



IMPROVING THE QUALITY OF RESEARCH OUTPUTS IN HIGHER EDUCATION THROUGH KNOWLEDGE SHARING AND COLLABORATION: A CASE STUDY

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ABSTRACT

The article highlights some drawbacks of not managing knowledge in academia and suggests knowledge-sharing strategies that can be used to leverage knowledge on research procedures. The study investigated the research procedures used by Master of Information Studies students at the University of Natal in South Africa between 1982 and 2002. The results indicated that there was no uniformity in the research procedures used in the theses. For instance, issues relating to sampling, validating survey protocols and summarising research findings were not always handled according to established methodological standards. The variability in research processes that were employed partly implied that the levels of knowledge of research supervisors differed. It is evident from the research outputs that knowledge that is scattered among research supervisors is not easily accessible. In that regard, this article provides a model for academic institutions interested in bridging existing knowledge gaps and enhancing performance of research supervisors.

1. CONTEXT AND CAVEATS

The concept of managing research programmes in academia is a fairly new one (Taylor 2002:146). Although, Young (2002:166) observed that departments in many universities were paying more attention to community service and teaching at the expense of research, the situation is gradually changing in the case of South Africa. Research and development is increasingly becoming

the mainstay of higher education in South Africa (Waghid & Le Grange 2003:5).

Pressure to secure research grants, obtaining rating from the National Research Foundation and the need to be promoted has prompted many academics in South Africa to place more emphasis on research than teaching and community service (Le Grange 2003:129). The shift of emphasis towards research seems to be in line with some of the objectives of the Southern African Development Community (SADC), of which South Africa is a member. SADC's 'Protocol on Education and Training' underscores the fact that research is the *sine qua non* for high-quality education, training and research, and creative thinking (Southern African Development Community 1996). Furthermore, the South African Government's funding formula for higher education tends to be biased towards research.

The number of scholarly publications produced by academics and the number of research theses produced by their students are some of the criteria used to measure the research output of institutions of higher learning in South Africa. Using a case study approach, this investigation analysed Master's theses in the Information Studies Programme at the then University of Natal (now University of KwaZulu-Natal) between 1982 and 2002 to evaluate the quality of their research output. The quality of research theses partly depends on the academic support provided by supervisors.

The scholarly publications of academic staff in the Information Studies Programme were considered to be beyond the scope of this study. The aim was not to measure the output of academics in terms of their publication record. Instead, the study was concerned with the academic support that supervisors gave to their students and the bearing it had on knowledge sharing and collaboration among themselves. Equally, excluded was the input of examiners of the theses. Although the research recognised that examiners were also the gatekeepers of quality assurance in thesis production, it proved extremely difficult to gain access to the reports they submitted in relation to the theses under study. The study also concentrated on theses that used quantitative research approaches because of the nature of the variables that were investigated.

One of the assumptions was that the quality of research theses could demonstrate the level of knowledge of supervisors in relation to research procedures relevant to their discipline. Supervisors are expected to have expertise in their specific domain, be successful researchers, have experience in the topic of research and have time to supervise (Xiao & Taurigana 1998:168). In that regard, supervisors 'should have commitment to research and scholarship that informs' their supervisory role and 'those who are not

themselves active in research and scholarship can rarely supervise the work of others so engaged with success' (University of Hong Kong 2004).

Research has demonstrated that postgraduate students dislike supervisors who are not knowledgeable (Xiao & Tauringana 1998:176). Knowledgeable and experienced supervisors are likely to give appropriate academic support which might positively affect the outcome of students' research outputs. Appropriate research procedures are at the heart of high-quality research outputs. The role of supervisors in assuring the quality of theses is further discussed in section 1.2 below.

Supervisors are under pressure to 'identify, develop, and evaluate their skills to enhance the supervision relationship' (Zuber-Skerritt & Roche 2004:90). Supervisors may gain knowledge of supervision through training or experience. Many organisations provide training to supervisors to ensure that the quality of their academic support to research students is enhanced (Cryer & Mertens 2003; Edwards 2002). For instance, mandatory training for postgraduate supervisors is gaining momentum in the United Kingdom (UK) and Australia (Cryer & Mertens 2003; Edwards 2002).

There are formal training programmes such as the Training and Accreditation Programme for Postgraduate Supervisors (TAPPS) and Edge Hill Higher Education Institute's Postgraduate Certificate in Research Degree Supervision in the United Kingdom (Edwards 2002). Van der Westhuizen and de Wet (2002:186) highlighted the need for supervisory training programmes for social sciences and humanities in South Africa.

It is contended that in the absence of any formal training such as the one offered in the United Kingdom, research supervisors may improve their academic support to students through sharing their knowledge and expertise in a given context among themselves. In that regard, the key assumption was that people might gain knowledge from their experiences and their peers' expertise. People's ability to learn from one another's experiences and then to apply that knowledge to address life situations is one of the steps towards the acquisition of wisdom.

According to Prusak (1996:6), '[t]he only thing that gives an organisation a competitive edge – the only thing that is sustainable – is what it knows, how it uses what it knows and how fast it can know something new'. In that regard, organisational processes may be improved 'when better knowledge is made available and used competently where and when needed' (Wiig 1993:xvi). Put differently, organisations that share knowledge increase the opportunities for the creation of new ideas that have the potential of adding value to their activities (Mitchell 2003:69). Failure to manage and share knowledge systematically could be a barrier to knowledge creation and distribution (Webb 1998:10).

In that light, higher education institutions should be encouraged to apply the principles of knowledge management in order to build and exploit their intellectual and social capital effectively and gainfully. According to Davenport and Prusak (2000:vii), many companies are applying principles of knowledge management but there is little evidence that institutions of higher learning are doing this. One could argue that many institutions of higher learning in South Africa have not systematically embraced knowledge management.

The situation is not peculiar to South Africa; academics in other parts of the globe have also adopted the concept of knowledge management at a snail's pace (Tippins 2003:339). In fact, knowledge management has only been experimented with in higher education in recent times (Kidwell, Vander Linde & Johnson 2000:28). Although, knowledge management is gradually gaining acceptance in the field of education particularly in the United States of America (Petrides & Nodine 2003:4), many universities in the world are still 'on the very first steps of what appears to be a long ladder', to use the words of von Krogh and Roos (1996:1).

1.1 DEFINING KNOWLEDGE AND KNOWLEDGE MANAGEMENT

It is essential to define *knowledge* because an understanding of its nature is fundamental to locating, using, measuring and managing it (Huseman & Goodman 1999:104). Authorities have made a distinction between *data* and *information*, and between *information* and *knowledge* (Boahene & Ditsa 2003; Davenport & Prusak 2000; Kidwell, Vander Linde & Johnson 2000). Data with context is regarded as information, and knowledge is information laden with experience, intuition, meaning and relevance (Davenport & Prusak 2000). Knowledge helps organisations and individuals to assess situations and manage change. Put differently, knowledge provides the means for interpreting data and information (Newell et al., 2002:102).

Knowledge management has the potential for making knowledge processes explicit and developing strategic guidelines for using knowledge innovatively. The literature gives varying definitions of knowledge management contributing to a 'fragmented mosaic of views' (Nicolas 2004:20). However, this article defines *knowledge management* as the sum of processes that facilitate the creation, identification, validation, acquisition, sharing, utilisation, integration and retention of knowledge resources in an organisation, irrespective of their location and formats, and in order to improve the organisation's efficiency and effectiveness.

1.2 RESEARCH SUPERVISORS AND QUALITY ASSURANCE IN THESIS WRITING

The quality of postgraduate education and the production of postgraduates are correlated to the calibre of research supervisors (Cryer & Mertens 2003). In fact, sound research procedures are key to the production of valid knowledge. Research supervisors are supposed to be expert guides and advisers who should guarantee quality control in the thesis-writing processes and enable institutions of higher learning to supply postgraduates to society (Le Grange & Newmark 2002). Research has shown that supervisors might have up to 16 different roles (Edwards 2002). However, only two traditional roles of supervisors are highlighted here as they were deemed to be pertinent to the current study. Among other things, the supervisor ensures that the

- supervisee uses the correct methods to solve the problem and uses appropriate sources in reviewing the literature (Deist 1990:67; Mouton 2001:18; University of Natal 2003).
- research problem is solved according to the requirements of the methods employed (Deist 1990:67; Taylor 2002:140).

It is evident that research supervisors are pivotal to the research process. The fundamental role of supervisors is to impart to the student the skills necessary to plan and conduct original research. Therefore, their knowledge and advice in the use and application of appropriate research procedures is key to the production of theses of high quality.

2. PROFILE OF THE INFORMATION STUDIES PROGRAMME

Since its establishment in 1973, the Information Studies Programme at the University of KwaZulu-Natal accounted for a large part of graduate research in library and information science (LIS) in South Africa up to the twenty-first century (Ocholla 2000). Studies have revealed that the library and information science research landscape in South Africa is dominated by research at Master's level (Kaniki 2000; Ocholla 2000). In that light, this study confined itself to Master's theses that were submitted to and approved by, the University of Natal between 1982 and 2002. A Master's degree is awarded for a thesis alone or for a thesis plus course work (University of Natal 2000:1). The current study made no distinction between the two types of theses because they both require a high standard of rigorous research.

Theses of Master's degree students were regarded as suitable for the study. According to a number of research methodologists, one of the safeguards

against getting unreliable information is ensuring that the units of analysis are capable of providing the required information with some degree of accuracy (Babbie & Mouton 2001:234; De Vaus 1996:84). The data from the theses was supplemented by personal observations and documentary evidence on the profile of the lecturer on the Information Studies Programme during the period under review (cf. Bell 1999).

3. METHODOLOGY: THE RESEARCH STORY

This is an exploratory piece of research which sought to highlight some of the pitfalls of not sharing knowledge in an academic environment from a bibliometrics perspective. The aim was not to carry out a knowledge audit, which generically encompasses key knowledge drivers of the business process, technology infrastructure, exploitation of management information, key knowledge flows, key people skills and the intellectual assets of an organisation (Knight & Howes 2003:50; Webb 1998:21).

Alan Pritchard coined the term *bibliometrics* in 1969. Ever since, it has been defined in various ways (Hertzal 2003:288). However, the emerging consensus is that bibliometrics is concerned with the study and analysis of all forms of written communication by countries, authors, languages, words, formats, research methodologies, articles, obsolescence and distribution of authors in literature (Borgman & Furner 2002). Bibliometrics research is also being used to measure knowledge production, consumption and its impact (Rowlands 2003).

Many researchers investigating research trends and methods in library and information science have used bibliometric methods for data collection and analysis (Abdoulaye 2002). In that regard, the bibliometric research method was considered appropriate for the study. The case study approach was adopted because every organisation has a unique knowledge capital (Mitchell 2003:69). In that light, the study of context-specific models remains important because knowledge management models used in specific case studies may be used with some modifications as building blocks for other environments. For instance, knowledge management success stories of Hoffman–LaRoche Limited and Merck and Company (cf. Prusak 2001) may be used as examples by organisations exploring knowledge management practices.

The population of the study was 81 Master of Information Studies theses submitted to, and approved by, the University of Natal from 1982 to 2002. The size of the population was considered to be sufficient for the study. For instance, Abdoulaye (2002) used a population of 20 theses to investigate research trends in library and information science at the International Islamic

University Malaysia and was able to sketch reasonable conclusions. The 81 units of analysis of the current study were identified from the University of Natal graduation ceremony lists and the study done by Bell (1999).

Three of the theses that were analysed were completed between 1982 and 1986, nine between 1989 and 1991, the years 1992 to 1994 accounted for eleven theses, eighteen were completed between 1995 and 1997, and the years 1998 to 2000 and 2001 to 2002 had twenty theses in each period. Each thesis in the population of the study was perused in order to establish the name of the supervisor(s), the methodological perspective(s) used, definition of population of the study, sampling procedures used, data collection techniques, ethical issues, questions of reliability and validity, response rates, data analysis procedures and evaluation of the research procedures. The study of these variables helped to map the use of these procedures by the Information Studies Programme research students during the period under review. Table 1 gives a summary of the aspects of procedures used by sixty-one theses that employed the quantitative approach, including research supervisors and the years they were with the Programme.

TABLE 1 _____
ASPECTS OF RESEARCH PROCEDURES USED N = 61

Aspect of research procedure	A (1986-1995)	B (1986-2003)	C (1992-2003)	D (1994-2003)	E (1996-2003)	F (2000-2003)	Total number of theses
Definition of population of the study	1	8	9	4	3	4	29
Sampling procedures used	0	1	0	0	0	1	2
Data collection techniques	2	12	12	4	7	4	41
Ethical issues	0	0	0	0	0	0	0
Reliability and validity	1	5	5	1	3	2	17
Response rates	1	11	18	4	4	3	41
Rationale for data analysis procedures	0	5	4	0	0	1	10
Evaluation of the research procedures	0	11	2	1	1	1	16

Readers should note that each of the research supervisors labelled A to F promoted at least four theses during the period under review. The picture that emerges from Table 1 is that the research supervisors did not use the various aspects of the research procedures consistently.

4. DISCUSSION OF THE KEY FINDINGS FROM THE CASE STUDY

The research revealed that, in spite of the fact that there is a steady improvement in the utilisation of research procedures in the Information Studies theses at the University of Natal, the theses did not have a uniform approach in dealing with the definition of the population of the study, sampling procedures used, data collection techniques, questions of reliability and validity, response rates, data analysis procedures and evaluation of the research procedures. There were disparities in the use of the research methods among theses.

The findings indicate that such disparities were widespread and, in many cases extreme. That implies that supervisors had varying knowledge of sound research procedures (see Table 1). However, no one staff member seemed to have a monopoly of knowledge on research procedures. Supervision guidelines and standards should be established in order to avoid the disparities uncovered by the current research. According to Frame and Allen (2002:101): 'There have been increasing moves in UK universities to introduce formal guidelines for PhD supervision, intended to clarify expectations, establish minimum standards of PhD training, and improve PhD training quality.'

The establishment of formal guidelines for research supervision would immensely benefit the Information Studies Programme as well as bridge the knowledge gap of less experienced supervisors.

4.1 METHODOLOGIES USED BY THE THESES

Table 2 summarises the research methodologies used by the 81 theses that were submitted to, and approved by, the University of Natal during the period under review.

It is evident from Table 2 that the quantitative approach and the survey design method dominated the research scene during the period under study. Despite the fact that, one of the major steps in survey design is to define the population before collecting the sample, only 29 (47.54%) out of the 61 theses that used quantitative strategies clearly defined the population and outlined how the population was determined.

4.2 SAMPLING PROCEDURES

Although the foundation of survey research lies in sampling procedures (Leedy & Ormrod 2001:219), 20 (83%) of the studies did not indicate how their samples were drawn. The characteristics of populations from which the

TABLE 2 _____
RESEARCH METHODOLOGIES USED BY THESES UNDER STUDY

Year	No. of theses	Historical	Survey	Bibliometric	Experiments	Quasi experiments
1982	1		1			
1985	1				1	
1986	1		1			
1989	3	3				
1990	4	2	1			1
1991	5	2	2			1
1992	1	1				
1993	1		1			
1994	9	3	6			
1995	9	3	5	1		
1996	1		1			
1997	7	2	4		1	
1998	6	1	5			
1999	8	2	6			
2000	5		5			
2001	9		9			
2002	10	1	9			
Totals	81	20 (24.69%)	56 (69.14%)	1 (1.23%)	2 (2.47%)	2 (2.47%)

samples were drawn were not fully discussed. The sampling frame was only evaluated and justified by two theses, even though sampling frames that contain every member of the population are an exception rather than the norm. Only four theses reported using the randomising devices such as tables of random numbers or pseudo-random numbers generated by computer software.

Information on the precision and level of certainty associated with the sample sizes they used was only provided by two theses. Little attention was given to using adequate sample sizes. It is evident that most of the samples that were used in the theses were not representative of the total population since many theses used haphazard sample sizes with the exception of two cases.

4.3 RELIABILITY, VALIDITY, SURVEY PROTOCOLS AND RESPONSE RATE

Readers were not given enough information to be able to estimate the reliability and validity of some of the research procedures used. The situation is not peculiar to South Africa, as library and information science researchers elsewhere in the past neglected issues of reliability and internal validity in their research procedures (Hernon & Schwartz 1994). The major threats to the internal validity of an investigation such as instrumentation, selection bias and nonresponse were not adequately discussed by the theses that were studied. Possible sources of error need to be discussed so that readers may estimate the degree of the validity of the findings made.

Forty-five (73.77%) of the theses that used the quantitative paradigm pretested their survey protocols before using them. One of the commonest sources of errors in questionnaire construction is the lack of pretesting (Mouton 2001:103). Only 41 theses out of 61 theses based on the quantitative research designs discussed their response rates. Although, 'the response rate is a basic parameter for evaluating a data collection effort' (Fowler 2002:40), only 12 theses followed-up on the questionnaires and sent reminders to the respondents. Paradoxically, the response rates to most of the surveys was more than 70 per cent in spite of not using techniques such as pre-notification and letters of persuasion.

4.4 DATA ANALYSIS PROCEDURES

The rationale behind selecting data analysis procedures was not always given by the theses. Tables, charts, graphs and statistical summaries were used for displaying and communicating the findings. Two (3.28%) theses employed line or arithmetic charts to portray survey data, 11 (18.03%) used pie charts, bar charts were utilised by 12 (19.67%), 51 (83.61%) made use of tables and all the theses used percentages and/or frequency distributions. Out of 61 quantitative-based theses used statistics to test the relationships between variables. The descriptive statistic that was found in all theses was the mean (average of all scores in the data). The standard deviation (a measure of dispersion) was used in 3 theses to demonstrate how spread out the scores were.

4.5 EVALUATION OF RESEARCH METHODOLOGIES

All research designs are imperfect. In that regard, it is mandatory for researchers to evaluate their investigation procedures. Only 16 (26.23%) of the 61 quantitative theses attempted to do a methodological evaluation of the research procedures. That implies that various limitations under which the

projects could have been carried out were not adequately narrated in the theses. Researchers should understand the variety of possible research strategies, approaches and techniques available to them, and be able to justify the choices they make (Blaxter, Hughes & Tight 2001:86). Whatever research methodology one uses, the interpretation of reality will remain subjective, conditional and tentative.

4.6 ETHICAL CONSIDERATIONS

All theses that were investigated omitted to discuss ethical issues relating to how the research was conducted. In fact, many studies do not report on how the researcher adhered to ethical requirements in the research process (Du Plooy 2001:348). However, all researchers are 'subject to a moral requirement to do research truthfully' (Gomm 2004:299). For instance, committing plagiarism, and falsification and fabrication of data constitute unethical conduct (Coetzee 2003:119). In that regard, ethical issues arise in any type of research, be it content analysis, discourse analysis, bibliometrics or informetrics, to mention a few examples.

In that regard DeBakey and DeBakey (1975:539) observed that a sound thesis is a product of ethically obtained and scientifically valid data. Furthermore, data collection, processing and dissemination also raise important ethical questions. Thus, Sarantakos (1998:22) argued that methodological rigour is an ethical, and not simply a technical matter. In presenting the results it is important for researchers to bear in mind that others would use the results of the research to develop their theories and if the analysis of data was not correct, other researchers would be misled by the results (Babbie 2001:475; Dane 1990:52; Gomm 2004:300).

Payne and Payne (2004:66) emphasised the fact that ethical practice is fundamental to any social research: 'Ethical conduct provides the basis which legitimates the whole enterprise; it permeates research design and project organisation; and extends to minute and momentary decisions, like politeness to informants during fieldwork. Even the decision to do research is based on an ethical judgement that the project is worthwhile . . .' Therefore, researchers are morally obliged to discuss the ethically issues that informed their investigation.

4.7 COMMENTS ON THE LEVELS OF EXPERTISE IN RELATION TO RESEARCH PROCEDURES

The findings revealed that the Information Studies Programme staff might have had varying levels of expertise in relation to research procedures. Paradoxically, co-supervision of theses was an exception rather than a norm

during the period under review. Co-supervision could give the academics on the Information Studies Programme a chance to share knowledge on research methods that were distributed among different supervisor(s) and to tackle areas where they had limited expertise. For instance, mentoring or co-supervision systems are one of the components of formal research supervision guidelines and training contracts in the United Kingdom (Frame & Allen 2002:101).

What is also evident from the findings is that much of the knowledge that the Information Studies Programme staff needed to supervise research projects efficiently was there among some of the academics, but was not necessarily accessible or available to the whole programme. That explains why some theses supervised by certain individuals used sound research methods, while those promoted by others only used few elements of rigorous research design, and excluded some of the essential elements that are critical to producing valid knowledge in a research environment (see Table 1). The findings are also suggestive of either a lack of standards for thesis writing and supervision within the programme or non-compliance with the guidelines stipulated by the university.

The findings are not peculiar to the Information Studies Programme. A study of the perception of Master and Doctor of Education students at the University of South Africa revealed that there was lack of support with some research skills, indicating that lecturers themselves might have lacked the necessary experience in this regard (Lessing & Schulze 2002:143). In that light, professional expertise should be developed and nurtured through knowledge sharing and transfer in order to enhance performance. Students would benefit considerably from their research experience if supervisors shared what they knew. It is essential that students be given adequate and effective supervision as they are initiated into the world of professional research.

As Mouton (2001:16) argued, the Master's degree is an 'apprenticeship degree'. In that regard, for the training of the apprentice to be effective and productive, the supervisor should be an established and experienced scholar (Mouton 2001:16). Lack of experience on the part of the supervisor may compromise the quality of the thesis and jeopardise the chances of the graduate trainee to receive effective training. If the functions of higher education are to conserve and interpret knowledge and ideas, search for truth and train 'students who will practise' and 'carry on' (Flexner 1967:22; cf. Van der Westhuizen & de Wet 2002:185), then a high standard of supervision should be set.

What is important about the findings summarised above are not the shortcomings that they reveal. The findings show that the available

knowledge on research procedures was unevenly distributed among the Information Studies Programme staff (see Table 1). Experience has shown that diversity is very healthy in building an organisational culture. However, collaboration, as envisaged by Tom Wilson when he addressed the Third British–Nordic Conference on Library and Information Studies in 1999, is key to survival for researchers in the twenty-first century (Bakewell 2000). A strong research ethos can be chiefly promoted through teamwork rather than individualism. In the analysis of research output in the United Kingdom, Bassey (1995) underscored the fact that researchers should not work in isolation as individualism might negatively impact on research. That observation also applies to research supervision in higher education. Collaboration could enhance the quality of supervision and avoid the production of students with sub-standard postgraduate qualifications.

In reality, it is practically impossible for academics to have expertise in all aspects of supervision. In that regard, institutions of higher learning must identify internal expertise and nurture it in order to produce efficient and credible research. Sharing knowledge may be helpful in inducting research supervisors who are new to an institution or discipline. It is, as Taylor (2002:138) has argued, important that new staff are inducted into the research degree, the regulations governing it and formal requirements relating to their role. Such knowledge would ensure that supervision is undertaken within set regulations.

Additionally, supervisors would understand what they would be supervising their students to achieve. Knowledge sharing may also motivate academics to ask for help to deal with those areas where their expertise is limited and also easily share their work in circumstances they find themselves overloaded. That would obviously improve services to the graduate trainees and enhance their quality.

In addition, academic programmes should have a system that can indicate and locate knowledge holders or carriers. In that regard, knowledge topographies may be useful in identifying people who possess certain skills and knowledge (Probst, Raub & Romhardt 2000:76). The knowledge topography might also indicate the level of expertise of each academic. Knowledge topographies may help departments at institutions of higher learning to map their competencies and promote teamwork. Knowledge topographies are also essential building blocks for knowledge sharing.

5. FRAMEWORK FOR KNOWLEDGE SHARING

The following sections further explore the concepts of developing a knowledge-sharing culture, a learning organisation, trust and systems

thinking, and leadership and social capital. It is suggested that the Information Studies programme may exploit some of these strategies in order to create, transfer, share and use research supervision knowledge that is scattered throughout the programme. The knowledge sharing framework suggested in this article is diagrammatically represented in Figure 1.

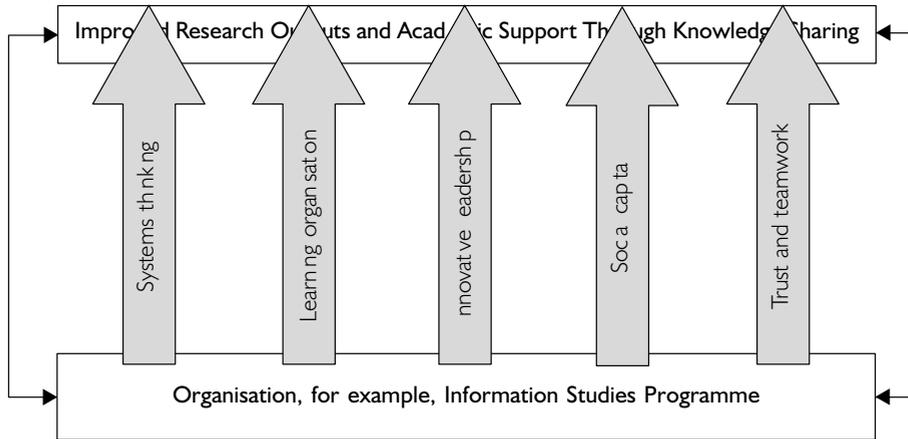


FIGURE 1: **CONCEPTUAL MODEL OF A KNOWLEDGE-SHARING ORGANISATION**
 (ADAPTED FROM HUSEMAN & GOODMAN 1999:XIV;
 PROBST, RAUB & ROMHARDT 2000:30).

5.1 CREATING A KNOWLEDGE SHARING CULTURE

Creating a knowledge-sharing culture is the key to knowledge transfer. Research has shown that inappropriate behaviours and organisational culture are the major obstacles to creating a knowledge-based environment (Chase 1997; Skyrme & Amidon 1997). Fostering knowledge sharing or improving knowledge sharing depends on dialogue, trust, common goals, empathy and openness (Groff & Jones 2003:57; Probst, Raub & Romhardt 2000:49; Webb 1998:8). Ideas take precedence over power and status in enterprises that promote such cultural values (Probst, Raub & Romhardt 2000:49). Every one is willing to learn from others if the operation of an organisation is based on the ethos of sharing knowledge. Developing a knowledge sharing culture would help to harness the knowledge that is unevenly spread among research supervisors on the Information Studies Programme.

5.2 LEARNING ORGANISATIONS SHARE KNOWLEDGE

Learning organisations have been conceptualised and touted as the effective model for sharing knowledge in today’s societies which are characterised by

more complex human problems than in the past. Learning organisations are highly committed to collective participation and sharing ideas. Learning organisations (re)construct knowledge (Huysman & de Wit 2003:29) through mutual interaction and the exploitation of social capital. To be a truly learning organisation, an enterprise needs to ‘discover how to tap people’s commitment and capacity to learn at *all* levels’ (Senge 1990:4). That way individual knowledge would be transformed into institutional knowledge that could be shared.

Individual knowledge can be institutionalised through systems thinking which Senge (1990:68–73) regarded as the fifth and most important discipline for learning organisations. In fact, systems thinking promotes human relationships and work teams (Allee 2002). In systems thinking everything is seen as being connected to everything else (Sterman 2000:4). That implies that systems thinking can help academics in higher education to appreciate the kind of mutual impact they have on each other.

Although a systems view of the world is still rare (Sterman 2000:4), Senge (1990) and Allee (2002) agree that one of the fundamentals of systemic thinking is viewing the system as whole and realising that the whole is greater than the sum of its parts. Systems thinking-based organisations may easily overcome individual differences caused by ethnicity, race, gender, personal beliefs, fear of change, levels of skill, education and training, and unwillingness to give up power and past practices, and foster an organisation-wide knowledge sharing culture. In this way, the Information Studies Programme might overcome some of the obstacles that prevent research supervisors from collaborating and sharing their expertise.

The focus would be on the programme, instead of the individual. In other words, the activity of an individual would have value in relation to the whole system or what Allee (2002) referred to as the network. Thus individuals would combine their efforts in ways that produce results for the benefit of everyone. Although systems thinking values differences, individual capabilities are brought together to build shared capabilities. The emphasis is on shared ability or what Constantine (1993) referred to as ‘consensus engineering’, instead of individual expertise.

5.3 SYSTEMS THINKING AND KNOWLEDGE SHARING DEPEND ON TRUST

Processes of making knowledge transparent, and sharing, distributing and utilising knowledge largely depend on trust (Davenport & Prusak 2000:35; Probst, Raub & Romhardt 2000:vii). A survey by Ratcliffe-Martin, Coakes and Sugden (2000) revealed that universities did not have a culture of

teamwork and trust. Trust is fundamental to most collaborative work because if it is absent, 'no one will risk moving first, and all will sacrifice gains of cooperation in order to remain safe' (Rijamampianina & Maxwell 2002:6). Members of an organisation need to trust one another to be 'honest, capable and committed to joint aims' (Dodgson 1994:291), in order to create and share knowledge. Monitoring one another in a positive and reciprocal manner is possible if members trust one another.

In addition to trust, people working together should have what Habermas (1984) called 'communicative competence', which is the ability to communicate objectively about factual matters, openly about ethical issues and sincerely about personal feelings. According to Probst, Raub and Romhardt (2002:150), communication supports the development of group skills. Where openness prevails, it is possible to assign each member responsibilities that may facilitate the efficient achievement of the group's goals. It is important that the level of collaboration envisaged in this framework be horizontal as opposed to vertical. Horizontal collaboration usually takes place between partners at the same level and its key to the creation of innovation networks (Dodgson 1994:285). Information Studies Programme staff are not likely to share knowledge if they perceive some power imbalances within the system. That partly explains why the possibility of fully engaging the skills and knowledge of all employees in hierarchical organizations has been very limited (Vallas 1998).

5.4 ROLE OF LEADERSHIP AND SOCIAL CAPITAL IN KNOWLEDGE TRANSFER AND SHARING

The organisational culture cannot change nor can the sharing of knowledge occur without innovative and inspiration leadership. Leadership has a key role in promoting knowledge sharing (Martiny 1998). Lack of leadership with foresight might be a barrier to knowledge management (Du Plessis & Boon 2004). Behavioural theorists are of the view that effective leaders help their subordinates to achieve goals by 'having task centred relations that focus on the quantity and quality of work', and 'by being supportive of subordinates' needs and personal ambitions' (Metcalf & Altman 2001:108). Such leadership can develop trust and teamwork amongst subordinates.

In playing their role, leaders should influence the organisational culture through their own exemplary behaviour, by networking within their organisations, by coaching, mentoring, and by articulating an inspiring vision (Sveiby & Lloyd 1987). Although subordinates can receive suggestions on what and how much to share with their colleagues, the final decision is always up to them. In that regard, leadership of the Information Studies Programme should encourage rather than coerce employees into sharing because, '[w]hen

lower level workers are ordered to 'share' information with those higher up the corporate ladder, a cutthroat information culture of meddling micro-management can result' (Davenport 1994:26).

Leadership of the university and the programme should also focus on building social capital and the interaction of people in an organisation in order to promote collective action or what Lesser (2000) referred to as social capital. *Social capital* has been defined as accumulated wealth that an individual benefits from as a result of having social relationships with others (Lesser 2000:4). Social interaction can help individuals to learn acceptable behaviour, and language and knowledge used in a certain context.

Thus, social capital determines what knowledge to share, why to share it and with whom. Individuals are encouraged to share because of their positive relations and vice versa. That implies that social capital can help in the transfer of both explicit and tacit knowledge. Research supervisors in the Information Studies Programme can benefit from social capital developed through positive social interaction. Giving research supervisors in the Information Studies Programme an opportunity to share some aspects of their experience through face-to-face activities such as meetings, skills workshops, seminars, presentations and social activities, and real-time online meetings using groupware, email and discussion boards would further promote social interaction and effective knowledge sharing. Trust, interests and the spirit of sharing is likely to develop during the process of social interaction.

Some companies are on record as having provided complimentary food and drinks in order to promote frequent interaction of their employees (Flaherty 2000). Many organisations also recognise the power of conversation as a key business process (World Café Community 2002). That led to the development of café conversations or knowledge cafés. Café conversations are a way of creating a network of collaborative dialogue around issues of mutual interest (World Café Community 2002). The openness and creativity associated with knowledge cafés bolster relationships. Like knowledge cafes, communities of practice, storytelling and work teams may contribute to building social capital among research supervisors in an academic environment. In that regard, leadership at academic institutions should use the advantages provided by social capital in their organisations to bring about knowledge sharing and innovation.

6. CONCLUSIONS AND SUMMARY: DRAWING THE THREADS TOGETHER

This article investigated the research procedures used by LIS Master's students at the then University of Natal between 1982 and 2002. The research

revealed that although the thesis writers were committed to producing projects of a high standard, they did not uniformly relate their research stories. The discrepancies and variability in the research procedures among the theses that were reviewed may be attributed to the different levels of expertise of the supervisors. Indeed, research supervisors are key to the production of sound theses. It is evident from the research outputs that knowledge that is scattered among research supervisors is not shared and used effectively. Mobilising, harnessing and sharing knowledge scattered among research supervisors is one of the keys to improving the quality of research outputs and scholarship.

Research supervisors should be encouraged to share their research experiences and relate them to the vision of their institution. Thus, a culture that encourages knowledge sharing among research supervisors should be promoted so that the supervisors can produce graduates with strong research skills. Trust, systems thinking, teamwork and leadership would be key elements to the development of the knowledge sharing processes among research supervisors on the Information Studies Programme. Systems thinking can act as a catalyst to foster collaboration and teamwork among research supervisors.

Furthermore, a climate of mutual trust and respect for other people's knowledge could promote knowledge sharing and teamwork. Teamwork in the academic environments may be encouraged through job sharing, co-authorship of chapters in books, conference papers and journal articles, co-supervising students, and joint research projects. A mentoring system for research supervisors could be developed to enhance the role of higher-level research in higher education. Inexperienced supervisors can team up with more experienced staff to learn about supervision through mentoring processes (Lessing & Schulze 2002:148; Zeelen 2003:146). Knowledge sharing may reduce the learning curve of novices.

Sharing knowledge and information on problems and issues encountered during supervision may induce research supervisors to reflect on their expertise and experiences in another light. A knowledge management strategy can be easily developed where a culture of sharing exists. As Kidwell, Van der Linde and Johnson (2000) advised, organisations should first develop a knowledge management culture based on shared beliefs and practices before adopting a knowledge management strategy.

In a nutshell, knowledge sharing and collaboration hold significant potential for improving the quality of research outputs in academic settings. It would facilitate the transformation of personal knowledge into institutional knowledge. Knowledge management would help research supervisors to share, transfer, update and improve their knowledge and skills as well as quickly adapt to the changing environment.

It is very clear from the angle that was taken by the current research that significant research still needs to be done using other research tools. For instance, questionnaires, as envisaged by the Arthur Andersen Knowledge Management Assessment Tool (KMAT) described by Probst, Raub and Romhardt (2002:274) were not used in this exploratory study. It is recommended that future studies should consider that possibility in order to give a balanced knowledge profile that takes into consideration aspects such as leadership, organisational culture, assessment, technology and learning behaviour in an academic environment. That would lead to a better understanding of how knowledge sharing and collaboration can lead to the improvement of research procedures at institutions of higher learning. However, one thing that is clear is the need for institutions of higher learning to leverage knowledge that is scattered among research supervisors in order to improve their research outputs and academic support to the students.

BIBLIOGRAPHY

- Abdoulaye, K. 2002. Research trends in library and information science at the International Islamic University Malaysia. *Library Review*, 51(1):32 37.
- Allee, V. 2002. *The future of knowledge: increasing prosperity through value networks*. Boston: Butterworth Heinemann.
- Babbie, E. 2001. *The practice of social research*. 9th ed. Belmont: Wadsworth.
- Babbie, E. & Mouton, J. 2001. *The practice of social research*. Cape Town: Oxford University Press Southern Africa.
- Bakewell, K. G .B. 2000. Book review: *New fields for research in the 21st century: Proceedings of the 3rd British Nordic Conference on Library and Information Studies, 12 14 April 1999, Borås, Sweden*. Edited by M. Klasson, B. Loughridge & S. Lööf. *New Library World*, 101(6):282 287.
- Bassey, M. 1995. *Creating education through research: a global perspective of educational research for the 21st century*. Kirklington: Kirklington Moor Press.
- Bell, F. R. 1999. The Department of Information Studies, University of Natal: its role in education for librarianship in South Africa, 1973 1994. Master's thesis. Pietermaritzburg: University of Natal.
- Blaxter, L., Hughes, C. & Tight, M. 2001. *How to research*. 2nd ed. Buckingham: Open University Press.
- Boahene, M. & Ditsa, G. 2003. Conceptual confusions in knowledge management and knowledge management systems: clarification for better KMS development, in *Knowledge management: current issues and challenges*, ed. E. Coakes. London: IRM Press:12 24.
- Borgman, C. & Furner, J. 2002. Scholarly communication and bibliometrics. *Annual Review of Information Science and Technology*, 36:1 40.
- Chase, R. L. 1997. The knowledge based organization: an international survey. *Journal of Knowledge Management*, 1:38 49.
- Coetzee, S. 2003. Research ethics: a strategy for promoting professional ethics. *Perspectives in Education*, 21(2):113 125.

- Constantine, L. 1993. Work organisation: paradigms for project management and organisation. *Communications of the ACM*, 36(10):34-43.
- Cryer, P. & Mertens, P. 2003. The PhD examination: support and training for supervisors and examiners. *Quality Assurance in Education*, 11(2):92-99.
- Dane, F. C. 1990. *Research methods*. Pacific Grove, CA: Brooks/Cole Publishing.
- Davenport, T. H. 1994. Saving IT's soul: human centered information management. *Harvard Business Review*, 72:119-131.
- Davenport, T. H. & Prusak, L. 2000. *Working knowledge: how organizations manage what they know*. Boston: Harvard Business School Press.
- DeBaakey, L. & DeBaakey, S. 1975. Ethics and etiquette in biomedical communication. *Perspectives in Biology and Medicine*, 18:536-539.
- Deist, F. E. 1990. The role of the promoter. *Theologia Evangelica*, 23(3):66-68.
- De Vaus, D. A. 1996. *Surveys in social research*. 4th ed. London: University College London Press Limited.
- Dodgson, M. 1994. Technological collaboration and innovation, in *The handbook of industrial innovation*, edited by M. Dodgson & R. Rothwell. Aldershot, Hants: Edward Elgar:285-292.
- du Plessis, M. & Boon, J. A. 2004. Knowledge management in e Business and customer relationship management: South African case study findings. *International Journal of Information Management*, 24 (1):73-86.
- du Plooy, G. M. *Communication research: techniques, methods and applications*. Cape Town: Juta.
- Edwards, B. 2002. Postgraduate supervision: is having a PhD enough? A paper presented at the Australian Association for Research in Education Conference on Problematic Futures: Educational Research in an Era of Uncertainty, Brisbane, Australia, 1-5, December, 2002. [Online] <http://www.aare.edu.au/02pap/edw02382.htm> (accessed 10 August, 2003).
- Flaherty, J. 2000. Perk du jour: a loaded company kitchen. *The Globe and Mail*, (Toronto), January 13, 2000. <http://www.globeandmail.com/> (accessed 10 August, 2003).
- Flexner, A. 1967. *Universities: American, English, German*. New York: Columbia University Press.
- Fowler, F. J. (Jr). 2002. *Survey research methods*. 3rd ed. Thousand Oaks, CA: Sage.
- Frame, I. A. & Allen, L. 2002. A flexible approach to PhD research training. *Quality Assurance in Education*, 12(2):98-103.
- Gomm, R. 2004. *Social research methodology: a critical introduction*. New York: Palgrave Macmillan.
- Groff, T. R. & Jones, T. P. 2003. *Introduction to knowledge management: KM in business*. Boston: Butterworth Heinemann.
- Habermas, J. 1984. *The theory of communicative action: reason and the rationalization of society*, Vol.1, translated by Thomas McCarthy. London: Heinemann.
- Hernon, P. & Schwartz, C. 1994. Editorial: the need for more methodological and research design studies in library and information science. *Library and Information Science Research*, 16(2):85-86.
- Hertzfel, D. H. 2003. Bibliometrics history, in *Encyclopedia of Library and Information Science*, 2nd ed., edited by M. A. Drake. New York: Marcel Dekker, Inc:288-328.

- Huseman, R. C. & Goodman, J. P. 1999. *Leading with knowledge: the nature of competition in the 21st Century*. Thousand Oaks, CA: Sage.
- Huysman, M. & de Wit, D. 2003. A critical evaluation of knowledge management practices, in *Sharing expertise: beyond knowledge management*, edited by M Ackerman, V Pipek and V Wulf. Cambridge, MA: MIT Press:27 55.
- Kaniki, A. M. 2000. Prevalent mistakes in the preparation of Library and Information Science (LIS) theses among master's degree candidates at eastern and southern African institutions, in *Progress in library and information science in Southern Africa: proceedings of the first biannual DISSAnet Conference held in Pretoria, South Africa, 26 27 October 2000*, edited by I Wormell. Pretoria: University of Pretoria, Centre of Information Studies:39 51.
- Kidwell, J. J., Vander Linde, K. M. & Johnson, S. L. 2000. Applying corporate knowledge management practices in higher education. *EDUCAUSE Quarterly*, 4:28 33.
- Knight, T. & Howes, T. 2003. *Knowledge management: a blueprint for delivery*. Oxford: Butterworth Heinemann.
- Leedy, P. & Ormrod, J.E. 2001. *Practical research: planning and design* 7th ed., Upper Saddle River, NJ: Prentice Hall.
- le Grange, L. 2003. Why publish? *Perspectives in Education*, 21(2):129 135.
- le Grange, L. & Newmark, R. 2002. Postgraduate research supervision in a socially distributed knowledge system: some thoughts. *South African Journal of Higher Education*, 16(3):50 57.
- Lesser, E. L. 2000. Leveraging social capital in organisations, in *Knowledge and social capital: foundations and applications*, edited by E L Lesser. Boston: Butterworth Heinemann:3 16.
- Lessing, A. C. & Schulze, S. 2002. Postgraduate supervision and academic support: student's perceptions. *South African Journal of Higher Education*, 16(2):139 149.
- Martiny, M. 1998. Knowledge management at HP consulting. *Organizational Dynamics*, 27(2):71 77.
- Metcalfe, B. & Altman, Y. 2001. Leadership, in *Organisational behaviour reassessed: the impact of gender*, edited by E Wilson. London: Sage:106 128.
- Mitchell, H. J. 2003. Technology and knowledge management: Is technology just an enabler or does it also add value? in *Knowledge management: current issues and challenges*, edited by E Coakes. London: IRM Press:66 78.
- Mouton, J. 2001. *How to succeed in your masters and doctoral studies*. Pretoria: Van Schaik Publishers.
- Newell, S., Robertson, M., Scarbrough, H. & Swan, J. 2002. *Managing knowledge work*. New York: Palgrave.
- Nicolas, R. 2004. Knowledge management impacts on decision making process. *Journal of Knowledge Management*, 8(1):20 31.
- Ocholla, D. N. 2000. Research capacity in library and information science in South Africa: an overview. Paper presented at the 66th IFLA Council and General Conference held in Jerusalem, Israel, 13 18 August 2000. http://www.ifla.org/IV/ifla66/papers/054_127e.htm (accessed 30 August, 2003).
- Payne, G. & Payne, J. 2004. *Key concepts in social research*. London: Sage.
- Petrides, L. A. & Nodine, T. R. 2003. *Knowledge management in education: defining the landscape*. <http://iskme.path.net/kmeducation.pdf> (accessed 15 December, 2003).

- Probst, G., Raub, S. & Romhardt, K. 2000. *Managing knowledge: building blocks for success*. Chichester: John Wiley.
- Prusak, L. 1996. The knowledge advantage. *Planning Review*, 24(2):6 8.
- . 2001. Where did knowledge management come from? *IBM Systems Journal*, 40(4):1002 1007.
- Ratcliffe Martin, V., Coakes, E. & Sugden, G. (2000a). Enhancing knowledge acquisition and transfer in the university sector. <http://users.wmin.ac.uk/~coakese/knowledge/bit2000.htm> (accessed 15 April, 2003).
- Rijamampianina, R. & Maxwell, T. 2002. The sharing principle: a way of managing multicultural organizations. *South African Journal of Business Management*, 33(2):1 11.
- Rowlands, I. 2003. Knowledge production, consumption and impact: policy indicators for a changing world. *Aslib Proceedings*, 55(1/2):5 12.
- Sarantakos, S. 1998. *Social research*. 2nd ed. London: The Macmillan Press Ltd.
- Senge, P. M. 1990. *The fifth discipline: the art and practice of the learning organization*. New York: Doubleday/Currency.
- Skyrme, D. & Amidon, D. 1997. The knowledge agenda. *Journal of Knowledge Management*, 1(1):6 14.
- South Africa. 1997. Higher Education Act (Act No. 101 of 1997). <http://education.pwv.gov.za/content/documents/203.pdf> (accessed 21 June, 2003).
- Southern African Development Community. 1996. Protocol on education and training. <http://www.swazi.com/sachrd/protocol.htm> (accessed 21 April, 2003).
- Sterman, J. D. 2000. *Business dynamics: systems thinking and modelling for a complex world*. Boston: Irwin McGraw Hill.
- Sveiby, K. & Lloyd, T. 1987. *Managing knowhow: add value by valuing creativity*. London: Bloomsbury.
- Taylor, S. 2002. Managing postgraduate research degrees, in *The effective academic: a handbook for enhanced academic practice*, edited by S. Ketteridge, S. Marshall & H. Fry. London: Kogan Page:131 147.
- Tippins, M. J. 2003. Implementing knowledge management in academia: teaching the teachers. *International Journal of Educational Management*, 17(7):339 345.
- University of Hong Kong. 2004. Good practices for supervisors. http://www.hku.hk/gradsch/gsch_info/gpsupervisors.htm (accessed 10 January 2004).
- University of Natal. 2000. *Information for guidance of examiners of masters degrees*. Pietermaritzburg: Author.
- University of Natal. 2003. *Guide to the procedures relating to the admission, registration and examination of honours, coursework masters, research masters and doctoral candidates and the responsibilities of the various parties concerned*. Pietermaritzburg: Author.
- Vallas, S. 1998. Manufacturing knowledge: technology, culture, and social inequality at work. *Social Science Computer Review*, 16(4):353 369.
- van der Westhuizen, P. C. & de Wet, J. J. 2002. The training needs of supervisors of postgraduate students in the social sciences and humanities. *South African Journal of Higher Education*, 16(3):185 195.
- von Krogh, G. & Roos, J. 1996. *Managing knowledge: perspectives on cooperation and competition*. London: Sage.

- Waghid, Y. & le Grange, L. 2003. Research and development in higher education: rating or not? *South African Journal of Higher Education*, 17(1):5-8.
- Webb, S. 1998. *Knowledge management: linchpin of change some practical guidelines*. London: Aslib.
- Wiig, K. M. 1993. *Knowledge management foundations*. Arlington, TX: Schema Press.
- World Café Community. 2002. A quick reference guide for putting conversations to work. <http://theworldcafe.com/cafetogo.pdf> (accessed 12 June 2003).
- Xiao, Z. & Taurigana, V. 1998. Research students' training in accounting and finance: the case of 'new universities'. *Managerial Auditing Journal*, 13(3):165-186.
- Young, K. 2002. Developing a strategic culture for research, in *The effective academic: a handbook for enhanced academic practice*, edited by S. Ketteridge, S. Marshall & H. Fry. London: Kogan Page:131-147.
- Zeelen, J. 2003. Improving the research culture at historically black universities: the situation at the University of the North. *Perspectives in Education*, 21(2):137-147.
- Zuber Skerritt, O. & Roche, V. 2004. A constructivist model for evaluating postgraduate supervision: a case study. *Quality Assurance in Education*, 12(2):82-93.