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Creating knowledge-based organisations by means of knowledge management and organisational learning

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Knowledge-creating organisations are successful. They have the ability consistently to produce new knowledge, circulate it through their organisations, and embody it in new products and services. Knowledge is a certain source of competitive advantage and the challenge for organisations, therefore, is to share and manage it. This article distinguishes between information, learning and knowledge and describes various models of knowledge management. These models that focus on social construction share common ground with those on learning organisations. For knowledge management to be successful it is necessary to understand how people in organisations learn, how they implement what they learn and how they share their knowledge. This article concludes by discussing the flow of knowledge in a learning organisation and the various types of learning which take place in such organisations.

Die skepping van 'n kennisgefundeerde organisasie deur middel van kennisbestuur en organisasieleer

Suksesvolle organisasies is kenniskeppende organisasies. Hulle besit die vermoë om nuwe kennis te produseer, om dit deur hulle organisasies te versprei en om dit in nuwe produkte en dienste te vergestalt. Kennis en die uitdaging vir organisasies om dit met ander te deel en dit te bestuur, is 'n kompeterende voordeel. Hierdie artikel onderskei tussen inligting, leer en kennis en beskryf verskillende modelle vir kennisbestuur. Modelle van kennisbestuur wat op sosiale konstruksie fokus, toon ooreenkomste met teorieë oor organisasieleer. Om kennisbestuur suksesvol te kan toepas, is dit belangrik om te verstaan hoe mense leer, hoe hulle dit wat hulle leer, implementeer en hoe hulle hulle kennis in die organisasie met ander deel om 'n leerorganisasie te wees. Hierdie artikel sluit af met 'n blik op die kennisvloei en die verskillende tipes leer wat plaasvind in leerorganisasies.

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Existing models of management and management theory are viewed as inadequate in our changing world.¹ This is attributed to their essentially rationalist mindset which thinks in terms of linearity, quantification, command and control, and is regarded as the basic flaw in many paradigms of management (Bryans & Smith 2000: 228).

According to Riley (1998: 145), organisations are ready to begin the transition into the age of the mind, which is a natural progression from the age of information. Knowledge is at the core of the age of the mind and is an organisation's key asset.² A growing number of knowledge-based and knowledge-enabled organisations consider intellectual capital as a prime source.³ This intensifying awareness of the value of knowledge, embedded in the experiences, skills and abilities of people, forms the emergent discourse known as knowledge management (Todd 1999: 11). The economic forces and globalisation behind the evolution of knowledge management and intellectual capital are fundamental and likely to persist (Bassi 1997: 26; Riley 1998: 149).

Knowledge management requires the transformation of personal knowledge into an institutional knowledge that can be disseminated throughout the institution and appropriately applied (Bryans & Smith 2000: 229). In the movement towards knowledge management the development and application of knowledge as the economic and social order of the twenty-first century replaces capital, raw material and labour as the main means of production.⁴ It must be recognised that the success of organisations in the post-industrial world will depend more on intellectual abilities than on physical assets.⁵

In the past, South African organisations have focused on the collective relationship between management and labour (Kinnear & Su-

1 Cf McAdam & McCreedy 1999: 91; Bryans & Smith 2000: 228; Martensson 2000: 204.

2 Cf Roelof 1999: 95; Hargreaves 1999: 124; Katz 1998: 50; Todd 1999: 12; Riley 1998: 154.

3 Cf Katz 1998: 50; Roelof 1999: 94; Hargreaves 1999: 124; Smith 2000: 236; McElroy 2000: 195; O'Connell 1999: 33; Kinnear & Sutherland 2000: 106.

4 Bryans & Smith 2000: 229; Bassi 1997: 25; Kinnear & Sutherland 2000: 106.

5 Cf Katz 1998: 50; Hargreaves 1999: 124; Bassi 1997: 25; Riley 1998: 154; O'Connell 1999: 33.

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therland 2000: 106). Factors such as increasing competition, globalisation and the new knowledge economy are now forcing South African organisations to take careful stock of the powerful role of intellectual capital as offering their most competitive advantage (Kinneer & Sutherland 2000: 106).

1. Problem statement

The information age is already at or past the midpoint of its cycle (Bassi *et al* 1998: 52; Bassi 1997: 25). This explains the growing interest in knowledge as the new source of competitive advantage: the so-called “knowledge era”. According to Riley (1998: 146) there is no clearcut distinction between these two approaches because the two ages are still in a transformational phase. However, he explains that the age of information focused on the external organisation, transformation and communication of knowledge whereas the age of the mind replaces the externally observable features of information by a completely different set of rules, customs and modes of delivery whereby people will utilise knowledge according to judgements made in accordance with a different set of criteria (Riley 1998: 145).

To satisfy this shift in thinking towards the knowledge era, practitioners of knowledge management are now looking at the organisational learning community as a source of what it means for an individual and organisation to learn (McElroy 2000: 199). In this new approach, knowledge management has shed its former preoccupation with information technology, and organisational learning is now its preferred counterpart. Consequently, the new view has given itself the name: “second-generation knowledge management”, not be confused with the term “first-generation knowledge management”, which implies a technology-centred heritage (McElroy 2000: 199). Understanding the way in which knowledge is created and how it is shared and diffused throughout an organisation is at the core of the movement from first- to second-generation thinking (McElroy 2000: 200; Riley 1998: 154). The first generation is all about delivering information in support of a task and concerns individual performance in the field. There is no mention of knowledge creation or organisational learning. With the emergence of second-generation thinking, knowledge management is applied to these issues. The damage which

first-generation knowledge management did to its own credibility could unfortunately adversely influence the acceptance of the new second-generation knowledge management by the market (cf Bassi 1997: 25).

In the light of the above, the following research question is posed in this study: How can a knowledge-based organisation be created by means of knowledge management and organisational learning? Sub-questions emerging from this issue are: What is knowledge? What is knowledge management? What knowledge management models currently exist? What is organisational learning? What is the difference between information, knowledge and learning? How is knowledge management linked to organisational learning?

The relevance of “knowledge” as a critical component of the intellectual discourse on knowledge management and organisational learning has become evident to researchers (Shariq 1998: 10; Hargreaves 1999: 125). Knowledge management recognises that part of the information base of a learning organisation is the human knowledge possessed by that organisation. Managing this knowledge can play a significant role in enhancing learning and growth within an organisation (Todd 1999: 12). In the next section the link between information, learning and knowledge will be briefly explained.

2. What is knowledge?

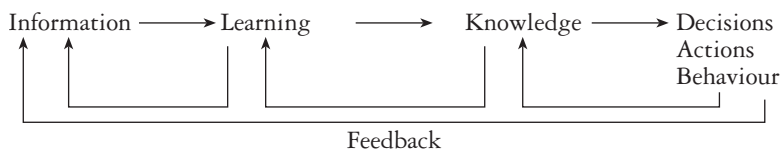
With the growth in information technology a clear operational distinction can be drawn between information, learning and knowledge (Rolf & Ron 1999: 288; McElroy 2000: 199). Information is recorded in documents, journals and electronic formats; is tangible, and exists independently of people (Todd 1999: 11). It is described as data, stimuli and representations that exist in the external environment and are potentially available to be converted and utilised in some way (O’Connell 1999: 33). Information as such has little value until it is processed in a person’s mind (Martensson 2000: 208; Roelof 1999: 101). This process is known as learning (Rowley 2000b: 9). Learning leads to knowledge that is either tacit (embedded in people’s minds) or explicit (stated, as in formal communication or in documents).

It is important to bear in mind that knowledge as such resides in people's minds and not in technology (Martensson 2000: 208; Hicks 2000: 71; O'Connell 1999: 33). The technology explosion has unfortunately misled some organisations into believing that technology can replace the knowledge and skills of an experienced person (Robinson & Ellis 1999: 27). Instead, what technology development does is to make sharing, storing, distributing and accessing information cost-effective and user-friendly (Hicks 2000: 71; Riley 1998: 146).

Knowledge results when people transform information into their personal knowledge store through a process of giving meaning to information (the learning process) (Shariq 1998: 11; O'Connell 1999: 33). The knowledge acquired has to be managed in such a way that it contributes to organisational effectiveness and ensures that the organisation can demonstrate what has been learnt through its actions and decisions (Bassi *et al* 1998: 512; Rowley 2000b: 12). Tan (2000: 10), therefore, regards knowledge as knowing how to use information to make better decisions. The final stage in knowledge management is the feedback from actions, which may lead to further information and which forms the basis for further learning (Rowley 2000b: 9). Figure 1 depicts how information, learning and knowledge are linked.

Figure 1: Linking information, learning and knowledge (Rowley 2000b: 9)

The old knowledge equation was: knowledge is power, so collect it. This view is currently being replaced by: knowledge is power, so share it in order for it to multiply (Allee 1997: 71). Since knowledge



is perishable and changes continuously, the implication is that people and organisations should continuously create more knowledge (Katz 1998: 50; Riley 1998: 147).

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Knowledge is an asset to be nurtured and valued, like any other asset in an organisation (Bagshaw 2000: 180; Katz 1998: 50; Todd 1999: 12). What knowledge workers know or do not know may be valuable to the organisation (Bukowitz & Williams 1999: 2). One needs to realise that knowledge is hidden in the organisation until knowledge workers release it (O'Connell 1999: 33). Such workers continuously look for innovation, which increases choices and can potentially increase the organisation's knowledge assets (Bagshaw 2000: 180). There may be a temptation to channel knowledge into a bureaucratic process as it occurs. However, this would be unsuccessful since it would obstruct the free flow of ideas, and the freedom to take risks, which is essential for a knowledge-creating culture.

Certain characteristics of knowledge creation need to be taken into account, as outlined below:

- Objectivity

Social science researchers realise the difficulties associated with the creation of valid and transferable objective knowledge (Rowley 2000b: 12). Reliability and accuracy are also related to the issue of objectivity. (Accuracy refers to the correctness of data and information; reliability implies that the information is a true indicator of the variable that is to be measured).

- Accessibility

Accessibility refers to the availability of knowledge (Rowley 2000b: 12). The difference between tacit and explicit knowledge is relevant here. Tacit knowledge is owned by an individual or team and is subjective while most explicit knowledge is stored in the form of printed and electronic records (Hicks 2000: 71). According to Martensson (2000: 213), tacit knowledge can start as information, but because it is interpreted in the human mind, it can be translated into explicit knowledge (Todd 1999: 12). Tacit and explicit knowledge are complementary, interacting and influencing each other in the actions of people (Bukowitz & Williams 1999: 4; Roelof 1999: 99; Rossett 1999: 65). Knowledge may therefore be stored and communicated by people, or the media, whether printed or electronic (Rowley 2000 b: 12). The challenge for most organisations is to translate tacit knowledge into explicit knowledge and to ensure that individual

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knowledge becomes organisational knowledge in order to improve organisational performance.⁶

- Relevance

Knowledge is regarded as relevant when it meets the requirements of its users and contributes to the completion of a task in which a person is engaged in the workplace, such as decision-making, problem-solving or learning.⁷

- Currency

The currency of knowledge is important since older information is superseded by more recent information, which requires that outdated information be discarded (Rowley 2000b: 12). Currency poses a challenge: to recognise the position of specific knowledge on a time-scale and to manage it according to its lifespan.

In a world of rapid development, it is necessary to constantly create new knowledge and ideas in order to survive and prosper (Bagshaw 2000: 179). Knowledge creation starts when people share their internal knowledge by socialising with other people or by obtaining it in digital or analogue form (Martensson 2000: 209; Riley 1998: 148; Bassi 1997: 25). The shared knowledge is then again shared with others, creating new knowledge, which is again disseminated through others before the process begins again. It is no use for organisations to have knowledgeable people who do not know how to manage that knowledge.

3. What is knowledge management?

As has been mentioned, knowledge management is the process of systematically and actively managing the stores of knowledge in an organisation (Shockley 2000: 57; O'Connell 1999: 33; Tan 2000: 10). It is an integrated approach aimed at identifying, sharing and capitalising on the know-how, experience and intellectual capital of staff in an organisation.⁸ The goal of knowledge management is to

⁶ Cf Martensson 2000: 214; Hicks 2000: 71; Shockley 2000: 57; Hargreaves 1999: 126; Rossett 1999: 64; Todd 1999: 12.

⁷ Cf Rowley 2000b: 12; O'Connell 1999: 33; Martensson 2000: 214.

⁸ Cf Todd 1999: 12; Katz 1998: 50; Martensson 2000: 205; Riley 1998: 149; McKenna 2000: 333.

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capture, codify and distribute the organisational knowledge usually found in the data-base of the computer so that it can be shared by the organisation's knowledge workers (McElroy 2000: 199; Bassi *et al* 1998: 512). This ability to decode tacit knowledge into explicit information is regarded as its major contribution (Martensson 2000: 212; Hicks 2000: 71).

By managing knowledge, organisations can improve their efficiency, make professionals learn more efficiently and effectively, provide a better foundation for making decisions and improve communication and synergy among staff members (Roelof 1999: 95; O'Connell 1999: 33). Organisational resources can be used to motivate and assist people in dealing with knowledge. These resources include the reward system, the knowledge infrastructure, management style, and so on (Roelof 1999: 101).

The literature reveals various theoretical perspectives on knowledge management. According to Martensson (2000: 213) and McAdam & McGreedy (1999: 93), one perspective emphasises information and information technology theories, whereas the second perspective involves theories that focus on the knowledge of people. This distinction resembles Rossett's (1999: 64) classification, which distinguishes between the content-oriented perspective, in which data, information, and presentations are collected and maintained, and a second perspective which focuses on the social construction of knowledge in the organisation (cf Riley 1998: 148) and is characterised by dialogue, action learning and problem solving.

Considering the two perspectives, McAdam & McGreedy (1999: 93) believe that people and learning issues are central to knowledge management and that it is not situated in the technological domain. This is in line with the second-generation of knowledge management. The issue is not information and information technology, but psychology and the marketing of the knowledge within people (McElroy 2000: 195). Although there has been faster data transfer due to recent advances in technology, technology is regarded as a useful enabler rather than a central tenet at the heart of knowledge management (McAdam & McGreedy 1999: 93).

Todd's classification almost negates the content-oriented perspective, and focuses on human knowing, which includes people's com-

petence, knowledge, skills, ideas and practices as well as the accumulations of this knowing present in filing cabinets, books and computer discs (cf Roelof 1999: 101). According to Todd (1999: 11), people possess a wealth of knowledge that represents a significant resource for an organisation, one which has long been underestimated. Todd's second perspective includes sharing and utilising the content of intellectual capital to enhance an organisation's learning objectives.

According to Bassi *et al* (1998: 54), knowledge management has the benefit of increasing the amount of learning taking place; making work less frustrating; making the learning organisation a reality, and creating the knowledge, insight and understanding that can assist people in their daily lives outside work. These benefits of knowledge management have been succinctly summarised by Todd (1999: 13) in the following chain:

Greater and easier access to knowledge ➤ knowledgeable people ➤ motivated to use knowledge ➤ value-added decisions and value-added learning at the personal level ➤ enhanced organisational effectiveness.

In an attempt to understand knowledge management, theorists have designed various models.

4. Models of knowledge management

4.1 Knowledge category models

Nonaka & Takeuchi (1995: 58) view knowledge management as a process, as depicted in Figure 2. This shows that knowledge is considered as consisting of explicit and tacit elements (McAdam & McGreedy 1999: 95; Hargreaves 1999: 127). Explicit knowledge is similar to information and can be stored outside the human mind, for example in a data base.⁹ Information cannot be described as knowledge until it has been processed in the human mind (Martensson 2000: 213; Todd 1999: 12). Tacit knowledge, on the other hand, is oral, may be regarded as internalised and subjective, and cannot be shared electronically (Rowley 1999: 418; Rowley 2000a: 327).

⁹ Cf Martensson 2000: 213; Todd 1999: 12; Rowley 1999: 418; Smith 2000: 237.

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Figure 2: Nonaka's knowledge management model
(Nonaka & Takeuchi 1999: 62)

		<i>TO</i>	
		Tacit	Explicit
<i>FROM</i>	Tacit	Socialisation	Externalisation
	Explicit	Internalisation	Combination

The instruments of knowledge management are categorised according to the kind of interaction between tacit and explicit knowledge, that is, socialisation (camaraderie), externalisation (formalising a body of knowledge), combination (combining existing theories) and internalisation (translating theory into practice).¹⁰ According to Nonaka's model of knowledge creation (see the top two boxes of Figure 1), tacit knowledge can be transferred to others through a process of socialisation or can be transformed into explicit knowledge through a process of externalisation (McAdam & McGreedy 1999: 96). The transfer of tacit knowledge between individuals can be achieved when they learn by watching one another (Rowley 2000b: 11). The transfer of explicit information across an organisation (explicit to explicit) can be achieved by means of print and electronic documents (Rowley 2000b: 11). The model also assumes that explicit knowledge can be transferred to others as tacit knowledge through a process of internalisation, and that explicit knowledge can be transferred to others as explicit knowledge through a process of combination (see the bottom boxes in Figure 2) (McAdam & McGreedy 1999: 96).

Boisot's knowledge category is depicted in Figure 3. This model distinguishes between codified and uncoded knowledge and between knowledge diffused or undiffused in an organisation (Boisot 1987: 67). The term "codified" is used for knowledge that can be readily prepared for transmission, such as financial statements. "Uncodified" refers to knowledge that cannot easily be prepared for transmission — the knowledge contained in experience, for example (Boisot

10 Cf Bassi *et al* 1998: 54; Roelof 1999: 100; Hargreaves 1999: 127.

1987: 66). If knowledge is both codified and undiffused, then it is regarded as proprietary knowledge (Boisot 1987: 68). Knowledge is prepared for transmission in this case, but is selectively limited to a small population on a “need-to-know” basis. Share price issues are an example of this type of knowledge. Personal knowledge, indicated in the left bottom quadrant, is uncoded and undiffused, for example perceptions and insights (Boisot 1987: 69). The top right quadrant represents public knowledge, which covers both codified and diffused knowledge in journals and books, for example. Common-sense knowledge, in the bottom right quadrant, is relatively diffused and uncoded and develops through a process of socialisation.

Figure 3: Boisot’s knowledge-category model (Boisot 1987: 67)

Codified	Proprietary knowledge	Public knowledge
Uncodified	Personal knowledge	Common sense
	Undiffused	Diffused

According to McAdam & McGreedy (1999: 97) there is some correspondence between the models of Nonaka and Boisot. Nonaka’s categorisation of explicit and tacit knowledge partially parallels Boisot’s codified and uncoded knowledge, and the horizontal dimension is associated with the spread or diffusion of knowledge in both models.

4.2 Socially constructed models of knowledge management

Socially constructed models of knowledge management view knowledge as intrinsically linked with the social and learning processes of the organisation (Rowley 2000b: 8; Rossett 1999: 65). McAdam & McGreedy (1999) developed a model based on Demerest’s model, which focuses on the construction of knowledge, including the social construction of knowledge in an organisation. The model identifies four phases of knowledge management in the organisation: knowledge construction, knowledge dissemination, knowledge use and knowledge embodiment. The constructed knowledge is embodied in

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the organisation through both explicit programmes and the process of social interchange. Dissemination of the espoused knowledge throughout the organisation then follows. Finally, the knowledge is seen as of use for both the organisation and the staff member. The solid arrows in Figure 4 show the primary flow direction while the open arrows show the more recursive flows. According to McAdam & McGreedy (1999: 98), it is clear from the model that knowledge management is not a simple sequential process.

Models of knowledge management that focus on social construction share common ground with theories on learning organisations (Rowley 2000b: 11; Martensson 2000: 213). Organisations, not only individuals, have the ability to learn (McElroy 2000: 198). For knowledge management to be successful it is necessary to understand how people in organisations learn, how they implement what they learn and how they share their knowledge in order for a learning organisation to be created.

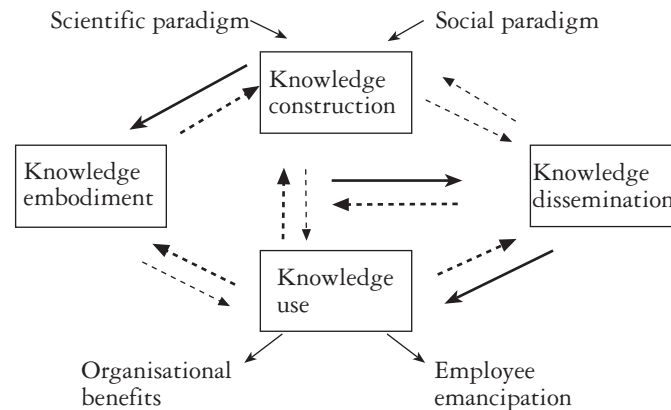
5. What is a learning organisation?

Rapid global changes have placed a high premium on learning in which both individuals and organisations learn.¹¹ The way in which organisations seek to improve learning opportunities is regarded as crucial (Rowley 1998: 17; McElroy 2000: 195). Organisations must, however, ensure that all individuals are ready to learn at every opportunity (Johnston & Caldwell 2001: 2).

Learning organisations have developed through a process of natural evolution and are characterised by the ability to transform themselves through the acquisition of new knowledge, skills and behaviours on the part of all staff members (Bassi 1997: 29; Rowley 1998: 16; Robinson & Ellis 1999: 28). This process requires the active participation of staff members in individual learning (Rowley 1998: 17). The responsibility for individual learning, however, has to be shared between the organisation and its individuals (Martensson 2000: 214). It is therefore important to take up the challenge and to identify and undertake the specific actions to turn individual learn-

11 Cf Bassi *et al* 1998: 51; Robinson & Ellis 1999: 27; Hoppers 2000: 285; Cascio 2001: 4; Doherty 1998: 604.

Figure 4: Modified version of Demerest's knowledge management model (McAdam & McGreedy 1999: 98).



ing and team learning into organisational learning. Although the literature on organisational learning takes many forms, it shares a central idea: organisational adaptability, flexibility, the readiness to re-think means and ends, an orientation towards inquiry, the realisation of the human potential for learning in the service of organisational purposes, and the creation of organisational settings for human development (Argyris 1999: 1).

The learning organisation aims to develop the potential of all staff members through staff development and self-development as well as via the concept of learning on the job, in and through the work situation, so that the organisation can develop the capacity for self-renewal and for adaptation in order to survive and prosper (Duke 1999: 22). Argyris (1999: 67) states that organisations do not perform the actions that produce learning; individuals act as the agents of the organisation in producing the behaviour that leads to learning.

Senge (1990: 6-11) identifies five "components", each developing separately and providing a critical dimension in organisations which can positively learn. These are:

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- Systems thinking

The underlying notion is that when the organisation is “thinking” systematically, underlying patterns of events, trends and responses can be identified and changed. In this approach the organisation is the basic unit of analysis.

- Personal mastery

Personal mastery requires that people begin building an organisation by first considering themselves as single individuals. It is the discipline of “continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively” (Senge 1990: 7).

- Mental models

Mental models are deeply ingrained assumptions, generalisations that influence people’s understanding of the world. They affect the way in which people act. To take advantage of accelerated organisational learning, people need to expose their own mental models, to expose their own thinking, and to make that thinking open to the influence of others.

- Building a shared vision

The significance of a shared vision lies in the idea that a vision represents a balance of competing interests in an organisation. Sharing a vision is a discipline that requires clear, passionate communication of what matters most to people as individuals and collectively.

- Team learning

The “team learning” discipline of the Senge model draws on the view that teams are an effective means through which organisations learn and people are able to enhance their personal mastery skills. The process of team learning starts with a dialogue or ‘thinking’ together’ which can enable the intelligence of the team to exceed that of individuals.

A decade of focus on knowledge and learning in organisations has begun to develop a different model of learning within organisations. This model views knowledge as distributed among organisational members rather than as residing in only a few experts. According to Allee (1997: 71), this model has brought new power to employees.

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The opposing views of organisational knowledge are depicted in Figures 5 and 6 (Dixon 1999: 212).

Figure 5: Knowledge residing in experts

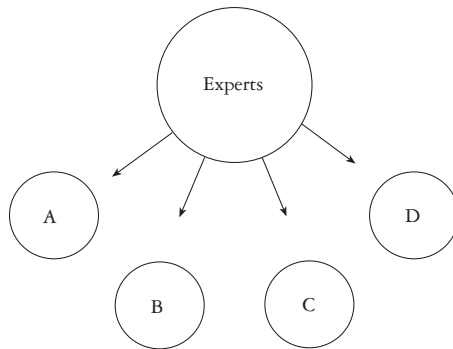
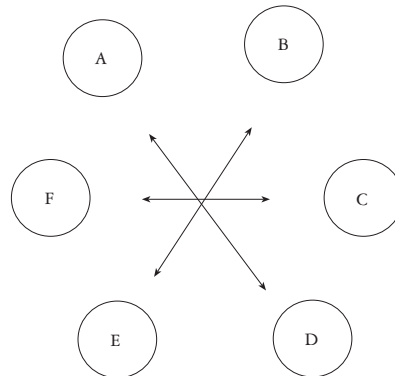


Figure 6: Knowledge distributed throughout the organisation



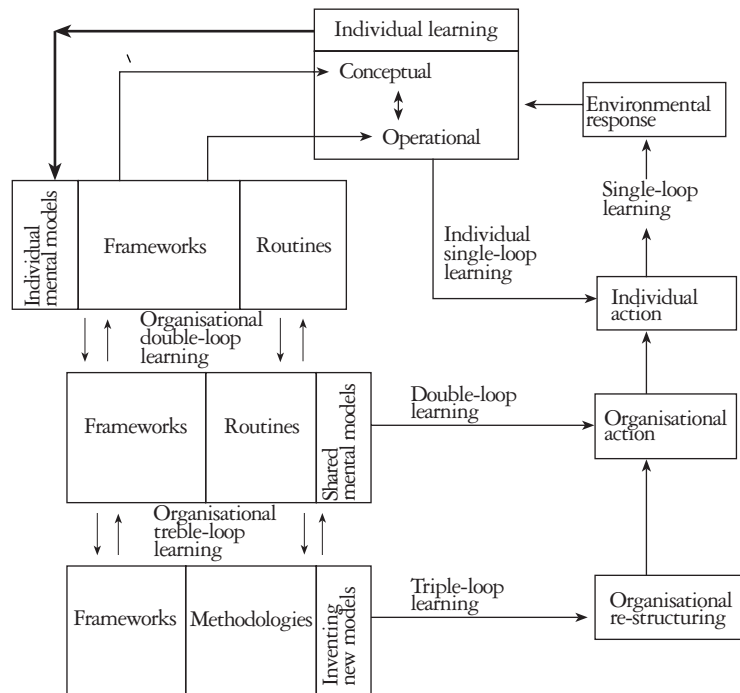
Essentially, a learning organisation is a philosophy and a way of operating an organisation (Drafke & Kossen 1998: 156; Doherty 1998: 605). A learning organisation searches for new ideas, new problems, and new opportunities for learning, in order to succeed in a competitive environment (Rowley 1998: 16; Cascio 2001: 4; Johnston & Caldwell 2001: 2). It relies on critical thinking and rigorously hard data to indicate directions for quality improvement (cf Wagner & Hollenbeck 1998: 396; Hargreaves 1999: 126). The ability to learn

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faster than other organisations may be the only competitive advantage a certain organisation has. It is, therefore, closely associated with survival and future success (McElroy 2000: 199; Bassi *et al* 1998: 51; Rowley 2000b: 10). People in learning organisations must, however, question how they produce and transfer knowledge instead of merely how simple tasks are performed (Drafke & Kossen 1998: 157; McElroy 2000: 195; Robinson & Ellis 1999: 28).

A learning organisation focuses on improving learning and the way in which knowledge, skills and behaviours are disseminated throughout the organisation (Drafke & Kossen 1998: 157; Doherty 1998: 605; McElroy 2000: 195). Different levels of learning can be distinguished: single-, double- and triple-loop learning (Snell & Chak 1998: 339). Single-loop learning refers to relatively routine lower-level learning which increases the knowledge and skills of an organisation without changing its underlying culture (Du Toit 2000: 187). It is concerned only with improving efficiency (Zuber-Skerrit 1995: 37). According to Argyris (1993: 178) highly skilled professionals are very good at single-loop learning because they spend a lot of time acquiring formal qualifications, mastering one or more intellectual disciplines and solving real-world problems. Organisational learning is characterised by double-loop learning, which goes through a continuous cycle of experience and examination of experience with a view to improving the organisation (Gordon 1998: 454; Zuber-Skerrit 1995: 37). This type of learning is perceived as higher-level learning which attempts to change the culture of the organisation (Argyris & Schön 1978: 22; Snell & Chak 1998: 340; Du Toit 2000: 187). Effective double-loop learning is not only a function of how people feel, it is also a reflection of how they think in order to design and implement their actions. Triple-loop learning is involved when individuals develop new processes or methodologies for arriving at reframings such as moving from brainstorming to rigorous self-critique and from paradigm shift to paradigm invention (Snell & Chak 1998: 339). It involves transforming people by altering the images from which they derive their identity (Hargrove 1996: 18). The appropriateness of each of these types of learning will depend on a particular situation. The flow of knowledge in organisational learning is indicated in Figure 7.

Figure 7: Organisational learning (McElroy 2000: 198)



In a learning organisation four types of learning are important (Robinson & Ellis 1999: 28; cf Rowley 2000b: 10). It is possible to learn about things (knowledge); to do things (skills, abilities and competence); to become oneself (personal development to achieve one's full potential); and to achieve things together (collaborative enquiry) (Robinson & Ellis 1999: 28). Knowledge and skills have long been recognised as important by the best organisations. Personal development has been recognised as relevant outside work and is becoming increasingly important for long-term success, for both the individual and the organisation (Bagshaw 2000: 180). Collaborative enquiry is now regarded as one of the keys to organisational learning.

6. The implications of knowledge management

The belief in knowledge management as an emerging paradigm consistent with broader movements in organisational theory and practice has important implications for organisations (McAdam & McGreedy 1999: 95). Knowledge management provides both an opportunity and a challenge to workplace learning and practitioners (Bassi *et al* 1998: 56).

The focus on knowledge management leads to the recognition that developing people's knowledge and skills is the driving force behind organisational success (Riley 1998: 154). According to O'Connell (1999: 33), the success of organisations in the post-industrial world lies primarily in the intellectual abilities of practitioners rather than in its physical assets. These practitioners own the necessary tools for success by means of the knowledge they possess (Kinnear & Sutherland 2000: 106).

Knowledge management offers two challenges to workplace learning:

- New strategies are needed to encourage learning through informal, natural means and to direct that learning in such a way that the goals of the organisation can be met (Bassi *et al* 1998: 56). The successful management of knowledge implies that the tacit knowledge of practitioners needs to be developed continuously if organisations are to survive and prosper in a competitive environment. After such knowledge has been developed, it has to become explicit by being laid out in the form of documentation or data, or by other means of sharing (Hong & Kuo 1999: 214).
- Demonstrating the value of learning and the process of knowledge management is an ongoing challenge (Bassi *et al* 1998: 56). The knowledge management system in a learning organisation has to be able to co-ordinate work and learning activities and should contain incentives to persuade all practitioners to become involved in learning activities (Hong & Kuo 1999: 214).

A learning organisation should be able to:

- construct new knowledge;
- employ external resources in order to acquire knowledge;
- integrate and apply external knowledge;

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- present knowledge in the form of documentation and data;
- use incentives to encourage knowledge growth;
- transfer new knowledge to other sections of the organisation, and
- assess the value of knowledge for the development of the organisation (Hong & Kuo 1999: 214; cf Bassi *et al* 1998: 52).

7. Conclusion

The management of knowledge has been practised for years in many organisations. The difference in the way in which knowledge is managed lies in the environment and the nature of business (Tan 2000: 10). A competitive environment compels organisations to use information and knowledge in innovative ways that provide a competitive advantage and thus create more knowledge.

A successful organisation is a knowledge-creating organisation: that is, one which consistently creates knowledge, manages and disseminates it through the organisation, and embodies it in new products and services. Such an organisation can learn from and adapt to an ever-changing, competitive environment. Learning is an essential part of creating and using knowledge. A major function of knowledge management has been to establish a positive learning environment in which people can conduct all sorts of learning activities and share knowledge with other people in the organisation (Bukowitz & Williams 1999: 2; Hong & Kuo 1999: 215; Martensson 2000: 214). Employing a knowledge management philosophy is challenging because it requires one to understand and manage the relationship between knowledge and the social contexts that shape it (Stromquist & Samoff 2000: 323; Rowley 2000b: 14). Riley's statement (1998: 154) succinctly describes the social relationship obtaining in organisations: "The human race working as one mind will be able to accomplish things that are now only dreamt of".

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