Research Management: Global Influencing of Risks and Rewards in a Rural Environment

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Abstract
Restrictions on availability of resources, time and funds can impact on the quality of the research done and the resulting reputation of researchers and their institution. Research in a rural tertiary educational institution presents additional challenges as to how it may be managed to maximise the return to the institution. Managers of research in these institutions are becoming increasingly aware of the impact that global influences can have on the risks and rewards for a researcher in a rural environment. At Taranaki Polytechnic, ways to manage these risks and rewards are being investigated.

Taranaki Polytechnic is the basis of a case study on research management. While the first cycle looked back over the last decade, the second cycle will look forward to the next decade where it is intended that the research focus will broaden from a rural, national, perspective to an international view, influenced by increasing globalisation of education.

Introduction
The introduction of the requirement for research into New Zealand Polytechnics has raised issues for management in a changing environment. Taranaki Polytechnic is used as an example of developing a research culture in a mid-sized New Zealand Polytechnic. This paper discusses the issues raised, describes the changes and resulting challenges and suggests possible impacts that globalisation may have on the management of research in rural tertiary institutions in the future.

The “nineties”
The decade 1991-2001 has seen both the introduction of an EFTS (equivalent full-time student) Government funding regime for New Zealand Polytechnics, and a reduction in this per EFTS funding. EFTS funding has dropped, (using a variety of mechanisms) from a notional base of $10,000 per EFTS in 1991 to $6,000 per EFTS in 2001. As a result, Polytechnics, both large and small, regional and urban, have been forced to find new income streams to help replace income lost. Student fees, full cost recovery tuition (eg. international students, courses for business and special courses for selected secondary school students) have all helped provide income to meet the funding shortfall.

This decade also saw Polytechnics introduce degrees into their programme offerings. Degrees were a growth area, and students attracted slightly higher per-EFTS funding. Degrees however had the requirement of being taught by staff engaged in research, and when the EFTS funding scheme was extended from Universities to Polytechnics in 1991, no allowance was made to fund research in Polytechnics. This posed three challenges for Polytechnics, firstly to resource research, secondly to develop a research culture, and thirdly to encourage staff to conduct research.

Since 1991, The New Zealand Qualifications Authority (NZQA) had approved over forty new Degrees in 18 Polytechnics, and, in keeping with accreditation requirements, Polytechnics were faced with the challenge of developing new research cultures where previously research was minimal or non-existent. The requirement for staff to be engaged in research called for Managers of teaching staff to carefully manage time and funds to enable research to be carried out in a way that maximises the return to the institution. Lack of numbers has meant that smaller rural tertiary institutions have had a particularly difficult time championing creditable research.

Decisions about the employment of tutors, their qualifications and training are the responsibility of each Polytechnic Council through their Chief Executive. Ten years ago emphasis was placed on tutors having industrial experience rather than academic qualifications and/or research capability. This has now changed – with an appropriate Masters Degree a requirement for those teaching on bachelor degrees.
The nineties also forced Polytechnics to recognise that they could no longer just meet regional needs, but in fact, in order to survive, more and more of them needed to behave as global institutions. Daniels (1994), suggests ‘As a business concept, a global company has a sphere of activity and awareness that stretches beyond where it operates to where it earns revenues, sources and carries out activities, or has a relationship with an outside party.’

International students are contributing to the relationship with an outside party. The Hon. Steve Maharey, Associate Minister of Education[Tertiary Education], (2001) in the second report of the Tertiary Education Advisory Commission (TEAC), states “Tertiary education is no different - it is increasingly becoming a global activity. As in other countries with well-regarded tertiary education systems, there has been a rapid expansion of the number of international students coming to New Zealand”.

Thus Managers in Polytechnics have faced the challenges of:
- reduced government funding
- introduction of new degree programmes
- academic staff issues
- increasing globalisation influences,

while at the same being required, (as part of their degree accreditation) to develop a research culture capable of standing scrutiny and winning research grant money.

Current Statistics
New Zealand has a population of approximately 3.6 million people. Maharey (2001) reports that in 1999 a snapshot of tertiary education in New Zealand showed that there were over a quarter of a million students enrolled in Tertiary Education Institutes (TEIs). This amounts to approximately seven percent of the total population with a forecasted rise in Maori and Pacific peoples from 2003 to 2011. Among these TEIs there are eight Universities and twenty-two Polytechnics. Of the twenty-two Polytechnics, eighteen offer Degrees, and of these, ten are regional Polytechnics. Government provides bulk funding to Polytechnics based on the number of equivalent full time students (EFTS).

A Rural Tertiary Education Institution

Taranaki Polytechnic is situated in a predominantly farming community with strong links to the oil and gas industry. The Polytechnic meets a variety of needs ranging from community courses, industrial training courses through to vocational training and Degree programs. The first Degree Program was introduced in 1995.

In a paper written four years ago, for presentation to a Polytechnic Business Computing Tutor’s conference, Bridgeman said:

Since 1993, a growing number of (New Zealand) Polytechnics have faced the challenge of the Development of a Research Culture, which has resulted from their being accredited to offer degrees. Degrees are "mainly taught by (tutors) engaged in Research” (Section 254 of Education Act 1989).

The development of new course "cultures" is not new in Polytechnic Business Computing Departments, which, since 1988, has seen the introduction of Introductory Certificate in Computing, Certificate in Business Computing, Advanced Certificate in Business Computing, National Diploma in Business Computing, and Degrees. Thus Business Computing Tutors have (since 1988) been working in an environment which has required almost continuous course development. Tutors have learned to cope with change. For those Polytechnics who are now teaching, or contemplating teaching degrees, the question could be asked ‘How is this new requirement to develop a 'Research Culture’ different? (if at all)”. (Bridgeman 1997)
Managing Research

The introduction of Degrees at the Taranaki Polytechnic had implications for the existing staff and the Institution. In addition to industry experience, importance was now placed on staff having academic qualifications. Attracting suitably qualified staff to regional institutions was difficult, so management were faced with encouraging existing staff to upgrade qualifications. For many institutions this also meant developing research capability in existing staff. Brook and Mann, (1999) reiterate, “To teach in a degree is synonymous with engaging with research; that is part of what a degree is”. Such research produced should be focused and inform innovation and excellence in teaching.

Appointing a Research Co-ordinator

At Taranaki Polytechnic, a Research Co-ordinator position was established to create a research culture both at the individual level and the institutional level. Insight into the possible paths that the development of the “research culture” could have taken was gained by consideration of the Australian experience as a number of TAFE (Tertiary and Further Education) institutions merged with a university or gained university status in their own right. Beattie (1993), and other contributors. (Bridgeman 1997a) discussed a number of issues needing to be addressed by these newly created Australian Universities. One such journey is documented by Deane and Jones (2001) as they chronicle “how one department, within a new (Australian) university, set about establishing a research culture and research presence, particularly the strategies that were developed and used by a small group of university staff to both promote and reward research excellence” (Deane E. M. 2001)

The New Zealand Qualifications Authority (NZQA) definition of research is deliberately comprehensive and encompasses; basic/fundamental, strategic and applied research together with scholarship, creative work and when certain conditions are met consultancy and professional practice. The Research Co-ordinator’s role in conjunction with Management was to facilitate staff education on “how to” and “what constitutes research” to meet these criteria, create opportunity for staff to engage in research, and encourage staff to publish and present their findings in suitable venues. Pringle (1999) in an address to the members of the APNZ (Associated Polytechnics of New Zealand), Research Forum, described the role of management in research as developing an infrastructure, systems and resources, assistance, education and mentoring for staff.

Bridgeman (1997:27) cites an unpublished work by Hill (1993) “At the level of the Institution, Hill (1993) suggests consideration needs to be given to making Research Activities cohesive (Sharing expertise and knowledge; having direction, niche or strategy) plus making Research easy for researchers. (Administration support for and commitment to research and researchers; having research facilities and resources)”.

Establishing Polices and Resources for Research

The development of policies to make research activities cohesive and easy for researchers was seen to be fundamental to the development of a research culture at the institutional level. (Hill, 1993). To this end an Ethics and Research Committees were established. Funds were designated for research and a room with a computer and associated resources was made available for staff engaged in research. As well, there was a visiting Research Mentor from a neighbouring Institution.

Providing in-house Professional Development of Research Expertise for staff.

Because of the varying needs, and the relatively small numbers of staff at the Taranaki Polytechnic, who were teaching on the two degree programmes, it was not seen as viable for the Professional Development Officer at the Polytechnic to develop a specialised Programme to help the existing staff develop and or enhance their research skills. Rather, staff were encouraged and funded to attend national ‘Conducting Research Seminars’.

To experience research funding assistance was given to staff via an internal contestable research fund. A written application was required which had to meet certain criteria adopted by the Taranaki Polytechnic.

- did the application fall within the granting body’s terms of reference?
- was the project it feasible and/or significant?
- was there a likelihood that the results would be published thereby making a return to the Polytechnic on its investment? Sheenan and Eadie (Beattie, 1993).
Establishment of a “Research Colloquium”
To assist the staff at the Taranaki Polytechnic to gain confidence in writing for journals and presenting at conferences, a Research Club was established at which beginning researchers presented to their peers. Meetings of the members participated in collegial discussion and critique to help in revising and editing of papers to enable papers to be of an appropriate standard for publication.

Managing Research at the Individual Level
At Taranaki Polytechnic the creation of a research team, was considered to be the ideal vehicle to begin the development of a research profile. In July 1995, collaboration with other institutions as research partners was also in hand. Five staff members from the Department of Computing and Information Technology at Taranaki Polytechnic were upgrading their qualifications via the Internet with Victoria University, Wellington. The electronic delivery of these courses to the staff members at the Polytechnic tied in with Taranaki Polytechnic’s Department of Information Systems Research focus on Electronic Information Distribution and also formed part of Victoria University’s research.

Taranaki Polytechnic Research Outputs to 2000
Research outputs were steadily increasing, and demonstrating a wider variety of research. In addition to the research taking place in the two Degree Areas of Computing and Nursing, other research outputs were also being produced for example Forestry, Science and Engineering, Tourism and Hospitality. Presentations of papers at a National level were steadily increasing, together with presentation of papers at an International level. There was also evidence of joint research and collaboration in research at an international level as researchers joined to complete papers or gathered together to contribute to workshops.

Strategies to manage research at Taranaki Polytechnic resulted in:
- a Research Co-ordinator had been appointed
- policies and procedures had been put in place
- ethics and research committees were established
- research colloquium set up
- contestable research fund in place

Generally this has proved to be a successful first cycle in creating a research culture at a rural Polytechnic.

Extrapolating to the National Polytechnic Environment
Taranaki Polytechnic’s experience in management of research was not unique. Issues of time and resource were reflected by Ferguson (2000:13) in a Keynote Address to a Research Conference at Northland Polytechnic states: “Research carried out in a variety of international institutions stress the difficulties that researchers face if insufficient time is made available to them to carry out their work. These difficulties were cited in Australia by Bazeley (1994); by Moses and Ramsden (1992); and by Poole (1991); in the U.K. by Dyer-Smith & Candler (1994); and Phillips (1992) and in New Zealand by Buckeridge (1997); Croty (1992); Hill (1993); Sylvester, (1995) and Wood (1994). So it is critical that institutions find ways of releasing staff from teaching and administrative commitments if they wish them to engage in research”.

Generally, research was carried out in addition to a staff member’s usual teaching load. Typically within a Polytechnic, a tutor’s workload was established, with emphasis placed on the number of hours a staff member spent in front of the class. To engage in research, in addition to teaching, required excellent time management and organisational skills to manage a high workload.

Some features as to how individuals managed research were discussed by Dr Greg Pringle, (1999) at the APNZ Research forum as being:
- “individual, independent, ad-hoc, with an internal focus
- a minority part-time effort for most
- conference dependent
- required for degree upgrades

The aim for management was to develop the individual staff member:
- from an internal to an external focus
• create more active partnerships with industry
• go from ‘lower’ to ‘higher’ quality publications
• promote themselves nationally

Maharey (2000:10), in a keynote address at the Northland Polytechnic Research Conference, noted the very wide field of Polytechnic Research when he commented “Industries such as carpentry, hospitality, interior design and fashion obviously offer opportunities for polytechnic research”. He also commended New Zealand Polytechnics for establishing their niche research area… “Nelson Polytechnic with fishing, Waiariki with forestry”. Maharey (2000:5),

The Second Cycle: Taranaki Polytechnic 2001 - 2011
Research in Polytechnics needs to be managed well at the institutional level to encourage credible results at the individual level. Research in the Taranaki Polytechnic has largely been established within the last decade and staff has been reliant on a developing research culture to grow their experience as researchers. Staff at Polytechnics in New Zealand has a role to contribute to research, particularly (but not limited to) applied research and technical research. The aim of Taranaki Polytechnic in the next decade is to strive towards achieving alliances with international educational institutions and to contribute to a global research culture.

“If you want to develop a research culture, then, you need to consider how individual research skills and experience might best be developed or acquired; to decide whose values and beliefs underpin the kinds of research that will be carried out; and to support the developing research work with appropriate facilities and tools”. (Ferguson, 2000:3)

At this present time the research environment at the Taranaki Polytechnic is geared for change. The responsibilities previously associated with the Research Co-ordinator’s position have been split. Responsibility for the management of research at the institutional level now rests with the General Manager, Academic Quality and Business Development, while Head of Department for Nursing provides academic leadership of the Research Committee. Responsibilities for management of research at the individual level are with the Heads of Departments.

A strategic direction the Taranaki Polytechnic aims to achieve during 2002-2004 is to use international benchmarks to meet all client-learning needs to their satisfaction and contribute to innovation and excellence in learning. This has implications for the continued development of its research culture. It will be striving to:

• achieve alliances with international educational institutions
• contribute to a global research culture
• align effort with appropriate rewards for researchers

while recognising that the research exists in a rural, national and international context, informed by globalisation of education.

A suggested research growth strategy.
At another Polytechnic in New Zealand the following strategies were used to encourage a change in staff attitude to research, and maximise the return to the institution. Joyce and Young, (2000:2-5), identify ten strategies for managing the growth of research outputs as being:

1. “Lead by Example… Academic management to exceed own personal research targets
2. Training Existing Academic Staff …encourage staff to attend courses and seminars that cover research methods, writing papers and finding places to publish.
3. Encouraging Academic Staff Study …staff without an under graduate degree have been actively encouraged to enrol in a degree programme.
4. Recruiting New Academic Staff …the importance and desirability of having higher degrees and/or research experience.
5. Setting Research Targets …every staff member negotiates a research target that is within their capabilities and experience
6. Establish a Research Fund …academic staff can apply for a share of the fund and five research grants are awarded each year.
7. **Forming Research Groups** - For some academic staff members getting started in research is a daunting task and one way of reducing this obstacle is to partner the new researchers with the more experienced researchers within the school.

8. **Expanding the National Conference** - Each year the National Advisory Committee on Computing Qualifications (NACCQ) holds an annual conference. …this gives the lecturers a place to share their research results.

9. **Introducing a National Journal.** - 1997 saw the first publication of the New Zealand Journal of Applied Computing and Information Technology …provides a vehicle for polytechnic academic staff to publish their research.

10. **Funding Conference Travel** - Within the Faculty of Business there is a policy of funding conference travel, provided the academic staff member is presenting a paper”.

Joyce and Young (2000:5) comment on the success of these strategies “Nearly all academic staff at SISC (School of Information Systems and Computing), have been funded to attend at least one national conference and ten academic staff have been funded to present papers at international conferences. This international exposure has ensured the ongoing reputation of the individual academic staff members and adds to the growing international reputation of SISC”. They also state that in the past five years their research outputs by the staff in SISC have grown from three to fifty-three.

**New Strategic Directions for Tertiary Education in New Zealand**

Maharey (2000:12-13) asks the question “Where to from here? … What can polytechnic researchers expect from the new strategic and cohesive national tertiary education system?” He states as yet exact details are yet to be determined, however five things are clear:

1. “Polytechnics will have a distinct role from universities …this emphasises diversity, vocational training and promoting community learning
2. Polytechnics will continue to be able to offer degrees
3. Degrees will be required to have a research underpinning - and that requirement will be enforced
4. … there is an overall need to focus research spending strategically and build centres of excellence
5. We want to use collaboration and information and communications technology (ICT) to reconcile that strategic focus with a broad underpinning of degrees by research”.

With degrees now a part of most Polytechnics, the members of the Association of Polytechnics in New Zealand (APNZ) met in Wellington in November 1999, to discuss and set up the APNZ Research Subject Forum. A key role of this forum was to establish how research could be/s/is being managed at Polytechnics, and to identify and publicise “best practice”. To this end, on 6 August 2001 there was a Ministerial Reception hosted at Parliament Buildings to showcase Polytechnic research capability. Three outstanding research projects, and a further 12 “Posters” were presented to the ministers and guests, to inform them of the standard and scope of research currently being carried out in Polytechnics.

**Impacts of globalisation on institutions**

During the “nineties”, another revolution was happening, namely, the rapid advance of information technology and the resulting exponential growth of the Internet.

“Worldwide, research networks have proliferated as the knowledge economy has expanded. The new technology ensures that new findings enter public debate more rapidly than previously and new users and developers pick up on the consequences’. Maharey (2000:6).

To take advantage of this knowledge base, researchers in New Zealand Polytechnics need to build networks for international alliances. However there are risks associated with forging such links via the internet. Such associations may be likened to a “blind date”. For example, staff may be trying to collaborate with future competitors, or staff may be unwittingly sharing intellectual property. However, the ability to publish and access knowledge has a saving in time at the individual level of research, and also a saving of scarce resources such as funds for travelling and accommodation at the institutional level.

On the other hand, once networks are established the Internet allows for international collaboration among researchers. Another benefit is access to trans-national education for staff to upgrade academic qualifications.
Research in Polytechnics needs to be managed well at the institutional level to encourage credible results at the individual level. Rewards for researchers are not necessarily financial. In the academic environment, considerable “kudos” is gained when a researcher is published in a refereed journal or presents at an international conference. Management can provide rewards by acknowledging the researcher’s achievement - for example providing links to papers published by staff thereby acknowledging the researcher and the results in a global environment.

Research at the Taranaki Polytechnic has largely been established within the last decade and staff has been reliant on a developing research culture to grow experience as researchers. Staff at Polytechnics in New Zealand has a role to contribute to research, particularly (but not limited to) applied research and technical research. The aim of Taranaki Polytechnic in the next decade is to strengthen research in their niche area, continue to build on research outputs, and to strive towards achieving alliances with international educational institutions and to contribute to a global research culture.

Conclusions
Over the last ten years research cultures have been developed in many Polytechnics. As experience in managing the research has been gained, restrictions on the availability of resources, time and funds have slowly eased and the quantity and quality of research carried out has led to an increasing reputation of both researchers and polytechnics. However, a good beginning has been made.

Arguably, over the last ten or so years, globalisation has had an impact on tertiary education in New Zealand, and on Polytechnics in particular. Globalisation has seen: decreasing government funding, and the introduction of degrees into polytechnics. Also, there has been an increasing demand for places on degree courses by both Government funded local students and full-cost recovery international students. Provision of such places has seen the need to carefully manage the development of a quality Polytechnic research culture capable of enhancing the reputation of the researchers and maximising the return on investment.

To create a climate, which encouraged staff members to participate in research and to maximise the return to the institution, firstly it was important to develop and manage a research infrastructure, and to build and put into place systems and resources to educate and mentor the staff. Secondly, there was a need to build external relationships with other researchers for collaborative efforts, and with industry and to gain funding. It was also important to be aware of the role that research could play to help meet the needs of business development and commercialism.

The globalisation of education has the potential to change the way Polytechnics conduct business, and open up opportunities to create new networks and relationships in research opportunities. This could see a rural polytechnic’s research focus shift from a rural, national perspective to a more international perspective governed by international benchmarks. The challenge for rural polytechnics is how to manage the risks and rewards in this new environment.
References


