

**KNOWLEDGE AND LEARNING  
IN ELECTRONICALLY  
ENABLED ENVIRONMENTS**

**Liam F. Page & Jeffrey J. McLean**

*Working Paper 76/00  
November 2000*

**Abstract**

Technology is a critical component of the knowledge management process. Modern organisations employ tools that assist workers to acquire, generate, integrate, interpret and act upon information. This study discusses the common tools employed by knowledge workers and depicts the applications, advantages, and disadvantages of each. It utilises a knowledge management and organisational learning framework, which interprets the knowledge process as a sequence consisting of four interrelated sub-processes, including generation, integration, interpretation and action stages as a structure within which the knowledge related functions of individual technologies may be described. Data was gathered from participants in exploratory interviews and web-based surveys. The research suggests that knowledge related tools and technologies are not utilised to their fullest potential. Some indication exists that there is a low level of awareness of the knowledge management and organisational learning process within sample organisations, and hence the related tools and technologies are used in a fragmented way.

# KNOWLEDGE AND LEARNING IN ELECTRONICALLY ENABLED ENVIRONMENTS

## INTRODUCTION

Knowledge management and organisational learning are becoming increasingly acknowledged as processes through which business may come to understand and master rapidly changing environments (Argyris, 1992; Senge, 1990a; Stata, 1989). Technology is a critical component of these processes. Modern organisations, as they develop into electronically enabled environments, employ tools and technologies that assist workers to acquire, generate, integrate, interpret and act upon information. Many of these tools, including the Internet, intranets, networked databases, and mobile computing devices have been examined in light of knowledge theory. The daily use of these tools by workers, however, and their experiences as they interact with the technology is under explored. The current study aims to redress this situation.

A number of factors, including economic reform, improved manufacturing techniques, and the continued trend towards globalisation have influenced business processes in recent years. However, it is a series of advances in technology that have had the most evident effect (Kochan & Useem, 1992; Malhotra, 1993; McCune, 1999). Communications technologies are an excellent example; the Internet and e-mail have experienced exponential growth in popularity over the last five years. Both commercial and personal users have endeavoured to exploit the technology with varied intent (Gillooly, 1999). Many such tools, by their nature information based, perform functions critical to learning and knowledge activities; the collection, organisation, storage, retrieval, and dissemination of information is central to these processes (Bransford, Brown, & Cocking, 1999). These tools have the potential to replicate, at the macro level, the role of the human nervous system, permitting learning and knowledge sharing on a wider scale. Their development is recognised as critical to the enhancement of organisational learning and knowledge management processes (Gates & Hemingway, 1999; Goodman & Darr, 1996; Malhotra, 1993).

The relationship between the knowledge and learning processes currently used in business and technological tools is unclear. This study discusses the common tools employed by knowledge workers, describing some of their applications, advantages, and disadvantages. It utilises an organisational learning framework (Dixon, 1994), which interprets the knowledge process as a sequence consisting of four interrelated sub-processes, including generation, integration, interpretation and action stages, as a structure within which the knowledge related functions of individual technologies may be described.

## REVIEW OF THE LITERATURE

Organisational learning and knowledge management are the topic of much discussion. The proliferation of literature on the subject (Fulmer, 1994; Harvey, Palmer, & Speier, 1998; Huber, 1991; Mink, Esterhuysen, Mink, & Owen, 1993; Senge, 1990a; Starkey, 1996; Starkey, 1998) hints at the eagerness with which both academics and management practitioners have greeted the field of research. Whilst some have suggested that organisational change, seen as a result of environmental instability and socio-technological reform, is the greatest of challenges faced by managers (Kochan & Useem, 1992), knowledge management and organisational learning have become a top priority for managers seeking the key to competitive innovation (VonKrogh, 1998). Learning, and the effective use of knowledge, is a principle means through which organisations can undergo renewal and redesign (Crossan, Lane, & White, 1999).

Drucker (1998; 1999) suggests business is entering a new phase of existence, characterised by the emergence of the knowledge based economy and specialist knowledge workers. Consequently, many aspects of organisational life are in flux. Knowledge based work and information-intensive tasks require different skills than those roles traditionally filled by manual workers. A new set of tools is required to cope with the influx of data made commonplace by continuous change.

The need for individuals and organisations to acquire and utilise the tools and skills required to master continuous transformation has never been more apparent. It is reflected by the growing consumer

expectation that the full extent of an organisation's collective knowledge be utilised to solve problems creatively (Martiny, 1998). Some go as far as to suggest that the speed at which individuals and organisations learn new attitudes and behaviours could be the single sustainable competitive advantage remaining to industry (Ruggles, 1998; Stata, 1989). Hout (1999) agrees, saying that organisations should no longer be valued in the traditional accounting method, but more accurately by assessing everything they possess that enables them to create new ideas.

It is apparent that knowledge management involves more than just the collection of raw data. Drucker (cited in Wren, 1994, p. 367) states that real knowledge is only gained after raw data has been processed and transformed into something that changes behaviour or a person's mental processes. The challenge for organisations, then, is to enable this transformation at the group level.

The strength of technology, it seems, lies in its ability to draw together disparate flows of data. Information about production, distribution, accounting, marketing and external conditions can be incorporated into one useful resource for knowledge workers (Treece, 1998). Technology can transform a mass of individual datum into more valuable and actionable information. The purpose of any information system, of course, is to provide knowledge that is useful to those who need it (Simon, 1998) freely and equitably (Sirois, 1999).

Tools that speed communication, that enable the rapid storage, classification, search and retrieval of large volumes of data, such as an Intranet or the Internet (Spinello, 1998), and that have the potential to increase the flow of ideas between people, present extraordinary possibilities to learning organisations. The application of technological tools to learning and knowledge processes seems particularly apt; the potential for such technologies to help organisations emulate the human function of learning has been noted (Harvey et al., 1998). Gates and Hemingway (1999) propound the notion of the "digital nervous system", an organisation-wide digital network designed to enable the rapid collection, analysis and dissemination of information to and from all members.

Communication and decision making processes within organisations are being adapted to the qualities of knowledge saturated environments (Goodman & Darr, 1998; Harris, 1996). Traditional interpersonal interactions are often being substituted with direct access to information. A worker with a question who previously would have had to go to another within the organisation may now find the answer much more easily by accessing a networked database, Intranet, or web-based resource.

Researchers and organisations have responded to this trend, attempting to develop systems that support the organisational learning and knowledge processes. Hine and Goul (1998), for example, are concerned with the development of a support system that facilitates knowledge-based learning through the application of information technologies.

Little practical material exists, however, that can be applied to real-life situations by practitioners. Basic information about what types of information technology are being utilised by organisations is not openly available. General awareness of the various tools and techniques that have become available to the wider community, including devices like data mining, intranets, video-conferencing, web-phones, search agents and the like may be growing. We are, however, still largely ignorant of the ways people interact through social and other processes in organisations (Malhotra, 1998). The use and effectiveness of such tools and technologies on the learning and knowledge practices of organisations is far from understood.

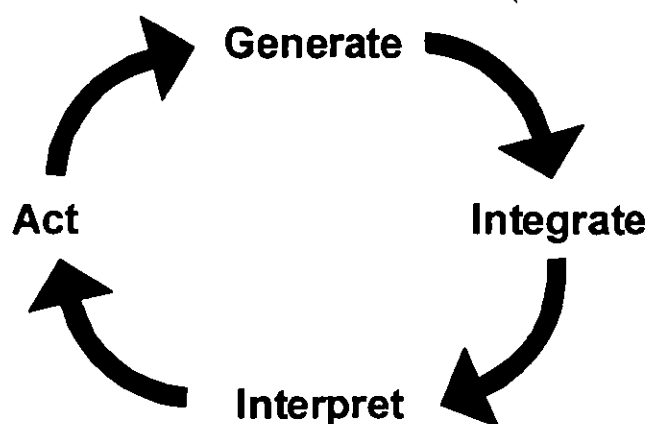
The link between technology and knowledge processes is evident. The learning cycle discussed below, for example, is concerned with the movement and utilisation of information throughout the organisation. Similarly, technology within the workplace is typically geared towards the movement of information.

### **The Organisational Learning Cycle**

If effective utilisation of knowledge is a process then it is necessary to understand each component stage in order to facilitate the phenomenon as an intentional and managed behaviour. Kolb, Rubin and Osland (1995) and others (Argyris, 1981; Palmer, 1981; Pfeiffer, 1991) have described the process within individuals using a cyclical model. The cycle illustrates the process through which one encounters an experience, reflects upon

it, generalizes the conclusions drawn from the experience, and actively tests new hypotheses. Every individual will complete the cycle in a different fashion, emphasizing different stages due to their personal learning style (Kolb et al., 1995).

Organisational learning, as opposed to the individual process described by Kolb, is a collective accomplishment. Dixon (1994) addresses this by modifying and applying Kolb's individual experiential learning cycle to organisations. She concludes that for organisational learning to occur the organisation as a whole must be structured so as to facilitate collective learning. All members of a learning organisation must actively take part in the search for and creation of new information. This information must be integrated with the collective knowledge of the larger group; everyone must have access to the information held by every other group member. A collective interpretation of data may be achieved by consolidating personal interpretations. Finally, members of the collective act on the resulting interpretations, generating new information and initiating the learning cycle once more. This cyclical learning process is illustrated in Figure 1.



**Figure 1: The Organisational Learning Cycle**

(Source: Dixon, 1994, p. 46).

Whilst no one learning theory has achieved widespread acceptance (Fiol & Lyles, 1985), Dixon's learning cycle provides a framework within which knowledge processes may be observed and measured. Huber (1991), in his review of the prominent material in the field, draws conclusions that support the Dixon cycle. He also identifies four phases of the learning process. His knowledge acquisition, information distribution, and information interpretation phases are closely matched to Dixon's generate, integrate and interpret stages. Additionally, Huber reveals a new stage in learning and knowledge processes that he refers to as organisational memory, a topic worthy of exploration in itself (see Huber, 1991).

### **The Current Study**

The current study proposes to answer four primary research questions, including (1) What information and knowledge related technologies are being utilised by organisations to support the various stages of the knowledge and learning process? (2) How are these technologies being utilised? (3) What are the perceived strengths and weaknesses of the tools in use? And (4) how widely are the tools distributed and utilised within sampled organisations?

This exploratory study holds significance for management practitioners, as well as for those involved in the design and implementation of the technologies and tools used by modern "knowledge workers" (Drucker, 1999). Its discussion of the core knowledge and learning processes and practical applications within industry help build links between established theory and practice, shedding light on some of the contemporary factors surrounding the interaction of individuals in the workplace, and the means through which they create, transfer, interpret and utilise knowledge. Most importantly, this study is exploratory in nature. It is not designed to test specific hypotheses, or analyse theoretical models. Instead, it poses questions about the

nature of learning processes within contemporary business and sets out to establish benchmarks for future study. Ultimately, the study adds to the body of knowledge in this essential field of research; streamlined knowledge processes are a requisite core competency for organisations operating within the emerging information economy.

## RESEARCH METHOD

The exploratory nature of this research project requires that a qualitative method be taken in order to best answer the stated research questions; a broad-based and comprehensive approach is required to provide groundwork for, and give context to, future research. Qualitative research provides the scope and flexibility necessary for comprehensive research in an under-explored field of study, and is of particular use when the researcher's goal is a holistic overview of the environment or circumstance under examination (Miles & Huberman, 1994).

Case studies in three different organisations were conducted. In each case, detailed interviews with participants were used to gather personal accounts of the use of tools and technologies at the four stages of the learning cycle. Questionnaires were employed to add depth to the case studies and address the issues of reliability and validity. Three Australian organisations, including (1) the local division of a worldwide packaged-goods manufacturing and marketing firm, (2) the state division of an international corporate information services firm, and (3) a state statutory authority, provided case material for this research. Data was gathered from participants in exploratory interviews and web-based surveys. Generative analysis of the qualitative data is used to address the four primary research questions.

Participating organisations were chosen:

- From disparate sectors of industry. This provides for a range of varied responses with respect to the stated research questions, and allows for an understanding of the current uses of tools and technologies in each stage of the learning cycle across multiple environments and industry sectors.
- To provide a set of cases that illustrate variations in the use of tools and technologies at each stage of the learning cycle dependant upon specific task environments.

Within each of the organisations participating in the study, a member of staff acted as a principal contact, a conduit through which researchers could contact and interact with the wider firm. To contact potential participants, an e-mail message was prepared that contained a brief introduction of the researcher and the purpose of the research. The principal contacts then forwarded these messages to a large number of people within their organisation with a note to suggest that people take the time to review the message and consider volunteering.

Semi-standardised interviews, and a web-based questionnaire transmitted to a wider group within each participant organisation, attempted to gather answers for the questions summarised below.

**Table 1: Summary of Questions**

|  |   |
|--|---|
| <b>Questions asked at each stage (Generation, Integration, Interpretation, Action)</b> | What information and knowledge-related tools and technologies do you use to GENERATE/INTEGRATE/INTERPRET/ACT UPON information?  |
|  | How are you using these tools and technologies to GENERATE information?   |
|  | What do you consider to be the strengths and weaknesses of these tools and technologies for the GENERATION/INTEGRATION/INTERPRETATION/ACTION UPON of information?   |
|  | Who within the organisation has access to these tools and technologies?   |
|  | Are you aware of any differences in different departments or divisions within this organisation – for example, do any other departments use different tools or technologies to GENERATE/INTEGRATE/INTERPRET/ACT UPON information? |

## DATA ORGANISATION AND ANALYSIS

Data collected via the means described above during interviews and from questionnaires was organised according to the stated research questions. Dixon's (1994) organisational learning cycle was used to provide an additional level of organisation.

Thus, a matrix was developed that provided, at the first level, three divisions based on case. At the second level, the matrix was divided into stage of the organisational learning cycle. Finally, at the third level, the matrix was divided by research question.

Data collected over the term of the research was added to the matrix as it became available. Analysis was conducted at an exploratory cross-case level and conclusions are discussed below.

## DISCUSSION OF RESULTS

A comprehensive discussion of each and every tool and technology used by the case organisations explored within this study would go beyond the scope of this paper. Discussion is thus limited to those tools and technologies considered by participants of the study to have had the most important impact on case organisations within the framework provided by Dixon's organisational learning cycle. Note that quotes used throughout this section, unless otherwise stated, are taken from participant responses and are not referenced to protect anonymity.

### Generation

This study has revealed a number of tools and technologies used within case organisations at the first stage of the organisational learning cycle, the generation stage. The highest number of tools and technologies were identified at this stage, including the following: E-mail, telephone, face-to-face communication, word-processing software, strategic applications programming (SAP), process control equipment, spreadsheet software, database software, schedule software function – "request task/meeting", automated forms – "yes/no" response button, portable computer, internet – online references, internet – online survey, data logging system – plant-wide monitoring, laptop – link to plant-wide monitoring system, internal mail, electronic whiteboard – brainstorming, CD-ROM references, paper-based library, floor-plan diagram to brainstorm workflow, modelling software, voicemail, Lotus Notes – databases, specialist databases, mobile phone, portable document files (PDF), digital cameras, standard film cameras, and recording equipment (audio).

Participants made particular mention of their use of e-mail and the Internet to generate information. These tools provide a means of sourcing data (Spinello, 1998), "that in many cases is already out there. It's just a matter of finding it". Consequently, users scan the Internet for "ideas that might be useful to (the firm)". These technologies provide for the rapid communication of vast amounts of data and make available that data to anyone who needs it (Simon, 1998).

Sales staff use portable computers to collect data in the field. Digital cameras can be used to survey actual situations and return information to the office over the Internet. These cameras are "instant, you don't have to wait for the processing". Further, "we can build a library of these kind of images to refer to and use as learning tools". This system helps overcome some of the traditional barriers to knowledge sharing (Brown & Duguid, 1998). Data that was traditionally fed into the system on paper at irregular intervals, whenever field operatives returned to the office, is now available on a continuous basis.

Face-to-face communication, often enhanced by technological tools, is used to provide a more personal approach and to demonstrate "the care factor", which participants report missing in other forms of communication or interaction. It incorporates "personality" into transactions. "It's more 'hands-on' you can see their reactions". These responses support the concerns of earlier researchers who warn against replacing human interaction with a technological substitute (Fahey & Prusak, 1998). Participants indicated that face-to-face communication, by bypassing e-mail, the Internet, and even the telephone, added an extra dimension

to the interaction between individuals and the generation of quality data. Technological interfaces were generally referred to as "cold" or "an extra layer between people". Discussions, group dialogues, and presentations enable a dynamic coming together of minds. Brainstorming, for example, a process identified by various individual participants as a means of generating new ideas and information, is only valuable when people are free to "bounce ideas off each other". According to respondents, e-mail or GroupWare solutions like Lotus Notes do not allow that level of free form interaction; it seems that the capabilities of these tools have yet to replace more traditional methods of communication in some respects. "Media boards are used extensively to capture 'group generated' data – this simultaneously generates and integrates information within a group". Some users combine technologies by running "working sessions in the conference room using an on-line PC hooked up to a 'beamer' (digital projector) – and tapping into presentation software or other information on line".

## **Integration**

Technologies identified as applicable to the integration stage of the learning cycle included the following: E-mail, face-to-face communication, word-processing software, spreadsheet software, database software, presentation software, SAP, telephone, Lotus Notes – shared databases, laptop – link to plant-wide monitoring system, whiteboard, voicemail, tele-conferencing, distribution lists, intranet – publishing HTML documents, internal mail, field PenPad – portable computer, data warehouse, photocopier, specialised databases, presentation equipment, field link system, desktop publishing software, mobile phones, and network drives.

E-mail was reported the most common means of sharing information within sampled organisations, and was favoured for the ease with which it enabled communication. "Electronic means (of communication) give me more control over the timing of actions (I can choose when to open an e-mail but I have much less control over when to receive a phone call). Conversely I don't have control over when people respond to my e-mails." Senior members of staff report receiving "probably one to two hundred" e-mails a day on all topics from policy matters, requests for tasks, requests for information, and general communication.

E-mail is considered problematic, however. "We're too reliant on them. They're just another layer between people – they're just 'cold', no personality" – "I just delete a lot of them". E-mail can be abused, and people fail to recognise the potential sensitivity of the medium. "I've had to deal with a few people who have misused the system, sending things they shouldn't, mostly without knowing they were doing it". "Because it's a public thing, but it feels private. Things can be forwarded to anyone, and you can find that you've revealed something to someone you never meant to". E-mail is also used to automatically request meetings or assign tasks. Using the automatic meeting request function "can be intrusive", and lets the system take a "certain degree of control". E-mail is used to share information "...large volumes of information can be duplicated and disseminated easily", but "it's too easy to forward things on". With one address, staff are able to reach "everyone, that's 3000 people around the country" – "there are no adequate filters" to sift through the masses of e-mail that is sent.

Other tools, like Lotus Notes, provide users with the ability to share information. "When I first got here, I was excited. I expected it to have all this relevant information and discussion. But you get there and it's all just 'This space is vacant, just waiting for your contribution'". "I am not even sure I'd know how to contribute, what I'd have to do to add anything to it". It appears that little or no support is provided for the technology at the management level, despite the obvious need for upper-level involvement in all learning tasks (Senge, 1990b). No encouragement is given for people to use the system, and the perceived benefits of sharing information across this platform evidently do not outweigh the perceived cost. This is perhaps typical of an organisation that places considerable emphasis on personal knowledge, rather than knowledge sharing (O'Dell & Grayson, 1998).

## **Interpretation**

Previous stages of the learning cycle have highlighted the importance of communication to facilitate the learning process. Tools and technologies that increase the communication of data into the organisation populate the generation stage. The integration stage, by comparison, makes use of tools that facilitate the

communication of data throughout the organisation. This stage uses tools that increase the value of the communication process, focussing on the development of two-way interaction. Tools and technologies identified as applicable to the interpretation stage of the learning cycle included the following: Face-to-face communication, presentation software, conference calls, telephone, e-mail, video conferencing, electronic whiteboard, whiteboards, group-based meetings and presentations, schedule software function – “request task/meeting”, sales force management system, Mindmap modelling software, digital projector, internet, and audio-visual equipment.

Face-to-face communication is a dominant process through which individuals discuss and interpret data. Tools and technologies, including presentation software, electronic whiteboards, and modelling software are means through which the communication process is enhanced (Gallupe & Cooper, 1993; Ganzel, 1998; McManus, 1998) within case organisations. “Hard data is usually interpreted through statistical analysis software. Soft data is usually interpreted through public forum discussion”, using digital whiteboards. Brainstorming is aided by the use of these whiteboards, where sketches of models and ideas are made to illustrate points or “capture group-based data” and printed for individuals, helping interpretation by making the process more tangible for participants (Cole, 1998). The images can then be taken away and worked on or developed further. This function addresses the concerns of Huber’s (1991) organisational memory, providing a record of the otherwise intangible interpretation process.

The Internet “can be used to gather corroborating evidence”, and “to check ideas out”. It is also “particularly useful when pulling together cross-divisional presentations”. The Internet is “dynamic, you start with one idea and it develops” into much more. Hyperlinks allow you to “expand on ideas”, follow them through and see things in new ways. “You have to draw a circle in the sand”, and decide on your boundaries or you’ll get carried away.

### **Action**

By nature of the learning process, any behaviour or decision made in life is the ‘action’ of a learning cycle. Thus, by the broadest of definitions, any tool or technology might be considered relevant at this stage. For practical reasons, only those tools that enable the learning cycle to continue by providing feedback on actions taken are considered. Tools identified as relevant to the action stage of the organisational learning cycle included: E-mail, focus groups, intranet, paper-based communication, performance review software, face-to-face communication, telephone, voicemail, monthly newsletter, and databases.

Respondents report that software is available to “provide anonymous performance feedback” to staff members at all levels of the organisation. But sometimes it is best to “just ask... People are always happy to discuss things with you and let you know what they think”. “I like to meet with them (the internal client) and work through exactly what it is that they want and why”.

E-mail, which “allows you to give prompt feedback or seek it about something you’ve been involved in”, is a broad-reaching communication tool that enables the growth of users (Maccoby, 1999) by giving them the power to seek commentary on actions they have taken. The success of such a request, however, is dependent on the recipient and his or her willingness to provide a timely and appropriate response.

### **Access to tools and technologies**

No significant difficulties were reported in accessing tools or technologies. One interviewee suggested that “they’re pretty good here, if you need it you can have it”. Overall, organisations recognise the value of the tools discussed above within the organisational setting. However, there is nothing within the data collected during this study to indicate that these technologies are perceived as learning tools. Rather, the general comments received from participants suggest that they are considered “tools of the trade”, a means to an end rather than a small part of a larger interactive and recursive learning cycle. Access is granted to tools that management recognises are needed to complete specific tasks, rather than for any potential benefit they might present in terms of learning.



In light of Gates and Hemingway's (1999) notion of the digital nervous system, and their concern with providing transparent access to information and technology at all levels of a firm, one can see a need to go beyond the mundane perception of workplace tools to a vision of enablement (Maccoby, 1999). By perceiving tools and technologies within the workplace as a means through which workers may learn, or rather may expand their capacities to achieve the results they desire (Senge, 1990a), one might better operationalise the learning process within organisations. The development of organisations as learning systems would increase tangibly, especially considering Kautto-Koivula's (1998) suggestion that the technical infrastructure of an organisation is one of the primary impediments to sharing personal data.

## CONCLUSION

This study has identified a number of tools and technologies used at different stages of the learning cycle, including e-mail, the Internet, presentation equipment, software applications and the telephone. The actual process within which each tool is utilised depends upon the nature of the business at hand. It is the general application of these tools, however, that appears most significant to the learning process. The generation stage, for example, primarily makes use of communication technologies to improve the flow of inbound data. The integration stage uses similar tools to store and disseminate that data internally. The interpretation stage of the cycle utilises tools and technologies that enhance two-way communication, thereby increasing the effectiveness of group-based interpretation of data. Finally, the action stage makes use of tools suited to collecting feedback.

The dramatic increase in communication speed common to many of the tools explored is an obvious benefit to organisations in a world where competition depends on the availability of information. Significant resistance is evident, however, where this speed sacrifices the human element of interpersonal communication throughout the knowledge and learning processes.

Overall, this research suggests that the available tools and technologies are not utilised fully for the purpose of enhancing learning or knowledge management within the participating organisations. A low level of awareness with regard to the knowledge and learning processes, and especially the organisational learning cycle, is reflected in the strictly task-based deployment of technologies throughout observed workplaces. Future research should aim to redress this through a closer examination of specific tools, especially those most evident in the current research like enhanced presentation media and e-mail, and the manner through which they are most able to support knowledge and learning in an electronically enabled environment.

## REFERENCES

- Argyris, C. (1981). *Increasing leadership effectiveness*. New York: John Wiley.
- Argyris, C. (1992). Overcoming organizational defences: Facilitating organizational learning. *Journal for Quality and Participation*, 15(2), 26-29.
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (1999). *How people learn: Brain, mind, experience, and school*. Washington: National Academy Press.
- Brown, J. S., & Duguid, P. (1998). Organizing knowledge. *California Management Review*, 40(3), 90-111.
- Cole, R. E. (1998). Introduction (to the special issue). *California Management Review*, 40(3), 15-21.
- Crossan, M. M., Lane, H. W., & White, R. E. (1999). An organisational learning framework: From intuition to institution. *Academy of Management Review*, 24(3), 522-537.
- Dixon, N. (1994). *The organizational learning cycle: How we can learn collectively*. London: McGraw-Hill.
- Drucker, P. F. (1998). Management's new paradigms. *Forbes*, 162(7), 152-177.
- Drucker, P. F. (1999). Knowledge-worker productivity: The biggest challenge. *California Management Review*, 41(2), 79-94.
- Fahey, L., & Prusak, L. (1998). The eleven deadliest sins of knowledge management. *California Management Review*, 40(3), 265-276.
- Fiol, C. M., & Lyles, M. A. (1985). Organizational learning. *Academy of Management Review*, 10(4), 803-813.
- Fulmer, R. M. (1994). A model for changing the way organizations learn. *Planning Review*, May/June 1994, 20-24.
- Gallupe, R. B., & Cooper, W. H. (1993). Brainstorming electronically. *Soan Management Review*, Fall 1993, 27-36.
- Ganzel, R. (1998). Online learning's family tree. *Training*, 35(8), 4-9.
- Gates, W. H., & Hemingway, C. (1999). *Business @ the speed of thought: Using a digital nervous system*. Melbourne: Viking.
- Gillooly, C. (1999, Sep 27, 1999). Tech companies want everything on the Web. *Informationweek*, pp. 197-204.
- Goodman, P. S., & Darr, E. D. (1996). Computer-aided systems for organizational learning. *Journal of Organizational Behavior*, 3(Trends in Organizational Behavior), 81-97.
- Goodman, P. S., & Darr, E. D. (1998). Computer-aided systems and communities: Mechanisms for organizational learning in distributed environments. *MIS Quarterly*, December 1998, 417-440.
- Harris, D. B. (1996, 7 April 1999). *Creating a knowledge centric information technology environment*, [HTML]. Technology in Education Institute. Available: <http://www.htcs.com/ckc.htm> [1999, 19 May].
- Harvey, M., Palmer, J., & Speier, C. (1998). Implementing intra-organizational learning: A phased-model approach supported by intranet technology. *European Management Journal*, 16(3), 341-354.
- Hine, M. J., & Goul, M. (1998). The design, development, and validation of a knowledge-based organizational learning support system. *Journal of Management Information Systems*, 15(2), 119-152.
- Hout, T. M. (1999). Are managers obsolete? *Harvard Business Review*, 77(2), 161-168.
- Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. *Organization Science*, 2(1), 88-115.
- Kautto-Koivula, K. (1998). The pitfalls of knowledge (knowledge management). *Information Strategy*, 3(6), 26-27.

- Kochan, T. A., & Useem, M. (1992). *Transforming Organizations*. New York: Oxford University.
- Kolb, D. A., Osland, J. S., & Rubin, I. M. (1995). *Organizational behaviour: An experiential approach*. London: Prentice-Hall.
- Maccoby, M. (1999). Re-thinking empowerment. *Research Technology Management*, 42(5), 56-57.
- Malhotra, Y. (1993). *Role of information technology in managing organizational change and organizational interdependence*, [WWW document]. @BRINT Institute. Available: <http://www.brint.com/papers/change/> [1999, 21 April].
- Malhotra, Y. (1998). *Knowledge management for the new world of business*, [HTML]. @BRINT Institute. Available: [wysiwyg://145/http://www.brint.com/km/whatis.htm](http://www.brint.com/km/whatis.htm) [1999, 21 April].
- Martiny, M. (1998). Knowledge management at HP consulting. *Organizational Dynamics*, Autumn 1998, 71-77.
- McCune, J. C. (1999). Thirst for knowledge. *Management Review*, April 1999, 10-12.
- McManus, K. (1998). Multimedia review: Creative approaches to learning. *The Journal for Quality and Participation*, 21(4), 54.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An expanded sourcebook*. (2nd ed.). Thousand Oaks, CA: SAGE.
- Mink, O. G., Esterhuysen, P. W., Mink, B. P., & Owen, K. Q. (1993). *Change at work: A comprehensive management process for transforming organizations*. San Francisco: Jossey-Bass.
- O'Dell, C., & Grayson, C. J. (1998). If only we knew what we know: Identification and transfer of internal best practices. *California Management Review*, 40(3), 154-174.
- Palmer, A. B. (1981). Learning cycles: Models of behavioural change. In J. E. Jones & J. Pfeiffer (Eds.), *The 1981 Annual Handbook for Group Facilitators* (pp. 145-154). San Diego: Pfeiffer & Company.
- Pfeiffer, J. W. (1991). The experiential learning cycle. In J. W. Pfeiffer (Ed.), *Theories and models in applied business science* (Vol. 2, pp. 215-223). San Diego: Pfeiffer & Company.
- Ruggles, R. (1998). The state of the notion: Knowledge management in practice. *California Management Review*, 40(3), 80-89.
- Senge, P. M. (1990a). *The fifth discipline: The art and practice of the learning organization*. Milsons Point: Random House.
- Senge, P. M. (1990b). The leader's new work: Building learning organizations. *Sloan Management Review*, 32(1), 7-23.
- Simon, H. A. (1998). Information 101: It's not what you know, it's how you know it. *The Journal for Quality and Participation*, 21(4), 30-33.
- Sirois, C. (1999). The knowledge-based society: A perspective on the road ahead. *Executive Speeches*, 14(1), 1-4.
- Spinello, R. A. (1998). The knowledge chain. *Business Horizons*, 41(6), 4-15.
- Starkey, K. (Ed.). (1996). *How organizations learn*. London: ITP.
- Starkey, K. (1998). What can we learn from the learning organisation? *Human Behavior*, 51(4), 531-546.
- Stata, R. (1989). Organizational learning: The key to management of innovation. *Sloan Management*, 30(3), 63-74.
- Treece, D. J. (1998). Capturing value from knowledge assets: The new economy, markets for know-how, and intangible assets. *California Management Review*, 40(3), 55-70.
- VonKrogh, G. (1998). Care in knowledge creation. *California Management Review*, 40(3), 133-153.
- Wren, D. A. (1994). *The Evolution of Management Thought*. (4th ed.). New York: John Wiley & Sons.

## DEPARTMENT OF MANAGEMENT

### 2000 WORKING PAPER SERIES

- 1/00 Amy Wong. "The Role of Relationship Strength in the Formation of the Customer-Contact Employee Relationship" (January, pp.26).
- 2/00 Paul Kalfadellis & Loong Wong "Labour of Burden: An Analysis of Occupational Change – The Domestic Worker (January, pp. 9).
- 3/00 Marjorie Jerrard "Organisation of the Roman Clothing and Textile Industry: Skill, Occupation, and the Gender-segmented Workforce" (January, pp. 11).
- 4/00 Marjorie Jerrard "Formation to Arbitration" – The Early Years of the Queensland Branch of the Australasian Meat Industry Employees' Union 1889-1918" (January, pp. 14).
- 5/00 Jacintha Tan & Damian Morgan "Quality in Australian Tourism Education: Educator and Professional Views" (January, pp. 15).
- 6/00 Betty Weiler & Sam H Ham "Training Ecotour Guides in Developing Countries: Lessons Learned from Panama's First Guides Course" (January, pp. 9).
- 7/00 Rosemary Black, Sam Ham & Betty Weiler "Ecotour Guide Training in Less Developed Countries: Some Research Directions for the 21<sup>st</sup> Century" (January, pp. 12).
- 8/00 Jacintha Tan & Damian Morgan "Tourism Education: Views from Educator and the Tourism Industry" (January, pp.8).
- 9/00 Warwick Frost "Ecotourism and Rainforests" (February, pp.13).
- 10/00 Glenice J. Wood & Margaret Lindorff "Sex Differences in Managers' Explanations for Career Progress: A Test of Social Role Theory" (February, pp.15).
- 11/00 Yi-Ting Yu & Alison Dean "Including Emotions in Customer Satisfaction Measurement: a new Perspective on Loyalty" (March, pp.11).
- 12/00 Dianne Waddell & David Mallen "The Future for Quality Managers" (March, pp.13).
- 13/00 Di Waddell & Deb Stewart "Training and Management Development of Quality Managers" (March, pp.12).
- 14/00 Geraldine Khachan & Cornelis Reiman "Australia's Relationship with the Middle East – A Trade Perspective" (March, pp.16).
- 15/00 Lim Hong Hai, Ali Haidar & Len Pullin "Managerial Values of Penang Island Municipal Council Officers: A Preliminary Report" (March, pp.11).
- 16/00 Alison M. Dean & Dr. Mile Terziovski "Quality Practices and Customer/Supplier Management in Australian Service Organisations: Untapped Potential" (March, pp.12).
- 17/00 Sarah Germaine Grant, Sonja Petrovic-Lazarevic & Mike Berrell "Significance of Recognition of Australian and Singaporean Cross-Cultural Differences in the Decision-Making Process" (April, 15.pp).
- 18/00 Michelle R. Greenwood "The Study of Business Ethics: A Case for Dr. Seuss" (April, 9.pp).
- 19/00 Bernadine Van Gramberg & Julian Teicher "Exploring Managerialism in Victorian Local Government" (April, pp.13).
- 20/00 Jan Schapper "Value Dissonance: A Case of the Pyschodynamics of Organisational Identity" (April, pp.15).
- 21/00 Alison M. Dean "Issues Inherent in Measuring and Monitoring Quality in Contracted Services" (April, pp.16).
- 22/00 Damien Power & Amrik S. Sohal "An Empirical Study of Human Resource Management Strategies and Practices in Australian Just-in-Time Environments" (April, pp.11).
- 23/00 Amrik S. Sohal & Mile Terziovski "Continuous Improvement Process Teams (CIP Teams) and Corrective Action Teams (CATs) at Varian Australia" (April, pp. 8).
- 24/00 Damien Power & Amrik S. Sohal "Human Resource Management Strategies and Practices in Just-in-Time Environments: Australian Case Study Evidence" (April, pp. 23).
- 25/00 Cherrie Jiuhua Zhu & Peter J. Dowling "Changes in the Role of Government in Human Resource Practices in China: Implications for Multinational Corporations" (April, pp. 14).
- 26/00 Ruth Barton & Julian Teicher "A Labor Government's Different than the Current Government" Telstra, Neo-Liberalism and Industrial Relations" (April, pp.17).
- 27/00 Owen E Hughes "New Public Management: A Parliamentary Perspective" (April, pp. 13).
- 28/00 Tui McKeown "Why do Professionals become Contractors?" (May, pp. 13).
- 29/00 Deb Stewart & Dianne Waddell "Quality Managers: Are their Personal and Professional Development Needs being fulfilled? (May, pp. 6).

## 2000 WORKING PAPER SERIES

- 30/00 Yvette Reisinger & Lindsay Turner "Cultural Differences between Mandarin Speaking Tourists and Australian Hosts and their impact on Cross-Cultural Tourist-Host Interaction" (May, pp. 21).
- 31/00 Yvette Reisinger & Lindsay Turner "A Cultural Analysis of Japanese Tourists: Challenges for Tourism Marketers" (May, pp. 22).
- 32/00 Yvette Reisinger & Lindsay Turner "Japanese Tourism Satisfaction: Gold Coast Versus Hawaii" (May, pp. 20).
- 33/00 Yvette Reisinger & Lindsay Turner "Asian and Western Cultural Differences: The New Challenge for Tourism Marketplaces" (May, pp.17). (Reissued June, pp.12)
- 34/00 Yvette Reisinger & Lindsay Turner "Tourist Satisfaction with Hosts: A Cultural Approach Comparing Thai Tourists and Australian Hosts" (June, pp.16).
- 35/00 Yvette Reisinger & Lindsay Turner "Structural Equation Modeling with Lisrel: Application in Tourism" (June, pp.29).
- 36/00 Helen De Cieri & Peter J. Dowling "Convergence and Divergence: Central Concepts in Strategic Human Resource Management and Marketing in an International Context" (June, pp.15).
- 37/00 Michelle R Greenwood "The Importance of Stakeholders According to Business Leaders" (June, pp.13).
- 38/00 Phyllis Tharenou "Consequences of Mentoring on Career Advancement: Does Protégé Gender Make a Difference" (June, pp.16).
- 39/00 Simon Moss, Tim Haslett & Charles Osborne "Bulls and Bears in the car park: An Application of Stock Market and Local Rule Theory to the Behaviour of Shoppers" (October, pp.10).
- 40/00 Warwick Frost "Golden Anniversaries: Tourism and the 150<sup>th</sup> Anniversary of the Gold Rushes in California and Victoria Festivals" (October, pp.10).
- 41/00 Sonja Petrovic-Lazarevic & Milé Terziovski "The Effects of Human Resources Management on Transitional Companies in the Globalisation System" (October, pp.8).
- 42/00 Amanda Pyman, Julian Teicher & Glennis Hanley "The Impact of the Workplace Relations Act 1996 (Cth.) – The Views of Five Australian Trade Unions" (October, pp.11).
- 43/00 Margaret Lindorff & Michael Barnett "Gender Differences in Work Values: Testing Alternative Explanations" (October, pp.7).
- 44/00 Margaret Lindorff "Gender, Social Support, and Strain: What is Helpful to Whom?" (October, pp.19).
- 45/00 Tim Haslett & Marvin Oka "Using VSM to Integrate SD Modelling into an Organisation Context" (October, pp.6).
- 46/00 Beverly Walker & Tim Haslett "System Dynamics and Action Research in Aged Care" (October, pp.11).
- 47/00 Beverly C. Walker & Tim Haslett "The Dynamics of Local Rules in Hospital Admission Processes" (October, pp.8).
- 48/00 Tim Haslett, Gerard Moylan & Peter McKee "A System Dynamics Analysis of the Victorian Workcover Authority Insurer Scheme" (October, pp.5).
- 49/00 Melanie Bryant "New Management and Old Employees: The Implications of Group Differentiation on Employment Relations" (October, pp.9).
- 50/00 Julie Wolfram Cox "Remembrance of Things Past? Change, Development, and Paternalism" (October, pp.18).
- 51/00 Julie Wolfram Cox & Stella Minahan "Crafting Organisation" (October, pp.33).
- 52/00 Vaughan Reimers & Val Clulow "Is Retail Compatibility a Natural Phenomenon?: A Comparison of Store Compatibility in Planned and Unplanned Retail Centres" (October, pp.11).
- 53/00 Vaughan Reimers & Val Clulow "Convenience for the Car-Borne Shopper: A Comparison of Access and Parking in Planned and Unplanned Retail Centres" (October, pp.15).
- 54/00 Vaughan Reimers & Val Clulow "Downtown Shopping: Is it Worth the Time and Effort?" (October, pp.8).
- 55/00 Vaughan Reimers & Val Clulow "The Unplanned Retail Centre: Is it Designed for Convenience?" (October, pp.10).
- 56/00 Susan Hinton & Jan Schapper "Jobs.Com: Recruiting on the Net – A Critical Analysis of E-Cruitment" (October, pp.16).
- 57/00 Susan Hinton "Different and Always Lacking: The Discursive Construction of the 'Male Benchmark' Work Organisations" (October, pp.11).
- 58/00 Glennis Hanley "Union Satisfaction: An Australian Perspective" (October, pp.15).
- 59/00 Vaughan Reimers & Val Clulow "What is Retail Centre Convenience? A Model for the 21<sup>st</sup> Century" (October, pp.14).
- 60/00 Vaughan Reimers & Val Clulow "The Composition of Retail Centres: The Key to Competitive Advantage?" (October, pp.19).

## 2000 WORKING PAPER SERIES

- 61/00 Vaughan Reimers & Val Clulow "Retail Concentration: A Comparison of Spatial Convenience in Planned and Un-planned Centres" (October, pp.17).
- 62/00 Vaughan Reimers & Val Clulow "Shopping and Convenience: A Model for Retail Centres" (October, pp.6).
- 63/00 Glennis Hanley "Union Satisfaction: An Australian Perspective" (November, pp.15).
- 64/00 Glennis M. Hanley "Union Amalgamations: Motivation, Barriers, Risks, and Benefits" (November, pp.12).
- 65/00 Jeffrey J McLean "From Fragmentation to Integration: Towards an Integrated Model of Knowledge Management and Organisational Learning" (November, pp.12).
- 66/00 Mike Berrell & Marianne Gloet "The Third Culture: Organisational Learning in International Joint Ventures" (November, pp.7).
- 67/00 Jeff Wrathall & Mike Berrell "Management Development in China" (November, pp.8).
- 68/00 Peter Mrkic & Julian Teicher "Teams and Innovation: A Case Study of an Australian Automotive Components Manufacturer" (November, pp.18).
- 69/00 Owen Hughes & Deirdre O'Neill "Public Management Reform: Some Lessons from the Antipodes" (November, pp.11).
- 70/00 Savo Kovacevic, Dr. Peter D. Steane & Associate Professor James C. Sarros "Managerial Remuneration in Australian Welfare Organisations" (November, pp.17).
- 71/00 Linda McGuire "Service Charters – Global Convergence or National Divergence? A Comparison of Initiatives in Australia, the United Kingdom and the United States" (November, pp.33).
- 72/00 E. Anne Bardoel, Phyllis Tharenou & Douglas Ristov "The Changing Composition of the Australian Workforce Relevant to Work-Family Issues" (November, pp.21).
- 73/00 Richard Winter & James Sarros "The Academic Work Environment in Australian Universities: A Motivating Place to Work?" (November, pp.12).
- 74/00 Warwick Frost "Teaching Economics to Non-Economics Students: A Case Study of Tourism and Hospitality Economics" (November, pp.8).
- 75/00 Peter J. Bruce & Judy H. Gray "Is Experience the Key to Effective Decision Making in an Australian Airline's Operations Control Centre?" (November, pp.8).
- 76/00 Liam F. Page & Jeffrey J. McLean "Knowledge and Learning in Electronically Enabled Environments" (November, pp.11).
- 77/00 Mary Anderson "Leadership in Higher Education; Are Substitutes for Leadership a Reality or a Reason?" (November, pp.8).
- 78/00 Dawn Loh, Jeff Wrathall & Jan Schapper "The Maslow Revival: Maslow's Hierarchy of Needs as a Motivational Theory" (November, pp.30).
- 79/00 Dawn Loh, Jeff Wrathall & Jan Schapper "The Individuals in Mao's Collective Kingdom: A Study of Motivational Needs of PRC State – Enterprise Employees" (November, pp.28).
- 80/00 Damian Morgan & Martin Fluker "Accidents in the Adventure Tourism Industry: Causes, Consequences, and Crisis Management" (November, pp.14).