Concise paper

Research Cultures under the Microscope: Three Case Studies

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ABSTRACT

Nearly all institutions which are part of the National Advisory Committee on Computing Qualifications (NACCQ) offer computing degrees and are under pressure to grow their "research cultures" in order to maintain their degree accreditation. The three authors have experienced this pressure in different ways: as heads of department, programme directors and research co-ordinators. In this paper they attempt to answer five research questions:

- what patterns of growth/decay have been observed at three institutions of different sizes?
- how has the balance between publication and presentation changed?
- how has the balance between national and international changed?
- how has the balance between conferences and journals changed?
- what are the possible reasons for the observed changes?

Keywords

Research, cultures, balance, changes, decay, growth.

1. INTRODUCTION

At least two dozen papers have been written about research in NACCQ member institutions. Among the factors that have been identified as impacting on research outputs are:

- Introduction of degrees and diplomas at level 7 or higher - the New Zealand Qualifications Authority (NZQA) expects that most staff teaching on degrees will be research active and staff research outputs are an important consideration when NZQA panels are considering applications to have new programmes approved (Bridgeman, 1997, 2000; Brook and Mann, 1999).
- Staff development and research targets - staff who undertake masterates or doctorates will enhance their research skills and be encouraged to publish their research results (Bridgeman, 2002, 2004; Fielden, Joyce & Nodder, 2001; Joyce, 1997).
- Availability of publication vehicles – NACCQ began publishing conference proceedings (PACIT) in 1994, the Journal of Applied Computing and Information Technology (JACIT) in 1997 and the on-line Bulletin of Applied Computing and Information Technology (BACIT) in 2003, all with the aim of promoting research in member institutions (Joyce, 1999, 2004; Joyce & Petrova, 2004) and several institutions have provided "in-house" electronic vehicles for researchers to share their current projects with colleagues (Mann & McGregor, 2000; Strode & Coard, 2004).
- Appointment of staff as research co-ordinators – staff who are new to research may be encouraged and supported by more experienced staff who have been given a time allowance to co-ordinate research across the institution, faculty or school (Blackshaw, King & Surendran, 2001; Brown, 2000; Burgess, 2001; McCurdy, 2000; Surendran & McSporran, 2001).

The authors extracted data from annual research reports and then drew on their own experiences over the past decade in three institutions to interpret the data. The results are presented as three case studies.

Table 1: CPIT School of Computing Research Profile 1994 -2004

Year	Research Outputs	% Proc	% Pres	% Jour	% Intl	Degree Began	Staff Development	NACCQ Publ	Research Co-ordinator
1994	1	100	0	0	0			PACIT	Institute
1995	1	100	0	0	0				Institute
1996	1	100	0	0	0	BBComp			Institute
1997	5	60	0	40	20		1M	JACIT	Faculty
1998	3	67	0	33	0		1M		Faculty
1999	7	86	14	0	0		1M		Faculty
2000	10	100	0	0	0		1M		Faculty
2001	22	77	18	5	23	Grad Dip	1M		Faculty
2002	14	79	14	7	14	BICT			Faculty
2003	22	64	27	9	23			BACIT	Faculty
2004	21	71	19	10	33				Faculty

2. CASE STUDY 1: CHRISTCHURCH POLYTECHNIC INSITUTE OF TECHNOLOGY (CPIT)

The School of Computing at CPIT offers a bachelor's degree and a graduate diploma and has 23 academic staff. Table 1 (where proc = conference proceedings, pres = conference presentations, jour = journal articles, intl = international, M = masters) relates staff research outputs to the four factors identified in the introduction to this paper.

Note: Conference papers accounted for 81 of the 107 outputs (76%), presentations for another 17 (16%) and journal articles for the remaining 9 (8%); 20 of the outputs were international (19%), including 2 journal papers. Conference papers have always made up at least 60% of outputs.

The introduction of the Bachelor of Business Computing (BBComp) in 1996 provided an impetus that saw the number of research outputs increase in subsequent years. In the late 1990s CPIT introduced employment contracts with "research conditions" attached, which meant some staff members were required to produce research outputs as part of their employment – this partly explains the 1999-2001 "growth spurt". Journal publication began in 1997 when JACIT was launched and resumed in 2001 in response to encouragement by CPIT management, research coordinators and the degree monitor. Other factors include the introduction of a Graduate Diploma in eCommerce in 2001 and the restructuring of BBComp into the Bachelor of Information and Communication Technologies (BICT), both of which broadened the scope of subjects taught and therefore the subject areas for research outputs. The drop in 2002 could be attributed to the secondment of a senior staff member to an industry based organisation and the need for other staff to cover the resulting teaching gap. Three particularly active staff members were responsible for 64% of the outputs in 2003 and 71% of the outputs in 2004. These observations about the 2002, 2003 and 2004 data indicate that the level of research outputs in an institution of this size is vulnerable to staffing changes. Financial incentives for staff to produce research outputs include "publication incentive grants" that are awarded to staff who publish in peer reviewed journals, with these grants able to be spent on research related activities at their discretion, which can include attending conferences where they are not presenting.

3. CASE STUDY 2: UNITEC NEW ZEALAND

The School of Computing and Information Technology at Unitec offers a bachelor's degree, a graduate diploma, a master's degree and a doctorate, and has 44 academic staff. Table 2 (where D = doctorate) relates staff research outputs to the four factors identified earlier.

Table 2: Unitec School of Computing and Information Technology Research Profile 1994 -2004

Year	Research Outputs	% Proc	% Pres	% Jour	% Intl	Degree Began	Staff Development	NACCQ Publ	Research Co-ordinator
1994	1	0	100	0	0			PACIT	
1995	3	67	33	0	0				
1996	11	45	55	0	0				Institute
1997	14	57	14	29	36	BCS		JACIT	Faculty
1998	35	40	46	14	20				Faculty
1999	33	48	33	18	24		2M		Faculty
2000	48	42	50	8	33	MComp	5 M, 1D		School
2001	71	66	17	17	32	Grad Dip	7 M, 1D		School
2002	63	60	24	16	29		7 M, 2D		School
2003	73	59	21	21	42	DComp	7 M, 4D	BACIT	School
2004	103	52	37	11	37		6 M, 4D		School

Table 3: WITT Department of Computing Research Profile 1994 -2004

Year	Research Outputs	% Proc	% Pres	% Jour	% Intl	Degree Began	Staff Development	NACCQ Publ	Research Co-ordinator
1994	3	0	100	0	67		1D	PACIT	Faculty
1995	13	38	62	0	38	BAppIS	5M, 1D		Faculty
1996	6	33	67	0	0		5M, 1D		Faculty
1997	15	27	40	33	27		5M, 1D	JACIT	Institute
1998	16	37	44	19	13		1D		Institute
1999	26	42	42	15	31				Institute
2000	13	46	46	8	31				Institute
2001	8	50	50	0	0				Institute
2002	7	43	57	0	0		1 M		Institute
2003	4	75	25	0	0		2 M	BACIT	Institute
2004	19	32	53	16	0		3 M		Institute

Note: Conference papers accounted for 247 of the 454 outputs (54%), presentations for another 140 (31%) and journal articles for the remaining 67 (15%); 146 of the outputs were international (32%), including 21 journal papers. The proportion of international outputs has varied between 20% and 42% since 1997.

The development of the Bachelor of Computing Systems (BCS) in 1996 and its introduction in 1997 provided strong incentives to produce research outputs. Unitec staff were actively involved in JACIT and PACIT from their inception and have contributed 28% of all JACIT papers and 23% of all JACIT papers (the largest contributions of any institution). The last six years have seen increasing numbers of staff enrolling for postgraduate study and nearly all of them have produced research outputs since doing so. Computing staff played a significant role in promoting research across Unitec and within the faculty from 1996 to 1999 and there has been a school research co-ordinator since 2000 (Joyce & Young, 2000). The introduction of the Master of Computing (MComp) and Doctor of Computing (DComp) has had a multiple impact since 2000: staff enrolled in the programmes have published papers based on their studies and staff teaching on the programmes have published papers about

the programmes and have co-authored papers with students (Joyce & Young, 2004a). Other local factors include the launching of the CITRUS Research Centre (Williamson & Mann, 2002) and the introduction of research fellowships (Joyce & Young, 2004b), both of which allow selected staff to have reduced teaching loads.

4. CASE STUDY 3: WESTERN INSITUTE OF TECHNOLOGY AT TARANAKI (WITT)

The Department of Computing at WITT offers a bachelor's degree and has 10 academic staff. Table 3 relates staff research outputs to the four factors identified earlier.

Note: Conference papers accounted for 50 of the 130 outputs (38%), presentations for another 64 **(**49%) and journal articles for the remaining 16 (12%); 25 of the outputs were international (19%), including 3 journal papers, but there have been none since 2000.

There were three obvious contribuory factors to the big increase in outputs in 1995 (Bridgeman, 1996): the introduction of the Bachelor of Applied Information Systems (BAppIS) degree, the involvement of six staff in postgraduate study and the launching of PACIT. In 1996 the NACCQ conference came to Taranaki and most of the "research active" staff were heavily involved in organising the conference rather than producing research outputs. The appointment of a computing staff member as research co-ordinator for the institute and the availability of another local publication vehicle (JACIT) contributed to the steady growth in 1997-1999 (Bridgeman & Chamberlain, 2001). The dramatic downturn in 2000-2003 can be attributed to funding and staffing problems, and the restructuring of the institute. In a small institution like WITT, individuals can have a significant influence: one staff member (who was research coordinator from 1994 to 2004) was responsible for 41 of the 130 outputs (32%).

5. CONCLUSION

Each institution has experienced years when outputs have increased dramatically and other years when outputs have decreased. Conference papers and presentations continue to form the majority of outputs and only a small proportion of outputs are international. In smaller institutions the arrival, absence or departure of an active researcher can have a significant impact on the outputs. Other factors include the existence of "user-friendly" vehicles for publication (in particular the NACCQ conference and JACIT), financial incentives and time allowances, and the support of an enthusiastic dean, degree monitor, head of department or research co-ordinator.

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