

The odd one out: Gender imbalance in tertiary ICT education

Scott Morton
Southern Institute of Technology
133 Tay St, Invercargill 9810
+64 3 211 2699
scott.morton@sit.ac.nz

ABSTRACT

The paper explores some of the reasons for the large imbalance between male and female students entering the Bachelor of Information Technology degree from high schools. The literature suggests that only one in six students entering higher education to study computer related degrees are female. It also suggests that occupational stereotyping can be linked to the decline in the number of females entering computing degree courses. This study examines the influences and perceptions of both male and female students leaving high school in 2012 from four schools in the Southland region of New Zealand. A survey was conducted over a four week period in October/November 2012 with four schools in Southland to gather evidence regarding their influences of what Information Communication Technology involved or how they perceived ICT as a job. From the results females found the perception of ICT as interesting, well paid and secure but still do not want to take up roles within the industry. One of the recommendations that came out of this paper would be to look further into the perception of ICT and how that relates to the career choices made by female students.

Categories and Subject Descriptors

K.3.1 [Computers and Education]: Computer Uses in Education – *collaborative learning*,

General Terms

Measurement, Documentation, Economics, Human Factors

Keywords

Gender, computing, career choice.

1. INTRODUCTION

Within this paper the term ICT, has been used to define any related jobs within the technology field and also for the technology high school qualifications used within New Zealand. It is assumed that computer relates to any device used by the students that can connect to the internet such as tablets, games machines, desktops, phones and laptops

The past two decades have seen an exponential growth of employment opportunities within the ICT industry. Many of these jobs internationally have been filled by graduates coming out of polytechnics and universities with degrees in computing or computer science [4]. Despite the availability of employment opportunities in ICT, there has been a downturn in the number of females entering the industry. This decline has been steady over the past two decades to the point where there is a real risk that females will be almost entirely absent from the ICT industry [32].

The popular stereotype of people working in ICT is that they are ‘geeks’, hiding in darkened rooms, staring at computer screens all day [17, p.128]. This image is promulgated in popular media in TV shows such as NCIS and Criminal minds, which portray a negative stereotype of females within the ICT industry.

Although there are many avenues that females can take into the ICT industry, such as internal promotion, apprenticeships and on job training, New Zealand statistics show that only 1.8 per cent of women identify themselves as employed in ICT, media or telecommunications jobs [19].

This paper focuses on the perceptions of school leavers in 2012. The aim of the research was to identify the influences on these students when deciding whether or not to follow a career in the ICT industry. Data was gathered by way of a questionnaire delivered to two schools in Invercargill and two schools around Southland. Questions were designed to elicit information from students on aspects that influenced their choices.

2. LITERATURE REVIEW

2.1 Global problem

Nearly three decades have come and gone since the publication of the first research papers on the gender-subject split in high schools were published. As early as 1986 Culley [11] wrote about girls being uncomfortable working in computer labs with boys where they felt it to be a male dominated territory. Since then, this trend has continued to be noted in literature.

In more recent times evidence from around the world highlights a general reluctance among females to pursue ICT studies at tertiary level. Females account for 10 to 30 per cent of students studying ICT globally, and across the job sector females make up less than 25 per cent of those employed in ICT based jobs [18]. In 2010, according to a FINS.COM analysis of Labour Department data in the US, women held just 23.9 per cent of high tech jobs [26].

Most of the international research has concentrated on the university and ICT industries, however career paths are chosen much earlier in the student’s educational life. Long before many girls enter higher or tertiary education they have already decided not to follow careers in maths, science and technology [13].

Science and technology subjects in the 1980s in Europe were predominately ‘masculine’ and were mainly taught by male tutors. This gender imbalance in teaching further strengthened the perception that pursuing these subjects at a higher level was not for females. Culley as cited by Volman and Van Eck [30] found that teachers in the upper classes of primary schools often considered boys to be more interested in computers, and those male teachers enjoyed teaching boys more than girls. Volman and Van Eck also suggest that this bias was a major factor in the low numbers of females going on to careers in computing. Gras-Velaquez, Joyce and Debry [14] comment on a report compiled by European SchoolsNet and Cisco Systems Inc. which indicated that 46 per cent of female students across Europe who enjoyed studying ICT

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at high school still failed to progress to tertiary level or use their skill to get jobs in the ICT industry.

Gras-Velazquez et al. [14] called for closer cooperation between educational agencies and industry as a way to ensure accurate information about ICT is available to teachers, pupils and their parents. They believe that this kind of public-private collaboration can play a role in changing perceptions about industry, by giving access to more realistic information and authentic role models.

2.2 Closer to Home

Currently female students represent less than 19 per cent of all students enrolled in undergraduate ICT programs across Australia [9]. Craig and Lang [10] note that women have many career choices presented to them, which is a luxury not always present in other countries. Women are embracing technology and applications but not ICT careers (p.335). A Tasmanian study in 2003 found that only 5 per cent of Year 9 students intended to continue with their education [33]. Young finds the way that ICT is taught in secondary schools a major disincentive to girls continuing to study these subjects. Female students described ICT as “boring” and did not see the need to learn computing “as it does not relate to the job they are going to do” [33, p.116].

A descriptive study carried out in New Zealand by Abbiss in 2005 [2] sought to explain the gender imbalance in ICT studies within the polytechnic tertiary sector. Lack of interest was the most common response given by female students to questions designed to elicit the perceptions about females in the ICT industry. Another reason for lack of commitment to ICT as a career was identified by Weaver and Tucker [32] who argue that females under-estimated their ICT skills and self-identified themselves as incompetent.

Cater-Steel and McDonald [7] suggest a strategy to build a mentoring and support network among female students to help with their on-going studies from a younger age. With international studies from Gras-Velazquez et al. [14] and New Zealand literature from Young [33] indicate the need to change perceptions earlier on in the schooling of females from Year 5 onwards can help in the foundation of ICT. New Zealand Qualifications Authority are looking at trying to address ICT qualification within New Zealand, they have undertaken a study of ICT qualification over the past five years to combine old qualifications and to introduce new concepts to keep up to date with technology [20]

2.3 Family

A desire to follow in the footsteps of one’s parents has long been a very influential factor in the choice of family member’s career. If children view their parents as role models they will be strongly influenced by their choices of career [3]. Adya and Kaiser [3] suggest that those women who enter a male-dominated field such as ICT come from families where both parents are highly educated.

Mothers with degrees are also more likely to influence their daughters’ career choices than mothers without a degree. Women who choose non-traditional careers identify fathers with higher education qualifications as having had a stronger influence on their career choices than mothers without such qualifications. With career advice girls more than boys sought advice from parents when choosing a career. Many girls rejected a career in ICT due to misinformation and misguidance from parents who had limited or no knowledge of the subject or of what jobs were available in the ICT industry [33].

Weaver and Tucker [32] note that there is a great deal of misconception about what a career in computing involves. With so few mentors for women to look up to within the ICT industry, peers and family start to influence their career choices.

The Institute of ICT Professionals New Zealand (IITP) have formed a working group initiative to inform schools about ICT professionals. There are sending ICT professionals to schools to educate students on what is classed as a job in ICT and to try and combat media driven stereotypes [21].

2.4 Media & Stereotyping

Young adults’ perceptions about ICT jobs are biased by media influences and how these depict people in the ICT industry, rather than being influenced by facts and figures about actual people in the industry today [21].

Films, T.V., print and electronic media enhance the stereotypical that ICT is a male occupation. This stereotype ICT professional is a social inept male “geek” in glasses or a teenage boy in a darkened room in front of a computer screen. These images do not represent ICT as an appealing career choice [13, 15].

Girls’ perceptions of ICT jobs mirror the stereotypes that they have been presented with throughout their teen years in television, film and other popular media. Consequently many teenage girls look upon ICT as being “uncool, nerdy or boring” [29, p.110;17; 21].

2.5 Role Models

Career choices are often influenced by role models [3]. There are few young female role models in the ICT industry [12]. Media attention focuses on prominent males such as Steve Jobs, the infamous Kim Dot.Com and Mark Zuckerberg. The lack of female role models reinforces the way females and especially young girls view the ICT industry as being male-dominated [13]. Female role models and mentors could be used to increase the percentage of women who take computer courses [32].

One possible solution is to expose middle and high school students to female role models such as female computer science instructors. Even girls with little or no computing experience perform surprisingly well and report positive attitudes when they are in the presence of female instructors [15, 22].

2.6 School

There have been many research papers written on the gender difference in schooling but few of these studies have focused specifically on related ICT influences [13].

Camp and Gruer talk about an earlier paper published by Camp in America he states that despite more girls taking up ICT at high school the number decreases when going on to tertiary education. Camp and Gruer [5] called this the “shrinking pipeline”: where the number of females decreases at each stage in the education process.

The traditional school classroom environment and outdated teaching methods can also cause female students to turn their back on ICT subjects early in their high school lives. Classroom atmospheres have been shown to have an influence on female students, who feel intimidated by the dominant number of male students, or neglected and isolated, and did not receive the right type of support [21].

Abbiss [1, 2] notes that girls lose interest in computing early on due to the fact boys will act without direction and monopolise the tutor’s time, leaving girls to figure out things on their own. She

also notes that with the same opportunity to gain computer experience girls are capable of evenly competing with the boys. Boys typically have access to computers and the use of computers at an earlier age than girls [1], so by the time they reach high school boys are more confident when it comes to using technology than girls [25].

Studies have found that computer enjoyment and interest decreases as age increases. This is the case for both boys and girls but is more extreme among girls [5].

Research in New Zealand shows that girls' attitude towards ICT tends to become increasingly negative as they progress through schooling. A similar trend is observed in Australia and the United Kingdom [1, citing Alton-Le and Prat, 2000]. Abbiss also notes that girls and boys tend to interact differently with computers and with each other during learning episodes. Girls tend to favour collaborative forms of learning and engage in shared problem solving while boys tend to work more individually.

This attitude is neatly illustrated by a comment from a female high school student in an Australian study in 2011. She wrote: "I am not interested in how it does what it does as long as it does it" [8, p. 53].

Many students were put off studying ICT by their experience of computing in junior school (Years 9 to 10), stating that they had found it boring or that they experienced a lack of assistance in the learning programme or did not get the right help required [28].

Many took discouragement or encouragement from their high school teachers very seriously. According to Margolis and Fisher as cited by Timms et al [28], girls who may be inspired by computers have their interest extinguished during the school experience (p.3). When girls are exposed to technology in a single sex setting with supportive teaching and appropriate tools they show an increased interest and a confidence in technology [28]. Akbulut and Looney [4, p. 70] state that: "As technology continues to rapidly evolve it is important to deliver course content that is fresh, current and aligned with student's interests". Carroll, Howard, Vetere, Peck and Murphy [6] looked at the use of technology by female students in schools in the 16 – 22 year old age bracket and recommend that ways should be found to incorporate the use of this technology into the curriculum to entice young adults including girls to take up ICT degrees.

Classroom experience plays a large role in influencing females in the ICT arena. Women report that positive classroom experience led to an increased intention to major in computing and positive attitudes of their tutors and the support they received for the hands on activities really pushed them and made them look at the ICT industry in a different light. The single sex setting also increased confidence with equipment and also they had greater access to help [23].

Lang, Craig, Fisher and Forgasz [16] wrote about the findings from their research project called 'Digital Divas' which came from a UK based program Computer Club for Girls (CC4G). The idea was to expose Year 8 students to a variety of computing applications and experiences in a female-only club environment; and to try and make connections between various applications with courses and careers in computing by using university students as classroom mentors and facilitators (pp.38-39).

Lang et al. [16] find within Australian schools by the final year of schooling female students studying computing were in a minority of only 16.5 per cent. One of the conclusions about this low percentage was the ambiguity and inconsistency in the delivering of ICT units in secondary schools may be a factor of putting off

females from going on to study further within the discipline. Lang et al. also note that many of the teachers teaching computing have not completed a subject specific methodology in their teaching education program (p.39).

A smaller scale version of this type of method of educating females in computing is at Wellington Girl's school. Since 2002 students in Years 12 and 13 look after the computer lab and help mentor students alongside teachers. This has been very successful and the number of students involved has grown from just a few students to over 20. Despite these positive projects, there is no evidence that this is actually getting more females into ICT jobs or related courses.

From the findings, education delivery has not moved forward as quickly as technology in the past three decades and as a consequence the schooling and understanding of ICT trails behind. Until this imbalance can be rectified in the education sector, the gap between male and females will still keep on growing. The need to encourage female role models to stand up and be counted must be fostered within the ICT community and the understanding of parents on ICT within jobs needs also to be addressed.

3. RESEARCH METHODOLOGY

This paper investigates whether schooling, role models, family and media are perceived differently by high school students and whether there are any differences between male and female opinions.

A research project was conducted with students who were in the final year of their schooling within the Southland region. The survey samples were taken from four different schools across the region which included two town schools and two rural schools. The majority of the students were aged between 16 and 18 years of age and were completing the final year of high school. A total of 100 students was asked to complete the survey, 86 questionnaires were completed, resulting in 84 that were useable. Out of the 84 usable questionnaires, 51 were filled in by female students and 33 by male students

The questionnaire was adapted from Abbiss's questionnaire from 2005 and validated at one of the town schools, in a pilot study with 20 students. This allowed the researcher to amend/improve the questions from the results of the pilot survey.

The anonymous questionnaires were completed during a four week period, from mid-September to mid-October 2012, and given to the students in class and then collected after they had completed the questions. The outcomes of the questions asked were measured by either category choice, a five point Likert scale, or by textual response. The quantitative data was then analysed within survey crafter software to give meaning to the data gathered.

3.1 Results and Analysis

The questionnaire was broken up into three sections. The first section looked at the previous experience of ICT at school. The questionnaire has been added as appendix A to give clarification of each section and the questions asked.

Students were asked to rank their liking of a range of subjects including ICT from one through to five, one being 'I hated it', five being 'I loved it'. The rankings of these subjects were averaged out of 5 and this provided a table of results. Overall both male and female students were equally likely to say they liked ICT lessons.

Table 1: How ICT rates against other subjects

Gender	Female	Male
Favourite	1 English 2.87	Math 2.95
	2 Math 1.83	Science 2.57
	3 ICT 2.28	PE 1.9
	4 Science 1.69	ICT 1.8
	5 Geography 1.56	English 1.52
	6 History 1.5	Languages 1.23
	7 PE 1.37	Music 0.76
	8 Art 1.37	Drama 0.76
	9 Languages 1.11	History 0.76
	10 Music 0.84	Geography 0.66
Least Favourite	11 Drama 0.78	Art 0.66

The aim of the next question was to find the perceived difficulty level of ICT at school.

Table 2: level of difficulty students found ICT at school.

	Really Easy	Easy	OK	Quite Hard	Really Difficult	Total
Male	7	10	11	1	1	30
Per cent	9%	13%	14%	1%	1%	39%
Female	10	13	19	4	1	47
	13%	17%	25%	5%	1%	61%
Total	17	23	30	5	2	77
	22%	30%	39%	6%	3%	100.0

Out of the students that filled in this part of the questionnaire only one student from both male and female found the course really difficult. The percentage of females that found the course really easy to easy was 49% compared to the males which was 57%.

Students were then asked why they felt this way about how they found ICT at school. One of the responses that came up many times from the boys was “It’s only unit standards and therefore you can’t strive to achieve and do better”. Response that appeared multiple times from the girls was “Because we had a good teacher”. One of the negative replies that came up on a number of occasions from both male and female was “It’s boring”. The last comment that appeared multiple times was “Because there were parts which were easy to understand and then parts were very hard”. Again both male and female felt the same way.

The question then went on to ask what activities the students did not like about ICT. From the answers the overall comment that came up multiple times from both male and female was: it’s just typing and Microsoft Office. Twelve out of the 51 females did not answer this question but 11 that did, responded with typing and Microsoft office and 7 out of the males responded the same way.

Question 8 went on to ask why they chose ICT as a subject. The main answer to this question from the females was that they thought they needed some sort of computer skill later in life. One male and one female answered by saying they required it to get into University. The main answer from the males was it is easy marks.

Question 9 asked the students if they are studying ICT in their final year. From the data it can be seen that 60% of females questioned are not taking ICT and 54.5% of males are also not taking ICT. The main reason given by both male (7 students) and female (12 students) was “Not interested” from the students that answered this section of the question. Most students felt that it would not improve their chances of getting a job or getting into polytechnic or university.

Table 3: Studying ICT in final year

	Count	Pct.	Male	Pct	Female	Pct.
Yes	35	42%	15	45%	20	40%
No	48	58%	18	55%	30	60%
Total	83	100%	33	100%	50	100%

Question 10 looked at the age the students first started using technology

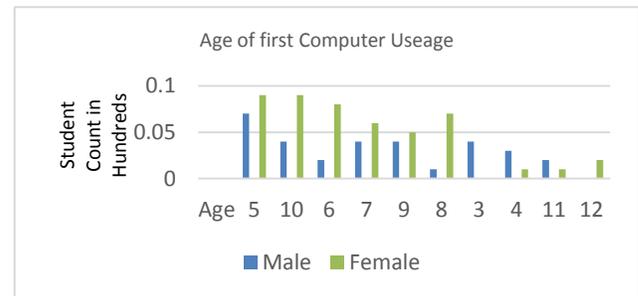


Figure 1: the age students first used a computer

From the figure it can be seen, just over 20% of the female students started using computers before the age of 6, also from the table 62.5% of female students who answered the question were using technology before they were 9 years of age.

Question 13 asked the students how long they used the computer on a daily basis.

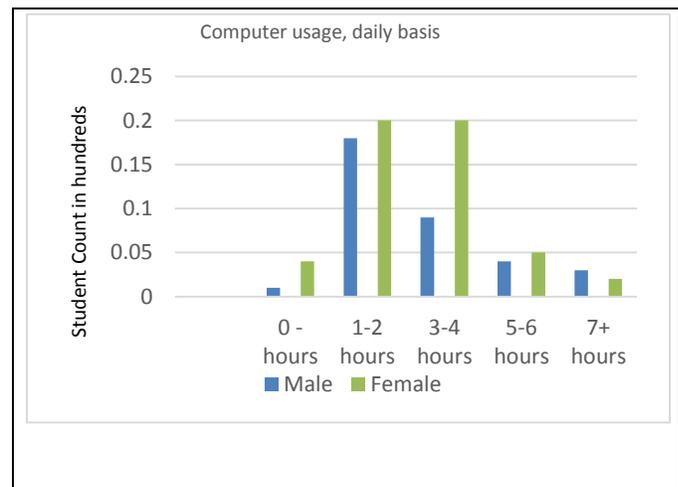


Figure 2: Computer usage on a daily basis

From the questionnaire 39.2% of female students reported they used the computer for about 2 hours a-day and 39.2% of females

said they used it for about 4 hours a-day. This figure is slightly higher than the international average for female computer use [24].

Question 15 looked at the activities the students used the computer for.

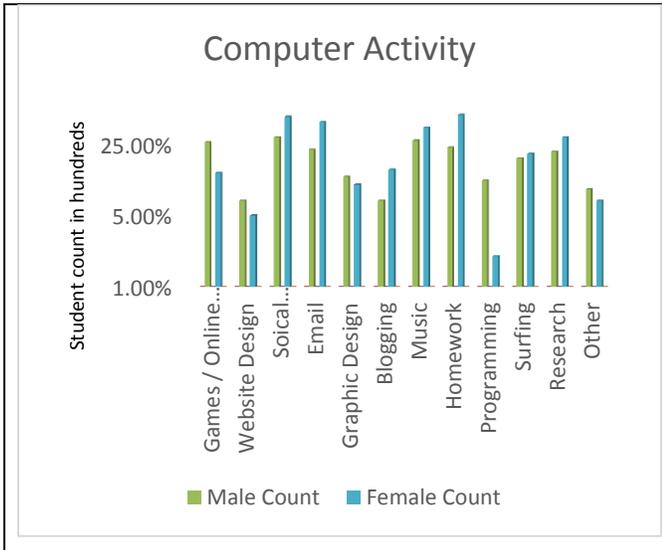


Figure 3: Computer Activity

From the figure, social networking and homework stood out for female students. 90% of the females students used the computer to socialise with friends where as 83% of males used some sort of social media. With homework the females used the computer much more than males to complete school related work with 94% of females and 64% of males.

Section three of the questionnaire looked at the future of ICT for the student, asking questions about the next step in their education. Questions 15 through to 20 looked at the students' future in ICT and if they were planning on going to polytechnic or university if so why and if not why. Out of 84 questionnaires filled in by the students only 4% of the female students were going on to polytechnic or university to study ICT related courses compared to 26.5% of males. Some of the reasons female students gave were "Good for future skills" and "I find computing interesting". The ones that were not going on to study ICT at a polytechnic or university, gave responses such as "not interested, other plans, different career path".

The questionnaire also looked at where the students go for career advice. From the results, career advisors came out on top with 92% of females and 88% of males going to them for advice, 82% of females and males went to their parents also for career advice. Teachers' advice came in third with 76% of females going to their teachers for advice. From the outcome of the last question it was then asked if the student believed that they were getting the correct advice, 94% of the female students and 91% of male students thought the advice given was helpful to them for making their career choice. Students' that said no to this question, responded by saying: "it is very general information given by advisors" and "they do not know me or what I want to do".

Question 18 looked at the student's attitude towards ICT. The students were given a list of positive attitudes towards ICT and then asked to rank them from strongly disagreeing to strongly agreeing. The attitude of both male and female students on ICT involves repetitive work; both male and female still thought that

ICT involved the same thing over and over again. 18 out of 51 or 35% of female students also thought that ICT subjects were not relevant to their future career. Both male and female students said that they were familiar and confident using technology with 35% of females and 44% of males saying so.

One of the final questions that the students were given was to list five characteristics from a table containing 16 words that they perceived to be the main characteristics for a job in the ICT industry.

Table 4 Overall rankings

Characteristics	Male	Female
Interesting Work	11 (73.33%)	9 (29.03%)
Independent	2 (25%)	8 (57.14%)
High Salary	5 (35.71%)	5 (35.71%)
Job Security	4 (40%)	5 (33.33%)
Work from Home	2 (50%)	5 (62.50%)

From table 4 it can be seen that the overall consensus for the top characteristic for a job in ICT is Interesting work. The second best characteristic chosen was Independent, where more females than males though this was a good characteristic to have in a job. The third characteristic was high salary which was even on the genders. Job security came out in fourth and working from home in fifth.

4. DISCUSSION

As a subject ICT was well liked by both male and female students out of all the subjects taken. Females ranked it third behind English and maths and males ranked it fourth, behind math, science and P.E. The reasons that some of the students disliked ICT at school were that it was all about the information and the way it was taught [5].

Both male and female students found the subject really easy to easy, suggesting that the subject matter needed to be looked at for students of today, 30% of females compared to 22% of males found this. A reasons they found it easy was that part of the syllabus used unit standards, which is not conducive to learning and understanding as students just had to follow instructions required [28].

Questions 4 through to 7 give an insight into why students put boring down as an answer when they had also put down easy to question 4. Out of the 23 females that put really easy to easy as an answer to question 4, 11 of the female students also put down boring or not interesting.

One of the major outcomes from the questionnaire was that 96% of the female participants stated that they would not go on to study ICT at a higher level due to the fact of being "not necessary for their career" and "not interested", as where 77.5% of males said they would not go on to study ICT, giving the same sort of answers. Another fact that came out from the questions asked was the age at which students first started to use computers, 60% of the students started using a computer at eight years of age or before. The level of knowledge most students have by the time they reach high school is now beyond the level of the current curriculum studied [4]. It also can be concluded that females use computers for two major activities, social networking and homework.

A result came out from the question about career advice where 92% of the females went to their career advisor for guidance. The third place that students went was to teachers with 72% of females going to them for advice. The trust they gave to guidance advisors and teachers was very overwhelming with 93% of the students trusting the advice they are given is true and correct [3].

There was no definitive gap in the genders about attitudes towards ICT; both male and female students stated that repetitive work was involved in ICT having to do things over and over again which gave a negative light on the subject for the students. 18 out of the 51 or 35% of female students also thought that ICT subjects are not relevant to their future career. From the characteristics given in the table the female students thought that ICT work would be interesting, the second choice they gave was working independent which actually contradicts working in the industry today. Both male and female students looked at ICT as being high paid and secure, especially in the economic climate of today but more females than males still do not want to carry on in an ICT related job.

5. CONCLUSIONS

From the findings of the literature review and the results from the questionnaire, the major stumbling block for females and males comes from the information that is taught in Year 11 and 12 which is not up to the standard of knowledge and quality of the students that are currently taking the course. The course is out of touch with this generation of tech savvy students. Most of the course with its unit standards and typing skills does not embrace understanding and learning but puts off and discourage females from taking ICT as a subject.

From the results there is a clear area that both male and female students do not understand, this is the perception of ICT professional job roles, this could be a deterrent for them entering the IT industry. Better education into what is ICT and how it applies to female students would be a good start. Programmes like the Digital Divas and Tech Angels program looks like it has had a positive impact on the upturn of more females who took part in the programs wanting to consider an ICT career path in the future and that their attitudes towards ICT had also changed. The media has a big part to play in addressing the imbalance of females in ICT and need to start showing females in normally male dominated roles.

5.1 Further Research

More research is needed to investigate how career advisor and tutors keep up-to-date with ICT and technology. The reskilling of advisors and teacher to give them a better understanding of what is expected in today's society for a job in ICT needs to be addressed. The 'Digital Divas' program could be an area that could be looked at in New Zealand in a pilot to see if it will work within secondary school curriculum.

Over the last five years the New Zealand Qualification Authority (NZQA) have been looking into the ICT qualifications that are offered within the polytechnics around the country from level 1 through to level 6. Once these have come to fruition it would be a good idea to repeat the survey to see how the new ICT qualifications have changed the status quo.

Another avenue to research would be the 'Tech Angels' by looking at the study to see how many of the students that have gone through 'Tech Angels' have gone on to either study ICT at a higher level and or gone into an ICT related job (Tech Angles).

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Appendix A: Questionnaire

1 Age: _____ Gender: Male Female

2 What type of *information communication technology (ICT)* course are you taking?

Experience of ICT at school

3 Please tick one box for each of the subjects you do at school to show what you think

Subject	1 – I really hate it	2 – I don't like it	3 – It's OK	4 – I like it	5 – I love it
Math	<input type="checkbox"/>				
English	<input type="checkbox"/>				
Science	<input type="checkbox"/>				
Language	<input type="checkbox"/>				
ICT	<input type="checkbox"/>				
P.E.	<input type="checkbox"/>				
Art	<input type="checkbox"/>				
History	<input type="checkbox"/>				
Geography	<input type="checkbox"/>				
Music	<input type="checkbox"/>				
Drama	<input type="checkbox"/>				
Other: _____	<input type="checkbox"/>				

4 How have you found ICT at school? Please tick only **one**.

Really easy | Easy | OK | Quite hard | Really difficult

5 Why did you find ICT this way; in respect to question 4?

6 List 3 activities you enjoyed in your ICT class

7 List 3 activities you did not enjoy in your ICT class

8 Why did you choose ICT as a subject?

9 Are you studying ICT in your last year of school? Yes | No

If not please pick **one** of the following as a reason

Not Interested <input type="checkbox"/>	Too Hard <input type="checkbox"/>	Not Offered <input type="checkbox"/>	Too Boring <input type="checkbox"/>
Not Convenient <input type="checkbox"/>	Looked too Easy <input type="checkbox"/>	Preferred other subjects <input type="checkbox"/>	

Experience of Computing

10 At what age were you when you first started using a computer?

11 Where do you most prefer to use computers out of school hours? Please tick one

Home | Library | After school club | Friends | Other

If other please specify: _____

12 Who do you most prefer to use computers with outside of school hours? Please tick one

On your own | With Parents | With Brother/Sister | Other Family members | With Friends | Other

If other please specify: _____

13 How long would you say you spent daily on the computer? Please tick one

0 – hours | 1-2 hours | 3-4 hours | 5-6 hours | 7+ hours

14 What activities do you use a computer for? Tick the boxes that applies to you

Games / Online games <input type="checkbox"/>	Social Networking <input type="checkbox"/>	Email <input type="checkbox"/>	Graphic Design <input type="checkbox"/>	Blogging <input type="checkbox"/>	Music <input type="checkbox"/>
Website Design <input type="checkbox"/>	Homework <input type="checkbox"/>	Programming <input type="checkbox"/>	Surfing <input type="checkbox"/>	Research <input type="checkbox"/>	Other <input type="checkbox"/>

If other please specify: _____

My Future

15 Are you planning to study ICT at Polytechnic/University?

If Yes why

If No why

16 Who/What do you go to for career advice? Please tick the boxes that apply to you

	Use	Never Use
Parents	<input type="checkbox"/>	<input type="checkbox"/>
Brother/Sister	<input type="checkbox"/>	<input type="checkbox"/>
Other Family Members	<input type="checkbox"/>	<input type="checkbox"/>
Friends	<input type="checkbox"/>	<input type="checkbox"/>
Career Advisors	<input type="checkbox"/>	<input type="checkbox"/>
Career information leaflets	<input type="checkbox"/>	<input type="checkbox"/>
Prospectuses	<input type="checkbox"/>	<input type="checkbox"/>
Teachers	<input type="checkbox"/>	<input type="checkbox"/>
Media incl. TV, Magazines	<input type="checkbox"/>	<input type="checkbox"/>
Other :		

17 Do you believe you are receiving the correct career advice? Yes | No

If No why

18 What is your attitude towards ICT? Please circle the one most appropriate for you

<i>Attitude towards ICT</i>	<i>Strongly disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly agree</i>
I am familiar with technology	1	2	3	4	5
I am confident using technology	1	2	3	4	5
I have confidence in technology	1	2	3	4	5
I am interested in studying ICT in the future	1	2	3	4	5
I think ICT is more for boys than girls	1	2	3	4	5
Studying ICT locks you into the ICT industry	1	2	3	4	5
I am attracted to the ICT industry	1	2	3	4	5
Working in ICT involves repetitive work	1	2	3	4	5
Working in ICT means working on your own	1	2	3	4	5
ICT subjects are not relevant to my future career	1	2	3	4	5

19 In the table below are “ideal” career characteristics for ideal careers. Please circle the number that you agree with and that you believe best matches your ideal career.

<i>Ideal Characteristics</i>	<i>Strongly disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly agree</i>
Interesting work	1	2	3	4	5
Working with people	1	2	3	4	5
Interesting challenge	1	2	3	4	5
Creativity	1	2	3	4	5
Responsibility	1	2	3	4	5
High salary	1	2	3	4	5
Socially useful work	1	2	3	4	5
Travel	1	2	3	4	5
Flexible hours	1	2	3	4	5
Independent	1	2	3	4	5
Job security	1	2	3	4	5
High status	1	2	3	4	5
Cool image	1	2	3	4	5
Self employed	1	2	3	4	5
Working alone	1	2	3	4	5
Working from home	1	2	3	4	5

20 Choose five characteristics from the table above that you believe to be the main characteristics of a job in ICT, ranking them from 1 through 5, 1 being the most important and 5 being the least important.

<i>Rating</i>
1
2
3
4
5

Thank you for your time.