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Creative and Innovative Role in Knowledge Management in An Organization

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Abstract

Knowledge management (KM) is the process of capturing, developing, sharing, and effectively using the organizational knowledge. It refers to a multi-disciplinary approach to achieving organizational objectives by making the best use of knowledge.

Knowledge management efforts typically focus on organizational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration and continuous improvement of the organisation. KM efforts overlap with organizational learning and may be distinguished from that by a greater focus on the management of knowledge as a strategic asset and a focus on encouraging the sharing of knowledge. It is an enabler of organisational learning.

In this paper the authors has explained KM. Technologies, relationship between KM and Innovation, blocks to creatively and Innovation, Removing the blocks to creativity, groupware Technology, Learning space etc.

Key words: *Dissemination, Benchmarking, Intranet, Extranet, Synergy.*

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1. INTRODUCTION

If knowledge management is to have any real impact on the way we do business and not just a passing fad then it has got to be about making radical changes in the way that we perceive and utilize knowledge. It needs to be about creating new knowledge, applying knowledge and in the words of Peter Drucker "making it productive". In other words, knowledge management needs to fundamentally focus on creativity and innovation.

Knowledge management efforts have a long history, to include on-the-job discussions, formal apprenticeship, discussion forums, corporate libraries, professional training and mentoring programs. With increased use of computers in the second half of the 20th century, specific adaptations of technologies such as knowledge bases, expert systems, knowledge repositories, group decision support systems, intranets and computer-supported cooperative work have been introduced to further enhance such efforts.

In the enterprise, early collections of case studies recognized the importance of knowledge management dimensions of strategy, process and measurement. Key lessons learned include people and the cultural norms which influence their behaviors are the most critical resources for successful knowledge creation, dissemination and application; cognitive, social and organizational learning processes are essential to the success of a knowledge management strategy; measurement, benchmarking, and incentives are essential to accelerate the learning process and to drive cultural change. In short, knowledge management programs can yield impressive benefits to individuals and organizations if they are purposeful, concrete and action-orientated.

2. STRATEGIES

Knowledge may be accessed at three stages: before, during or after KM-related activities. Organizations have tried knowledge capture incentives, including making content submission mandatory and incorporating rewards into performance measurement plans. Considerable controversy exists over whether incentives work or not in this field and no consensus has emerged.

One strategy to KM involves actively managing knowledge (push strategy). In such an instance, individuals strive to explicitly encode their knowledge into a shared knowledge repository, such as a database, as well as retrieving knowledge they need that other individuals have provided to the repository. This is commonly known as the Codification approach to KM.

Another strategy to KM involves individuals making knowledge requests of experts associated with a particular subject on an adhoc basis (pull strategy). In such an instance, expert individual(s) can provide their insights to the particular person or people needing this (Snowden 2002). This is commonly known as the Personalisation approach to KM.

Hansen et al. propose a simple framework, distinguishing two opposing KM strategies: codification and personalization. Codification focuses on collecting and storing codified knowledge in previously designed electronic databases to make it accessible to the organisation. Codification can, therefore, refer to both tacit and explicit knowledge. In contrast, the personalization strategy aims at encouraging individuals to share their knowledge directly. Information technology plays a less important role, as it is only supposed to facilitate communication and knowledge sharing among members of an organisation.

Other knowledge management strategies and instruments for companies include:

- Knowledge Sharing (fostering a culture that encourages the sharing of information, based on the concept that knowledge is not irrevocable and should be shared and updated to remain relevant);
- Storytelling (as a means of transferring tacit knowledge);
- Cross-project learning;
- After action reviews;
- Knowledge mapping (a map of knowledge repositories within a company accessible by all);
- Communities of practice;
- Expert directories (to enable knowledge seeker to reach to the experts);
- Expert Systems (knowledge seeker responds to one or more specific questions to reach knowledge in a repository);
- Best practice transfer;
- Knowledge fairs;
- Competence management (systematic evaluation and planning of competences of individual organization members);
- Proximity & architecture (the physical situation of employees can be either conducive or obstructive to knowledge sharing);
- Master-apprentice relationship;
- Collaborative technologies (groupware, etc.);
- Knowledge repositories (databases, bookmarking engines, etc.)
- Measuring and reporting intellectual capital (a way of making explicit knowledge for companies);
- Knowledge brokers (some organisational members take on responsibility for a specific "field" and act as first reference on whom to talk about a specific subject);
- Social software (wikis, social bookmarking, blogs, etc.);
- Inter-project knowledge transfer.

3. KM TECHNOLOGIES

Knowledge Management (KM) technology can be divided into the following general categories:

1. **Groupware:** Groupware refers to technologies that facilitate collaboration and sharing of organizational information. One of the earliest and very successful product in this category was Lotus Notes. Notes provided tools for threaded discussions, sharing of documents, organization wide uniform email, etc.
2. **Workflow:** Workflow tools allow the representation of processes associated with the creation, use and maintenance of organizational knowledge. For example, the process to create and utilize forms and documents within an organization. For example, a workflow system can do things such as send notifications to appropriate supervisors when a new document has been produced and is waiting their approval.
3. **Content/Document Management:** Content/Document Management systems are systems designed to automate the process of creating web content and/or documents within an organization. The various roles required such as editors, graphic designers, writers and

producers can be explicitly modeled along with the various tasks in the process and validation criteria for moving from one step to another. All this information can be used to automate and control the process. Commercial vendors of these tools have to start either as tools to primarily support documents (e.g., Documentum) or as tools designed to support web content (e.g., Interwoven) but as the Internet grew these functions merged and most vendors now perform both functions, management of web content and of documents. As Internet standards became adopted within most organization and the distinction between the two essentially went away.

4. **Enterprise Portals:** Enterprise Portals are the web sites that aggregate information across the entire organization or for groups within the organization such as project teams.
5. **e-Learning:** e-Learning technology enables the organizations to create customized training and education software. This can include lesson plans, monitoring progress against learning goals, online classes, etc. e-Learning technology enables organizations to significantly reduce the cost of training and educating their members. As with most KM technology in the business world this was most useful for companies that employ knowledge workers; highly trained staff with areas of deep expertise such as the staff of a consulting firm. Such firms spend a significant amount on the continuing education of their employees and even have their own internal full-time schools and internal education staff.
6. **Scheduling and planning:** Scheduling and planning tools automate the creation and maintenance of an organization's schedule: scheduling meetings, notifying people of a meeting, etc. An example of a well known scheduling tool is Microsoft Outlook. The planning aspect can integrate with project management tools such as Microsoft Project. Some of the earliest successful uses of KM technology in the business world were the development of these types of tools, for example online versions of corporate "yellow pages" with listing of contact info and relevant knowledge and work history.
7. **Telepresence:** Telepresence technology enables individuals to have virtual meetings rather than having to be in the same place. Video conferencing is the most obvious example.

4. RELATIONSHIP BETWEEN KM AND INNOVATION

Messa and Testa (2004) stated that organizations must develop the receptors that gain or absorb the external knowledge and this activity is strongly correlated to the innovation capability. Further, they said that through the benchmarking, organizations can acquire explicit and tacit knowledge from external sources. These external sources of knowledge can be integrated with the organizational internal explicit and tacit knowledge and if knowledge gap prevails that can be filled through the new knowledge acquisition which will helpful to bring innovation. Also argued that in order to get competitive advantage organizations should continuously learn from outside sources. Through the proper knowledge distribution and sharing, organizations can bring the innovation. So, organizations must develop such channels within the organizations through which employees share their knowledge with one another. Plessis (2007) stated that innovation depends upon knowledge. So, to bring innovation, organizations must identify knowledge capability and richness.

Parlby and Taylor (2000) asserted that the foremost purpose of knowledge management is to bring innovation. Plessis (2007) stated that organizations can develop the collaborations across the

organizational boundaries to bring the innovation and to get the sustainable competitive advantage. This collaboration helps the organization to approach the new knowledge that can be helpful to fill the knowledge gap within the organization. This collaboration ultimately brings the innovation into the organization and this collaboration can reduce the risk and cost to bring innovation.

Organizations that rapidly capture and implement new knowledge across the organization can be able to foster innovation as compared to those organizations that don't focus on this aspect. Furthermore, they argued that first and most important aspect of the innovation is to increase the innovation capability to identify and capture the tacit knowledge of the organization.

Tacit knowledge can be acquired from outside the organization like customers, suppliers and bankers etc. This acquisition of tacit knowledge plays significant role to foster the process of innovation. Tacit knowledge becomes more important in those particular industries where explicit knowledge is scarce.

Through knowledge management, organization can identify their tacit knowledge which they usually do not know before. Knowledge management also helps the organization to articulate tacit knowledge in the form of explicit knowledge and this is a strong base to bring innovation. Knowledge management integrates different types of tacit and explicit knowledge. Through integration, organizations can discover what type of tacit and explicit knowledge subsists in the organization. Furthermore, knowledge activities like knowledge gathering, managing, sharing, learning, reuse and retrieval play an important role in bringing innovation. Through knowledge management activities, organizations find out the distance of knowledge from inside and outside the organizations. Organizations manage this knowledge in the form of data base, so that, they can ensure the availability of right type knowledge to the right person at the right time.

5. BLOCKS TO CREATIVITY AND INNOVATION

We are all naturally creative and the need to create is a fundamental driving force in human beings. If this is true, why do we not see a more creative world in every sphere of life? Much of it has got to do with our ways of thinking. Sir William Bragg is quoted as once saying - "The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them." I think the same applies to business and our everyday work life – much of the time we don't need more information or brilliant new ideas - what we need is to think about the information and knowledge that we already have in abundance in new ways. But one of the major reasons that we fail to do this is that there are blocks to our creativity and until these blocks are removed creativity cannot flourish. So let's look at some of these blocks.

5.1 Creativity Is a Serious Business: Creativity is often thought to be a serious analytical task. This is not true. The starting point of creativity is the generation of new ideas. It is, thus, important to look at the process by which new ideas are created. New thoughts and ideas come from a kind of thought-play of the mind. Daydreaming of what could or might be. It is a game - a fun game. Playing with words, concepts and metaphors. Playing what-if games. What if this was true? What if things were different? What if this limitation did not hold?

5.2 Creativity Is Not Needed: Generating new ideas – being creative - is often thought to be about holding brainstorming sessions or the like and although such sessions play their part we miss a huge opportunity if we only view creativity in this fashion. We actually get to play

all of the time or at least we do if we see it that way. Every interaction in our lives should be about play - should be about learning and should be about creativity. In my view, the playground is our lives. In business we get to play when we interact with people. Company meetings – so often a bureaucratic waste of time – if only we took the opportunity - are one of the best opportunities for play and learning. Working, communicating, coordinating and collaborating together on projects with common objectives are the 'swings and round abouts' of the playground.

In short, when we interact with people we have an opportunity to learn, to influence and to make things happen. We need to be creative every minute of our lives – every decision, every interaction - every act needs to be a creative and innovative one – not one out of habit.

5.3 Creativity is Specialised: One of the greatest blocks to creativity at the both the individual and organizational level is the thought that creativity is only needed in specialist disciplines such as R&D. Creativity is needed at every level and every dimension within an organization. Creativity is the responsibility of each functional discipline, of each team, of each manager, of each and every individual. Creativity is not limited to the grand scheme of things - to new products, new services and new or improved processes. As an individual if I can better organise my day or write a report in a more effective way - then this is every bit a creative act.

5.4 Limiting Paradigms: By far the most effective block to creativity at any level is the paradigm. 'Paradigm' is a much misused, abused, misunderstood and even hated word. But it is an extremely important concept that we should take the time to fully understand. A paradigm is a way of thinking, perceiving, communicating and viewing the world. It is often called a 'worldview' or 'a mindset'. The important point to understand about a paradigm is that it works at the subconscious level. We are not aware of our own paradigms. Its a bit like thinking the whole world is coloured red – unaware that we are wearing rose tinted contact lenses.

Paradigms include theories, principles, values, beliefs and doctrines. They can be thought of as a rigid tacit infrastructure of ideas that shape not only our thinking but also our perception of the world. When someone says "we need a new paradigm for this." It is a misuse of the word. All they are saying is "we need a new approach or we need a new way of looking at things". By the very definition of the word - our personal and organisational paradigms are not known to us.

Paradigms are both good and bad. In one sense they are the mind's immune system against new, possibly dangerous ideas. On the other hand if they prevent the take up of any new idea they are potentially more dangerous. The problem is - we do something - we make a decision - we react in a particular way - quite naturally for a sub-conscious reason. A reason with which our conscious mind would not agree. However, our conscious mind rationalises our action. And we move on totally unaware - at best dimly aware - that we have done something for the wrong reason. Some of us may recognize that we do this in our personal lives - in our emotional lives - in our relationships with our loved ones. But we do it too in our business lives. So paradigms block our creativity - they limit our thoughts and our actions in a way in which we are not aware.

5.5 Inappropriate Mental Models: Having looked at paradigms we need to look at the concept of mental models. Mental models and paradigms are closely related. Paradigms are our subconscious models. Mental models are conscious. The best examples of models are scientific ones. Scientific models are extremely explicit. Often encoded in maths. But we must remember that scientific models are just that - models. They are not reality. A model is an approximation to reality. Models only work when certain parameters are fixed or certain influences are ignored. Newton's model of the universe was the best model we had for a long time. Einstein's model has since provided an alternative – one that better explains reality. Neither model is proved or disproved. Although Einstein's model is superior – the Newtonian model is still appropriate to use in many cases – you need not worry about the relativistic shrinking of space and time when travelling in your car down the motorway, for example.

But we are not just talking about scientific models. We are just using them as examples. We have used many other models of the world in our everyday lives. Examples of business models are: 'How a particular market operates.?' Or 'What makes a good development process.?' The message is that we too often make the mistake in our thinking that our business models are real - they are not. Models are simply useful tools for understanding the world, making predictions and getting things done. One model is useful in one situation but an alternative model is more appropriate in a different situation.

We also limit ourselves when applying our mental models. We may have only one or two that we use in a given situation. But in the real world of people and business things are more complex than even the scientific world - every business is different, every person is different - one model will not do for all. We need a larger set of models or better still – in a fast changing world – we need to think things through from first principles each time and appropriately adapt to each new situation.

5.6 Limitations of Traditional Teaching: Traditional attitudes to teaching and the everyday communication of ideas and concepts are another limiting mindset.

"We teachers - perhaps all human beings - are in the grip of an astonishing delusion. We think that we can take a picture, a structure, a working model of something, constructed in our minds out of long experience and familiarity; by turning that model into a string of words, transplant it whole into the mind of someone else. Perhaps once in a thousand times, when the explanation is extraordinary good and the listener extraordinary experienced and skilful at turning word strings into non-verbal reality and when the explainer and listener share in common many of the experiences being talked about, the process may work and some real meaning may be communicated. Most of the time, explaining does not increase understanding and may even lessen it"

This quote from John Holt's book - 'How Children Learn' sums things up - we think we can transpose our knowledge from one person to another by traditional methods of teaching and explanation. It's not that these methods do not have a role but they are no way as near as effective as we might imagine. Adults like children learn most effectively through play and through experience.

So we have imperfect mental models of the world that we communicate to each other through the imperfect medium of speech, or the written word. And so the result is people with different models of reality thinking that they are talking with each other about the same things! We delude and confuse ourselves.

5.7 Inappropriate Belief in Absolutes: Having spoken about paradigms, a related issue is 'What is the relationship of our knowledge to reality?' Lets look at the thinking process. Our thought process generates provisional new knowledge. Putting it into action tests this knowledge. In return we obtain new or improved knowledge. Thus, knowledge undergoes a continuous adaptation. It is constantly growing and transforming itself. Knowledge does not accumulate indefinitely in a steady way. It is a continual process of change. Like an organism knowledge evolves and is not absolute or fixed in anyway. What shapes it is its appropriateness. If new knowledge gives an individual or organisation a business advantage then that knowledge will survive else it will perish in an analogous fashion to organisms in the environment.

A theory, model or way of doing things - in other words our knowledge - can only ever be disproved - it can never be proved in an absolute sense. It can be clearly shown not to work or not to work well but it is impossible to show that this is the one and only way in which things work. An innovative marketing strategy can be shown not to have worked but even when it has worked exceptionally well - it is impossible to prove that it was the best - the most appropriate solution at the time - there may indeed have been a better one. Also in a rapidly changing world what works well at one time, in one context or in one environment may not work well in another. All the time there is room for thought-play, action, learning and improvement in everything that a business does or creates.

5.8 Worry, Rewards and Punishment: If you insist that new ideas must have some business relevance or business value before the innovation stage then this very thought hinders creativity. New ideas come out of freewheeling play. As soon as this play is constrained by goals, by what is or what is not allowable, by rewards and punishments then the game loses its interest and creativity is stifled. This is one of the major blocks to creativity at both the individual and organizational level. The following two quotes are again from the book 'How Children Learn' by John Holt.

"If we continually try to force a child to do what he is afraid to do, he will become more timid, and will use his brains and energy, not to explore the unknown, but to find ways to avoid the pressures we put on him."

"Children do not need to be made to learn to be better, told what to do or shown how. If they are given access to enough of the world, they will see clearly enough what things are truly important to themselves and to others and they will make for themselves a better path into that world then anyone else could make for them"

These quotes not only apply to small children but also they apply to the larger kind too – adults in a business context. Trying to force someone to learn - trying to make them more creative – trying to get them to do things in supposed disciplined ways will frequently backfire and have the opposite effect. We are seeped in an educational and business tradition that lays great emphasis on rewards and punishment. Management by objectives, appraisals, remuneration policy, exams, etc. are all geared towards the improvement of performance.

Research shows that at least in the area of creativity – that these policies are counter-productive. This is a thorny issue for us to get our heads around.

5.9 Fear and Lack of Truth: Fear is one of the more common blocks on creativity. The fear of 'getting it wrong' – the fear of 'losing face' – the fear of 'making a fool of oneself' – the fear of 'failure'. In our Western culture such fear is crippling enough but in other cultures it is far worse. We have a friend working with VSO in the Maldives. There students are so fearful of 'getting an answer' wrong that they will abandon an evening class if a teacher directs questions at them. Freshly qualified, highly educated teachers avoid teaching because they fear making a mistake in front of the class. Learning is all about rote as that seems one sure way of avoiding mistakes. These are extremes but how often do we see the shadows of such behaviour in our business lives. It is probably one reason why rewards and punishment do not work well – they insist fear into so many people – fear of failure and fear of punishment.

One answer to all of this is to 'speak the truth' – not that there is a single *truth* – a single right way of doing anything - but you should never be afraid to make your *perception* known. In his book 'The Circle of Innovation', Tom Peters makes the point that in his opinion 'telling the truth' is the single most important thing that a leader can do to bring about fundamental change. And of course we are all leaders.

5.10 Infanticide: The problem with new ideas is that by their very nature - the product of play – they are often ill formed, sketchy and ambiguous. In their nascent state - like newborn babies - they are extremely vulnerable. They are easy to destroy - they even invite it. But if we killed every newborn baby because they couldn't do much - we would soon perish. So too with ideas, like infants, they need parents to protect and nurture them and to give them an opportunity to develop.

5.11 Information Overload: In the past, lack of information was a bottleneck in business. But today with electronic mail, electronic newsfeeds and Internet we have 'information overload'. Information is no longer a bottleneck it can be a liability and it can get in the way. We tend to think that to do anything we need to track down and analyse all the information and explicit knowledge available. But the real bottleneck today is 'creative thought'.

5.12 Judgement: Judgement is yet another major inhibitor of creativity. We are brought up in a world where judgement is the norm. We are not only quick to judge and criticise others but have that so-called little 'voice-of-judgement' in our heads. Michael Ray in his book 'Creativity in Business' calls this our VOJ and it incessantly judges everything we do. It holds us in a kind of 'creative straight jacket'. At times when being creative we need to learn to withhold our judgement.

6. REMOVING THE BLOCKS TO CREATIVITY

We have looked at some but certainly not all of the blocks to creativity and innovation. But how do we overcome them? Well there are many answers - some implicit in the descriptions above – others not. We wish we had more time and space to explore them in detail but fundamentally we believe there are two dimensions to knowledge management and the nurturing of creativity and innovation. One dimension is clearly the human element and the other is technology. Many people will argue that technology is a useful tool but has really got nothing to do with any of this. Here we differ. Technology coupled with the human mind creates a synergy that allows us to

transcend traditional ways of thinking and working. It is too easy to dismiss the hype over the technologies of the Internet and the Worldwide Web but like many others we are convinced that these are transformational technologies. We think when we look back from a perspective of history that the hype will be seen to have been underplayed! The human mind and technology are on a co-evolutionary path.

So we would like to very briefly look at two 'tools' one in the human domain and the other in the technological domain. And they are dialogue and groupware respectively.

7. DIALOGUE

In my view the real killer of creativity is the stranglehold that our limiting paradigms and mental models exert over us. We are prisoners of our own past – our upbringing, our education and business experiences. These limit and constraints make us in our ability to think and act creatively. But there is an emerging solution and that is the concept of 'dialogue'. Dialogue is a tool that allows us one-on-one and in groups to discuss issues in a way that helps reveal our limiting paradigms and in doing so helps lifts this major block to our creativity.

There is a deep fundamental problem in the way we relate to each other and in the way we 'discuss' or 'argue' issues - whether one to one, in small groups or in meetings. Lets take a look at what some 'thought leaders' say on this issue. In the words of Stephen Covey we listen 'with the intent to reply - not the intent to understand' - hence Stephen's fifth habit "Seek first to understand, then to be understood." David Bohm sees discussion as where "people hold relatively fixed positions and argue in favour of their views as they try to convince others to change". Edward de Bono talks about "argument becoming case making, point-scoring and ego-strutting".

The problem is that discussion is too often about 'argument' - about steam rolling something through about forcing agreement or compromise. It is about confrontation. It has nothing to do with creativity or the exploration of possibilities. In short, our habitual ways of thinking are anti-creational. It is worse when anything of fundamental significance is at stake - attitudes harden to the extent that it is extremely difficult to make progress at all - people have hidden agendas - people perceive hidden agendas - discussion verges on open warfare. Extrovert types do battle while introverts recede into their shells. Such 'discussion' is not creative - it is destructive not only of the 'truth' but worst of all of 'relationships'. So is there an alternative? Yes. This is where dialogue plays its role.

In dialogue: people prefer a certain position but do not cling to it. People are ready to listen to others. People mindset is not one of 'convincing others that their way is right' but of asking what can they learn from others. It is recognising that their input will help them refine their own ideas or fundamentally point out where they are wrong. It is not a fight. It is not win-loose. In dialogue all sides win by coming up with a more appropriate solution than a single person could ever have. It is win-win. It is what Stephen Covey calls 'synergy' – and this leads to his sixth habit 'Synergize'. This is what Stephen says about it: "Many people have not really experienced even a moderate degree of synergy in their family life or in other interactions. They have been trained and scripted into defensive and protective communications or into believing that life and other people can not be trusted. This represents one of the great tragedies and wastes in life, because so much potential remains untapped - completely undeveloped and unused. Ineffective people live

day after day with unused potential. They experience synergy only in small and peripheral ways in their lives." Moved to tears by this?.

So what is synergy? It is where the whole is greater than the sum of the parts. It is in the relationships that exist between the parts. Again in the words of Stephen Covey: "The essence of synergy is to value differences - to respect them, to build on strengths and to compensate for weaknesses." Dialogue and synergy are found on trust. The more you trust someone - the easier it is to engage in dialogue - the more likely that you will achieve synergy. We also need to acknowledge facts as they are - whether we like them or not. We tend to avoid and walk around facts that we do not like – for example if something we hold dear is just not working - we look the other way - we pretend all is ok - we delude ourselves. Do not kid yourselves – we all do it! Dialogue is about suspending our own views - our own judgement temporarily and focusing on alternative view points - to let those views into our minds rather than close them out - so they can mingle and merge with our own viewpoint. It's a very different way of thinking to that which we have been educated and accustomed. In summary dialogue and discussion can be compared in this table: The real power of dialogue though is in revealing our paradigms. As we have told that we are not aware of our own paradigms by the very definition of the word. We all, however, have different upbringings, experiences and backgrounds that make us eminently capable of seeing other people's paradigms and they ours. By engaging in dialogue we can reveal other people's paradigms to them and they in turn can reveal ours. This helps us all to see the world in new more appropriate ways and to destroy a lot of inappropriate assumptions and misinformation that we all hold dear. In short, we believe dialogue is emerging as an immensely powerful creativity tool and will play a major role in knowledge management.

A final point. Dialogue and discussion both have their place. They need to be seen as tools to be used as appropriate.

8. GROUPWARE TECHNOLOGY

John Kao in his book 'Jamming' lists a number of reasons why creativity is important today. His very first item declares "This is the age of creativity because that's where information technology wants us to go next". This may seem a rather strange way of expressing things but we think it indicates that he too feels that human and technological evolution are intimately interdependent. He goes on to say "IT is the medium for representing, organizing and deploying knowledge." And that "When we add IT to creativity and knowledge, we get a potent combination - capabilities to represent knowledge coupled with technologies to promote collaboration across divergent disciplines and perspectives."

He is clearly talking about 'groupware' technology. One of pioneers of groupware is Lotus Development. In a white paper, simply called 'Groupware', Lotus defines groupware as "tools to enable people to work together through communication, collaboration and co-ordination". Groupware is coming of age with the advent of I-Net technologies (Internet, Intranet and Web technologies) Its groupware – the bringing together of people across time and space - that combined with new ways of thinking is transforming the way that we work.

We have worked with this technology since its birth in the late 80s and have a deep understanding of its power. I believe groupware development platforms such as Lotus Notes and the more recent Lotus Domino platform for Intranets and the Web are one of the best kept secrets

in the world – their power is enormous – but still not fully realized or even recognized by many organizations. Lotus has recently adopted a strategy of evolving this technology into a knowledge management platform – after all the concepts of groupware and knowledge management are not so far apart. To give some idea of the power in relation to knowledge management and creativity let us briefly describe three applications.

9. TEAM ROOM

To innovate - the challenge for many companies is to bring employees together across the boundaries of time and geography to brainstorm, share ideas and co-create new products and services. By structuring collaboration to achieve specific objectives or to resolve issues - tools such as Lotus Team Room drive group interactions beyond the basic interactivity of discussion forums. Team Room is a next generation web/intranet-based discussion forum from Lotus Development that adds structure and direction to traditional discussion forums. Teams use Team Room to define a shared mission. Team Room is also a repository to store common information such as business plans, reports, procedural information and meeting minutes. It can be used for discussions, brainstorming and problem solving. Used as a planning tool, it aids a team in focusing on critical issues prior to a meeting. It can also be used for task management, such as assigning action items, tracking issues and managing joint work on reports or presentations.

10. LEARNING SPACE

Lotus Learning Space also from Lotus Development is a web/intranet based collaborative learning tool. It is used for developing, deploying and delivering interactive courses over a network and for augmenting classroom training. Learning Space course materials include a class schedule, links to readings and assignments and quizzes. Learning is more rapid and complete when there is interaction between a student and the instructor and between students themselves. Learning Space encourages interaction through its facilitation of discussions among each other and with the instructor. Students work in teams and can engage in both public and private discussions.

11. KNOWLEDGER.PDP

PDP from Knowledge Associates is a web/intranet-based tool for supporting learning, the attainment of key competencies and the sharing of knowledge. PDP allows the identification of people's key competencies and enables their ongoing learning and personal development. For each competence, individuals can record their current level of performance with their managers or coaches, the level they aspire to and their plans to get there. On an ongoing basis they can reflect on and enter their daily experiences, skill development and learnings that they feel contribute to an increased competence level. When a competence falls due for review a history of these learnings is, thus, available for discussion with their manager or coach. In an ideal implementation everyone's learnings are shared in order to maximise the benefits of the system.

CONCLUSION

Creativity and innovation are at the cutting edge of knowledge management. We have a long way to go to release our creative energy both at the personal and organizational level, as there are many blocks. One emerging powerful tool to help overcome these blocks is the concept of

dialogue. Groupware technology is also evolving into knowledge management technology and playing a major and increasing role. Today our challenge today is to build effective technology-based systems that support us in 'making knowledge productive' and take into account the ways in which we think and behave.

Knowledge success factors are vital in diffusing knowledge from individuals to the entire organization which strengthens the organizational knowledge culture. In order to pace up the innovation process, organizations must implement the innovation determinants which are actually the cause of innovation.

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