TE KOROWAI HOU

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Although there is extensive research concerning the under representation of women in the field of Information and Communications Technology (ICT), the literature is still sparse on Maori women and their representation in this field. In this paper, the authors continue their longtitudinal research study which began in 2002, to include the Maori women currently enrolled in the Bachelor of Computing Systems (BCS) and also to revisit the students who participated in the original study. This paper is important as it provides the only longitudinal study of Maori women enrolled in any computing degree programme in Aotearoa (New Zealand).

1. INTRODUCTION

Based on research conducted in 2002, the authors presented "Nga Wahine Maori o BCS: Kanohi ki te Kanohi" (Ngatuere *et al.*, 2002) at the 14th annual National Advisory Committee on Computing Qualifications (NACCQ) conference. In this initial investigation, the low number of Maori women enrolled in the BCS degree programme at Unitec, led us to assume that these low numbers were due to barriers, such as financial matters, lack of support and motivation. However, it became obvious during our investigative process that this was not always the case. Our conclusion from the initial study showed that the four Maori women that we interviewed were all self-motivated and determined to succeed in their chosen field.

Two years later was the optimum time to invite the original six Maori women back for an "interview as chat" (Bishop, 1996). We wanted to see if they were still as self-determined to succeed as they were in 2002 and also to record their progress over the last two years. It was also the opportune time to investigate the number of Maori women currently enrolled in the BCS in 2004, whether they had encountered barriers to their enrolment or their study, and whether they were also self-determined to suc-

ceed. A further motivating factor was to build "whanaungatanga" (family-like relationship) as a result of our focus group meetings not only for the researchers but also for these students.

2. RATIONALE

At the beginning of this study, two years ago the authors identified the students currently enrolled in 2002 of the BCS at Unitec, those students who had identified themselves as female and Maori on their enrolment form. There were six students who met the reporting criteria, this number was less than one third of acceptable representation levels (Ngatuere *et al.*, 2002). Of the six students invited to the focus group in 2002 we were able to interview four of them.

To continue our research study in 2004, we invited the original six women to meet again in a further focus group discussion. In the original study we found that four of the six women had not encountered many barriers and they were all determined to succeed in their studies. We were interested in reviewing their progress, to see if they had identified any further barriers during their studies, whether they were still enrolled or had graduated. Of the original six students we were able to contact five of them.

The authors also decided to investigate any new students who met the same criteria from the previous study, which is that who identified themselves as female and Maori and are currently enrolled in the BCS. The result of this query showed 11 students currently enrolled, of which one student was from the first study. We then contacted the ten students and invited them to attend another focus group

meeting in a similar format to how we had met the first group in 2002.

The responses from our new (2004) and previous (2002) students, "using pseudonyms of their own choosing" (Ngatuere *et al.*, 2002) are expressed in the form of summarised personal stories.

3. METHODOLOGY

In this project we continued to use the Kaupapa Maori qualitative research method as this enables "realisation of self-determination and power sharing" (Bishop, 1996). The method we have used to collect our data uses the beginnings of "whakawhanaungatanga (establishing family-like relationships)" (Bishop, 1996). We decided to "undertake research in a culturally appropriate way, which operates in a mutually respectful partnership, requires forethought and agreement about the process to be adopted" (Charkova *et al.* 2003). "Whakawhanaungatanga embodies three interconnected elements" (Bishop, 1996) and this has been summarised as "one is to establish whanau relationships; two is participant driven approaches to power and control and three is researcher involvement as the lived experience" (Ngatuere, 2003). We achieved this through "interviews as conversations" over kai. Bishop (1996) refers to this as "interviews as chat".

The process of the dialogue was in likeness to a koru, the authors used a semi-structured set of questions, which were similar to the original set of semistructured questions. As a koru grows from the centre out, so did our discussion grow and our questions evolved. An attempt to build a non-hierarchical atmosphere through genuine relating, enhanced the ability for all participants to contribute freely and equally.

4. TE ROOPU TAHI (THE FIRST GROUP)

Of the six Maori women we identified in our original study, we could only contact four of them at the time therefore the first part of this research only reports four "personal stories". Of the remaining two we have still been unable to make any contact with one of the students. The other remaining student, Rima, has completed the BCS degree and is now eligible to graduate in the upcoming ceremony in April 2004. She has found employment in the ICT field and is working as a senior programmer for an international software development company. These are the personal stories of the Te Roopu Tahi.

4.1 Rima

Rima enjoys her job as a Software Developer. This job was advertised internally at Unitec for graduates like herself and it has made the long haul worthwhile where she has been able to secure employment that enables her to do a job that she enjoys and is paid well. She admits that it has not all been easy and it has been a rough road with many obstacles along the way. During her studies she took a year off to consider her options as she was not succeeding and was struggling academically. Rima felt that she did not want to be viewed by her peers as Maori, nor did she want "hand outs" because she was Maori. Her family supported her throughout her time at Unitec and she admits she was stubborn with acknowledging that she needed help and accepting help from support mechanisms on campus. Once she did accept help from Maia, the Maori Development Centre on campus, they made a huge difference and she admits wishing she had swallowed her pride earlier and asked for help earlier. Her family has been the backbone of support and continues to always be there for her.

4.2 Hira

Hira has continued her studies in the BCS and is nearing completion and hopes to be eligible to graduate in 2005. She is learning from the course material covered in the programme but she admits that she isn't enjoying studying as much as she did when she commenced her studies and often finds it difficult to motivate herself. During the last two years she has often felt the isolation of being the only female student and also the only Maori student in all her classes. Being the minority in the class has only encouraged her to succeed and persevere with her studies in a mainly male dominated subject area. Hira also admits that she misses the friends she made in the initial years of study where she commenced in the bridging certificate programme and continued on to the degree programme with a small group of students. Most of these students that began their studies with Hira have now either left or changed their programme of study.

Another barrier faced by Hira over the last two years has been the need to survive financially. Her family live outside Auckland and although she has gained part time employment to supplement her income it has still been a struggle. Her employment is in the ICT field and has given her valuable work experience, people contact and extra income. Hira's long-term goal is still to graduate and work in the IT industry with a well paying job. This will enable her to put into practice what she has learnt. She admits the end of her studies often seem a long way away and feels it is difficult sometimes to motivate herself to keep going. Support from her family is always there and she travels home to see her parents whenever she can afford to.

4.3 Irihapiti

Irihapiti has taken leave from her degree studies due to family commitments but is still likely to return in the future. She mentioned that during her studies in the last two years she had struck an academic staff member who objected to her questioning subject matter. Irihapiti felt this was because she was female and the teaching staff predominately male. He was often unable to answer her questions and became agitated when she confronted him with questions. This led to her not completing the course, which was in an area she enjoyed and left her resolute not re-enrol in this course unless another staff member was teaching it. She has put this down to a bad experience but still determined to finish her studies once she is able to.

Irihapiti has felt that she has been a good role model for her children who are keen to study and do their homework, following their mother's example. This is the same influence that her mother had on her when her mother returned to school as an adult student while Irihapiti was at primary school. Irihapiti's partner continues to support her with her studies and encourages her to return to them once she is able. His continued support with family commitments also contributes to her confidence and her ability to complete her studies.

4.4 Mei

Mei has also not continued her studies since we last spoke to her due to illness. She was forced to withdraw from her studies on the BCS programme last year and has been recuperating slowly since then. Coping with her children and her illness has made a huge impact upon her lifestyle and the ability to focus on technical subjects and learning. Since January she has embarked upon learning Te Reo Maori, which has given her fulfilment spiritually and mentally but deterred her from returning to her studies in IT. She is quite determined to finish her qualification at Unitec, especially as she has invested time and money into the studies she has done so far. However, she is resolved to doing things at a much slower pace until she is fully recovered.

Other barriers that she faced are the constant struggle of bringing up her children and providing for them financially while studying. Mei's strongest goal is to provide a positive role model for her children so they appreciate education and will not hesitate to embark on learning new skills. Mei also aims to be knowledgeable enough to be able to help her children with their studies. Mei's family continues to support her in all aspects of life and she draws from her family a strength that allows her to keep going.

4.5 Erena

Erena has graduated with a BCS degree. She is now employed in Maia, the Maori Development Centre at Unitec, providing academic support to mainly Maori students. This role has enabled her to help students who are struggling with their studies especially in IT. Erena feels very passionate about being able to help Maori students and is pleased when students she has helped are successful. She has also embarked on some teaching roles but has struggled with this concept and feels she would be far more comfortable working in an IT role. Erena acknowledges that employment in the IT field is imperative for her to maintain the knowledge she has learnt in completing the BCS.

Erena is not currently studying but has enrolled in the Master of Computing programme, which she sees as a long-term goal. However, short-term Erena's goal is to become trained enough in Te Reo Maori and technical skills to work as an editor of Maori television programmes. Her current employment environment has provided her personally with a lot of support, as whanaungatanga is an ethical theme of the support centre she works in. Without support from her peers she felt she would not have completed her BCS and would not now be considering alternatives to her current employment. Financially she is stable but working very hard to pay

off student loans incurred while studying her degree. This is something she is determined to do and feels she will enjoy life more knowing this financial burden is gone.

5.0 TE ROOPU RUA (THE SECOND GROUP)

5.1 Donna

Donna is a vibrant young Maori woman who is now in her second year of study on the BCS programme. A family member recommended the programme to her and she investigated as it complimented her interest in computing even though she admits that at that stage she didn't even know what email was. She received support and encouragement from Maia, the Maori Development Centre at Unitec, and was successful in passing the aptitude test for entry to the bridging programme, the Certificate in Information Technology (CIT). Upon successful completion of the bridging programme she gained automatic entry to the BCS degree programme. She has made continuous use of Maia and gains a lot of support and networking with other students through contact at Maia.

Donna felt that her biggest barrier has been adapting to academic writing and the need to write and document information in the appropriate layout and format. Prior to her studies at Unitec she had not been required to write any form of essay. When asked why she chose the BCS she said it was because the subject matter pushed her to learn and exceed her limits. She also acknowledges that in order to complete anything one has to work hard. Besides Maia, Donna's family has provided her with ongoing support. Fortunately they live in Auckland and are able to be there for her when she is down and needs a moral boost. Her long-term goal is to graduate and to gain employment in I.T. with a well paying job.

5.2 Charlotte

Charlotte is a determined focused young Maori woman who works very hard to accomplish all tasks. She currently has an A average and sets herself the highest goal possible with anything she does. Charlotte commenced her studies by applying and entering a Bachelor of Environmental Engineering (BEE) at Unitec. She says this was largely due to a friend of her family who was one of the few people she knew with a professional occupation. Upon attending her first week with this programme she felt extremely isolated as the only Maori student and did not feel that her peers felt she should be in their class. A family member who comforted her in her distress suggested she consider changing programmes and study in the same programme as herself. After consultation with staff at Maia and the School of Computing & I.T. she was successfully changed from the BEE to the bridging programme CIT. On this programme she graduated with merit passes and successfully moved into the BCS in 2003. Her first two semesters have all been A passes and she is relishing the second year courses as they are more interesting and providing her with more stimulating learning.

Before studying at Unitec Charlotte was working full time in a mundane job which motivated her to want to gain a qualification and a more challenging job and of course to earn more money. Now she has her sights firmly set on a high paying job in the ICT industry once she graduates with a BCS – with honours of course!

5.3 Dorothy

Dorothy commenced study at Unitec in the Foundation Studies programme where she discovered a niche for Computing and I.T. Upon successful completion of the Foundation Studies programme she applied through the aptitude test for entry to the BCS programme. She was encouraged to study at Unitec by her sister who had studied in another field also at Unitec.

Dorothy has not been well lately and has had to take a semester off but has now returned determined to complete her studies. She says that while she enjoys the courses in the BCS she finds some lecturers and her fellow students hard to understand, as their spoken English is heavily accented. The isolation of being the only female student is often a barrier but makes her more determined to pass. Her long-term goal is to complete and graduate with a BCS and gain employment in a well-paid job in the ICT. industry. Ongoing support from her family are her lifeline, she has not used the services of Maia, the Maori Development Support Centre at Unitec but intends to do so.

5.4 Wha

Wha has recently settled in Auckland and has left her family and friends behind to commence her studies. Upon leaving school she commenced her tertiary education in a Bachelor of Arts (BA) Maori at Waikato University. She enjoyed her computing studies in her sixth form year and was disappointed she could not study this subject further in her seventh form year. Wha found the Unitec computing brochure informative and the most appealing institute so she applied for entry and was accepted into the CIT programme in 2003. Upon successful completion of the CIT she gained automatic entry to the BCS in 2004.

Long-term goals see Wha set her sights on completing a BCS and also her BA Maori as both qualifications fulfil different needs. She is still undecided on a career or specialisation but feels with both qualifications how could she go wrong? Nevertheless her aim to gain employment that pays well is just as high on the agenda so should a well paying job become available she may swap to part time study in order to complete her qualifications. Giving up or dropping out is not an option!

Her family is very supportive and phone her constantly. She has a sister also living in close by, who she visits regularly. Her friends and flat mates are her whanau in Auckland and they all support each other as they are all studying. Leaving home could be seen as a barrier but not one that has prevented Wha from fleeing the nest and gaining independence and enjoying the change in lifestyle from rural to urban NZ.

5.5 Ono

Ono is a mature Maori woman who has overcome many obstacles to get where she is today. She is raising a family and studying part time while working full time to support and provide adequately for her children. Ono commenced her studies in the BCS programme in 1999 but due to personal circumstances had to withdraw. She recently resumed her studies but since then further crisis have occurred which have forced her to again withdraw and deal with these problems before returning to study this year. Each obstacle has not waned Ono's determination and each time she has resolved to start again and keep going.

Financial barriers are constantly an obstacle for Ono and she has relied on support from scholarships without which she would not have been able to study. She says that getting married at an early age and working in mundane factory jobs to supplement the family income made her more determined to gain an education and a qualification so she could gain employment with a higher income.

Ono's current employment is in the IT industry and she says that it is noticeable the high number of her colleagues that lack strong people skills. These colleagues often appear more intelligent and have strong technical skills but have great difficulty communicating with users and other colleagues. This has made her more determined to be a successful IT practitioner so that she can communicate well with end users. This was something she feels strongly about because as a user herself she did not enjoy being spoken to as though she was ignorant nor did she enjoy struggling to understand what the technical person was trying to explain.

Being the only female member of a class has motivated her to be successful. She also felt that due to her age she is more likely to ask questions and talk to her peers who are predominately male.

5.6 Whetu

Whetu is a young determined woman of both Maori and Samoan decent who is in her second year of study on the BCS programme. She commenced study in the CIT and was attracted to Unitec by the greenness of the campus and also as her sister had previously studied at Unitec. She emigrated from Samoa where her parent's l settled in Auckland in 2001. Her academic record is of a high standard and her determination to pass everything well is evident. All avenues of scholarships have been pursued and due to successful scholarship applications and support from her parents she has been able to avoid a hefty student loan.

The only barrier Whetu could identify was the initial application process where she was told she could not get into the programme, as her secondary school qualifications were from overseas. Her father came with her to the application centre and insisted that her application be reconsidered. Had they not insisted she might have been turned away unnecessarily. She also had an unnecessary experience where a data entry mistake caused her fees to

show as unpaid when a scholarship fund had actually paid her fees. This was eventually resolved but caused her problems with re-enrolment as it looked like she had incurred a debt from the previous semster.

Whetu enjoys her studies and feels that as there is always something more to learn in any topic she is encouraged to keep learning. Her main interests are in multimedia and hardware and her constant contact with Maia has been her outlet when she needs study or academic advice or just somewhere to hang out and network with other Maori students. Long-term goals for Whetu are to see her graduating soon and gaining a well-paid job in the I.T. industry.

5.7 Waru

Waru is a parent of two young children who is studying full time. Waru successfully completed the bridging programme CIT to gain entry to the BCS programme. She leads an active life with lots of family activities but still finds time for hard work with her studies and meeting assignment and exam deadlines.

She has faced many barriers of which financial struggles and the constant need to support children while not in fulltime employment have been the biggest. However, this makes her more determined to finish her studies as soon as possible so she can earn a reasonable wage in a field that she enjoys. Being the only female in the class can be distracting and intimidating but she does not let this deter her or affect how she learns in the classroom. Her long-term goal is to graduate before her youngest child starts school.

5.7 Jade

Jade moved from a rural community to study, originally at Auckland University where she commenced a Bachelor of Health Science (BHS). Her brother was studying the BCS at Unitec and she became interested in the subject material that his programme covered. With only one course remaining before graduating in the BHS programme she chose to change and applied for entry in the BCS in February 2004.

During her first semester she has found a strong interest in her courses and has not been deterred in any way. She had completed an initial programming paper at Auckland University and she felt she could do a lot more in this field and is looking forward to the higher level programming courses. Jade also relised that she had picked up lots of bad habits in her previous studies and had learnt all the short cuts but was determined to put all these behind her now and focus on graduating as soon as she can. When asked why she decided to study in another subject area, she replied, "Because I just want to learn". She wasn't aware of support mechanisms on campus before she enrolled but became aware of them and is enjoying contact with staff and other Maori students through Maia.

5.8 Tekau

Tekau commenced her studies in the BCS in February 2004 upon successful completion of the CIT in 2003. Tekau has a preschool age child and she is determined to graduate before her son goes to school.

Tekau found there were not many barriers and she has enjoyed her studies so far. However she did identify that often being the only female and/or the only Maori student in a class can be intimidating but not something that she would allow to inhibit her in her progress. Financially, things are not easy but it makes more of a motivation to work harder so she will soon be able to find full time employment in the ICT industry, with a job that pays well.

6. CONCLUSION

To maintain whakawhanaungatanga, the personal stories of 11 Maori women are told. All the students were embraced in a feeling of whanau and the continuing research study provided an opportunity to meet their colleagues in a spirit of pirihoanga (friendship). The opportunity to continue this research again humbled the researchers when listening to the stories of students who all have barriers to success but don't consider these barriers (family and young children, lack of finance, lack of female classmates, part and full time employment) necessarily as reasons not to succeed. There were a number of underlying themes that were repeated through the "interviews as chat". Two years into the study has proved that there were no major barriers to enrolment however the majority of these students have come through bridging programmes rather than straight from secondary school as have the majority

of the male students. Not only does the research project provide a point of contact for the students to meet each other and provide peer support, it also introduces them to other support services that are provided for Maori women at Unitec.

Although the students did not identify major issues in the enrolment process, all the students talked about being the only women in their class and also about being the only person identified as Maori in their class. This research helps to overcome these barriers and provide the support that is available but not always obvious to students. By establishing contact with the students and providing role models, support services and points of reference we may see more Maori women ICT graduates in the future. This should then lead to major technological decisions that shape the lives of future generations having a balanced team of decisions makers, providing a balance of gender and ethnicity, women and mothers, men and fathers, as well as academic qualifications and industry experience.

All the women interviewed expressed the desire to be educated and to continue learning. None of them wanted to be "left behind" and they all wanted to provide an educated role model for their children so that future generations will be able to value education as a way of improving their lifestyle.

As this is a minimum six year longtitudinal study it is important to be able to present interim findings to add to the sparse literature available and to present this research to the educators of other Maori women studying in the ICT field. The authors would like to thank the reviewers of this paper for their insightful comments. One of the reviewers comments suggested to preserve the wairua (spirit) of narrative research we could present the personal stories in the "student" voice and this will be the basis of the next report of this study.

Mauriora

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REFERENCES

Bishop R., (1996). "Collaborative Research Stories Whakawhanungatanga", Dunmore Press

Charkova, R., Lin, A., Clear, T., Lomax, T. (2003) "Nga iwi o Ngapuhi Membership System: Relationship Management and Relational Design", in proceedings 15th annual NACCQ conference (Eds, Mann, S. & Williamson, A.) NACCQ, Palmerston North, New Zealand, pp 31-40

Ngatuere, J., Tupu, J., Young, A., (2002). "Nga Wahine Maori o BCS: Kanohi ki te Kanohi", in proceedings 14th annual NACCQ conference (Ed. Mann, S.) NACCQ, Hamilton, New Zealand, pp337-340

Ngatuere J., (2003). "Transforming My Whakapapa (Genealogy): Issues Around The Translation of Whakapapa Using Information Technology (I.T.)" in proceedings 5th annual ITiRA conference, Caloundra, Australia, pp 140-146