentation CD for year 12 students
• Building robots for the Robocup Junior Competition
• Developing children's books for under-developed countries
• Digital camera workshop for community members who are over 50.
Contact: Lesley Hall.

Sources:

**Pioneer State High School**

In 2004 a residential science and ICTs conference for girls in Years 10 to 12 was organised to give rural female students a chance to participate in ICT and Science activities. The GIFTS (Girls In For Technology and Science) Conference was held in Mackay for 70 girls from 12 schools. Funding for GIFTS was provided by Education Queensland's *ICT Innovator Grant* and the Centre of Excellence in Science, Maths and Technology. Staff from Central Queensland University, James Cook University and many successful women working in ICT careers in Mackay donated their time and resources to the conference.

Sources:

**Redbank Plains State High School**

Based on the philosophy of ‘It’s much easier to achieve your dreams … with a little help from a big sister’ the Cyber Sisters Program operates at Redbank Plains State High School. This enables girls with similar interests to get together to learn new ways of gathering and displaying information using ICTs, exchange ideas about a project of interest and be supported in their own school environment with a visit from a student mentor. Contact: Robin Finlay.

Sources:

**Smithfield State High School**

The TECHNO Chicks (Technology Enhancing Chances, Hopes and New Opportunities) group based at Smithfield SHS works on projects such as developing websites and creating Flash movies and animated gifs. This extra-curricular girls only club meets once a week. TECHNO Chicks get together and work with computer programs to complete allocated projects. Contact: Alana Baird.

Sources:
Toowoomba State High School

Toowoomba SHS has an all-girls computer club called ‘go gURL’ for Years 8 and 9 students. It was formed at the end of 2002 with support from an ICTs Innovators Grant. The aim of go gURL is to create interest and enthusiasm for girls to use ICTs. The club has a number of resources including three laptops, a colour printer, scanner and digital video camera. The girls in the club can borrow or use these resources at any time. go gURL members have become very useful to their classroom teachers helping them to set up ICT equipment and teaching them how to use some software and hardware. Contact: Dale Dittman.

Source:

Wesley College

An all-girl’s club called GEEK is CHIC was established to expand girls’ technology horizons. Operating at lunch times the girls were able to create personal web pages, while at the same time chatting, sharing and supporting each other. When assistance was required they supported each other before turning to staff. This was a significant feature of the experience; the teacher-learner role had been reversed as the girls grew in confidence and competence.

Sources:
• http://www.users.bigpond.com/rreyaud/geekischi/index.htm

5.3 Other Intervention Programmes

The following recent intervention programmes have been organised by women in the ICT industry, academia and government. While each programme is different, all reflect the goal of encouraging more girls (either at primary or secondary level) to consider studying in the ICT area or developing a career in the ICT industry.

Technology Takes You Anywhere - WIT Regional Tour

A regional tour of Cairns, Townsville, Central Queensland and Wide Bay was conducted during 2006 by WIT (Women In Technology), an active technology industry association in Queensland. Girls in Years 9 to 12 were introduced to technology and its opportunities through interactive presentations, hands-on workshops and competitions. They also had the chance to talk to women working in a wide range of technology careers. Parents, teachers and guidance officers were also welcome to participate.

Sources:
Technology Takes You Anywhere - Annual GIDGITS/WIT event

This event has grown significantly over the past few years. In 2005 over 1500 girls experienced one day of hands-on activities on topics such as DNA, dance studio, robots, cryptography and PDAs, run by volunteers including Australian Federal Police, IBM, Suncorp, and DNA Evidence. In 2006 girls from Years 6 to 12 had the opportunity to participate and were introduced to opportunities available in both information communication technology and biotechnology through workshops and interaction with women working in a wide range of ICT careers.

Sources:

TechGirls

Sponsored by AWE, the Association of Women Educators, DET, IBM, AWISE, FITT (amongst others), TechGirls currently runs events in NSW that are fun, exciting and informative to inspire young women to look at opportunities in the ICT area. Information sessions for careers advisors, teachers and parents about the booming ICT industry are also conducted. In 2006 a programme for 300 girls was run on the Central Coast and plans are in progress for an event in 2007 in Sydney. TechGirls is based on events held interstate including Technology Takes You Anywhere (QLD) and Go Girls, Go for IT (WA and VIC).

Source;
• http://www.techgirls.org.au/

Go Girl, Go For IT (WA)

Targeted at Year 9 to 12 girls over a two day event, Go Girl, Go for I.T. Careers Showcase aims to enhance the perceptions of available careers in ICTs. Women are I.T. WA (Inc.) (WIT WA), the WA chapter of a national network for women in information technology professions, has conducted this event in 2002, 2004, and 2006 with planning for the 2008 event underway. Over 2000 girls from Years 8 to 11 have attended each event. The showcase actively addresses the gender imbalance within the ICT industry by demonstrating that ICT careers provide exciting, rewarding and fulfilling opportunities for females.

Source;
• http://www.gogirlwa.org.au/

Go Girl, Go For IT (Vic)

If you're into fashion, science, cool gadgets or animation, then chances are you are also into IT but you just don't know it yet. That's the message the organisers of the Go Girl, Go For IT expo gave to over 2300 female high school students in Years 8 to 12 at the recent two day careers showcase, held at Deakin University during October 2006. The Go Girls event was
coordinated by the *Victorian Women in ICT Network*, a cluster established through a $100,000 Victorian Government grant. Major sponsors included Coles Myer, Deakin University, Telstra, Multimedia Victoria, Novell, and Jenny Barbour and Associates. This was the second such event held in Victoria with the first having taken place at Monash University in 2001 for 1700 girls.

Sources:

**IBM EXITE Camp**

IBM EXITE (EXploring Interests In Technology and Engineering) is a week-long camp run for 30 girls at a time in Years 8 to 10. The EXITE Camp program was first run in 1999 at IBM's Endicott, New York site. In 2006, there are a record 51 camps being held around the world. Since 2001, camps have been held in a variety of locations in Australia including Ballarat, Brisbane, the Gold Coast, Sydney and Melbourne. The girls learn about technologies such as wearable computers, wireless technology, virtual design and voice recognition. Activities include webpage coding and multimedia tools. The girls are assigned a tutor and at the conclusion of the camp a ten week mentoring program is undertaken. The continued interaction between the girls and their mentors after the completion of the camp assists in maintaining the interest and involvement of the girls in IT. Queensland contact: Carol Woodhouse.

Sources:

**New Realities**

New Realities, a past ICT careers awareness program run by the Victorian Government in 2001–2003, aimed to encourage girls to consider a career in the ICT industry. It profiled 45 young people, 22 of them women, involved in 15 diverse and interesting ICT careers and showed three different career pathways to those careers—a university course, vocational education or on-the-job training. School presentations were conducted which included MTV-style videos featuring interesting and dynamic young women acting as positive role models for a new generation of girls. Parents were also provided with information on the range of ICT careers available. The research culminated in a report on the attitudes to ICT careers (available from [http://www.mmv.vic.gov.au/AttitudesToICTCareers](http://www.mmv.vic.gov.au/AttitudesToICTCareers)).

Sources:
The Rural and Remote IT Stars Workshops

The Rural and Remote IT Stars Workshops are funded by James Cook University and the Queensland Department of Innovation and Information Economy. The objective of the workshops is to encourage Year 10 girls to take up IT subjects at secondary school level and to consider IT as a career. The workshop for 30 participants is held over a two-day period with the girls learning how to create their own music, animations and computer graphics and then to produce a CD about themselves. Students are also able to explore various career choices available in IT, their potential salaries and the possibility of working overseas. The workshops have been run numerous times and also include sessions where IT teachers and professionals discuss their careers and training in IT.

Sources:
• http://media.jcu.edu.au/story.cfm?id=187

The Girls in Maths, Technology and Science Summer School - GMTS

Conducted in January 2005 by the University of Southern Queensland, this workshop aimed to influence the subject selection of girls in years 11 and 12 to enrol in engineering, science, mathematics and technology courses at the tertiary level. Activities undertaken by students included video conferencing, use of a geographic information system and creation of own web page. Sponsors included Powerlink Qld and the Queensland State Government.

Sources:
• http://www.usq.edu.au/opacs/aboutopacs/specprogs/summerschool.htm

Technology Workshops for Primary School Girls

The University of New South Wales began offering hands-on workshops in Science and Technology to Year 5 and 6 primary school girls in 2001. These workshops attempted to address the gender imbalance present in many engineering, science and technology disciplines. Three workshops were conducted in 2002, and four in 2003. The one-day workshops involved 40 girls in brainstorming sessions, experience in human computer interface, the use of state of the art Apple Macintosh computers as well as a university tour and an introduction to the research environment. These workshops aimed to engage the girls in the process of creating the technology of the future, while giving them a better understanding of today’s technology.

Sources:
• http://www.eng.unsw.edu.au/alumni/unsweng/issue8/comp.htm
The Girls Can Do IT Breakfast, ignITe Breakfast
In 2003 in Cairns and the Cape District, an ignITe breakfast was held and another was hosted by Nyanda State High School's Techno G, in partnership with WIT (and funded by the Department of Innovation and Information Economy's Information and Communication Technology Skills, Training and Role Models (i-STAR) Program). These events were targeted girls from Years 8 to 10 as well as parents, teachers and career counsellors. The aim was to inform the girls of the possibilities offered within IT, to inform parents and educators of the opportunities available in IT for girls and how to assist the girls in following those opportunities. Talks were provided by industry professionals and demonstrations included current and emerging technologies. The girls were able to interact with the industry professionals by way of question sessions and informal discussions.

Sources:

Sunshine Coast GLITTER
Sunshine Coast GLITTER (Girls Learning IT TogethER) was an event held for Year 8 to 10 girls consisting of talks from women in ICT, a demonstration of a tablet PC from Toshiba, a workshop for video editing and a question and answer session with the speakers. Parents were able to view student work via a web camera link.

Source:

Emerald District Girls and ICTs Event
In 2004 girls from the Emerald education district had the opportunity to participate in a one day event with a range of activities, including robotics, digital video, digital albums, animations, digital art (design a t-shirt print, or a CD cover) and calendar creations. The day aimed to increase girls’ engagement with ICTs and made use of a virtual classroom which enabled the girls to interact via technology and also assisted in obtaining feedback from the participants. Contact: Judy Lanham.

Source:

University of Sydney
A final year undergraduate Information Systems project team (EO Solutions) conducted a three day workshop for 20 secondary school girls during September of 2005. The girls were introduced to a range of career opportunities in IT, through hands-on multi-media activities. Six final-year IT students acted as tutors to the girls, and interactive mentor sessions with twelve female IT professionals were also conducted. Working in groups the girls designed and created an online magazine which featured their mentors. Contact: Andrea Stern.
Association for Women Educators

The Girls and ICT project coordinated by the Association of Women Educators aims to build sustainable networks for young women throughout Australia. A grant from the Federal Government's Office for Women, Women’s Leadership Development Program supports this work. The project proposes to support and strengthen local networks to coordinate successful events for girls, teachers and parents in each State and Territory. Where a local network does not exist one will be established.

Source:
• http://www.awe.asn.au/girlsicts/buildingSustainableNetworks.php

Digi-girls

Northern Sydney Institute of TAFE operates the Digi-girls initiative which is aimed at Year 9 and 10 girls. The program includes presentations from role models and interactive workshops which aim to accelerate the girls’ technical engagement. Contact Robyn Woolley

Source:

5.5 Useful Online Resources

Girls With IT

This website is designed, written and built by the students from the Gold Coast Institute of TAFE. It aims to encourage more girls into careers in ICT by facilitating a range of projects within schools and the vocational education and training sector.

Source:
• http://www.tafeonline.qld.edu.au/gwit/about.html

GirlsGoTech

While this resource is not Australian it is an excellent site for girls of primary school age. The site aims to promote an interest in science and technology. The site includes the following sections: See the World, The Games, Inside the Web, and the ADS. The site is managed by Girl Scouts of the USA.

Source:
• http://www.girlsgotech.org/
6. Conclusion

The issue of the lack of girls considering a career in computing is not new. Interventions have historically been focused at secondary school and tertiary levels but were fragmented because they were undertaken by autonomous groups. This led to reduced and short-term impact. A lasting and strategic cultural change that leads to females having greater career (and economic) choices is more likely to be effective if more initiatives are targeted at early points in the pipeline chain—such as primary school.

While specific mention of gender equity as a focus is made in many official documents, the continuing decline in the number of young women who are prepared to consider computing in future studies and as a career would indicate that the current method of relying on individual teachers and inclusive teaching practices is not sufficient.

More needs to be done to engage primary girls to think and work positively with computers. Only a minority of schools at the primary level are currently implementing intervention programmes. Typically these programmes are small, usually involving a single teacher and their class, and this is usually as a result of a passionate individual. There are even fewer programmes involving a whole school approach.

A number of reasons exist for the lack of programmes within primary schools. Anecdotal evidence would suggest that in most schools there is little understanding of the seriousness of the pipeline effect. Additionally there are many competing demands for teacher attention—even in the area of technology itself. Many teachers are doing their best to overcome their own lack of confidence in their use of technology and in keeping abreast with the ever-changing technology itself. To run an intervention programme often requires the activity to be an extra-curricula one which requires another commitment at lunch time or after school for staff. The lack of published evaluations of successful programmes by others also results in a ‘reinvention of the wheel’ by those who do want to run such activities.

ICTs are vital to the future of every Australian child. The implementation of the Statement of Learning for ICT in the near future is an opportunity for these issues to be considered. School programmes are necessary to increase the access, participation and outcomes for students who currently experience barriers to the use of ICTs in their daily learning or to their participation in ICT-based subjects.

In recent years greater collaboration has emerged between women in associations from different States, which aim to promote ICTs to girls. The cooperation between groups offering the Technology Takes You Anywhere program (QLD), TechGirls (NSW) and Go Girls (WA and VIC) has enabled ideas and resources to be shared and improved programmes to be run.

This type of cooperation needs to be replicated in the education sector. For example the Queensland Governments report on ICTs for Learning, Girls and ICTs is a
practical and valuable resource that should be provided to all teachers, not just those in the geographical area of Queensland.

The much higher proliferation of intervention programmes throughout Queensland was evident. The planned approach adopted (Girls and ICTs Framework for Action 2003–2004 and Girls and ICT Strategy 2005–2008) has demonstrable benefits with much greater awareness and activity in primary schools in that state.

Initiatives in most places rely on goodwill. In Queensland, many Girls and ICT initiatives have been supported by universities, TAFE, women’s groups, companies, and schools. The coordination between these groups is critical to the success of events. The Department of Education, Training and the Arts in Queensland has a project officer who oversees Girls and ICT initiatives across Queensland and has managed much of this coordination. For the first time this year, Queensland has also appointed ten classroom teachers to enable coordination of regional action.41 The value of such coordination should not be underestimated.

As part of the strategy the Queensland Girls in ICT Group meets regularly to keep up-to-date on Girls and ICT initiatives and to collaborate on projects. Members of the group cover the broad spectrum of stakeholders including representatives from schools, Department of Education and the Arts, universities, ICT professional associations, TAFEs, Government departments, the catholic education office and vocational training providers and industry. Other States and Territories would benefit from adopting this model.

Rather than ad-hoc programmes, a coordinated large-scale intervention programme should also be considered to support schools. For example, in the United Kingdom, Computer Clubs for Girls (CC4G) is currently delivered to 2,000 schools and more than 62,000 girls. It is showing a positive impact on the attainment of 10–14 year old girls in ICT. Models such as this should be considered to see whether they would be of benefit and are adaptable to Australian schools.

The lack of women in the ICT industry is a complex issue that will not be solved easily. However, the educational sector can help address the issue facing girls early in the pipeline.

6.1 Recommendations

1. **Put gender on the agenda:** Greater conscious raising and professional development for teaching staff in schools is needed, especially regarding how subtle discrimination may occur.

   Suggested action: Running a professional development activity in each school at the commencement of the term where a minimum 15 minute presentation is given focused on this topic.

2. **Ensuring the ICT education at all levels is truly inclusive.**

Suggested action: Lobbying educational authorities for curriculum redesign.

3. There is a need to support teachers with resources to be able to run programmes such as computer clubs.

Suggested action: Each State and Territory should adopt a planned approach and appoint a person responsible for coordination. Links into existing networks such as the Learning Place and existing girls clubs should be established.

4. Good programmes need to be embedded into schools rather than being dependent on an individual’s enthusiasm.

Suggested action: The value of programmes needs to be made explicit via evaluation and dissemination of the results. Appropriate ways to inform the teaching community include presenting papers, reports or presentations through The Learning Place, Australian Educational Computing Conference, Education Views and the AWE Journal – Redress

5. Resources are required to be able to evaluate effectively all intervention programmes.

Suggested action: Appendix 4 of this report provides nine tools, seven of which were created during the running of this project. These instruments can be adapted as required for individual programmes. Feedback on the use of these and other tools can be provided to AWISE\(^{42}\) for further use by others.

6. Dissemination of the evaluation and quality resources need to be shared.

Suggested action: A network of people working in this area at primary, secondary and tertiary levels, and from within industry and government, can be created with a collaborative approach and shared intellectual property via the database developed as part of this programme and made available via AWISE. Additionally, promotion in education newsletters, journals and conferences is needed of promising practices.

7. A coordinated large-scale effort should be investigated for possible adoption.

Suggested action: Further research is required in this area.

The area of under-representation of girls in computing courses requires greater commitment from teachers, schools and funding agencies to create equality of outcomes for all.

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\(^{42}\)http://awise.ihoard.com/
7. References


Appendix 1: Data Collection

This Appendix provides a brief overview of the data collection methods for the Young Girls ICT project. The project consisted of three separate but interconnected pieces of work: an investigation of current initiatives; conducting of an evaluation workshop with the creation of evaluation tools; and the creation of a key educator’s database.

1. Intervention Programme Investigation

An investigation was undertaken into the girls and ICTs intervention programmes operating within Australian primary schools. The scope of the research was extended to include secondary school projects when it became clear that there were limited programmes operating at a primary level. As the boundary between primary and secondary school also varies from State to State, it was deemed appropriate to include both educational sectors. Programmes operating from outside the educational sector but aimed at young girls were also included as part of the investigation.

The first part of the investigation took the form of a literature review. Secondly a short telephone interview was conducted with a staff member from each of 280 government primary schools. This sample size aligns with research of a similar nature such as the OECD Programme for International Student Assessment (PISA)\(^\text{43}\). Only those schools identifying themselves as primary schools were considered (kindergartens, child care providers, high schools and educational services were not included in schools contacted). The schools were chosen at random from the following government sites with 40 schools selected from each state and 20 from each territory.

- Australian Capital Territory—Department of Education and Training
  71 primary schools listed
- New South Wales—Department of Education and Training
  2242 educational institutions listed
  http://www.schools.nsw.edu.au/schoolfind/locator/?section=showAlpha
- Northern Territory—Department of Education and Training
  172 educational institutions listed
  http://www.schools.nt.edu.au/
- South Australian Government—Department of Education & Children’s Services
  1942 educational institutions listed
- Queensland Government—Department of Education, Training & the Arts
  1290 educational institutions listed
  http://education.qld.gov.au/schools/directory/
- Tasmania Government—Department of Education
  206 educational institutions listed
  http://www.education.tas.gov.au/dept/about/contact/schoolsatoz
- Victorian schools—Department of Education and Training
  171 educational institutions listed
- Western Australia Government—Department of Education and Training

\(^{43}\) In Australia PISA 2003 involved 321 schools to obtain a national sample (Ainley and Searle 2005)
A limitation of this study is that due to time restrictions it was not possible to survey every school and every teacher within the country. While a random sample of schools was used, generally only one teacher was spoken to at each of these schools. However it is possible that there was activity within the school that was not known by this teacher and therefore not disclosed.

An extensive search was then made from predominately educational and government web sites.

Information was also sought from educators who were requested to inform the researcher about intervention programmes via requests in the following three publications.


Lastly the following associations were emailed:

- Australian Council for Computers in Education  
  http://www.acce.edu.au
- Computer Education Group - ACT  
  http://www.cegact.act.edu.au
- ICT in Education Victoria  
  http://www.ictev.vic.edu.au
- Computers in Education Group of South Australia  
  http://www.cegsa.sa.edu.au
- Information Technology Educators Association of the Northern Territory  
  http://www.iteant.nt.edu.au
- New South Wales Computer Education Group  
  http://www.nswceg.org.au
- Tasmanian Society for Information Technology in Education  
  http://www.tasite.tas.edu.au
- Queensland Society for Information Technology in Education  
  http://www.qsite.edu.au
- Victorian Information Technology Teachers Association Inc  

Each association was asked to place a notice in their next newsletter which briefly described the project and asked for members to contact the researcher should they have any information regarding intervention programmes. The programmes could be

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44 The Educational Computing Association of Western Australia (www.ecawa.asn.au) was not contacted through an oversight on the part of the researcher
on a small scale, as in involving a single teacher and their class, or on a large scale involving a whole school approach.

2. Evaluation Workshop

During the investigation of intervention programmes that attempt to engage girls in thinking and working positively with computers, key educators across Australia who are involved in such initiatives were identified. The following participated in a workshop held in Brisbane to explore the evaluation of such programmes.

Table 5: Workshop participants

<table>
<thead>
<tr>
<th>Educator</th>
<th>Sector</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alana</td>
<td>S</td>
<td>Smithfield State High School</td>
</tr>
<tr>
<td>Amelia</td>
<td>P</td>
<td>Normanton State School</td>
</tr>
<tr>
<td>Anne</td>
<td>S</td>
<td>Redbank Plains State High School</td>
</tr>
<tr>
<td>Craig</td>
<td>P</td>
<td>Peachester State School</td>
</tr>
<tr>
<td>Daisy</td>
<td>S</td>
<td>Mater Christi College</td>
</tr>
<tr>
<td>Dale</td>
<td>S</td>
<td>Chancellor State College</td>
</tr>
<tr>
<td>Helen</td>
<td>U</td>
<td>Swinburne University</td>
</tr>
<tr>
<td>Janelle</td>
<td>P</td>
<td>Crescent Lagoon State School</td>
</tr>
<tr>
<td>Julie</td>
<td>U</td>
<td>Monash University</td>
</tr>
<tr>
<td>Kim</td>
<td>P</td>
<td>Woree State Primary School</td>
</tr>
<tr>
<td>Megan</td>
<td>P</td>
<td>Atherton State School</td>
</tr>
<tr>
<td>Nicola</td>
<td>P</td>
<td>Kurunda District State School</td>
</tr>
<tr>
<td>Rhonda</td>
<td>S</td>
<td>Caloundra State High School</td>
</tr>
<tr>
<td>Sarah</td>
<td>P</td>
<td>Pullenvale State School</td>
</tr>
</tbody>
</table>

The workshop covered the need for evaluation and creation of tools that others could adapt and adopt. While it was recognised that there are different forms of evaluation such as process, impact, and outcomes evaluation, the workshop focused on outcome evaluation; in other words, what success for an intervention programme would look like. Outcomes were categorised into three groups;

1. Initial outcomes that could occur directly as a result of the programme which could include that girls learn skills, have greater awareness of uses of computers, or develop an interest in newly learned skills.

2. Medium-term outcomes that occur from the programme but more indirectly such as girls developing self-confidence in computer use, feel more comfortable in exploring technology, are more self-reliant or are more willing to take risks with technology

3. Longer-term outcomes may not occur until sometime in the future when girls have developed an understanding which enables them to make informed decisions about the use of technology in society; they develop to their full potential and may embrace an ICT career.

Tools were created which could assist educators with evaluation of future initiatives. These tools can be found in Appendix 4 and via the AWISE website.

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P=Primary; S= Secondary; U = University Sector
3. **Key Educators Database**

Approximately 300 key educators in Australia have been identified through the investigation of intervention programmes. These people are primary teachers, secondary teachers, university academics or people in an advisory capacity within government departments.

As part of the project an interactive educator’s community database called WIITE (Women in IT Educators) has been developed. It is available for free use from the AWISE web site awise.org.au.

Valuable information such as contact details, initiatives and project status are maintained and searchable. The key purpose is knowledge sharing and connecting the community to reduce duplicated efforts and enhance lessons learned.
Appendix 2: School Age and Levels

It is compulsory for children to attend school from the ages of 6 to 15 (16 in South Australia and Tasmania). However it is common for children to start school at a younger age than 6 and to remain beyond 15 years of age.

Primary education spans either six or seven years and secondary schooling is available for either five or six years depending on the State or Territory (see Table 6). Years 11 and 12 are regarded as senior secondary education and are post-compulsory education for most students.

The Australian Government's policies and programmes for schools are administered through the Department of Education, Science and Training (DEST). Through DEST, the Government provides supplementary funding to all school authorities to support agreed priorities and strategies. The overall result is that government schools receive the majority of their government funding from State and Territory governments, while non-government schools receive the majority of their government funding from the Australian Government.

Table 6: Primary and secondary school structures, and ages of commencement for year 1, by State and Territory, 2004

<table>
<thead>
<tr>
<th>State and Territory</th>
<th>Preschool</th>
<th>Year before year 1 (first year of school)</th>
<th>Month and age of commencement for year 1</th>
<th>Primary schooling</th>
<th>Secondary schooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>Preschool</td>
<td>Kindergarten</td>
<td>January, 5 turning 6 by 31 July</td>
<td>Years 1–6</td>
<td>Years 7–12</td>
</tr>
<tr>
<td>Victoria</td>
<td>Preschool</td>
<td>Preparatory</td>
<td>January, 5 turning 6 by 30 April</td>
<td>Years 1–6</td>
<td>Years 7–12</td>
</tr>
<tr>
<td>Queensland</td>
<td>Preschool</td>
<td>(until 2006) Preparatory (from 2007) (a)</td>
<td>January, 5 turning 6 by 31 December</td>
<td>Years 1–7</td>
<td>Years 8–12</td>
</tr>
<tr>
<td>South Australia</td>
<td>Preschool</td>
<td>Reception (b)</td>
<td>January, 5 years 6 months by 1 January</td>
<td>Years 1–7</td>
<td>Years 8–12</td>
</tr>
<tr>
<td>Western Australia</td>
<td>Kindergarten</td>
<td>Pre-primary (d)</td>
<td>January, 5 turning 6 by 30 June</td>
<td>Years 1–7</td>
<td>Years 8–12</td>
</tr>
<tr>
<td>Tasmania</td>
<td>Kindergarten</td>
<td>Preparatory</td>
<td>Turning 6 by 1 January</td>
<td>Years 1–6</td>
<td>Years 7–12</td>
</tr>
<tr>
<td>Northern Territory</td>
<td>Preschool</td>
<td>Transition (e)</td>
<td>January, 5 years 6 months by 1 January</td>
<td>Years 1–7</td>
<td>Years 8–12</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>Preschool</td>
<td>Kindergarten</td>
<td>January, 5 turning 6 by 30 April</td>
<td>Years 1–6</td>
<td>Years 7–12</td>
</tr>
</tbody>
</table>
Notes:

(a) In 2003 and 2004, a total of 66 Queensland schools participated in trials of a non-compulsory full-time preparatory year of schooling prior to year 1. From 2007, the preparatory year will be offered in Queensland primary schools, replacing the current part-time State preschool year. The minimum age for children entering the preparatory year from 2007 will be 4 years, 5 months, and the minimum starting age for year 1 will increase to 5 years, 5 months in 2008.

(b) Staggered intake for each term.

(c) The minimum school leaving age was raised to 16 years from the commencement of the 2003 school year.

(d) From 2001, Western Australia changed its minimum school starting age (Kindergarten) from 3 years to 3 years 6 months. A half year cohort is currently progressing through the year levels.

(e) Staggered intake for each term.

(f) In some places, Northern Territory's secondary schooling begins at year 7.

Appendix 3: Funded Research

1. ASISTM projects

The Australian Government, through DEST has provided funding of between $20,000 and $120,000 for specific projects which will improve science, mathematics and/or technology education in schools. A total of $33.7 million is being made available for ASISTM projects. The programme aims to

- encourage innovation in Australian schools and extend the innovative capacity of students;
- promote world-class teaching and learning of science, technology and mathematics in Australian schools; and
- assist in attracting to, and retaining in, the teaching profession, sufficient numbers of high quality graduates in the fields of science, technology and mathematics\(^46\).

The ASISTM Project integrates Elements 1 and 2 of the Boosting Innovation Science Technology and Mathematics Teaching (BISTMT) Programme.

Projects can be undertaken in government or non-government schools at the primary or secondary level. Projects are based on partnerships or clusters of schools—schools with other schools and/or universities, science organisations, business, industry and teacher professional associations.

Two funding rounds have so far been completed with funding allocated to 102 projects in July of 2005 and 99 projects in April 2006. Round 3 projects are due to be announced in October 2006. More than half of the projects either focused specifically either on technology or had a major technology component (see Table 7.)

\[\text{Table 7: ASISTM projects}\]

<table>
<thead>
<tr>
<th>State</th>
<th>Round 1 Technology related</th>
<th>Round 2 Technology related</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>NSW</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>NT</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>QLD</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>SA</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>TAS</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>VIC</td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>WA</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>64</strong></td>
<td><strong>52</strong></td>
</tr>
</tbody>
</table>

Of the 116 projects related to technology only two (1.7%) had a focus on gender issues (see Table 8). Specific details of these projects were sourced from the project websites.

Table 8: Gender and ICT projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Round</th>
<th>State</th>
<th>Project title</th>
<th>Target level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1036</td>
<td>1</td>
<td>QLD</td>
<td>Girls build IT</td>
<td>Year 6 to 8</td>
</tr>
<tr>
<td>1059</td>
<td>1</td>
<td>VIC</td>
<td>More Bytes: Girls and IT in the Middle Years</td>
<td>Year 8 to 10</td>
</tr>
</tbody>
</table>

1036 Girls Build IT

‘Girls Build IT’ aims to develop girls’ knowledge, confidence and skills in information communication technology (ICT) fields and impart a broader understanding of possible ICT career pathways. Through a variety of ‘girls only’ hands-on activities, trained teachers will assist year 6 and 8 girls to build computers for their schools. They will assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. The finished computers will be installed in classrooms or school libraries and facilitate the integration of ICT in learning. Girls will be encouraged to continue their interest through a ‘Girl Tech Club’, chatrooms and video links. Information about the program will be presented at forums, conferences and on school websites’.

Table 9: Project 1036—Girls build IT

<table>
<thead>
<tr>
<th>Organisation/School</th>
<th>Role</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holland Park State High School</td>
<td>Coordinator</td>
<td>Holland Park QLD</td>
</tr>
<tr>
<td>Junction Park State School</td>
<td>Partner</td>
<td>Annerley QLD</td>
</tr>
<tr>
<td>Marshall Road State School</td>
<td>Partner</td>
<td>Holland Park West QLD</td>
</tr>
<tr>
<td>Wellers Hill State School</td>
<td>Partner</td>
<td>Wellers Hill QLD</td>
</tr>
</tbody>
</table>

1059 More Bytes: Girls and IT in the Middle Years

‘More Bytes’ aims to use information and communication technology (ICT) and multimedia to produce an interactive narrative of girl’s culture across place, space and time. It will involve student chat sessions, hands-on experiences for teachers and networking for students across schools. The project recognises that many girls are disengaged from ICT and aims to show its capability as a collaborative learning tool. Using multimedia ICT, the students will develop new ways of thinking, producing and communicating e.g. digital storytelling, digital diaries, movie-making, game design, animation and web streaming media. The students will also learn to use a broad range of software and link to young women in ICT work environments. The outcomes of More Bytes will be disseminated on an interactive website and in a comprehensive report’.


- 52 -
Table 10: Project 1059 - More Bytes

<table>
<thead>
<tr>
<th>Organisation/School</th>
<th>Role</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Centre for Gender and Cultural Diversity, Swinburne Institute of Technology</td>
<td>Coordinator</td>
<td>Hawthorn, VIC</td>
</tr>
<tr>
<td>Banksia Secondary College</td>
<td>Partner</td>
<td>Ivanhoe, VIC</td>
</tr>
<tr>
<td>Bundoora Secondary College</td>
<td>Partner</td>
<td>Bundoora, VIC</td>
</tr>
<tr>
<td>Fitzroy Crossing District High School</td>
<td>Partner</td>
<td>Fitzroy Crossing, WA</td>
</tr>
<tr>
<td>Fitzroy High School</td>
<td>Partner</td>
<td>Fitzroy, VIC</td>
</tr>
<tr>
<td>La Trobe Secondary College</td>
<td>Partner</td>
<td>Macleod, VIC</td>
</tr>
<tr>
<td>Merrilands College</td>
<td>Partner</td>
<td>Reservoir, VIC</td>
</tr>
<tr>
<td>Shepparton High School</td>
<td>Partner</td>
<td>Shepparton, VIC</td>
</tr>
<tr>
<td>Warrandyte High School</td>
<td>Partner</td>
<td>Warrandyte, VIC</td>
</tr>
<tr>
<td>Wesley College</td>
<td>Partner</td>
<td>St Kilda, VIC</td>
</tr>
</tbody>
</table>

2. Technology School of the Future Projects

The mission of the South Australian Technology School of the Future (TSoF) is to “provide 'cutting edge' leadership and research and high quality services, which support education communities to better utilise technology to achieve improved teaching, learning, leadership and administration.”

Since 2003 the TSoF has provided annual research grants for Professional Learning in ICT to enable teachers to 'build and share knowledge and understanding for DECS educators, regarding the power of ICT to enhance learning and teaching’51. Seventy research grants have been awarded under this scheme for wide variety of projects to enhance and enrich learning and/or teaching via ICTs. However, there have been no projects specifically with a focus on girls and ICTs.

Under the category of major research projects in early stage of development, two projects focus on social inclusion:

- **Relevance, Power and Success**
  This project will investigate how ICTs support educationally disadvantaged students to make learning relevant, powerful and successful. Researchers for this project are TSoF, Equity Portfolio, Learning Outcomes and Curriculum Group, Pennington PS, Christies Beach HS and Murray Bridge North PS.

- **Gender and ICT**
  This project is concerned with looking at issues of harassment and the power of animation to engage students in critical discussions about gender issues. Researchers for this project are TSoF and the Equity Portfolio, Learning Outcomes and Curriculum Group, and the Heights School.

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49 The work of the National Centre for Gender & Cultural Diversity is now part of the Institute for Social Research Citizenship
50 http://www.tsof.edu.au/aboutus/
Appendix 4: Evaluation Instruments

To support educators in the evaluation of intervention programmes a number of resources and tools are provided in this section.

Each tool or instrument will require adaptation to the context of the specific programme and the changing nature of the technology. No tool is ever perfect and through a process of feedback and reflection can always be improved.

• Tools 1 – 2 are the survey tools from the 2006 Victorian Go Girl Event.
• Tools 3 – 9 were developed by participants of the evaluation workshop.

Tools 1 and 2

The Go Girl Student Evaluation instrument and Go Girl Teacher Evaluation instrument provided on the following pages have evolved over a lengthy period of time. The first ‘Go Girl Go for IT’ programme was conducted in Victoria in 2001. This event was evaluated via a post-event survey sheet. Similar events have now been conducted in numerous States with each instance of the evaluation tool being modified to suite the particular programme. Many committees and groups (Eg WIT) have had the opportunity to comment and improve the tool. The questions are now more focused enabling the determination of whether the programme was a success from an immediate outcomes perspective.

Feedback from Dr. Judy Sheard and Angela Carbone from Monash University, the independent evaluators who prepared the final report from the data, have made further recommendations to be considered for implementation next time:

Student questionnaire considerations:
Q.5  Could also add downloading/listening to music, downloading/viewing movies and downloading/viewing photos - quite a few students nominated these.

Q.6  This would be better reworded to allow for student who have studied IT in previous semesters: "Have you studied or are you currently studying an IT subject at school?"

With the 'No' option for Q.6, could reword as: "Is there any reason why you haven't studied IT?" and add the choice "I plan to study IT next year"

In the 'Yes' for Q.6, could present options such as: dull boring, difficult, not useful, interesting, useful (students could select more than one option). This would give more information about what they thought about their IT subject beyond their level of interest. Their level of interest in IT in general is gained in Q.19.

Q.11a and Q.11b, now that we have identified what girls like and don't like about IT we could convert this question to a "check-box" type question and then provide room for other things to be identified - This would help build a substantive list and not just repeat earlier findings.
Q.12 to Q.17 could be presented as Likert scale responses.

Teacher questionnaire considerations:
Q.5 Could reword as: "What are your main discipline areas?" and allow multiple responses. This is harder to code but you will get a better idea of how many teachers consider IT to be a discipline area. You could also add English Library as options here - a number of teachers nominated those in the open section.

Q.18 and Q.19 Combine these two questions (as in the student questionnaire).

Initial outcomes measured by the survey tool indicated that the Victorian 2006 event had been very successful with a much large percentage of the students (63%) indicating that they would now consider a career in IT compared with 34% before the event.

To obtain an understanding of what long term outcomes such a programme has achieved a follow up survey will need to be created and conducted in approximately two years time. For previous Go Girls event this has not been undertaken due to issues with privacy of information and the need to obtain parental consent for minors. However the correct permissions have been obtained facilitating a longitudinal study in the future.

**Tools 3 to 9**
These tools provide a sample set of questions for educators looking to evaluate similar programmes. These tools where created after participants brainstormed around the following points:

- What is the context of the programme?
- What is the purpose of conducting the evaluation?
- Who wants to know?
- What would success of the intervention programme look like?
- How do we measure these success attributes?
- Who should the evaluation be administered to and when?
- What sort of topics should be covered?

These tools were developed by participants of the evaluation workshop. They have not been tested for validity\(^\text{53}\) or for reliability\(^\text{54}\).

\(^{53}\) Does it measure what it claims to measure?
\(^{54}\) Will the same answers be generated if administered at a different time and place?
Tool 1 – Go Girl Go For IT Student Evaluation

GO GIRL, GO FOR IT 2006
Student Evaluation
Deakin University
Faculty of Business and Law

For us to understand what you liked and did not like about Go Girls we ask that you please take the time to answer a few questions. At the end of the day hand this sheet to a Go Girl volunteer at the front of the room before leaving. In return you will be given a show bag full of great gifts!!

Please complete this page only at the beginning of the afternoon session
Please indicate responses by placing a cross [ ] in the appropriate box

Q1. Which group are you in? [ ] Orange  [ ] Silver  [ ] Blue  [ ] Red

Q2. What year are you currently in at school?
[ ] Year 8  [ ] Year 9  [ ] Year 10  [ ] Year 11  [ ] Year 12

Q3. What school do you attend? ____________________________________________

Q4. How many hours do you use a computer per week? (please cross one)
[ ] None  [ ] 1-5 hours  [ ] 6-10 hours  [ ] 11-15 hours  [ ] 16 or more

Q5. What do you use computers for? (please cross all that apply)
[ ] Email  [ ] Assignments  [ ] Chatting/IM/MSN  [ ] Web surfing  [ ] Games
[ ] Building Web Sites  [ ] Programming
[ ] Other, please indicate ______________________

Q6. Are you studying an IT subject at school? [ ] Yes  [ ] No
If Yes, please describe the IT subject (cross only one box)
[ ] Dull boring  [ ] Mildly interesting  [ ] Interesting  [ ] Very interesting  [ ] Extremely interesting
If No, is there any particular reason why you don’t study IT?
[ ] Not offered  [ ] Not interested  [ ] Prefer other subjects  [ ] It will be boring
[ ] It will be too hard  [ ] Other, please indicate ______________________

Q7. Of the four sessions before lunch which was the best and why?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Q8. What was one thing that you learnt from these sessions which you did not know before?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2802389507

Please turn over ➔
Q9. Of the four sessions after lunch which was the best and why?

Q10. What was one thing that you learnt from these sessions which you did not know before?

Q11a. What do you think you would like about a job in IT?

Q11b. What do you think you would NOT like about a job in IT?

Q12. Did you find it helpful having presenters speak about their experiences in IT?  □ Yes  □ No

Q13. From today’s event did you get a positive feeling about careers in IT?  □ Yes  □ No

Q14. Will you go and find out more about IT?  □ Yes  □ No

Q15. Will you consider selecting IT based subjects next year at your school?  □ Yes  □ No

Q16. Would you consider IT as a career option?  □ Yes  □ No

Q17. Had you considered IT as a career option before today?  □ Yes  □ No

Q18. What parts of today’s event did you attend? (cross all that apply)
  □ Trade show  □ Sessions before lunch  □ Fashion parade  □ Sessions after lunch

Q19. After attending today how interested are you in IT?
  □ Not interested  □ A little interested  □ Interested  □ Very interested  □ Extremely interested

Q20. What was your overall impression of the day?
  □ Awesome  □ Great  □ OK  □ Not that good  □ Unsatisfactory

Q21. Do you have any suggestions to make the event better next time or any other comments?

Thank you for taking the time to fill out this survey  5535389503
Tool 2 – Go Girl Go For IT Teacher Evaluation

GO GIRL, GO FOR IT 2006
Teacher Evaluation
Deakin University
Faculty of Business and Law

To help us improve this event please take a few moments to complete the following questions.

Please indicate responses by placing a cross ☒ in the appropriate box.

Q1. How did your school hear about the event? Cross all that apply.
   ☐ Email ☐ Newspaper ☐ Website ☐ Fax ☐ Phone ☐ not sure
   ☐ Other (please indicate) ____________________________

Q2. How many girls did you bring with you today?
   ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-30 ☐ more than 30

Q3. Who within your school decided it would be worthwhile to have girls attend?
   ☐ Principal ☐ Careers teacher ☐ IT Teacher ☐ Parents
   ☐ Other (please indicate) ____________________________

Q4. How were the girls selected to attend?
   ☐ Compulsory excursion ☐ Individuals applied ☐ Staff selected
   ☐ Other (please indicate) ____________________________

Q5. What is YOUR discipline area?
   ☐ Careers ☐ IT ☐ Maths ☐ Science
   ☐ Other (please indicate) ____________________________

Q6. Which group did you attend? (please cross one)
   ☐ Orange ☐ Silver ☐ Blue ☐ Red

Q7. How would you rate the pre-event communication with the Go Girls team?
   Please explain why: ______________________________________

Q8. How would you rate the overall management of this event?
   Please explain why: ______________________________________

Q9. How would you rate the facilities provided at this event? (catering, rooms, parking etc)
   Please explain why: ______________________________________

Q10. How would you rate the overall quality and content of the presentations?
    Please explain why: _____________________________________

4348391237

Please turn over →
Q11. How interested are YOU personally in IT? (Please select one)
- Not at all
- A little
- Interested
- Very interested
- Extremely interested

Q12. What parts of today's event did you attend? (Please cross all that apply)
- Trade show
- Sessions before lunch
- Fashion parade
- Sessions after lunch

Q13. Within your school what resources are available for the girls to find out more about IT? (Please cross all that apply)
- Not sure
- Literature
- IT Teacher
- Careers teacher
- Local Careers event
- Other (please indicate)

Q14. Did you personally learn anything from today's events? Please explain:

Q15. Do you think it has been helpful for the girls having role models speak about their experiences in IT? Please explain:

Q16. Would you consider bringing your school to an event like this again?
- Yes
- No

Q17. What was your overall impression of the day?
- Excellent
- Great
- OK
- Not that good
- Unsatisfactory

Q18. Do you have any suggestions to make the event better next time?

Q19. Other comments you would like to make?

Thank you for taking the time to fill out this survey.
**Tool 3 – The Computer Club (TCC)**

PURPOSE: To track the change in curriculum through the changing needs of the girls

ADMINISTER TO: Year 8 to 12 girls who belong to the Computer Club (TCC)

TOPICS COVERED: Mentoring/role models, Networking, Multimedia, *Social Skills*, Programming, Work shopping

NOTES: These questions would require appropriate formatting and instructions before administering to the girls.

<table>
<thead>
<tr>
<th>Possible questions which provide justification for stakeholders</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What year are you in?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. How many years have you been involved in TCC?</td>
<td>SA</td>
<td>A</td>
<td>N</td>
<td>D</td>
<td>SD</td>
</tr>
<tr>
<td>3. I am considering a career in IT</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. TCC has changed how I think about IT</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Before TCC, I wasn’t interested in IT</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Since joining TCC my IT skills have improved</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I enjoy using IT in my other subjects</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I look for opportunities to use my IT skills</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I enjoy / am interested in multimedia</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I enjoy / am interested in programming</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I enjoy networking/technical elements</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I now am more likely to use my home computer to complete school work</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. I enjoy the activities we do in TCC</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I enjoy the activities we do in our normal computer classes</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Possible questions which provide feedback, promotion, design</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15. My favourite activity is</td>
<td></td>
</tr>
<tr>
<td>16. My least favourite activity is</td>
<td></td>
</tr>
<tr>
<td>17. I joined TCC because</td>
<td></td>
</tr>
<tr>
<td>18. I would describe TCC to a friend as …</td>
<td></td>
</tr>
<tr>
<td>19. Think about all the skills you’ve learnt in TCC. Which is the most important to you?</td>
<td></td>
</tr>
<tr>
<td>a. Describe one way you have used this skill outside of TCC</td>
<td></td>
</tr>
</tbody>
</table>
20. My favourite ICT activity is …
21. My least favourite ICT activity is…
22. One of the ways we work in TCC is through team projects
   Describe what you think about this…
23. What is the best thing about working in a team?
24. What is the thing I like least about working in a team?
25. What do you use your home computer for? List top 5.
26. My dream IT job would be ….
   Because …

Explain what would you like to learn about in TCC by finishing each sentence…
27. How do I…
28. Can I …
29. What does …
30. Why do …
31. List 3 words to describe how you feel about TCC
32. List 3 words to describe how you feel about ICT
33. How would you improve TCC?
34. How have the skills you have learnt in TCC changed your approach to IT tasks?
**Tool 4 - Early Secondary School Intervention**

PURPOSE: To establish the need for an early intervention programme to ensure girls consider the Year 10 IT Course

ADMINISTER TO: Year 7 and 8 girls

TOPICS COVERED: Process, Engagement, Self-esteem + Confidence

NOTES: These questions would require appropriate formatting and instructions before administering to the girls. Similar questions could be modified for younger student by using symbols such as<br>

< $\Phi \Delta$

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>Sort of</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I like using computers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Computers are fun.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I use computers to chat.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I use computers to create things.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I like learning new things about computers.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I show my mum and dad all the things I make on the computer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I like exploring on the computer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I want to use a computer when I grow up.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I think doing IT as a subject would be good.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. Does your parent/caregiver use the computer? (Tick ONE box only)
   ◆ All the time
   ◆ Sometimes
   ◆ Hardly ever
   ◆ Never

12. What does your parent/caregiver use the computer for? (Tick all the things they do)
   ◆ Work
   ◆ Games
   ◆ Email
   ◆ Surfing the Internet,
   ◆ Shopping
   ◆ Paying bills

13. What do you use the computer for? (Tick all the things you do)
   ◆ School work
   ◆ Games
   ◆ Email
   ◆ Surfing the Internet,
   ◆ Chatting
   ◆ Getting music

14. What do you think Information Technology means?

15. What is your favourite computer activity?

16. What is your least favourite computer activity?

17. Finish this sentence: On the computer I would like to learn how to……..
Tool 5 - School-based Computer Club

CONTEXT: A school computer club for Year 6 and 7 girls. Students complete an application for membership of this club. The club activities are flexible in nature and cater for student and teacher interest, rather than curriculum driven. Students use ICT skills developed in these activities to assist other students and classroom teachers.

Purpose of the club
- To develop confidence in girls to take a leadership role in use of ICTs across the school
- To progress positive attitudes in the use of ICTs
- To develop a sense of “club”

PURPOSE OF SURVEY: To gather information about changes in confidence, attitudes in the use of ICTs and to gauge whether a sense of “club” has developed.

ADMINISTER TO: Computer club members (ie girls who are in Years 6 and 7)

TOPICS COVERED: Background information, Confidence in use of ICTs, Importance of working as a member of a club, Taking a leadership role.

NOTES: These questions would require appropriate formatting and instructions before administering to the girls.

Questions:

1. How has your involvement in this computer club improved your use of ICTs?

2. Rate yourself on your ability to use the following; (Tick one box in each row)

Video editing
- I can show others
- I can work by myself
- I need some help
- I need a lot of help
- I can’t do this yet

Microsoft Office Programs
- I can show others
- I can work by myself
- I need some help
- I need a lot of help
- I can’t do this yet

Digital Cameras
- I can show others
- I can work by myself
- I need some help
- I need a lot of help
- I can’t do this yet

Internet Searching
- I can show others
- I can work by myself
- I need some help
- I need a lot of help
- I can’t do this yet

Email
- I can show others
- I can work by myself
- I need some help
- I need a lot of help
- I can’t do this yet

3. When I learn a new program I like to:
4. How often have you been asked to help a classroom teacher with ICTs?
   - Never
   - Occasionally
   - Weekly
   - Almost every day

5. How often have you been asked to help a student in your class with ICTs?
   - Never
   - Occasionally
   - Weekly
   - Almost every day

6. Have you seen a teacher who needs help and offered your ICT services?
   - Yes
   - No

7. Have you identified a fellow student who needs help and offered your ICT services?
   - Yes
   - No

8. What kind of comments have the other girls made about your being in the computer club?

9. What kind of comments have boys made about your being in the computer club?

10. What does it mean to be in the computer club to you? (Tick one box in each row)

<table>
<thead>
<tr>
<th></th>
<th>Very Important</th>
<th>Important</th>
<th>A little Important</th>
<th>Not Important</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working together to solve a problem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working with people who like the same things I like</td>
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<tr>
<td>Feeling valued</td>
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<tr>
<td>Being able to make mistakes in a safe environment</td>
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<tr>
<td>Learning new ICT skills</td>
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<tr>
<td>Getting out of class</td>
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<tr>
<td>Working with girls only</td>
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</tbody>
</table>
**Tool 6 - Using new technologies in the classroom**

**CONTEXT:** Often we introduce new technologies into school as a result of successful grant applications or an injection of funds into a project. This survey is designed to establish whether the process of dissemination of distribution of information and equipment has been successful. Staff are role models and their use of technology is therefore important.

**PURPOSE:** To gather information on the effectiveness of the implementation process for new technology in the school

**ADMINISTER TO:** Staff at the school

**TOPICS COVERED:** Fairness of distribution, Ease of use, Support structures, Curriculum enhancement, Celebration/recognition, Communication of outcomes and learning, Empowerment

**NOTES:** The following questions would be formatted

<table>
<thead>
<tr>
<th>Possible questions which provide justification for stakeholders</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The process of distribution/access to new equipment was fair</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. The process of distribution/access to new equipment was equitable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. The process of distribution/access to new equipment was transparent</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I had all the necessary information/training to operate the equipment effectively</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Support structures were in place to assist the implementation of this equipment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. The technology has enhanced my curriculum delivery in my classroom</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I felt confident in showing others how to improve this technology in the classroom</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. My school community provides opportunities for me to share/showcase success of this technology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. My students have embraced this new technology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>10. Any general comment you would like to make……</td>
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Tool 7 - Primary School-based Girls Computer Club

CONTEXT: Many girls’ computer clubs have been set up in isolation from each other. The intention many clubs is to empower girls to use ICTs in their education in the hope that they will continue with further ICT study beyond year 7. This survey has been designed to ascertain the effectiveness of such girls only computer clubs

PURPOSE OF SURVEY: To measure the success of existing programs

ADMINISTER TO: Computer club members (ie girls who are in Years 5-7)

TOPICS COVERED: Skills (Q1-Q3), Community (Q4-Q7), Self Image; awareness of strengths/weaknesses (Q8 –Q11), Self-confidence (Q12-Q17) Leadership (Q18-Q20)

NOTES: These questions would require appropriate formatting and instructions before administering to the girls. Q21 was included as a check that students are reading the questions.

1. Tick the equipment you feel confident using:

| ✧ | Digital camera | ✧ | Computer/laptop |
| ✧ | Digital video camera | ✧ | Interactive white board |
| ✧ | Scanner | ✧ | Drawing tablets |
| ✧ | Music keyboard | ✧ | PDA |
| ✧ | Data loggers | ✧ | Other: list……… |

2. Tick the software you feel confident in using

| ✧ | Photo imaging | ✧ | Email |
| ✧ | Video imaging | ✧ | Spreadsheet |
| ✧ | Word processing | ✧ | Presentation (eg Powerpoint) |
| ✧ | Data base | ✧ | animation |
| ✧ | Programming | ✧ | Web publishing |
| ✧ | Web browsing | ✧ | Other: list……… |

3. If a problem occurs with equipment/software what do you do?

<table>
<thead>
<tr>
<th>Disagree a lot</th>
<th>Disagree a little</th>
<th>Agree a little</th>
<th>Agree a lot</th>
<th>Don’t understand</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. I accept that we all have different skill levels</td>
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<td>5. I attend computer club regularly</td>
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<td>6. I help other students with ICT</td>
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<tr>
<td>7. I communicate regularly with members of my club</td>
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</tr>
<tr>
<td></td>
<td>Disagree a lot</td>
<td>Disagree a little</td>
<td>Agree a little</td>
<td>Agree a lot</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>8.</td>
<td>Its okay that I am good at doing some things but not good at doing other things</td>
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<tr>
<td>9.</td>
<td>In this club I learned what I do well</td>
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<tr>
<td>10.</td>
<td>I learned how to do some things so well that I can show others</td>
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<tr>
<td>11.</td>
<td>In this club I learned what I want to improve in</td>
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<tr>
<td>12.</td>
<td>I am good at a lot of things</td>
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<td>13.</td>
<td>My friends usually think my ideas are good</td>
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<td>14.</td>
<td>If I try hard, I feel I can learn anything</td>
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<tr>
<td>15.</td>
<td>I have good ideas</td>
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<tr>
<td>16.</td>
<td>This club gives me a chance to share my feelings with friends</td>
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<tr>
<td>17.</td>
<td>As a member of this club I learnt that I could disagree with someone and still be friends</td>
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<tr>
<td>18.</td>
<td>During club time I volunteer to do things</td>
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<tr>
<td>19.</td>
<td>When I get home, I will share things I have learnt at club with others</td>
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<tr>
<td>20.</td>
<td>I might play with a new kid even if my friends don’t want me to</td>
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<tr>
<td>21.</td>
<td>I can speak 7 languages</td>
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**Tool 8 School-based Computer Club**

**CONTEXT:** In school computer club for Year 6 and 7 girls. Students complete an application for membership of the club. The club activities are flexible in nature and cater for student and teacher interest, rather than curriculum driven. Students use ICT skills developed in these activities to assist other students and classroom teachers.

**Purpose of the club**
- To develop confidence in girls to take a leadership role in use of ICTs across the school
- To progress positive attitudes in the use of ICTs
- To develop a sense of “club”

**PURPOSE:** Gain feedback on changes in attitude of students and teachers in relation to the impact of the computer club on ICT use.

**ADMINISTER TO:** Teachers:

**NOTES:** Appropriate formatting and instructions are needed. Q1-Q4: For all teachers; Q5-Q7: For teachers of students in the Computer Club.

1. Are you willing to accept ICT support from girls in the computer club?  
   If yes, have you? If no, why not?

2. Has a member of the computer club offered to help you independently?  
   If yes, what was the help offered?

3. When help was given, did the girl work independently, politely and confidently?

4. How does having these girls in our school improve ICTs for everyone?

5. Do you support releasing the girls for computer club during class?  
   Why/Why not?

6. For each member of the Computer club, circle one of the following options according to your observations. (You might like to use a different colour for each student).
   a. Confidence in use of ICT  
      Totally different kid  Significant change  Some change  No change  Not observed
   b. Leadership - Sharing ICT Skills and knowledge  
      Totally different kid  Significant change  Some change  No change  Not observed
   c. Improvement in ICT skills  
      Totally different kid  Significant change  Some change  No change  Not observed

7. How does having these girls in your class improve ICTs for everyone?
**Tool 9 - One day workshop tool**

CONTEXT: 1 Day Conference – individual workshop evaluations for small groups.

PURPOSE OF SURVEY: Gain immediate feedback on workshops from participants.

ADMINISTER TO: Workshop participants Computer club members (i.e., girls who are in Years 5-7)

NOTES: A Bulls Eye is drawn on a large sheet of paper. The middle is worth 10 points, middle circle worth 5 and the outer circle is worth 0 points. Each girl is given 4 stickers and asked to place a sticker in each quadrant to ‘score’ their response to each question. Presents a quick and graphical result chart.

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I learnt something new.

I can use this at my home or school.

The presenter gave clear and easy to follow instructions.

I would recommend this to other girls.