A Framework for the Introduction of Organisational Learning using Web 2.0 Applications

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I certify that this dissertation which I now submit for examination for the award of MSc in Computing (Knowledge Management), is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the test of my work.

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1 ABSTRACT

We are now becoming more and more dependent on web technologies in our personal lives for our communication, information and entertainment needs. But what about using these skills and technologies for our business lives, could they transform the business world in the same way they have transformed our personal world? The purpose of this research was to investigate whether the latest web applications could be successfully implemented into an organisation who wished to transform itself into a modern and flexible organisation.

This research was primarily focused on introducing organisational learning into the business through the use of new technology and adapting the corporate culture to facilitate change. Outlined in this work were the main challenges involved; modifying the organization mainly through the use of Senge Five Disciplines and the successful introduction of the changes required whether they be technical or otherwise. New technologies such as blogs and wikis are rarely being used in the corporate world, this research has shown the implementation options and potential future benefits for using them. A survey was conducted to evaluate the industry response to the framework put forward as a result of this work; this survey showed the successes that organisations in Ireland have achieved but also highlighted some deficiencies that exist and will have to be overcome if they are to achieve their goal of becoming a learning organisation.

Key words: *knowledge management, organisational learning, learning organisation, web 2.0, blogs, wikis, Senge*

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1. INTRODUCTION

This research investigates organisational learning and how it relates to the overall knowledge management process. This dissertation will demonstrate the importance of organisational learning; the reasons for introducing organisational learning, how organisational learning is implemented, the different types of organisational, the benefits and drawbacks of each and which of them is most suitable. This dissertation will also show the level of transformation that is required within the organisation in order for organisational learning to be successful.

When discussing how organisational learning is implemented the research will specifically investigate Web 2.0 applications and see how they can be used as a medium for knowledge sharing within the overall organisational learning process. Web 2.0 applications come in a range of different forms such as blogs, wikis, social networking, tagging and audio/video sharing.

This research highlights the benefits of how carefully designed interaction tools can significantly benefit an organisation.

1.1 Background

Organisational knowledge is the intellectual assets that are within any organisation. There are two main types of intellectual assets, (i) product assets and (ii) process assets, Davenport & Desouza. (p2; 2003) Product assets are the outputs of some actual work. It may be a piece of software that an employee has written, or maybe a document produced. A product asset is an entity that can be reused by another, for example when an employee imports a software module into their code, that software module is a product asset to the organisation. Process assets are the codified knowledge of the process for performing a task, techniques and methods for creating products or knowledge of customer preferences are types of process assets, Stewart (p116; 1997).

Cultural knowledge is also another important aspect of organisational knowledge but it is different to either product or a process asset since it is specific to that organisation and it cannot be passed on to other organisations. Cultural knowledge is the knowledge of how the organisation goes about its business; no one can actually define what cultural knowledge will be at the birth of an organisation it simply evolves over a number of years, Dixon (p199-234; 1999). All these aspects to go form organisational knowledge, as you can see they form an integral part of any organisation that wants to be successful.

There a number of reasons as to why an organisation would try to modify itself and introduce organisational learning and this dissertation will investigate these reasons, some of which will be identified in the following sections. Initiating organisational learning is an attempt to anticipate more readily to environmental impacts and adapt much faster than before. It also accelerates the development of new products, services and better processes within the organisation. The organisation will become more proficient at learning from a multitude of elements such as competitors, customers and employees. It helps in the transfer of knowledge within the organisation to the benefit of everyone within the organisation, Argyris (p43; 1999). A learning organisation can make better use of all its employees since it has a much clearer picture of what they know and how useful they are. This process is not a single once off program it is a continuous program of learning from each other and developing the organisation for the greater good, not just for personal gain. There are benefits for large organisations that are spread geographically across the world since organisational learning and knowledge sharing can hide the physical boundaries to give the impression of one to one contact, Currah & Wrigley (2004).

To achieve a successful organisational learning program; the whole organisation must take part and see that learning is key. Everyone must see the importance of ongoing learning throughout all levels whilst still continuing with day to day activities. A focus is placed on creation of new techniques and processes and generative learning, Argyris (p148; 1999). All employees must have access to the information and the data at all times. A culture of learning and knowledge sharing and creation must be put in place, away from traditional individual learning that currently exists in most organisations, Dixon (p55; 1999). The organisation must be flexible and embrace change when it is

required and make these changes much faster than before. Such organisations require a philosophy on the behalf of the management that allows it the ability to continuously adapt, modify and completely overhaul itself in response to environmental changes, Dixon (p71; 1999).

There must be a focus on individual learning that is targeted to that individual and it should have some form of a link to their job. A personal development plan that creates a partnership between the employee and the employer assists in their long-term career development. It creates opportunities for professional development for the employee and empowers the employee to better themselves. Even though the emphasis is based on tailored individual learning there must be links to the overall organisation's improvement program.

To help achieve these aims it is important to consider technologies that can be of benefit for creating a learning environment. Traditional web browsing can be considered as read only technology, Web 2.0 applications are a read/write medium, it relies on user participation, Downes (2005) sees the development of Web 2.0 as a shift:

"from being a medium, in which information was transmitted and consumed, into being a platform, in which content was created, shared, remixed, repurposed, and passed along"
(Downes, 2005)

Not so long ago adding content to a website was a role solely assigned to a person who possessed all the necessary knowledge and time to create web pages using a complicated markup language, now applications encourage users to post and contribute their own materials to the world wide web.

Web 2.0 applications are a relatively new area of technology, O'Reilly (2005) but it has seen a massive growth in popularity thanks to video sharing and social networking websites. Many of these sites are considered quite frivolous and on initial inspection do not seem useful with regards to organisational learning but actually their underlying features do enable organisational learning. Web 2.0 applications are built on a network of co-operation between all the parties involved.

1.2 Aims and Objectives

Project Aim:

- To develop a framework for the use of Web 2.0 applications within a learning organisation.
    - This will include high level diagrams which encompass all aspects of the system and how they interact with each other and also lower level diagrams of each section.
    - The result of this project will be a framework that can be implemented in any organisation.

To achieve the above aim the following objectives had to be achieved:

- To conduct a critical review of the literature in the fields of organisational learning, collective knowledge sharing and Web 2.0 applications, in the context of knowledge management.
    - This review of available literature will provide the background and context for the project. It will provide a starting point for the project and will help me refine, revise and extend my knowledge on the topics.
- To explore the current developments with respect to the use of computer technology in social networking and collaborative learning.
- To evaluate the response of industry professionals to the performance of the framework/prototype within an industry environment.
    - This will take the form of questionnaires, surveys and interviews with people who either work in the industry or academics whose research relate to the area.
    - To develop a working prototype that will forge together the two terms in this research; *Organisational Learning* and *Web 2.0.*

Chapter 2 of the paper discusses organisational learning and the steps that need to be taken when introducing it. It will also highlight the challenges involved with regards to this new way of thinking and the best way to overcome these challenges.

Chapter 3 discusses the knowledge management process and how organisational learning fits into an overall knowledge management system. Chapter 2 will have examined the theoretical aspects of the process whereas Chapter 3 will discuss the more technical features of system.

Chapter 4 focuses on Web 2.0 technologies, the difficulty in defining what applications can actually be classed as Web 2.0. This chapter will also suggest a number of Web 2.0 applications that could be used for organisational learning.

Chapter 5 deals with the research conducted; specifically, the questionnaire that was sent out as part of the project and any interviews that I may have conducted. This chapter will compare and contrast my findings with the literature that I have reviewed in earlier chapters.

1.3 Research Programme

The research program consisted of a comprehensive review of current information and knowledge with regards to all the areas that are to be studied. This includes all research papers, journals, conferences (if they are available during the project's duration), standards documents, white papers, textbooks and finally the Internet. As part of this initial literature review section, Experts were contacted in the domain areas to ask their opinion based on my initial research and also throughout the process.

After completing all these tasks it is planned that the research will be one of completeness, balanced and be based on seminal sources. Afterwards I have formulated my judgments as part of my research design and methodology section and propose my own better alternative to the current options available.

I conducted a review of the current level of technology with regard to data warehousing, data mining and Web 2.0 applications, this review has allowed me to choose which software or technique would best suit the problem. This consisted of testing a multitude of different applications and as a result this helped me to better understand the properties of the system and build a better prototype.

The major challenge in this project was to investigate and critically analyse the domain of organisational learning, how it relates to the knowledge management process and how Web 2.0 applications fit into the process. Web 2.0 applications are a relatively new area of research and as such there is not a significant amount of information available and I hope to formulate new understandings based on my research that will be useful to the wider community.

There are also a large number of different Web 2.0 applications available, for example the best known are YouTube, Blogs and Social Networking sites like MySpace, FaceBook and Bebo and I have to reviewed a selection of these and judge whether they are suitable for this process and if so what part of the process they are part of.

Another challenge is that there is a large amount of research papers and information available in relation to organisational learning and as such I am going to have had to be careful to make sure that the information is reputable and useful.

2. KNOWLEDGE MANAGEMENT PROCESS

Knowledge management encompasses the processes of identifying, creating, organising, distributing and maintaining of knowledge. It attempts to make the data and the knowledge become a tangible asset than can be added to the business' worth and value. There a number of advantages to having a knowledge management practice within a business; cost reduction, cash flow improvements due to enhanced process knowledge learnt from previous experiences, better customer satisfaction and a further capacity to expand.

2.1 Knowledge Management

Creating the correct environment is the key to knowledge management, and the essential element to this is trust. The technical fundamentals are easily put in place, but creating the right working environment is the hard part. Infusing the organisational culture with the principle of knowledge sharing between all parties is needed; this includes high level management right through the ranks to "lower" level staff.

Sharing knowledge is already present in most organisations but it is in an informal way, knowledge management proposes introduce structured methods to retrieve and use this data that is not only stored in the organisation's computers and files but in the minds of the organisation's employees. Extracting this *tacit* knowledge from the employee's mind is extremely difficult, sometimes they do not know what they know or maybe they don't want to share. Knowledge management suggests a number of ways to find this knowledge from the employees, whether it be in the form of documentation, videoing or interviews. All this newly retrieved information is placed in a knowledge repository that can be used and encouraged to be used by anyone within the company, this repository must be maintained and constantly updated for the system to be useful.

Knowledge management can be used in a number of business programmes such as CRM and Supply Chain Management. Knowledge management helps in these programmes by supplying employees with a lot of information that is specific to their needs at that time, for example the system could provide the employee all the details of a customer such as order history, preferences, etc. and give the employee some recommended products based on this information thus making the employee's life and providing the customer a better more personalised experience.

The following diagram shows a six step process for developing a knowledge management structure within an organisation. It is a high level abstract scheme which means it can be adapted by any organisation no matter how big or small and it does rely on the organisation being in a particular field for it to be introduced successfully.

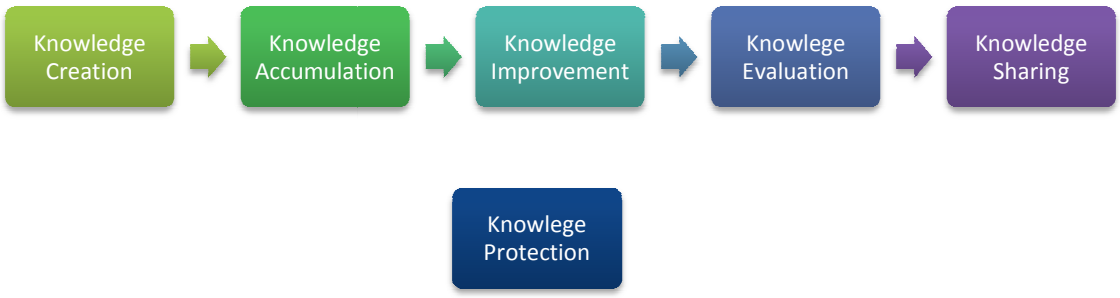

Figure 2.1: Knowledge Management Process (adapted from Mongkhonvanit)

Each step is detailed in the following sections. They will show the necessary tools and techniques needed to introduce a successful knowledge management structure within an organisation.

2.1.1 Knowledge Creation

Before discussing knowledge creation, it is important to be aware of what *knowledge* is; its characteristics and the different types of knowledge that exist. There are a number of different definitions of the word *knowledge*; the Oxford English Dictionary defines knowledge as:

*"n. **1.** knowing, familiarity gained by experience, (of person, thing, fact);"*

Knowledge. *Oxford English Dictionary*, Oxford. Retrieved June 4th, 2007, from http://www.oed.com

This is similar to the definition by Nonaka *et al.* (1991) which states that knowledge is a true justified belief with the emphasis on the word justified. Knowledge has also been defined as stubborn, relative, chaotic and especially to a large degree a context-bound factor that is extremely difficult to organise (Beijerse, 2000).

Similarly there are varying opinions on the *characteristics* of knowledge some argue that knowledge; is unique and original and once it is created, it cannot be copied and replaced (Cabrera and Cabrera, 2002). Others have a much specific definition such as Sveiby (1997) who states that knowledge has four characteristics: knowledge is *mainly in tacit form* which means it is difficult to explain in words. It is also *process-oriented* in its nature, future actions and procedures are going to be based on previous experiences. Thirdly and following on from the second characteristic, knowledge is *based on rules*, previous experiences help perform different tasks without having to stop and think about that action. Fourth and finally, knowledge is *constantly changing*. Hussi has summarised Sveiby's characteristics of knowledge by stating that:

"knowledge can practically be defined as a capacity to act"

Hussi (2004)

Nonaka (1994) has identified the two types of knowledge that existed. First, there is *explicit knowledge*, which is easily transmittable, expressed in words and numbers and shared in the form of data such as computer files, documents, patents and standardised procedures (Nonaka, 1994; Beijerse, 2000). *Implicit knowledge* is the opposite of explicit knowledge in that it is extremely hard to define and is uncodified knowledge that is hard to express and explain to others (Mir & Rahaman, 2003). Nonaka and Takeuchi (1995) go further and distinguish that there are two forms of implicit knowledge, one deals with "know-how", the informal skills that a person has learnt from past experiences. The other relates to an individual's beliefs and opinions, these go to form that person's mental model, this research will discuss those later on.

Often in organisations, a focus is placed on using explicit knowledge for business practices, however Nonaka argues that in order for an organisation to be truly successful especially with regards to knowledge creation both implicit and explicit knowledge must be catered for (Mir & Rahaman, 2003). Nonaka also raises the point that implicit knowledge is the key factor in the creation of new knowledge, but in order to successfully utilise implicit knowledge it must be converted to explicit knowledge.

This procedure of converting implicit knowledge to explicit knowledge is known as Nonaka's Spiral of Knowledge.

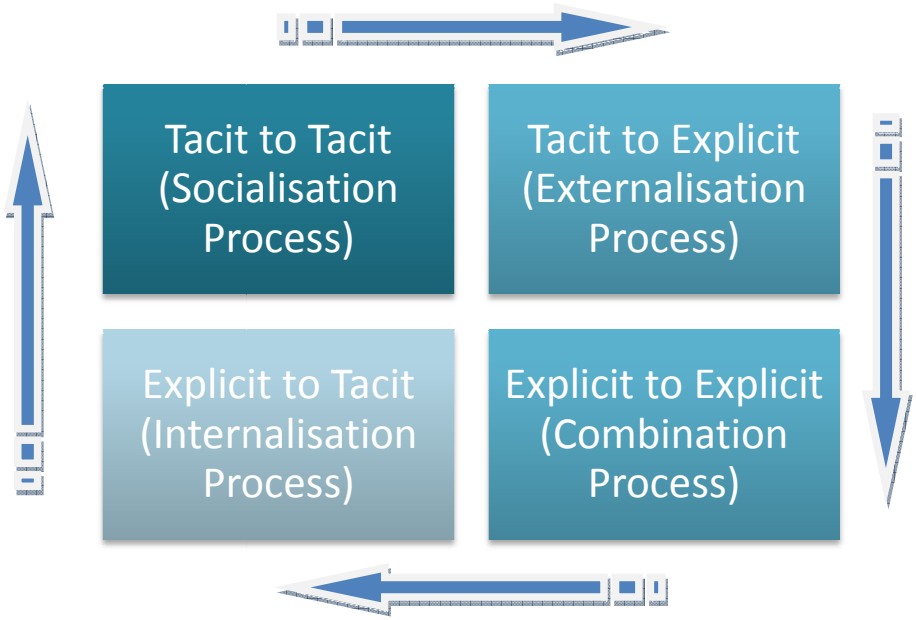

Figure 2.1.1: Spiral of Knowledge (Nonaka, 1991)

The above figure shows the spiral of knowledge within an organisation, by following this model, an organisation can formalise the knowledge gathering process.

Tacit to Tacit (Socialisation): The socialisation process occurs when the implicit knowledge of one person passes to another, typically when a new employee is being trained by a more experienced worker and is characterised by activities such as mentoring, observation and apprenticeship (Luethge & Byosiere, 2007). The starting point for the socialisation process is building a suitable environment for the interaction needed (Hussi, 2004). Nonaka (1994) has also split this step into four distinct proportions which he calls *wandering inside, wandering outside, tacit knowledge transfer* and *tacit knowledge accumulation*. Wandering inside and wandering outside are quite similar except wandering inside deals with information received from within the organisation and wandering outside deals with information learned from parties external to the organisation such as customers and suppliers. Tacit knowledge transfer deals with the formation of teams and groups whose purpose is to share information through successful dialogue. Finally, tacit knowledge accumulation is associated with the creation of networks both inside and outside of the organisation which facilitate the information sharing process.

Tacit to Explicit (Externalisation): Of all the steps in this process Externalisation is the most difficult to perform and if the knowledge has no explicit form it will be very difficult to transfer (Nonaka & Takeuchi, 1995). Hussi (2004) suggests a method of how to conduct this step to achieve the best results. He suggests that this stage be performed within a group and through well executed dialogue a shared vision/belief is created. Through reflection and further dialogue new concepts are created. This stage is very much a cycle process with constant "sorting, adding, recategorizing and recontextualization of explicit knowledge" (Nonaka, 1994).

Explicit to Explicit (Combination): Combination is the social process of combining explicit knowledge held by individuals (Mir & Rahaman, 2003). The concepts that have been formulated during the externalisation phase coalesce to create a much larger knowledge structure (Hussi, 2004). Hussi also states that this newer larger structure is much more complex; however as a result of this combination process new systemic knowledge is created. Another aspect to note is the information which goes to create this larger pool of knowledge can come from both inside and outside the organisation (Nonaka *et al.*, 1991).

Explicit to Tacit (Internalisation): In this phase, explicit knowledge is converted into implicit knowledge, this occurs because of learning taking place in the organisation (Nonaka, 1994). In order to use the explicit knowledge within the organisation they must understand the knowledge first, they do this through learning (Marwick, 2001). They can learn through a number of sources such as documents, manuals and even through spoken word (Hussi, 2004). These new insights that the employees learns can spawn new knowledge that can be feed back into the organisation again through the externalisation phase.

It is clear that Nonaka's Spiral of Knowledge is a never ending process that grows and develops with the organisation and its needs.

2.1.2 Knowledge Accumulation

This section deals with the storage of the knowledge that has been created in the company from the previous step in the overall knowledge management process. It also will show how this gathering of knowledge can create new knowledge. The newly created knowledge should ideally be placed in a 'knowledge repository'. This type of database is different to a normal business database since it is typically not dynamic as it is in a real time business database. Instead it evolves and interacts with the other knowledge bases in the organisation; Assudani (2005) highlights this best:

"the tacit knowledge of the collective in the form of organizational culture may interact with the explicit knowledge of the individual"

Assundani (2005)

This new repository becomes the organisation's collective memory; it now acts as a medium for interaction and communication throughout the organisation (Jambekar & Pelc, 2006). April (1999) has even said that it could become a "conversational bank" where it is a much more personal database than a typical organisational database where employees can share their own opinions and feelings which may or may not have anything to do with organisational issues. This may seem too informal to benefit an organisation but it is this lack of rigidity which increases the development of "new ways of communicating, ways of interacting, different kinds of stories, discourses, routines" (Jambekar & Pelc, 2006), this further boosts the culture of social interaction within the organisation. It is very important that the employees exert control over the repository (Jambekar & Pec, 2006), it must contain data and information that is useful to them or else there is no point in having a repository at all.

Metadata is very important at this step when storing the data; in fact it is the key to having a successful knowledge management program (Herschel & Jones, 2005). It would become impossible to search the tens of thousands of gigabytes without it. The ability to search and discover new information becomes very useful when attempting to develop new knowledge, the information recovered forms new cognitive strategies in the employee and fosters new ideas (Jambekar & Pec, 2006). This can benefit the organisation by building competitive advantages in its domain (Huang *et al.* 2007).

2.1.3 Knowledge Improvement

Out of all of the knowledge management steps, *Knowledge Improvement* is the most crucial if there is to be a successful knowledge management initiative in the organisation. Since it is the most important, it is also the most difficult to achieve. There must be a climate of improvement within the organisation; people are motivated to improve not only themselves but the organisation as a whole (Österberg, 2004). Traditionally, people would have held on to what knowledge they possessed in order to stay competitive in the workforce, there was no care for the overall organisation once they thought their job was safe (Herschel & Jones, 2005). Herschel & Jones suggest a way to remove this stumbling block on the road to successful knowledge management, a reward structure and a change of culture where everyone involved in the organisation plays a part in its development.

Once the organisation has completed the previous steps in the knowledge management process, this will result in a very significant quantity of data running into tens of gigabytes or more (Cody *et al.* 2002). Using this data effectively is extremely difficult, there will be a myriad of knowledge in the repository, some of the data might be old or not relevant to the organisation, and some might be critical to the operation and future success of the organisation. Some may be obvious, some other may not be as easy to locate and use (Cavaleri, 2004). There is a process called *Extract, Transform and Load* (ETL) which performs the actions needed to improve the data into a much more useable form.

The three phases of the *Extract, Transform and Load* process are as follows:

- *Extract Phase:* Data will be coming from multiple sources and will need to be integrated into a single data warehouse (Rahm & Hai Do, 2000).
- *Transform Phase:* "Dirty data" is inevitable result of the extract phase of ETL; data will be missing, incorrect or redundant (Rahm & Hai Do, 2000). It should be noted that during this phase, that all stakeholders should have a say on what data is needed or not (Jambekar & Pelc, 2006).
- *Load Phase:* This final phase simply places the newly cleaned data into the data warehouses so it can be used as a repository of knowledge.

Below is a figure of the structure of an ETL process.

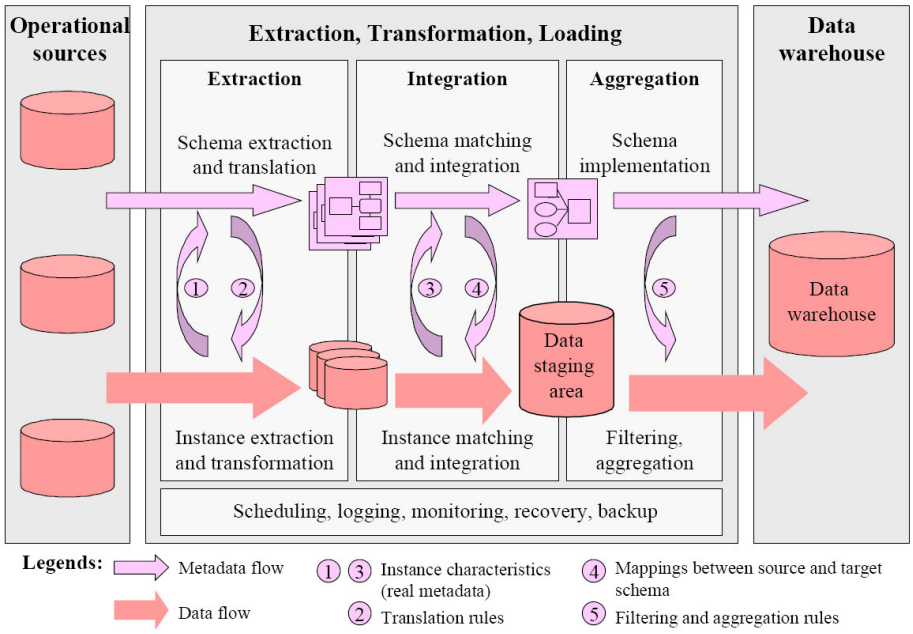

Figure 2.1.3: ETL Process (Rahm & Hai Do, 2000)

2.1.4 Knowledge Evaluation

This section is concerned with reviewing the knowledge that has been gained in the previous steps. The knowledge that has been created must be useful to some part the organisation or else there is no point in having it. It must fit into the overall strategy of the organisation (Beijerse, 2000; Cavaleri, 2004) so it is extremely important that the knowledge is evaluated.

This evaluation process should take place within the organisation, and it is only the organisation itself that is best judged to determine the value of the knowledge (Beijerse, 2000; Noll *et al.*, 2002). The organisation must decide the criteria for its own knowledge evaluation (Pfeffer & Sutton, 2000). Throughout the lifetime of the organisation, some core knowledge components have been created and without these the organisation would not exist or be able to operate; it is these components of knowledge that should be singled out for special emphasis for existing and future use within the company (Cavaleri, 2004).

A strategy for evaluating knowledge created has been developed, called PROMOTE (Karagiannis & Woitsch, 2002) which has outlined the tasks involved:

- Define the knowledge management strategy
- Define the business goals and the knowledge goals
- Define the knowledge management interventions
- Evaluation of the knowledge management criteria
- Aggregate the criteria to knowledge management metrics

2.1.5 Knowledge Sharing

Like other steps in the *Knowledge Management* process, *Knowledge Sharing* plays a support role in the overall process. It becomes a facilitator in the learning process, sharing knowledge "*makes it possible to understand, explore and explain the conditions under which knowledge creation and innovation occur*" (Merx-Chermin & Nijhof, 2004).

Although technology plays an important part in facilitating knowledge sharing especially nowadays when computer workstations are now pretty much standardised across all industries (Bennett & Kirstein, 1997), there are a number of other issues that influence the ability to share knowledge (Connolly & Kelloway, 2003). Technology does not create the knowledge, if you refer to *Nonaka's Spiral of Knowledge* in *Section 2.1.1* specifically *Tacit to Tacit* knowledge exchange, you will see that this phase is also called *Socialization* the important part of this phrase is the word social. Without communication there would no ability to share knowledge and the *Tacit to Tacit* is the most important aspect of the *Spiral of Knowledge*, it is the catalyst for all the other phases. Sharing knowledge, whether formal or informal is so crucial for the program's success.

No matter what type of knowledge sharing is taking place it is going to increase the individual's capability but it will broaden the organisation's knowledgebase (Bhatt, 2000). Initially it is important to note that this knowledge will likely imitate the originator but eventually and "*in the long-run, a conducive learning environment facilitates the process of critical-feedback, experimentations, and knowledge sharing, leading to higher learning capability, and knowledge creation in the organization*" (Kim, 1997).

Knowledge sharing builds mutual trust among employees in the organisation; this has the added benefit of improving dialogue among those involved (Mir & Rahaman, 2003). As with a number of aspects to the *Knowledge Management* process, management support is very important if management are willing to spend a large amount of money and resources on a system, it becomes a symbol and employees could view this as a sign of managerial support for the principle and act accordingly (Connolly & Kelloway, 2003). However spending large amounts of money and resources is simply not a recipe for success, a change of culture must also be advocated in the organisation, this culture change will be discussed in detail in *Section 2.2.*

2.1.6 Knowledge Protection

The *Knowledge Management* process does not just stop at the *Knowledge Protection* phase. It is a cycle that must be maintained and continually be updated with new knowledge and removing redundant knowledge that is no longer applicable to the organisation's business needs.

The most difficult iteration of the knowledge management process is without doubt the first, changing the organisational culture, bringing in a new way of thinking and embracing new technologies are just some of the challenges that need to be faced and overcome.

However once the first iteration has been completed it becomes much easier on the organisation to fully transform into a knowledge organisation. All the mechanisms are in place and it is just a matter of continuing to follow the steps of the process.

This is where the Knowledge Protection phase comes in; it encompasses all the previous steps, making sure that their guidelines are correctly followed. It also suggests that there is a person or a team (if the organisation is large enough) whose sole responsibility is to look after and maintain the organisation's knowledge. It is important to have either one person or a small group of people in charge of the knowledge management process for the whole of the organisation because if not each department could end up developing their own KM system which other departments might not know exist or even they might not be compatible with other KM systems in the organisation. This goes against one of the core principles of KM; that there is a central database of knowledge to which everyone has access.

2.2 Culture within Organisations

As with a lot of the steps that have been mentioned earlier, the major problem is not that the technical or infrastructural aspects that are the problem to achieving the goal of becoming a knowledge or learning organisation it is in fact the major cultural changes that need to happen within the organisation that are the difficult part. It is clear that a lot of emphasis is placed on the cultural aspects in the knowledge management process detailed in this chapter and this importance of cultural change is mirrored in Chapter 3 when discussing Senge Fifth Discipline of Organisational Learning.

There are two definitions which together encompass all the aspects of what culture is within an organisation. The first quote is by Edgar Schein (1985)

The term "culture" should be reserved for the deeper level of basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and that define basic "taken-for-granted" fashion an organization's view of itself and its environment.

Schein (1985)

This shows that the culture within an organisation is not thought of by the employees: "basic assumptions", and if questioned would simply be described by one as "The way things are done around here".

The following definition by Dooley (1995) has an interesting way of describing culture:

"When we think of "culture" we enter a fuzzy world of purposeful thought and feeling, action and meaning that shapes what life is like within an organization but that is very difficult to capture and define. This is in part because patterns of purposeful thought and action are not particularly amenable to reductionistic analysis. They are holistic, qualitative elements of our complex, collective lives."

Dooley (1995)

I especially like the phrase "fuzzy" when describing what culture is, this word sums up what culture is about and how difficult is it to define what it is. Each person could have a completely different but valid definition of their own view of what the culture is within their organisation. It is not something that you can feel, see or touch; it is the instilled values and ethos that have gone to form the organisation since it was founded. It is something that is very difficult to change without a complete overhaul of the organisation and most importantly the full support of every member of the organisation.

Schein (1985) has created the following diagram which shows the different aspects of culture, he has categorised them into three distinct levels. *Level 1* also known as *Artifacts,* shows the most visible level of culture; "*physical space, the technological output of the group, its written and spoken language, artistic productions, and the overt behaviour of its members.*" It is difficult to catalogue what these actually are however they can be viewed for oneself.

Level 2 (Values) reflects the person or in an organisational sense the opinion and values of the group. "*The group has a shared perception of that success, the value gradually starts a process of cognitive transformation into a belief and, ultimately, an assumptions. If this transformation occurs – and it will occur that it is in some larger sense "correct" and must reflect an accurate picture of reality.*" Gradually these values begin to take the shape of assumptions and the group does not consciously take note of them, in a similar fashion to the automatic nature of habits.

Level 3 (Basic Assumptions) as a development of the values created and formed in Level 2, those values that are used repeatedly begin to be taken for granted, it becomes reality for the group. "*Basic assumptions, in the sense in which I want to define that concept, have become so taken for granted that one finds little variation within a cultural unit. In fact, if a basic assumption is strongly held in a group, members would find behaviour based on any other premise inconceivable."*

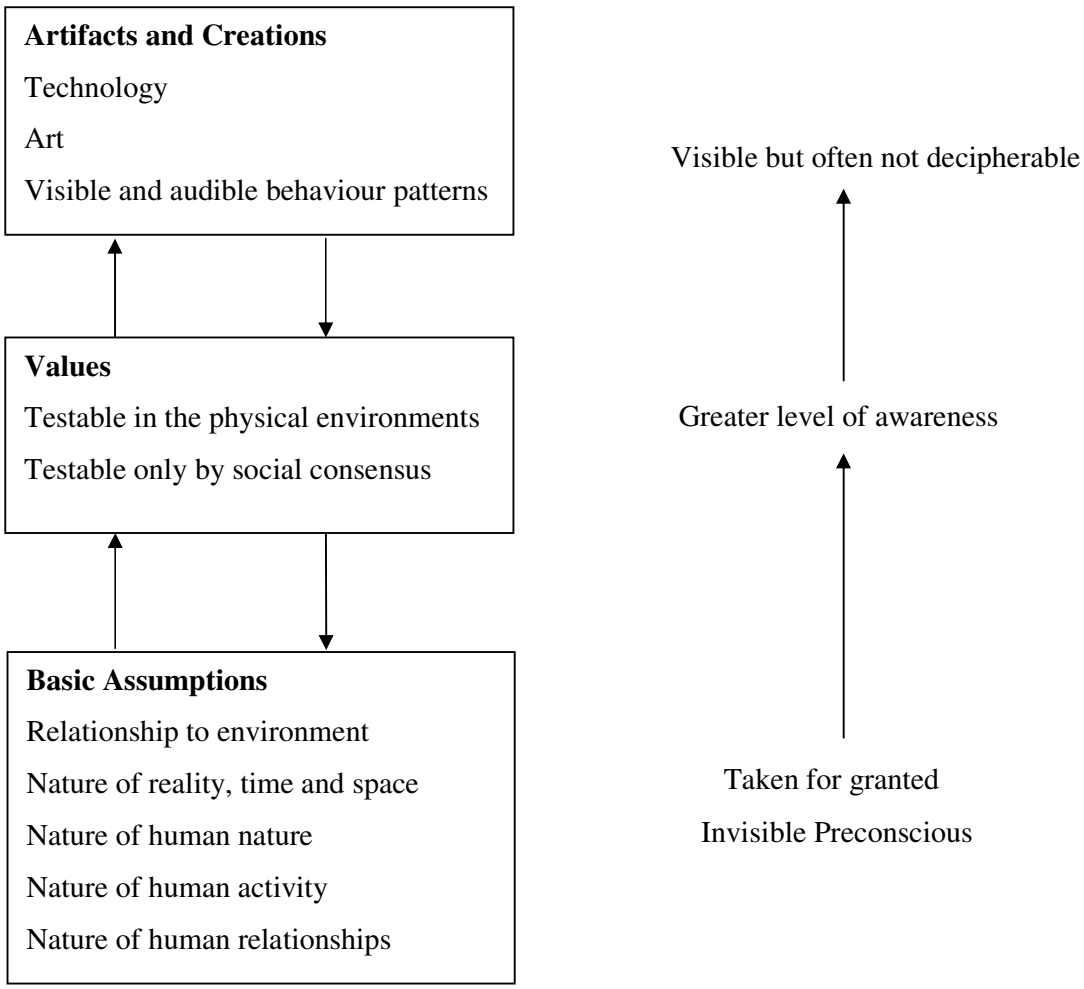

Figure 2.2: Levels of Culture and Their Interaction. (Schein, 1985)

Conclusion:

This section of my research dealt with the knowledge management change process that is required within an organisation. It has detailed the six steps required for knowledge management; it also discusses the very important but often overlooked aspect of culture change within the organisation, knowledge is has an active and social nature so it is important to have the correct culture in place in the organisation. The is a lot of emphasis placed on both Knowledge Creation and Knowledge Sharing as these are the two most crucial aspects to the Knowledge Management. Once these two have successfully been implemented into the organisation, the remaining six steps should be relatively simple to implement and maintain.

3. ORGANISATIONAL LEARNING

Organisational learning is slightly different to a knowledge management program in that its main focus is on how knowledge is created by each individual in the organisation and how this knowledge comes together to benefit the overall organisation. Many organisation wish to become a learning organisation however do not know how to go about transforming themselves into one. Peter Senge has developed a five stage process that if followed correctly will allow any organisation to become a learning organisation. In an addition to Senge's process there is a section on the dialogue as learning how to listen is just as important as talking when it comes to learning.

3.1 Background

Organisational Learning suggests that change, adaptability and utilization of new knowledge to develop a new way of detecting and satisfying the gaps that exist between theory and actual practice (Denton, 1998). Organisational learning can in fact be called a knowledge management programme since it shares so many of the traits typically associated with knowledge management. Chong and Choi (2005) proposed the following eleven key elements to a successful KM initiative:

1. Employee training
2. Employee involvement
3. Teamworking
4. Employee empowerment
5. Top managerial leadership and commitment
6. Information systems infrastructure
7. Performance measurement
8. Knowledge-friendly culture
9. Benchmarking
10. Knowledge structure
11. Elimination of organisational constraints

All of these 11 components can be seen in an organisational learning implementation and go to form Peter Senge's Fifth Discipline, and will be discussed in detail in this chapter.

Edgar Schein (1993) has suggested the following reasons as to why an organisation would want to change itself into a learning organisation:

- *"Because of the increasing rate of change in the environment, organizations face an increasing need for rapid learning.*

- *Because of the growth of technological complexity in all functions, organizational structures and designs are moving toward knowledge-based, distributed information forms.*

- *Consequently, organizations of all sizes will show a greater tendency to break down into subunits of various sorts, based on technology, products, markets, geographies, occupational communities, and other factors not yet known.*

- *The subunits of organizations are more and more likely to develop their own subcultures (implying different languages and different assumptions about reality, i.e., different mental models) because of their shared core technologies and their different learning experiences.*

- *Organizational effectiveness is therefore increasingly dependent on valid communication across subcultural boundaries. Integration across subcultures (the essential coordination problem) will increasingly hinge on the ability to develop an overarching common language and mental model.*

- *Any form of organizational learning, therefore, will require the evolution of shared mental models that cut across the subcultures of the organization.*

- *The evolution of new shared mental models is inhibited by current cultural rules about interaction and communication, making dialogue a necessary first step in learning."*

If an organisation becomes a learning organisation their complete organisational structure changes from one that may look like the figure below:

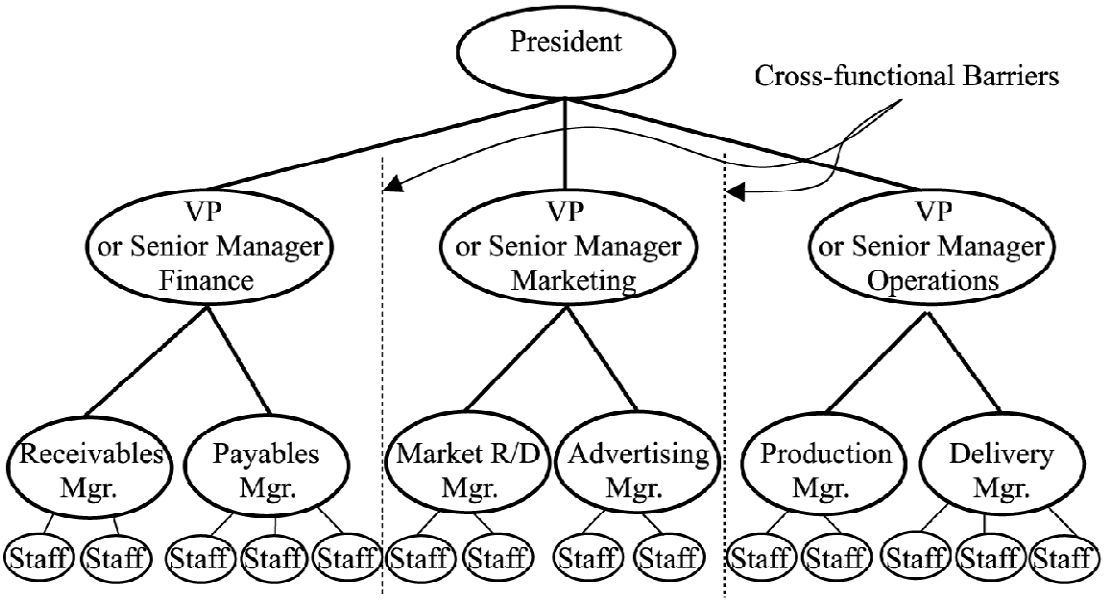

Figure 3.1.1: Typical Western Non OL Organisational Structure (Nonaka, 1991)

As you can see the structure is uni-directional where all decisions come from above, there are even barriers in-between departments in the organisation this further slows the learning and communication process within the organisation. In stark contrast to the structure of a knowledge/ learning organisation where communication is bi-directional, there are no barriers between departments in the organisation; each worker is part of a team whose collective knowledge adds to the larger pool of knowledge within the organisation. The figure below shows a knowledge/learning organisation structure.

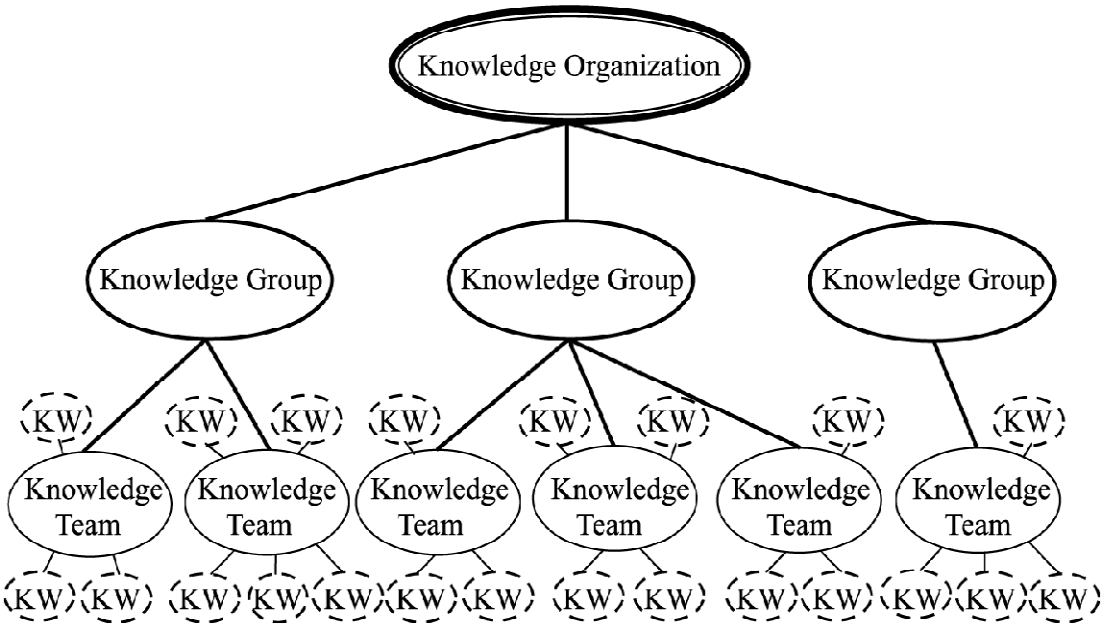

Figure 3.1.2: Knowledge Management/ Learning Organisational Structure (Nonaka, 1991)

3.2 Senge

Peter Senge has developed a five stage process for introducing *Organisational Learning* into an organisation, the five steps or disciplines as he calls them are, and Senge places no emphasis on their particular order:

- Personal Mastery
- Mental Models
- Shared Vision
- Team Learning
- Systems Thinking

Together with the correct vision from all those involved in the organisation and a culture change of the organisational structure these five steps which this research will discuss in detail in the following sections will go create a learning organisation.

3.2.1 Personal Mastery

The term "mastery" comes from the medieval French *maitre:* which means someone who is exceptionally proficient and skilled. Not just someone who can produce results but also have a deep understanding of how their actions can produce results and why (Senge, 1994, Philips & Baker, 2003). Dervitsiotis (1998) has probably the finest definition of personal mastery:

"Personal mastery is the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience and seeing reality objectively."

Dervitsiotis (1998)

This is not a single step in transforming yourself; it is a lifelong learning program (Philips & Baker, 2003). Self-awareness is the key to this achievement, and organisations cannot learn without their employees learning from themselves and not just because they have to but because they want to. Traditionally work in organisations has been of a reactive nature and performed simply because "you have to do"; however persons who have developed personal mastery for themselves are proactive and are continually learning and challenging themselves (Philips & Baker, 2003). Not all people believe that the previous statement is possible, Sergesketter (2004) states:

"All of us handle an enormous amount of stress and stimuli on a daily basis. It is often difficult not to live in a reactive mode; therefore, it is natural to question the practicality of Senge's concept."

Sergesketter (2004)

However this research takes the perspective that once a person has successfully developed the necessary traits of personal mastery, they are much more likely not to have to react to the difficult situations as before, since they are much more in control.

Personal mastery can only be achieved within organisations that want to challenge their employees and invest in increasing their potential. Encouraging employees to learn how to stimulate their intellect and empower themselves creates an environment which is much more flexible and adaptable than before (Molnar & Mulvihill, 2003). Senge makes it clear that learning does not occur in an organisation unless it is triggered "by people's own ardent interest and curiosity". People must drive themselves forward, question their actions and not just accept them; everybody has a personal vision however this vision may not be the same as the current reality that lays before them. The difference between their vision and the current reality creates tension, and it is this tension that makes them move closer to their own personal vision. They see that they must change their life to achieve their vision and they are not willing to lower their aspirations (Senge, 1994).

Butts (1999) suggested a link between Maslow's "hierarchy of needs" (2000) and work, he suggests that if a workplace can provide an employee's "personal survival and security needs, and social, self-esteem, and ego needs" that they can become much closer to achieving self-actualisation. Self-actualisation is term used to describe when a person truly becomes aware of themselves and their surrounding environment; they develop a higher level of self-discipline, interpersonal and ethical skills, knowing and managing their emotions, they are much more self motivated and they are much better at handling relationships and the emotions of others around them.

This skill is not something that can be taught to a person, they must be shown the benefits of it by others and want to achieve that same personal well-being for themselves. McIntyre (2003) believes that "learning the practice of personal mastery helps individuals to chart their own course at work, in their profession and in their personal life". This is the core nucleus of personal mastery where it is the individual themselves who are responsible for their own personal and professional improvement. The organisation cannot and should not be responsible for creating personal mastery within its employees; however they should be there to facilitate the employee who wishes to transform themselves. A lot of organisations fail to do this and the results can be disastrous: "Overlooking the human factor still continues to be the costliest mistake organizations make" (Kline & Saunders, 1998).

3.2.2 Mental Models

Knowledge is portrayed valuable only when it is required at a specific time and place. Knowledge that becomes seperate from the situation becomes information. This information can then be transferred between situations (Davison & Blackman, 2005). Using this information then falls in the realm of mental models, as mental models determine how we use data to make informed decisions (Spicer, 1998).
Mental models are described by Senge as:

"are the images, assumptions, and stories which we carry in our minds of ourselves, other people, institutions, and every aspect of the world."

Senge (p 235, 1994)

This description of what a mental model is not new, both Craik (1943) and Johnson-Laird (1983) conveyed the image of a mental model to be a small scale replica of reality, not complete but one that aided that person in their understanding of the environment around them. It is strange that mental models can be defined when in fact mental models themselves are the personal assumptions of one person, and if two people were to witness the same act, they would describe it differently (Senge, 1995). It is for this reason that Genter and Stevens (1983) eschewed defining mental models and instead described their research as examination of the way people comprehend some domain of knowledge. Mental models are typically in tacit form and as such they are extremely difficult to fully comprehend or even test (Senge, 1995). When one thinks of a model, they think of something that is neat and elegant, this is not the case with mental models which according to Norman are:

> *"messy, sloppy, incomplete, and indistinct structures"*
>
> Norman (1983, p.14)

Mental models are extremely important in the overall structure of organisational learning and can present the opportunity for the greatest amount of change within an organisation; however there is one downside in that it is the most difficult place from which to initiate change in an organisation (Senge, 1995). This difficulty arises from the fact that these mental models are "deeply ingrained" within people (Vaudreuil, 1995), and also mental models are incomplete and ever-changing which makes them extremely difficult to explicit define what they are (Norman, 1983).

As stated already, mental models are increasingly important in any learning organisation but the difficult task is transferring these individual mental models into an overall shared mental model. This will result in an assimilation of values and beliefs which in turn will foster a better environment for innovation (Caldwell *et al.*, 2002). This process of creating shared mental models is best described in the Figure 3.2.2 by Davison & Blackman (2005). The figure shows the iterative process. The process begins with the individual bringing their own mental model to the group, once they see the difference between their own and ones of the group's member; they begin to comprehend the difference. Once they have taken this new knowledge on board, they modify their own

mental model with this new knowledge to create a new mental model, one that is closer to the other group members.

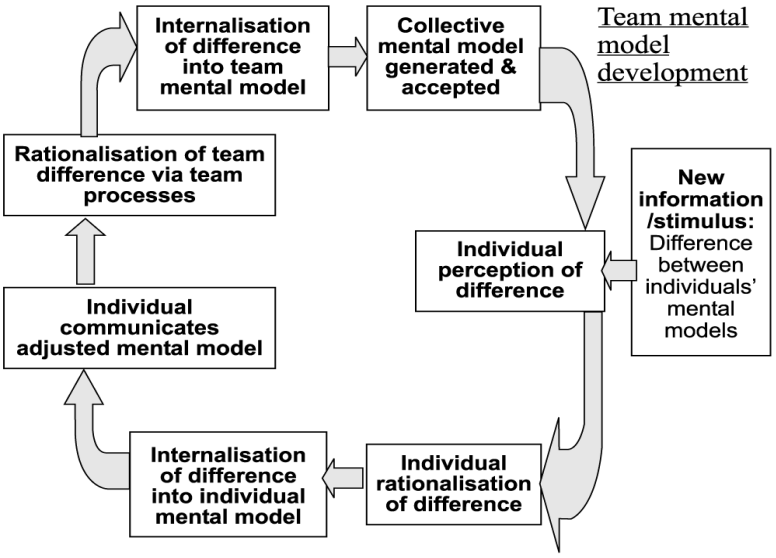

Figure 3.2.2: Process of Shared Mental Model (Davison & Blackman, 2005)

This process of shared mental model can in fact become a framework for knowledge creation and development, and as a result the team can become even more creative (Davison & Blackman, 2005).

3.2.3 Shared Vision

The third discipline as developed by Senge is a Shared Vision; it deals with creating a unified focus in the organisation by all parties. Parker (1990) states the benefit of shared vision as "heightening everyone's genuine sense of influence and ownership of the organization". This statement very much relates to employee empowerment, which is so very critical to the development of a learning organisation (Hays & Hill, 1999). Hays & Hill also make the very important point that a shared vision acts as a guide when the times are tough in the organisation and help to get any problems back on track.

Saveland (1995) describes shared vision as having seven characteristics:

1. It is a never-ending process
2. It is a coveted aspiration
3. It is specific, it is not ambiguous
4. It cannot be used to rid the organisation of something unwanted
5. It is not limited to what you think is possible
6. It relates to the current moment in time
7. The goal is not to be the best, the goal is to work well

A sign of a healthy organisational culture in place is when the values and behaviours of the employees match the beliefs of the organisation (Hitt, 1996). How does an organisation go about creating a shared vision? The trouble is that the beliefs of the organisation may come in tacit form, such as "symbols, language, myth, labels, allegories and metaphors" (Limerick *et al.,* 1994). An organisation must have in place an explicit statement of its beliefs and values, and these beliefs and values must be enshrined in the employees of the organisation for it to work (Hitt, 1996). These values are best communicated between the employees via informal networks, "water-cooler meetings" rather than the highly structured formal meetings where there is little room for deviation of discussion; that may in fact be very useful (Senge, 1995).

This stage of the learning organisation process has been described by some as the hardest step (Steiner, 1998), since it has to rely on other aspects of organisational learning such as dialogue and team learning in order to be truly considered a shared vision and be successful (Cavaleri, 2004).

3.2.4 Team Learning

"The collective output of a team is much greater than the output of any one individual"

Dervitsiotis (1998)

The above quotation very much ties in with the belief of team learning, that an organisation is much more powerful when it is "functioning as a whole". The organisation begins to think in more synergistic ways and a greater collective understanding for all the aspects that may influence thinking, such as people's own beliefs and values (Senge, 1994). This is not as obvious in business as it is in other fields, especially sport; but there is nothing to say that this characteristic can be brought over to the world of business (Dervitsiotis, 1998).

Team learning is not like the traditional team building exercises such as communication skills or morale boosting activities that you would normally expect (Senge, 1995) instead it is an attempt to get the team to explore new ideas, become much more creative in their roles but to also with the help of shared vision transform the team to "think as a single organism" (April, 1999). The team needs to be formed with people with similar problems or disciplines, typically within an organisation; as a result action learning occurs (Hall, 2007). However in most organisations it is not possible to have everyone take part in a dialogue process at once, in this instance the process is phased into smaller groups (Molnar & Mulvihill, 2003).

Senge (1994) points out that there are three phases to team learning, he calls the group a "container":

1. **Instability of the container**

   When any group is formed there is bound to be differences of opinion, to deal with these differences people can either let go of their opinion or the group can come together to form one collective opinion, the latter is the more beneficial. April (1999) calls this step "suspending judgement", it is releasing the employees opinion from their ego in order to see other people's point of view. The reflection process in this phase is the key to understanding other people's beliefs (Schein, 1993).

2. **Instability in the container**

   One of the drawbacks to the first phase is that there is a lot of confusion within the group, as everyone's thoughts and opinions begin to rise to the surface. The group must be made aware of that this is an expected result of phase 1, and if it wasn't happening there is something wrong.

3. **Inquiry in the container**

   If the group has arrived at this phase, then they will be acting in a single cohesive unit, the group will be conscious of its actions and opinions for all members of the group.

Phase 1 is obviously the most important of the three, if it is executed well, then the two remaining phase should be almost automatically achieved. Team learning is closely linked to the shared mental models phase, since reflection and inquiry are used to identify and modify mental models (Molnar & Mulvihill, 2003; Alavi & McCormick, 2004).

3.2.5 Systems Thinking

Senge describes principle of Systems Thinking as:

"a way of thinking about the forces and relationships that shape the behaviour of systems, thus making them more in tune with the larger processes we want to develop"

Senge (1994)

This is the core principle of Systems Thinking, for example it is no good just fixing the leaky pipe with a plaster; you must try to figure what is the root cause of the problem, be it poor maintenance, bad parts at fault or any number of other reasons. This technique of not just looking for a quick fix solution can be used for any aspect of business life within the organisation (Senge, 1995). Any business decision can and does affect the whole of the organisation even if on the surface they do not seem to, the organisation itself is a system and it as a whole must be taken into account with regards to any business action (Clayton & Gregory, 2000). Flood (1995) puts the point across that it is only when they begin to bring together the perceptions, thoughts and feelings of all those involved does it become possible to advance understanding of the overall system.

3.2.5.1 Leveraging

Some call the concept of leveraging the most crucial aspect of Systems Thinking (Jambekar, 1995; *Ballé & Jones, 1995).*

"The search is undertaken for the points of maximum leverage which will prevent such breakdowns in future."

Lank & Lank (1995)

Leveraging describes when enough pressure is placed at the correct point, the result is that you would be able to impact on a number of variables at once, so that the resulting changes are disproportionate to the effort put in (Ballé & Jones, 1995). Although Ballé & Jones (1995) question the logic of Senge's work with regards to Systems Thinking at this point, they say that finding this leverage point becomes like "intuition" and there is no scientific method to locate the point. But since Systems Thinking is about understanding the system as a whole, finding this point should not be as difficult as it seems, if reasonable logic is used.

The following diagram developed by Woodside (2006) shows eight steps that are useful for Systems Thinking.

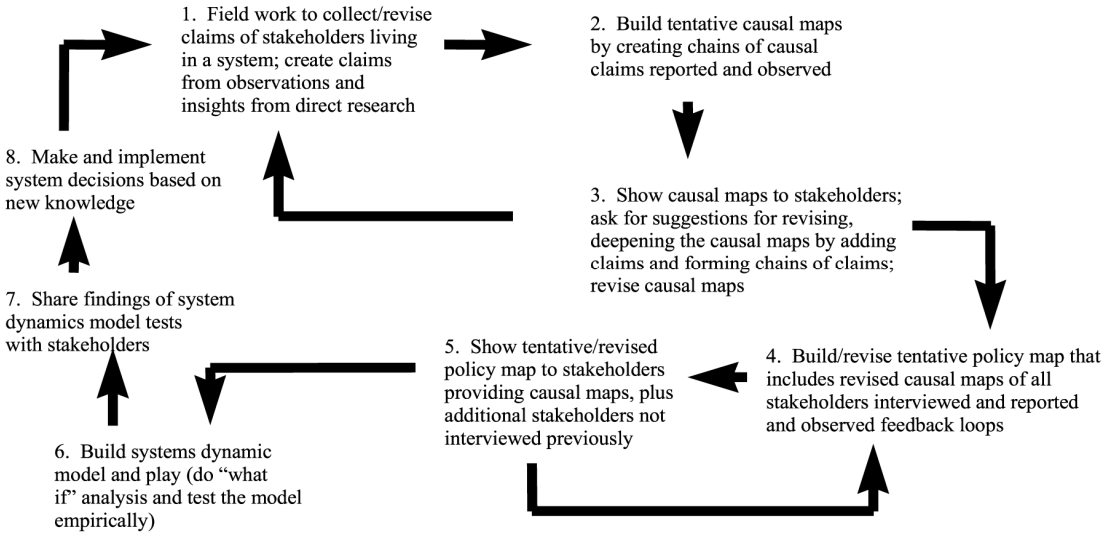

Figure 3.2.5.1: Systems Thinking Graph (Woodside, 2006)

Like many processes in the development of a learning organisation; the above graph shows an iterative process but it loops on itself but also some of the steps loop back to previous steps, for example Step 3 can loop back to Step 1 and Step 5 can loop back to Step 4. This shows that there is constant revision and reviews needed at each step before they can proceed to the next step.

3.3 Importance of Dialogue

One of the features of organisational learning that Senge does not seem to place a significant degree of focus on is the importance of good dialogue within an organisation, even though it is mentioned in Shared Vision and Team Learning it could easily be overlooked. Dialogue is very important and plays a crucial part in developing a good working culture (Schein, 1993), Bokeno (2007) claims that it "helps participants and their organizations learn and grow". Poole and DeSanctis (1990) claim that in order for an organisation to change itself it must do so in the context of human social interactions, as a result good dialogue is so important in bringing about change.

Dialogue is not simply an ordinary conversation between two people, for good dialogue people must suspend their own assumptions and self importance (Varney, 1996), the group of people engaged in dialogue must become a collective (Levine, 1994).

Senge (1994) has an excellent description of how important dialogue is within organisations:

"Dialogue is not merely a set of techniques for improving organisations, enhancing communications, building consensus, or solving problems. It is based on the principle that conception and implementation are intimately linked, with a core of common meaning. During the dialogue process, people learn how to think together – not just in the sense of analyzing a shared problem or creating new pieces of shared knowledge, but in sense of occupying a collective sensibility, in which the thoughts, emotions, and resulting actions belong not to one individual, but to all of them together"

Bohm (1994)

Smith (1998) has developed the following aspects of good dialogue that all members involved in dialogue should adhere to:

- Exploring a sense of connectedness
- Inquiring rather than promoting ideas
- Mutually respectful of differences
- Attending to silence
- Allowing shared meanings to emerge
- Willingness to be tentative
- Suspending assumptions
- Avoiding defensiveness
- Suspending role and status

And by adhering to these principles an organisation will be able to communicate in significantly more effective manner. Varney in addition states that:

"*There is no predetermined output, no agenda and no structure. Like-mindedness is discouraged because variety of experience, expertise and viewpoints will enrich the interaction and create additional possibilities. Difference is valued. There is no facilitator in the sense of one who shapes the process but only the presence of someone with experience to hold the context.*"

Varney (2006)

There are four steps involved in the dialogue process; this process was put forward by April (1999) and in encompasses a lot of the points that Smith (1998) created.

1. **Suspending Judgement**

   Traditionally it is difficult to stay open to other people's views even if you have your own "truths". It is human nature to protect your own positions even if it is at the detriment of others around you. Suspending judgement allows people to become more open, honest and truthful.

2. **Identifying Assumptions**

   This step has its roots in a lot of Senge's work, especially relating to mental models and systems thinking. Typically opinions are based on assumptions and generalisations, as a result this can lead to bad decision making, however if you began to look at the underlying reason for these assumptions and the cause of them you may be able to make better judgements.

3. **Listening**

   One of the stumbling blocks in any form of communication or learning process is participants not listening, the ability to listen allows people to be much more open to the meaning of the speakers words.

4. **Inquiring and Reflecting**

   Through silence and reflection on what was communicated between all parties involved, you can begin to develop new ideas and beliefs based on the common ground shared during dialogue.

Dialogue is very much the communication mechanism for many of Senge's Five Disciplines, as it brings to the surface the "undiscussables", those that are blocking "deep, honest, heart to heart communication" (Jaworski, 1996) without which it would not be possible to create a shared vision or mental models for the organisation.

Conclusion:

Organisational Learning is the key aspect of this research, it deals with both the employee and the organisation and how there must be a form of synergy between the two. Organisational Learning can be fitted into an overall Knowledge Management and even though it takes parts from all sections mentioned in Chapter 2 its roots are deeply set in Knowledge Creation. In both an emphasis is placed on creating new ideas and having a better thought process; however Organisational Learning goes further by specifying the steps required for both the employee and the organisation.

4. WEB 2.0

Web 2.0 is generally characterised as the next incremental step in the evolution of the web, it can be seen as a paradigm shift away from isolated information silos to data that has been created by many different users. Web 2.0 sites can be perceived as a blank canvas and the users *"paint"* the information they wish to view onto the site. It is this collective intelligence that drives the production of new information, users become co-developers constantly evolving the web resulting in a perpetual beta. An architecture which encourages participation is key; there has to be a focus on usability, design and standardisation i.e. Rich Internet Applications.

4.1 Differences between Web 1.0 and Web 2.0

The term *Web 2.0* was coined by the Vice President of O'Reilly Media, Tim O'Reilly (O'Reilly, 2005). However the term has never been well defined and as such suffers from being called simply a marketing buzzword (Anderson, 2007), created to increase profits. This work will attempt to find a definition for the term; there is one thing for certain in relation to the term: it does have a predecessor in the form of *Web 1.0*. This research will firstly examine the differences between the two.

Web 2.0 can also be viewed as a live web due to the use of RSS (Real Simple Syndication) which distributes the user created information to those who are interested in that information in *"many to many"* model. The term *"the network is the computer"* has been used to describe how Web 2.0 works meaning that the web is the platform, delivering applications through a browser.

Abram (2005) describes the differences in quite simple terms as:

"The old World Wide Web was based on the "Web 1.0" paradigm of websites, email, search engines and surfing. Web 2.0 is about the more human aspects of interactivity. It's about conversations, interpersonal networking, personalization, and individualism"

O'Reilly (2005) has gone as far as contrasting the Web 1.0 applications with what he feels are the equivalent Web 2.0 applications.

Web 1.0		**Web 2.0**
DoubleClick	→	Google AdSense
Ofoto	→	Flickr
Akamai	→	BitTorrent
mp3.com	→	Napster
Britannica Online	→	Wikipedia
personal websites	→	blogging
Evite	→	upcoming.org and EVDB
domain name speculation	→	search engine optimization
page views	→	cost per click
screen scraping	→	web services
publishing	→	participation
content management systems	→	wikis
directories	→	tagging ('folksonomy')
stickiness	→	syndication

Figure 4.2: Examples of Web 2.0 applications (O'Reilly, 2005)

The left hand column show the old "antiquated" applications from the Web 1.0 era, those on the right hand side show the more modern new web technologies, some of which this paper will discuss later.

4.3 Characteristics of Web 2.0

From the examples of Web 1.0 applications and their newer Web 2.0 counterparts shown in Section 4.1, Web 2.0 has a number of unique features. They embrace the collective power of people and grow to be much more useful when more and more people use them, this is especially apparent for the like of wikis. Whose collective knowledge base naturally grows when increasing numbers of people use the application. Users become co-developers of the application, rather than a single entity creating the information.

The previous static nature of Web 1.0 pages has been thrown away in the age of Web 2.0 applications, now they are in a perpetual beta and constantly evolving in a manner not seen before in the websphere, traditionally it could take days or weeks for a webpage to be updated, now blog updates can be instantaneous and can happen at any time during the day, even without the original author knowing about it, as comments to a blog can be added by anyone. People who are interested in such a blog are notified of this change by the RSS mechanism which feeds the updated blog back to all interested parties, it is this chain effect which has facilitated the huge growth in Web 2.0 technologies especially blogs. Users can choose who or what topics they wish to subscribe to, this creates a much more personal experience for the user.

Another reason for the explosion of Web 2.0 technologies is the relatively simple ways of using them, anyone who has word processing experience or has sent an email can use them, which contrasts sharply with the requirements for the traditional web developer who had to be an expert at HTML before they could upload information to the web. This is crucial in their design, keep the “front of house” simple and easy to use and leave any difficult processing to the application itself. These applications offer something new and different to its users, in this age where young people have grown up with computers, they expect their online experience to be stimulating and not just reading a static webpage. They also expect to play a part in their experience be it joining a social network or uploading videos that they have recorded.

4.4 The Term Web 2.0

One of the problems in regards to Web 2.0 applications is the name Web 2.0. It has caused quite a bit of controversy in its relatively short life. One has been that there has been no clear definition of what Web 2.0 is. The creator of the term has not explicitly stated what Web 2.0 is, other than there is a focus on "interactivity" but does not state what this interactivity does or what he expects it do. This can create confusion by the general public as what Web 2.0 is, since any website could claim that they are a Web 2.0 website since there is a lot of buzz about the term, a lot of traffic will be generated to the site as a result.

Another problem relating to the term was the incident that happened in 2006 when the not for profit organisation IT@Cork planned to stage a Web 2.0 conference. Tim O'Reilly and his media group CMP Media placed a "cease and desist" order on the organisation citing that they had claims on the term "Web 2.0" and that they were the only ones who could use the term. This caused consternation among the web community who saw this as one person greedily hanging onto the relatively generic term that they coined as a way of making more money. The backlash against O'Reilly worked and they eventually withdrew their claim and allowed the conference to go ahead with its original name. This action had two affects; one, it showed the collective power of the web community in standing up to large corporations but also it damaged the term Web 2.0 and resulted in some thinking it was just a marketing gimmick instead of the paradigm shift from the traditional web that it actually is and also scared some people from using the term for fear of being sued.

4.5 Blogs

Weblog or blog for short is possibly the oldest and most popular of all the Web 2.0 applications; however it has its roots long before "Web 2.0" was coined by Tim O'Reilly in 2005. They started to appear in the mid 1990s as a method of easily publishing information to the web (Tredinnick, 2006). Blogs are primarily used as a method of publishing an opinion on a topic (Fathelrahamn & Shafaghi, 2007). As a result a blog can not be taken as being factual in the same sense of the reporting agency, it is the opinion of the author and this could be subject to bias in its reporting, however this does not suggest that a blog has no benefits as these opinionated views of the author could be of value to many people (Kolbitsch & Maurer, 2006). Initially they were used as a online diary tool but soon became a much more general information tool, a truly democratic instrument that allows anyone with the smallest amount of technical knowledge to use them (Tredinnick, 2006).

Some have questioned why blogs have become so popular when all they seem is a glorified diary:

"*seems like a trivial difference, but it drives an entirely different delivery, advertising ad value chain*"

Skrenta quote, O'Reilly (2005)

But there is one major difference that is RSS, Really Simple Syndication which will discussed in more detail in Section 4.5. RSS allows the user to subscribe to blog and be notified of any updates to that blog. This connects the author to its readers and those readers with others; this creates an online community of people who all share a common interest. The name for this community is the *blogsphere* (Kolbitsch & Maurer, 2006). O'Reilly (2005) calls this effect of bloggers referring to each other as the "echo chamber".

Like many Web 2.0 applications, blogs greatest ability is to harness the collective intelligence of its whole community and be able share this information in a manner that is easily searchable and transferable to everyone.

4.5.1 Corporate Blogs

Lee, Hwang and Lee (2006) have categorised corporate blogs into five distinct types, and they are as follows:

1. **Employee Blog**

The Employee Blog, very similar to the personal blog of any "normal" blogger, usually the blog is written by rank and file employees and they usually give an unseen viewpoint into organisational life. Until recently they were typically hosted off the organisation's servers as they were perceived as not useful to the organisation; however increasing amounts of organisations such as Microsoft and Accenture are sponsoring employee blog as they see it as a way of humanising these large multi-national organisations.

2. **Group Blog**

This collaborative blog has some similar traits of the Employee Blog in that some are hosted off the organisations servers but more and more are being embraced by organisations and are becoming to be hosted on-site. Since the Group Blog has a number of contributors it does not have the personal nature of the Employee Blog but instead typically focus on a specific topic typically a technical one.

3. **Executive Blog**

This type of blog is of great interest to those in the blog sphere and creates large amounts of traffic whenever they are updated. The large interest in these types of blogs is mainly down to the fact that they give a rare insight into the high-level corporate world. CEOs and board members are beginning to use blogs as a way of directly communicating with the organisation's stakeholders.

4. Promotional Blog

Of all the blogs, this is the most controversial, many see these types of blogs as robotic and that they take away the personal nature of blogs. Some of these blogs are developed to look like personal blogs but in fact are advertising or marketing gimmicks, this is seen as deceptive by the ever growing blogging community and there can be a huge backlash against both the advertiser and the client. The power of the blogging community against a specific product or organisation can have drastic effects, so using this type of blogs must be careful monitored.

5. Newsletter Blog

Different to the Promotional Blog in that it is not trying to advertise an organisation's product or service but instead it performs the task of sending out company information and news. One thing to note in relation to the Newsletter Blog is that it is the most highly polished of all types of blog. It is there to reflect well on the organisation, its business and practices.

4.6 Wikis

Alongside weblogs, wikis have been the most popular form of Web 2.0 application in recent years (Hasan & Pfaff, 2006). It is quite similar to a blog in that people take part in a discussion about a certain topic; however there are some key differences. A blog has one author and people can post replies to add to the discussion; a wiki on the other hand is a site where anybody can edit, so in fact everyone is an author of the site (Long, 2006). Chawner and Lewis (2007) have the perfect description of a wiki:

A Wiki is a server-based collaborative tool that allows any authorized user to edit Web pages and create new ones using nothing more than a Web browser and a text entry form on a Web page. Wikis free writers from the burden of mastering HTML editing and file transfer software before they can publish on the Web. Instead, Wikis use very simple text-based markup to format page text and graphic content. While the idea of letting anyone change anything they want may seem radical or naive, most Wiki engines have features to let community members monitor changes, control user-edit permissions if necessary, restore previous versions of pages, and delete unwanted pages.

Chawner & Lewis (2007)

The greatest example of the power of a wiki is a website called Wikipedia.org. Started in 2001, the site has quickly grown into one of the largest knowledge based site on the web. As of October 2007 it has 2,041,075 articles in English with 75,000 people regularly contributing to the site (Wikipedia.org, 2007).

The following section will discuss how wikis can be used in a corporate environment, especially as a part of a wider knowledge management program.

4.6.2 Corporate Wiki

Seeing the collective power of wiki in the public domain, organisations are beginning to place wikis on their intranets. This will allow their employees to store, edit and access work related material such as reports, best practices and other documents (Hasan & Pfaff, 2006). Until wikis become fully utilised in the public domain, where people contribute to be a part of a social community, for organisational purposes it must have managerial support to encourage and show why they would benefit from contributing to the wiki.
Central to the wiki's and the majority of Web 2.0 applications philosophy is that the user does not have to have any high level technical knowledge to use it. An additional benefit is that the wiki software is inexpensive and can easily be put in place in the organisation's intranet. This means even more managerial support for the product since they have not had such a huge up-front cost to the organisation.

There are some concerns as to the benefits of introducing a wiki into an organisation. Hasan & Pfaff (2006) have outlined some of these potential disadvantages. They include:

- **Open to vandalism:**
  Since the wiki can be accessed by everybody in the organisation it could be changed for purposes other than those intended. The new information could have false or misleading facts, this is one of the dangers of a wiki however most wiki software allows the tracking of IP addresses and the database can keep a record of all changes and can be restored to a previous state.

- **No rewards for work:**
  Some may seem that employees who spend their time on applications like this as wasting their valuable time but however the long term benefits of having a highly valuable knowledge base that a wiki would bring to the organisation far outweighs any short term problems.

It is very important that an organisation is aware of any potential pitfalls that may affect the wiki in the long term; however a corporate environment is different from the public domain in that employees are subject to their contract and must act in a manner that reflects the ethos of the organisation.

4.7 RSS Feeds - Syndication

RSS feeds are the underlying technology that facilitates Web 2.0 applications, RSS feeds allow for both findability and "just in time" information retrieval (de la Torre, 2005). RSS feeds or web syndication as it is sometimes called are crucial for these type of applications as it allows the user to subscribe to websites where the content is constantly being updated and be notified of any changes to the website as it is being updated (Dieu & Stevens, 2007). It does not just notify the user when any change happens, RSS feeds can be easily customised to suit the wishes of the user to be only notified when a specific topic is discussed. This is especially important for blogs and social networking sites as it allows the user to save time as they don't have to trawl through all the websites they are interested in to see if they have been updated or not just view the ones that have been updated. This transforms the web experience for these users from a "pull" to "push" method (Best, 2006).

There are a couple of uses for RSS feeds within an organisation; they include using them as a communication tool. Instead of using email filters which have to be more and more powerful to deal with the multitude of spam emails being received and these filters could actually block important mails. RSS feeds can be used a filter as well, where users can define what messages they want to receive, they would actually have to subscribe to receive them.

Another facility created by RSS feeds is the ability to use them as a more modern newsletter, these can inform any interested party which can include employees, stakeholders, management and customers of any news within the organisation whilst keeping down on the communication overhead since only interested parties are informed.

4.8 Social Networking

The fourth Web 2.0 application that could be used in an organisation is a social network that is implemented for the employees to use to communicate between each other.

"*A social network is a collection of individuals linked together by a set of relations.*"

Downes (2005)

Neumann advocated social networks in an organisation for the following reasons:

"*A combination of a semantic web-based knowledge management framework and social network analysis features, enables social networking in the context of knowledge management for on-line communities and helps monitor the changing needs and skills of the work force in enterprise environment.*"

Neumann *et al.* (2005)

Social networks provide an informal method of communication between employees; this informal communication helps build relationships in the organisation this can only benefit the organiation (Zeffane, 1995). Limerick & Cunnington (1993) echo this sentiment by saying that informal social networking defines an organization. Social networks introduce a new type of communication into an organisation, one that can traverse geographically boundaries; participants identify themselves as part of a wider community and contribute to this community by sharing experiences and knowledge and can discover knowledge for their own personal use (Neumann *et al.,* 2005).

Conclusion:

One of the key features of Web 2.0 applications are that there are any imaginable amount of applications that could be classed as Web 2.0, in this chapter four of the most popular applications have been discussed and how they could be used in the business domain. Of the four discussed, blogs and wikis are the two that could be best suited to being used in an organisation and in fact are being used in business environments. Also discussed were the problems with the name Web 2.0 and the difficulties that there are in not only defining what it is but also the copyright issues that O'Reilly has placed on the term.

5. RESEARCH - QUESTIONNAIRE

Primary research took the form of a questionnaire which was sent out via email to employees of companies from a wide range of disciplines. Employees from such companies as Microsoft, Intel, Cable & Wireless, AIB and a department of the Irish government completed the questionnaire.

The questionnaire had two sections; the first section related to organisational aspects within the company and the second section was concerned with how technology, specifically web technology affected both business and personal life for the respondent.

5.1 Questionnaire Breakdown

Section 1 took the form of nine statements which the person filling in the questionnaire would grade each statement according to their own personal opinion. The grading of the statement used the Likert Scale, this is a common response scale used in questionnaires (Bhaskaran, 2007), the Likert Scale is a bipolar scaling method in which the positive and negative reactions of the respondent are measured. In the questionnaire the respondent was asked to indicate their agreement or disagreement with the statement, for this questionnaire it was decided to use five different responses of varying scale, although it is possible to have more than five, sometimes seven and nine responses are required. However for this case it was judged that five responses would be suitable. The responses available were:

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

One crucial aspect of the choices available to the respondent was the inclusion of *"Neither agree nor disagree"* this means that the respondent is not forced to either agree or disagree and as a result gives a much fairer indication of their opinion. Some suggest that the results of Likert Scale can be skewed by respondents not using the extreme responses (Bandalos & Enders, 1996) (in this case *"Strongly agree"* and *"Strongly disagree"*) this is called central tendency bias, however this does not seem to have happened for this questionnaire as numerous respondents used the extreme response choices as you will see below.

5.2 Questionnaire Section 1

The following section will discuss each statement in the questionnaire, why this statement was specifically asked, the expected response and the actual response.

Statement 1 - There are rewards for learning in my organisation

This statement relates to Senge's Personal Mastery section in which employees are expected to improve their own knowledge in an attempt to improve the overall knowledge of the organisation. One way of getting employees to spend time learning new skills and techniques is to reward them, this statement asked if companies are proactively doing this.

Results:

Figure 5.1.1: There are rewards for learning in my organisation

The result was a resounding agreement from nearly 70% of the respondents saying that learning is encouraged and rewarded in organisations. This would tend to agree with previous assumptions that organisations are willing their employees to further increase their knowledge and are accommodating employees who do so. However quite worryingly there is a small minority who say that learning is not encouraged in their organisation, hopefully this number will reduce in the coming years.

Statement 2 - Asking "why" is encouraged in my organisation

This statement is associated with the Mental Model section developed by Senge, it is extremely important to understand the reasoning behind a person's belief and as such people should be encouraged to ask "why" in order to create a successful and innovative group. Asking "why" could show that employee the differences between their own belief and the group's own one, and as a result create a new mental model, one that is closer to the mental model of the group.

Results:

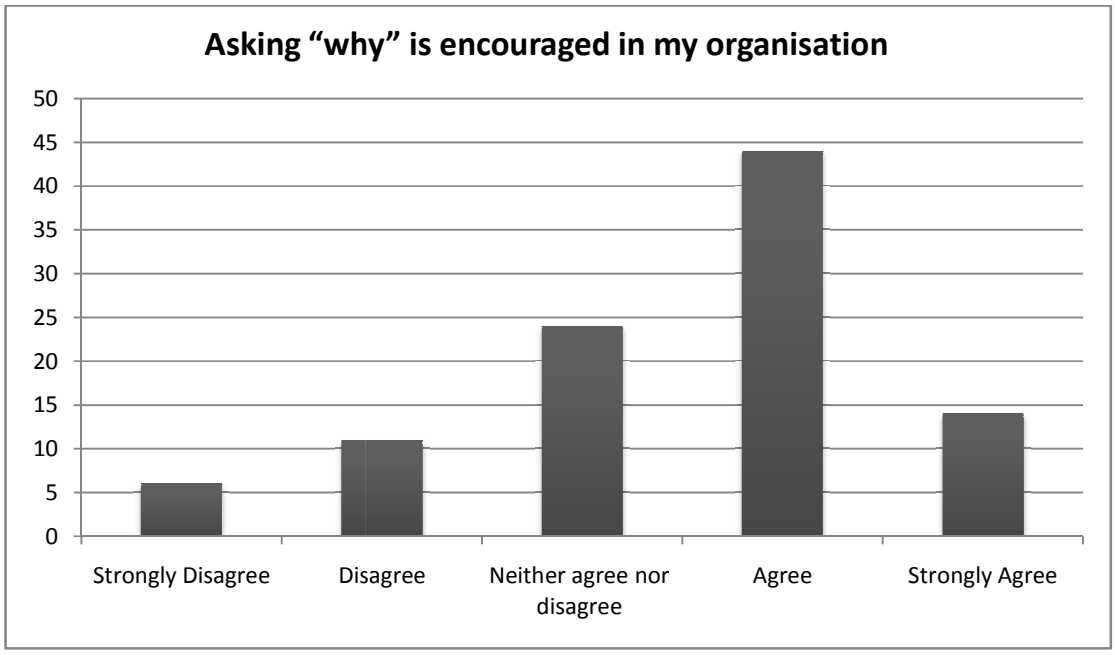

Figure 5.1.2: Asking "why" is encouraged in my organisation

This result was not as favourable as Statement 1 in that a large amount of people *"Neither agree nor disagree"*; however, it was not a surprise as western companies have much more hierarchical structure in which decisions come down from above and these decisions are not to be questioned. However it is encouraging to see that the majority agree and hopefully in the future this trend continues. This would show that the communication process in organisations are becoming a two way process and employees concerns and opinions are being listened to.

Statement 3 - I can contribute to my organisation's vision

This statement was taken from the Shared Vision section, to be a successful knowledge organisation, everybody must be able to be a part of and contribute to the overall vision of the organisation. The organisation may have an original vision set up by its founder however in a modern society that is ever changing it is important that this vision evolves to keep pace and it can only do so through a shared vision.

Results:

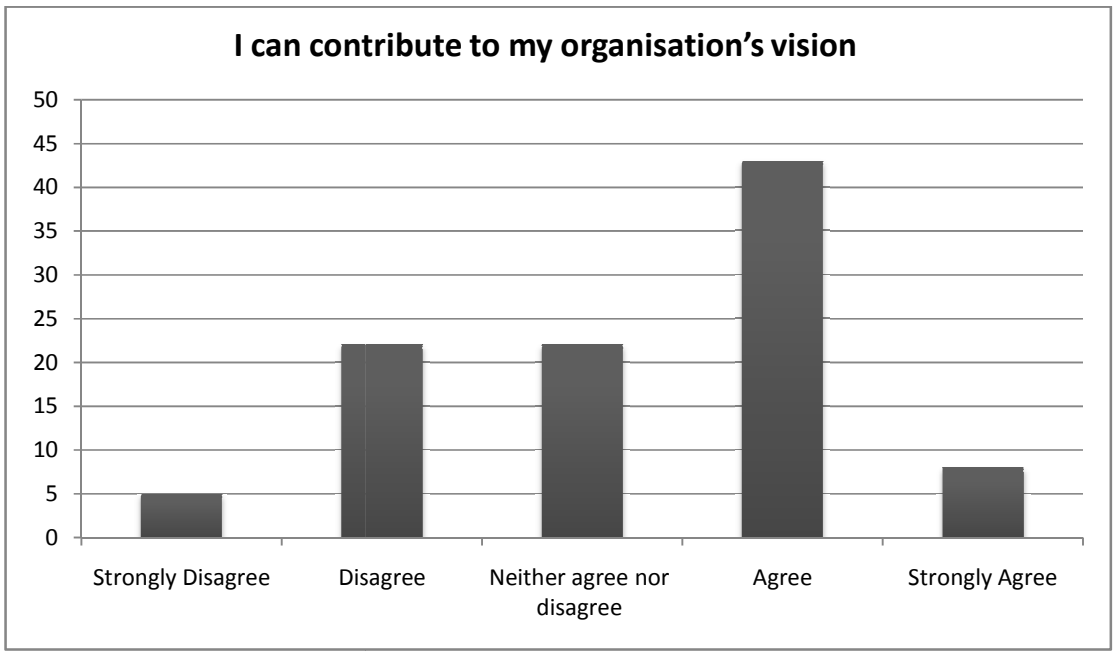

Figure 5.1.3: I can contribute to my organisation's vision

Like the previous statement it is heartening to see that the majority agree with this statement, this would go against the standard belief that organisations are dominated by one or a few people at the top of the management structure. However there is a considerable amount who cannot contribute to an organisation's vision, hopefully this will be rectified in the near future.

Statement 4 - In my organisation, thinking is revised as a result of group discussions

This statement has its roots in both Mental Models and Shared Vision. Both see the importance of groups within an organisation, and especially good discussion and dialogue. Thinking is not something that is static, it must constantly evolve to reflect a number of different issues and the power of the collective is much stronger than the single person; that is why group discussions are so important.

Results:

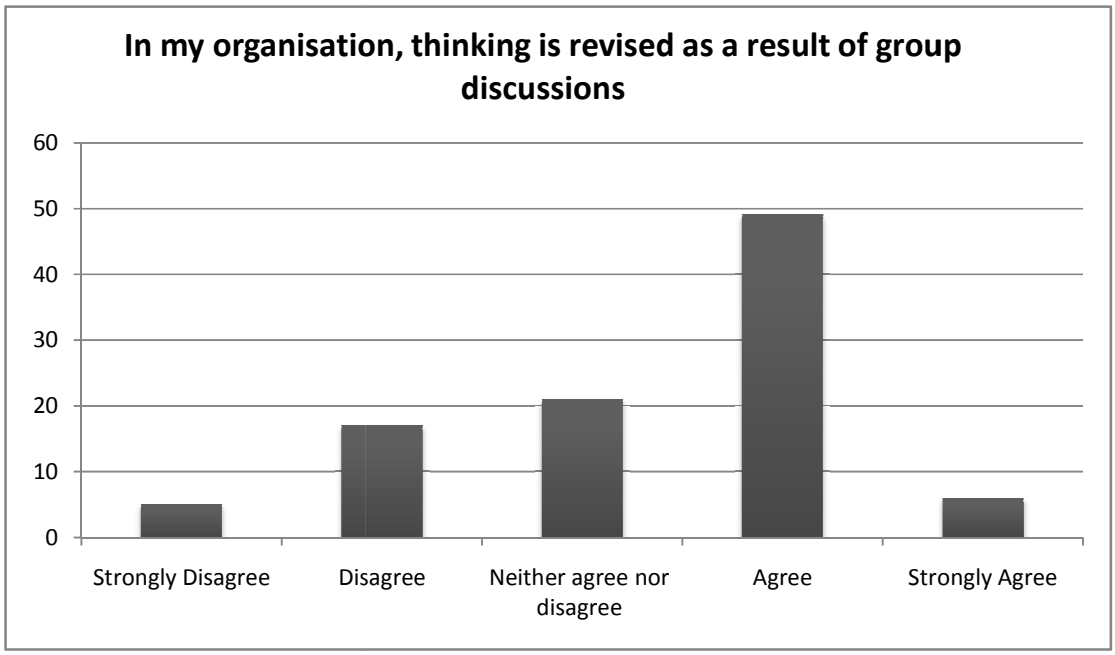

Figure 5.1.4: In my organisation, thinking is revised as a result of group discussions

Like Statement 1 this is highly encouraging to see so many respondents agree with the statement, it was expected that the results would show a slight majority in agreement with the statement however it was not expected that so many would agree and so few disagree. This statement is closely linked to statement 2 and the results mirrored those results, this would suggest that organisations are becoming much open in their business approach and allowing their employees a much greater say.

Statement 5 - My organisation maintains an up-to-date data base of employee skills

This statement relates to the knowledge management process that this paper has suggested, specifically making sure that there is a data base which contains all relevant and up-to-date information on all employees in the organisation, this is crucial for knowledge management and knowledge sharing. It is also very important for an organisation to know what it knows and what knowledge it is short of and can focus on for future development. This data base can also bridge geographical boundaries and share knowledge between employees that may have never been given the opportunity to communicate without it.

Results:

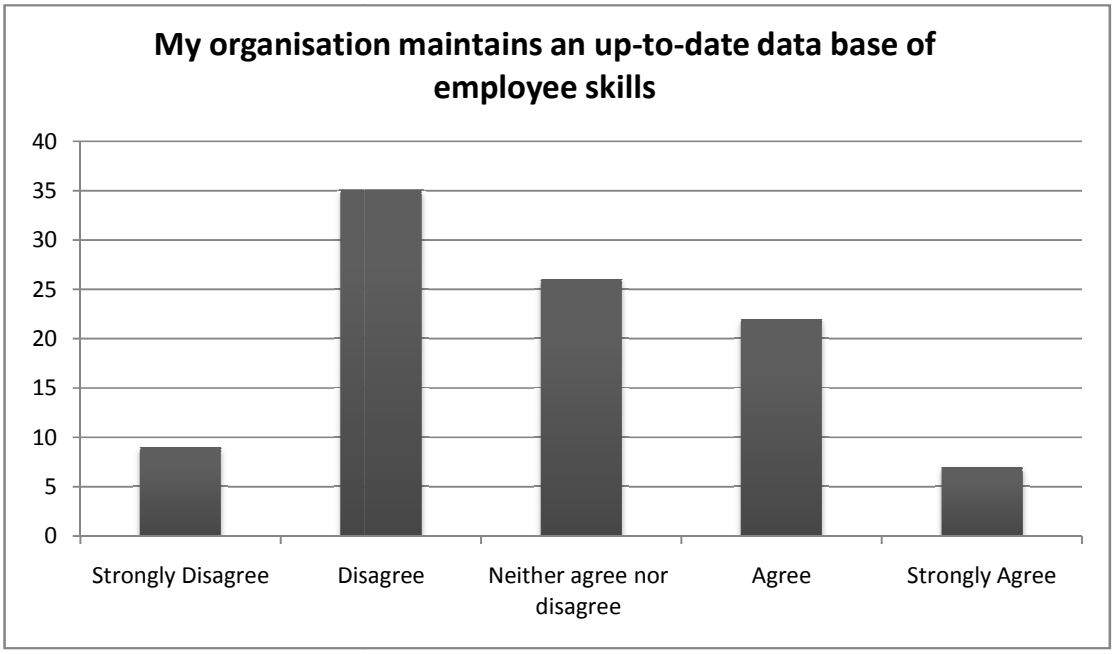

Figure 5.1.5: My organisation maintains an up-to-date data base of employee skills

This is one of the most disappointing results of the survey with the majority saying that their organisation did not maintain a data base with employee skills. How are these organisations going to know the knowledge and skills that are available in the organisation without one? A large minority agreed with the statement so it would suggest that this form of data base is starting to become more and more popular in organisations in Ireland. It also may in fact be that employees are not aware of such a system and only those who would need to know for their job role, for example HR personal would be aware of a system like this.

Statement 6 - It is easy to talk to the head of the organisation where I work

This statement relates to both the Shared Vision and Team Learning sections. In western organisations there is very much a hierarchical management structure, which in large organisations can mean it is extremely difficult to get in contact with the head of the organisation, and they can sometimes be seen as aloof to "lower" members of staff. This is completely different in eastern organisations, where every employee is equal to each other no matter what their role. This type of management structure encourages communication across the whole organisation and employees to freely express their opinion to everyone and most importantly, that they are listened to.

Results:

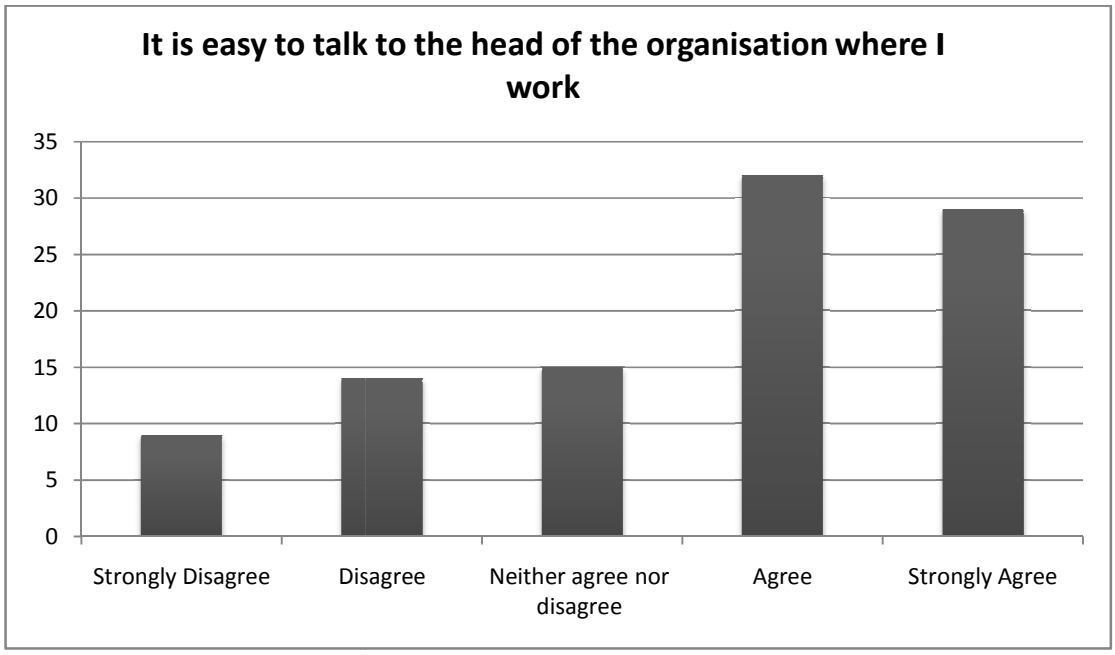

Figure 5.1.6: It is easy to talk to the head of the organisation where I work

This result was a little surprising, it was not expected that so many would "*Agree*" and "*Strongly agree*" maybe this is a result of large multi-national companies seeing how well an eastern organisation's management structure works. However there still are a number who disagree with the statement so there is obvious room for improvement in the future.

Statement 7 - My organisation helps employees balance work and home life

This statement was a general question to query whether the employee found the organisation helpful in making their personal lives as enjoyable as possible. A happy employee is one that will work harder for the organisation that treats them well (not just monetarily) and will stay with that organisation for the long term. This creates a much better working environment for everyone, and a happy working environment breeds innovation and results.

Results:

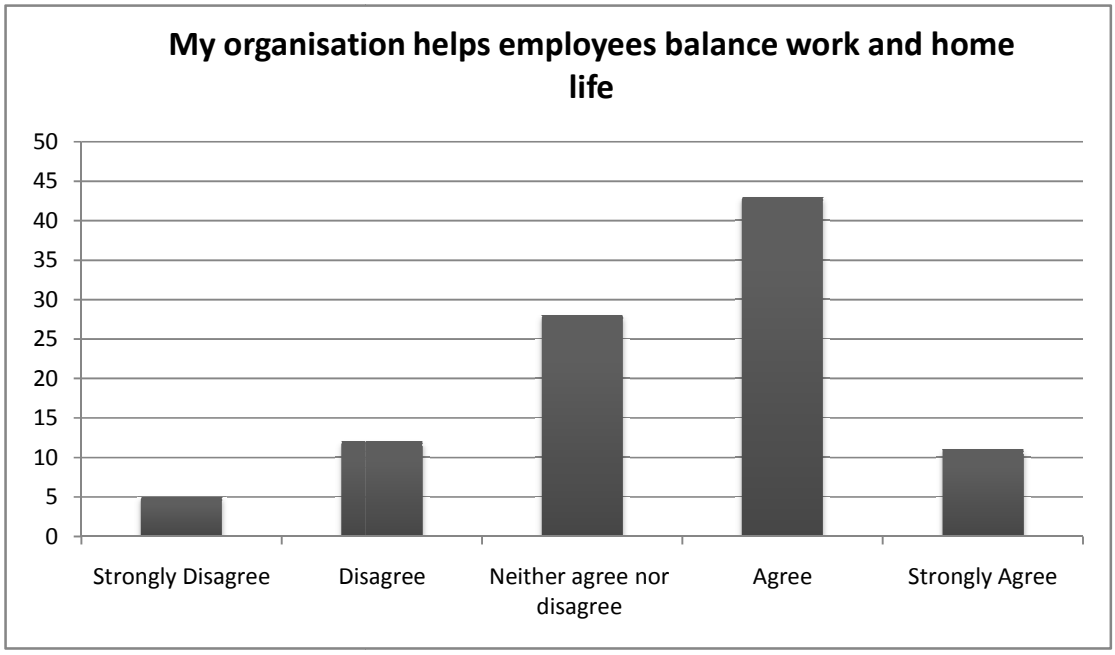

Figure 5.1.7: My organisation helps employees balance work and home life

It was expected that a large majority would agree with this statement and this ended up being the case, with over 60% being happy that their organisation helps them balance work and home life. It is becoming more and more prevalent in modern Ireland with a growing population and with a large number of young families that family life comes first. As a result, organisations are reducing the working week and becoming more flexible with regards to employees working from home, in order to keep the employees happy and wanting to stay with the organisation.

Statement 8 - Requests for learning in my organisation are supported by management

This was a follow on statement from Statement 1, in that not only is learning rewarded in the organisation but employees also have the support of management for wanting to learn new skills. This may involve job security or part/full payment of fees. Personal Mastery is crucial in a learning organisation but it is important that the employee wants to better themselves and not feel forced into having to study new skills just because management tell them to.

Results:

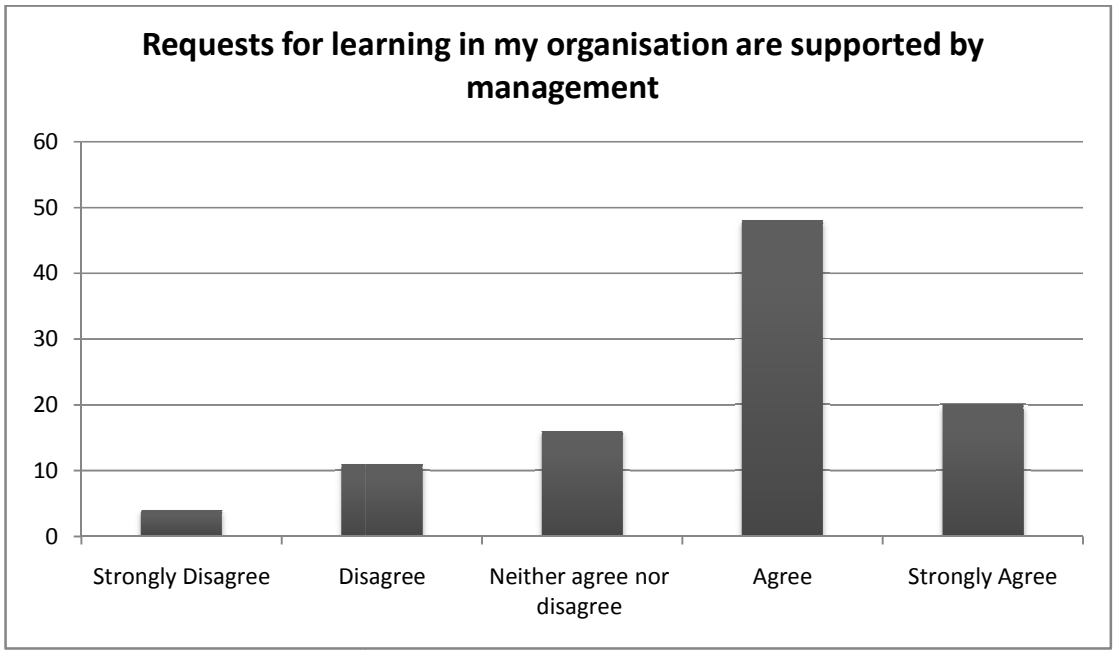

Figure 5.1.8: Requests for learning in my organisation are supported by management

It was expected that the result of this statement be a close copy of the results of statement 1, and this turned out to be the case with a clear majority in agreement echoing the results of Statement 1. This undoubtedly shows that organisations are willing to fully support employees who wish to up-skill. Learning does not have to consist of just off-site learning but also informal and formal learning between employees can be even more effective, management should provide a suitable structure to utilise other employees knowledge.

Statement 9 - The number of employees learning new skills has increased this year

The final statement was also related to further learning within the organisation, but it was not about the individual respondent's learning but their understanding of what learning is going on with regards to their fellow employees. This would show a greater awareness of learning within the organisation and maybe something that a colleague has learnt may be of interest to that employee.

Results:

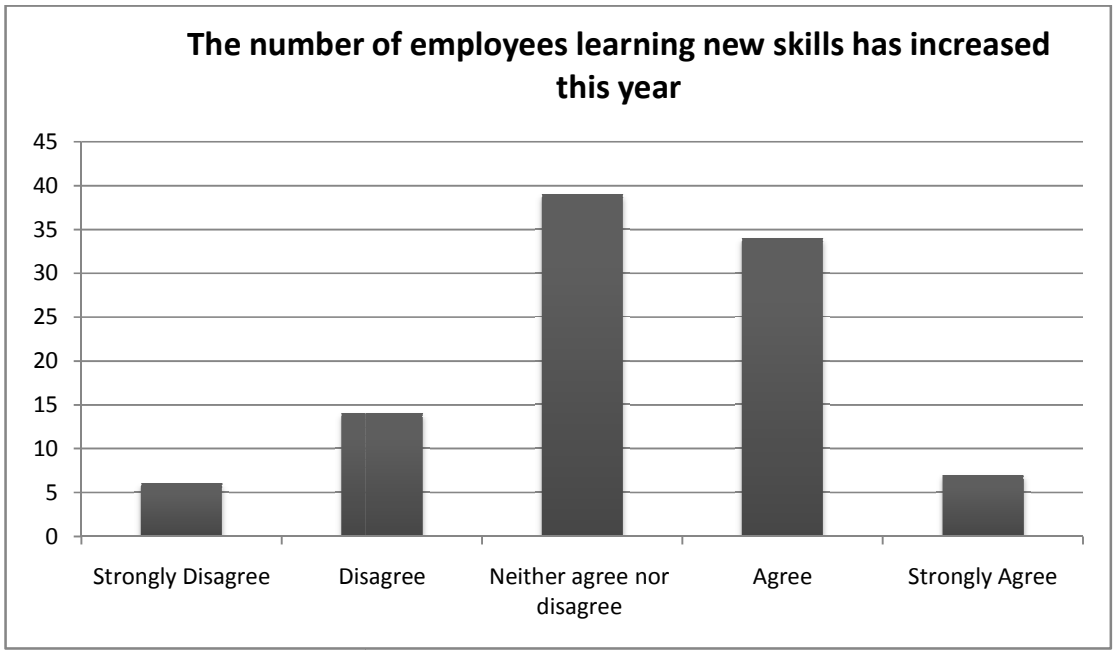

Figure 5.1.9: The number of employees learning new skills has increased this year

It was encouraging to see so many employees aware of further learning by fellow employees in their organisation. This shows that there is knowledge sharing happening within the organisation as employees are conscious of the learning being performed by other employees. These employees are then sharing their experiences; this can create a cycle where other employees will want to match their colleagues and learn themselves and not just sit back on their job. However there was a slight majority who "*Neither agree or disagree*" this would suggest that they are not aware of the learning that is going on in the organisation.

5.3 Questionnaire Section 2

Section 2 took a different format to Section 1, in that it consisted of a number of questions that the respondent would answer *Yes/No* or *Don't Know*, also some of the questions had a text box so the respondent could give some further detail to their response. This meant that this section had both open and closed questions, the open questions were placed in the questionnaire in order to better judge the respondents opinion on the topic.

Question 2.1: Does your organisation use computers/IT primarily for its business?

This was a very general question, asking the respondent if their organisation used IT products.

Results:

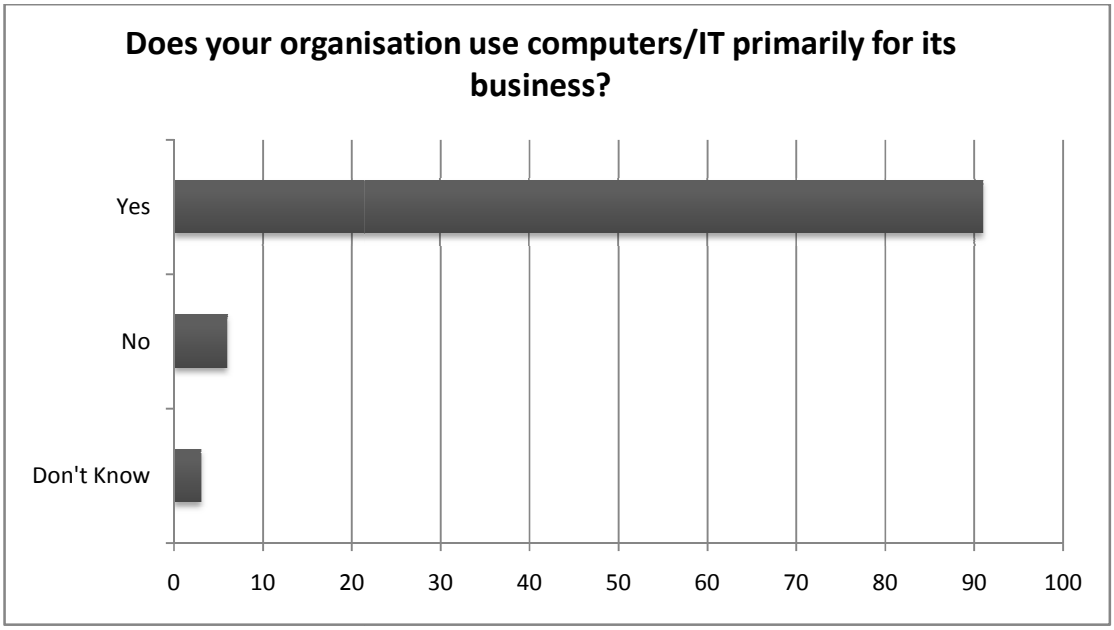

Figure 5.2.1: Does your organisation use computers/IT primarily for its business?

It was expected that the clear majority would say *Yes* to this question and this expectation was matched with the results which showed that 90% of the respondents saying that their organisation used computers primarily for its business.

Question 2.2: Does your organisation have a central database which you have access?

This question was asked since one of key components of a knowledge management is a central repository within an organisation. If these organisations already have a central database from which everyone has access, then they already have the architecture and technology in place to include a central knowledge repository within the organisation. This question would give an indication as to how many organisations are capable of becoming a knowledge organisation without the need for a huge amount of technical change.

Results:

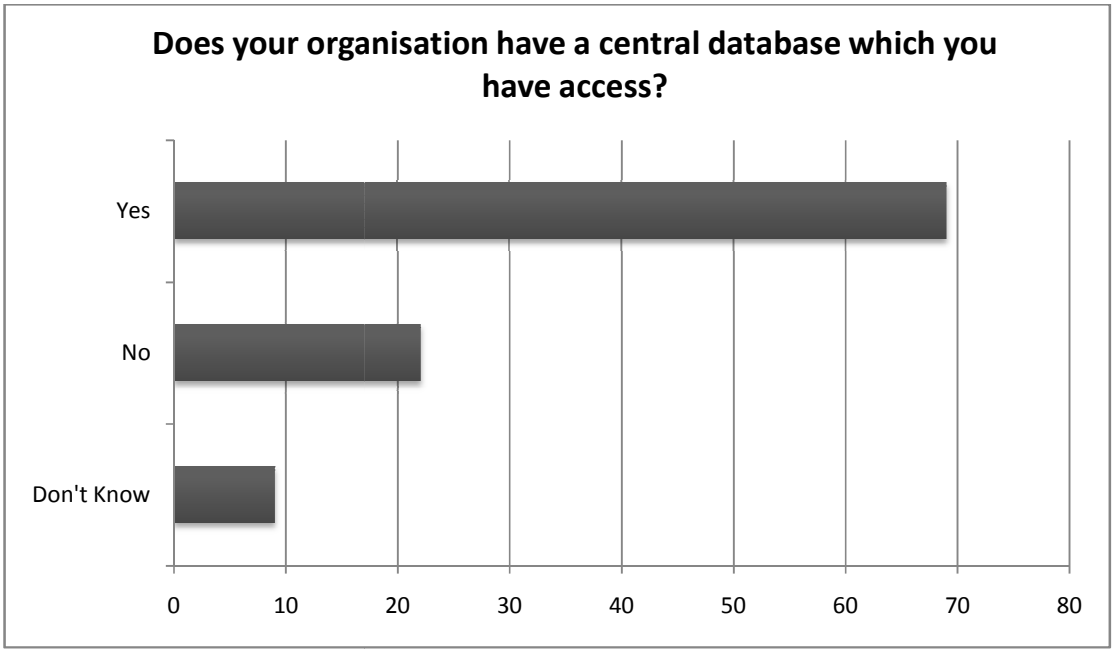

Figure 5.2.2: Does your organisation have a central database to which you have access?

The result of this question was highly encouraging, as mentioned before a central database is one of the key elements of a knowledge management/ learning organisation structure. It was not expected to be as clear a result as Question 2.1 and this was the case with one third saying *No* to the question. This shows that there is a majority of organisations on the correct path to knowledge management but there is room for improvement.

Question 2.3: Do you have access to the internet in your workplace?

This question was asked in relation to Web 2.0 technologies, the majority of Web 2.0 applications are hosted on the web, some are hosted internally on the organisation's servers. However in order to fully understand how to use and become part of the Web 2.0 community, the employee must be familiar with or be trained in using Web 2.0 applications. The best of way of doing this is letting the employee experience the Web 2.0 environment for themselves, for this they will need internet access.

Results:

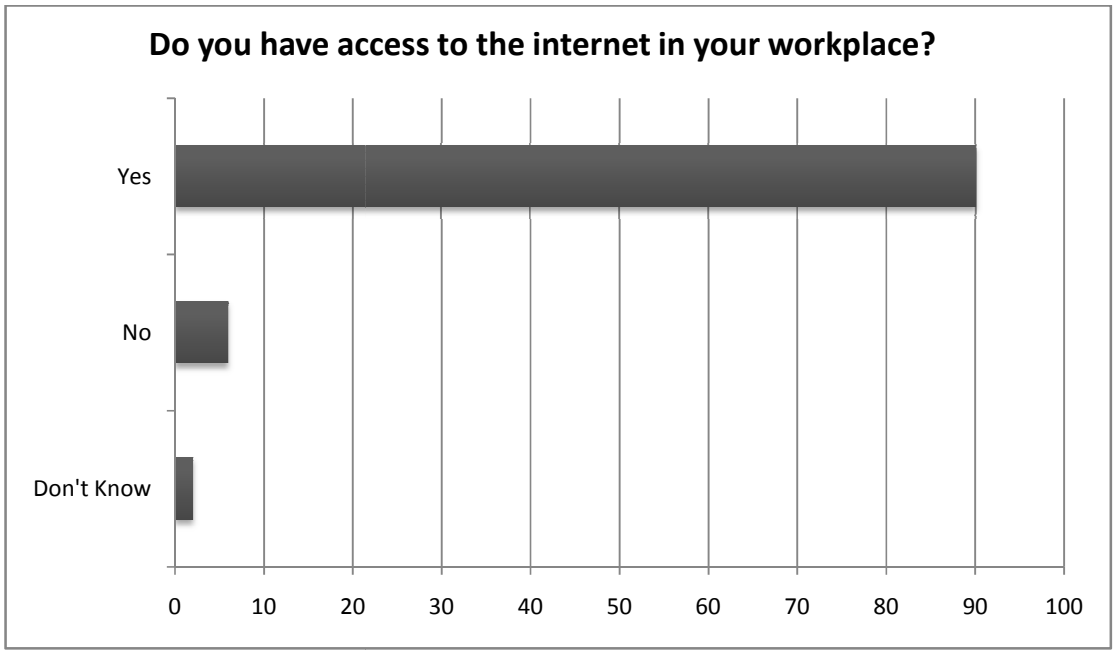

Figure 5.2.3: Do you have access to the internet in your workplace?

It was expected that nearly all of the respondents would say *Yes* to this question, as internet access is becoming a growing necessity in today's business world. The actual response was emphatic, with over 90% of the respondents saying *Yes* to the question. The internet is becoming an invaluable tool in modern business and as long as it used correctly, it can have untold benefits to the organisation.

Question 2.4: Do you use IT products to communicate with other employees?

This question was asked to see if there is a communication culture within organisations, specifically using IT products. Some organisations frown on employees spending too much time on emailing other employees seeing it as a waste of resources, however good communication is paramount for knowledge sharing and it does not just come in the form of face to face meetings. IT based communication can be highly effective since it is well structured and can be recorded for future reference. Also it can bridge geographical boundaries within the organisation and bring people who normally have never met together. Also if the employees become more comfortable communicating with their fellow colleagues they are much more likely to share knowledge and information using technological methods with others than before.

Results:

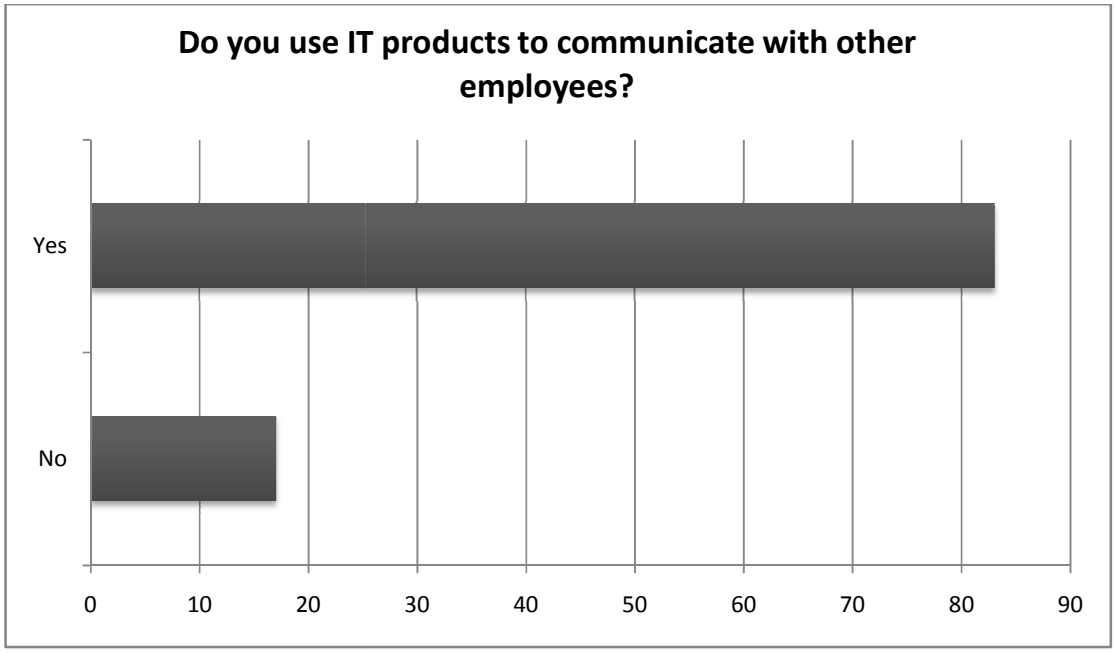

Figure 5.2.4: Do you use IT products to communicate with other employees?

As expected the majority said *Yes* that they use IT products to communicate with other employees. This shows that organisations nowadays are becoming aware of the benefits of using IT based communication tools. They might not be fully aware of all the benefits available to them with regards to knowledge management/ organisational learning but they have put in place the infrastructure needed and crucially the employees are familiar with using these products and would have little problem using them in the future if the organisation was to become a learning organisation.

Question 2.4.1: If yes, what IT products do you use to communicate?

This question was asked as a follow on to Question 2.3 in order to better investigate what type of IT based communication products are being used today in industry. The reason this question was asked was to see if organisations were embracing new technologies and applications or were they only using e-mail, even though e-mail is extremely useful. There may be times when other products may be more effective and it would be advisable that the organisation provided other communication products for these cases.

Results:

As expected e-mail was the predominant answer but there were a number of interesting products being used as well, some used an "*intranet portal*" and a "*shared drive*" this would tend to suggest that their company are developing some form of knowledge sharing mechanism as another method of communication. A large number of respondents said that they used "*instant messaging*", others went as far to say the actual product they used for this type of communication, applications such as "*MSN*" and "*google talk*" were mentioned. A number of respondents said that they used "*Skype*" which is very interesting; this shows that their organisation is very forward looking and willing to use new technologies. VOIP is becoming very popular as a replacement for traditional telephone lines and is much cheaper to run as well. In this age of growing costs, it is very important that organisations find new ways to maximise profits. There were some unusual responses such as one respondent saying that they used "*the NODE interface (a computer program I have developed for the company*" this would show that this

company is not only looking at new ways of communication but using the knowledge that is in-house in the organisation to create these new applications.

Question 2.5: Do you think that the level of access you have to IT products has an impact on your learning experience?

This was a very direct question asked to see the respondent's attitude to using IT products to enhance their learning experience. This question would hopefully gauge the attitude of employees to using new technologies as a source and method of improving their own knowledge.

Results:

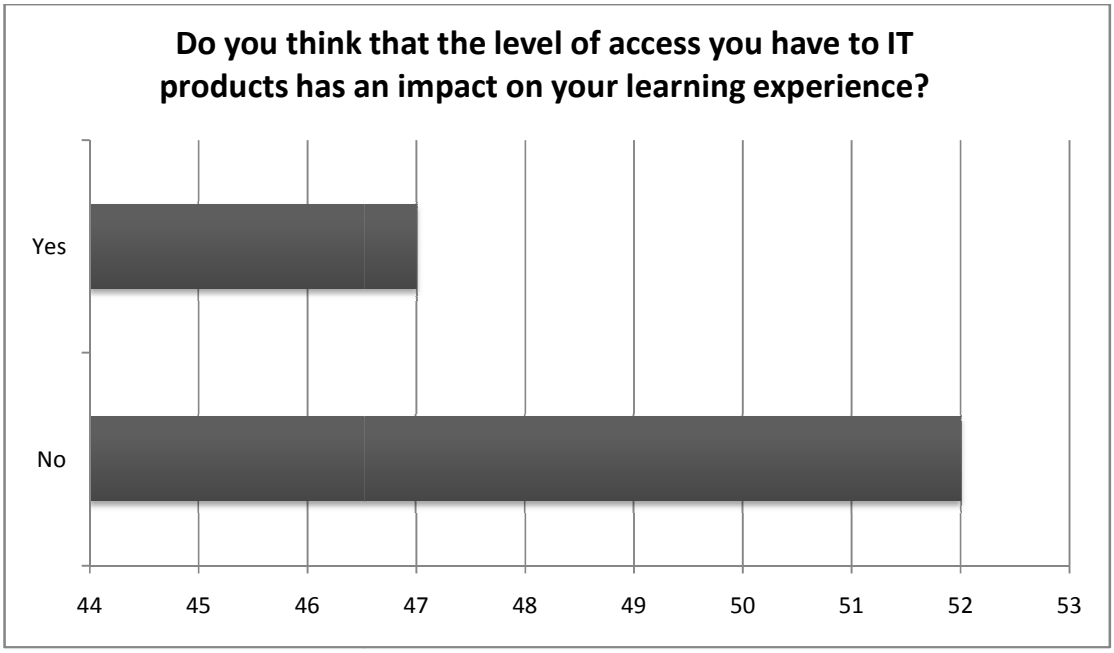

Figure 5.2.5: Do you think that the level of access you have to IT products has an impact on your learning experience?

This was a surprising result as it was expected that the majority of respondents would have said *Yes* to the question however only a small number did so. This maybe down to the fact that those who said *No* have not fully experienced the potential benefits of using technology with regard to learning.

Question 2.5.1: If yes, how does it affect it?

This was a follow up to Question 2.4; it was open ended so the respondent could give further details as to why they said *Yes* to Question 2.4.

Results:

Those who did say *Yes* had the following responses:

"*Reasearch on Internet Understanding what else is happening in company*"

"*easy to get access the source of information*"

"*The more access you have the more you become familar with various pieces of software, the more you learn.*"

"*So much of today's business is completely dependant on IT that it is important to keep my IT skills up to date and in line with the latest technology*"

"*If you are unsure of something, the question you have is usually answered somewhere on the internet. It is also very easy to find out (or find more) information on almost every topic*"

"*Yes, I can take online courses and learn to use new software*"

"*With access to the web I can research company related issues and my for my own personal projects*"

"*Greatly enhances the capability of my business to deliver customer requirements*"
"*Internal Learning programme called i-learn held centrally. Allows colleagues to gain access to a large amount of learning mateiral*"

"*Most in house training with work is delivered via web/intranet based tools. This means that I can learn when and at a pace that's convenient to me.*"

"*IT products provide on-line learning and testing with answers and additional learning available immediately. Also IT products allow for learning material to be sought for at users convenience and desire*"

It is worth noting that a lot of the respondents said they used IT products for information and research, this would tend to show that they wanted a specific piece of information and used the internet or IT products to find out more information instead of either getting a book or having to do a course. This could save many thousands of hours for the organisation if employees could look up the information that they require at that specific time, using this new information to build on their own knowledge. Respondents acknowledged the usefulness of using IT products for learning mainly for its convenience in allowing them to learn at a pace and a time that suits them.

Question 2.6: Do you use weblogs or wikis?

The following three questions can be grouped together to gauge the respondents use and knowledge of Web 2.0 applications and terminology. Question 2.5 asked the respondents do they use two of the most popular types of Web 2.0 applications, weblogs and wikis. The question had a number of different responses available asking not only did they use them or not but also in what domain do they use them, for personal use, for business or both.

Results:

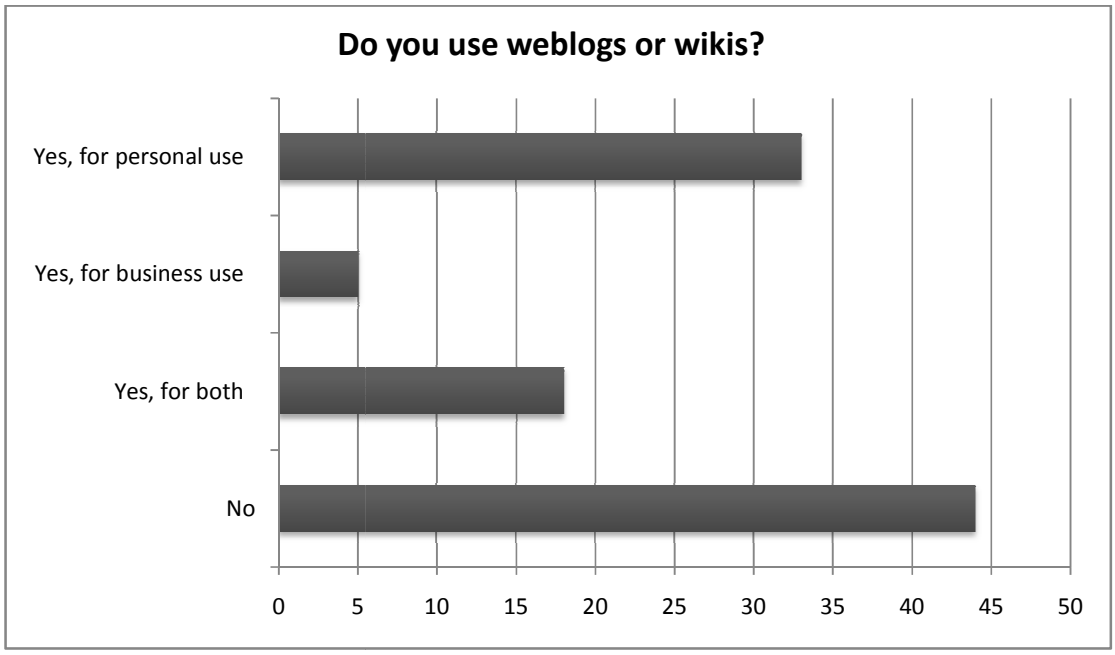

Figure 5.2.6: Do you use weblogs or wikis?

The results although there were expected were also a little disappointing in so few using weblogs or wikis solely in their business life, although there are growing numbers using them in the personal life which will hopefully in the future spread over into their business life, and this can be see in the *Yes, for both* column. There may be an attitude that some people would prefer to keep their personal life and business life separate and due to the personal nature of weblogs, some may see it as bringing their personal life into their work life. This does not have to be the case, one person could have more than one weblog, in fact they could have many of them each one separate than other. The clear majority said *No* which is disappointing but hopefully this column will reduce in the future.

Question 2.7: Do you use any other Web 2.0 products apart from weblogs or wikis and what are they?

The second question is this group asked the respondents did they use any other type of Web 2.0 products apart from the ones asked in Question 2.5. This would give an indication as to the types of Web 2.0 products being used, it would also show what products people thought were Web 2.0 products but in fact not be. This is a result of the confusion over the term Web 2.0 at the moment.

Results:

The following are some of the responses that were given as part of the survey:

"*Yes, gmail, Youtube, WebXunlei,iTudou,BitTorrent etc.*"

"*RSS Feeds*"

"*Flicker, del.icio.us*"

"*Bebo, YouTube, Boards.ie*"

"*Bebo*"

As you can see social networking features predominantly in the answers, social networking could become very useful in large organisations as a means of communicating in a way that is familiar to a lot of people. You can see the confusion that some people have with the term Web 2.0 when one respondent said that they used "*Boards.ie*", a message board would not be a typical Web 2.0. It is this confusion which leads a lot of people to believe that Web 2.0 products are a marketing gimmick. As some respondents answered:

"*I have no idea what weblogs or wikis are!*"

"*What are web 2.0 products??*"

"*Sorry, I don't even know what they are!*"

Question 2.8: Can you please give a brief description of your understanding of the term "Web 2.0"?

The final question in the survey was asked in an attempt to figure out the respondents understanding of the term Web 2.0 especially since there is a lot of confusion over the term.

Results:

The following show some of the responses from people who are familiar with the term:

"*Refers to software tools that emphasises/promotes/enhances 'social networking' and collaboration. They allow people author articles, network with others and participate in forums they wouldn't formally have access to.*"

"*Use internet as platform, associated with Web-based applications and Web protocols. Great stuff.*"

"*Internet based applications, leveraging the popularity of the Web for competitive or social advantage*"

"*Tim O'Reilly attempts to clarify just what is meant by Web 2.0, the term first coined at a conference brainstorming session between O'Reilly Media and MediaLive International, which also spawned the Web 2.0 Conference*."

"*New technologies, social networking sites, RSS, blogs, all that stuff.*"

"*Sites that let you upload personal content as opposed to just viewing content on a site.*"

"*Social interactive, commumity updatable websites*"

"*The evolved web. Webpages that are personalized and more media based.*"

"*Web 2.0 is not a specific architecture, its more of a function of usability and application of websites*"

"*Content generated by the horde, framework generated by the owner*"

"*Evolving web technology based upon a social/interactive or contributive idea!*"

"*It refers to a perceived second generation of web-based communities and hosted services – such as social networking sites, wikis and folksonomies – which facilitate collaboration and sharing between users.*"

"*Web 2.0 refers to a perceived second generation of web-based communities and hosted services. Although the term suggests a new version of the World Wide Web, it does not refer to an update to Web technical specifications, but to changes in the ways software developers and end-users use the web as a platform. Some technology experts, notably Tim Berners-Lee, have questioned whether one can use the term in a meaningful way, since many of the technology components components of "Web 2.0" have existed since the early days of the Web.*"

"*Modern emerging web technologies developed with user centric development methods usually incorporating a social aspect.*"

"*It is an attempt to make the web an easier and more standards adherent system, therefore allowing the same experience for all users of the web regardless of operating system or web browser*"

"*It is the type of internet that we are becoming dependant on. It is our paradise on an island, but we're doomed. It is the latest generation of websites that range from Google to Social Networking sites like Bebo. Programs like PHP, ajax, MySQL, they are all bringing the true light of the internet of the internet to millions of users. If we keep using Web 2.0, we will come addicted, and then eventually die!*"

As you can see the opinions on the term vary significantly but the term "social" is mentioned a number of times, this would tend to suggest that many people see the future of the web as one networked community with each user playing their part in building that community.

Of all the responses this is one I thought best described what the term Web 2.0 meant:

"*Web 2.0 is considerd an updated World Wide Web. Not from a technical stand point but from and end user stand point. Its considered a transition from a collection of websites to a complete computing platform serving web applications to end users.*"

A number of respondents had a very sceptical view of what Web 2.0 means; some seem to think that it is just a buzz word used by companies to get more money.

"*I'd consider it to be a buzz word more than an actual physical change in how the web fundamentally works with the main change being how people are using the resource. This means its impossible to determine when Web 2.0 actually began since the way the web is used is constantly evolving.*"

"*the world wide web was originally made for accessing document within organisations and for research purposes only. People soon realised they could set up business and so on on the net, then the net became a haven for muppetry, entertainment, gaming, and any form of visual/audio media. I can only assume that web 2.0 is trying to bring the internet back to basics by offering it in a different medium. Re-inventing the wheel so to speak.. im not very impressed as this was talked about YEARS ago.*"

"*It seems that any company that has something to do with the internet and was founded within the last calls itself something 2.0. I've never been a fan of the team. Not that I don't like what is going on with the Web right now, I just don't think that the label 2.0 is necessary. Some companies are building tools and services that can inter operate with other tools and services, others create communities around the tools, and the rest seem to be bridging the gap between tools/services, creating a whole that is more valuable than it's individual parts. Also rounded corners and gradients.* "

"*Officially – Refers to the perceived second generation of community web-based sites – such as social networks, etc that facilitate information and/or file sharing between users Personally, its just another buzz word, which means, more band wagon jumping by il-advised companies/individuals.*"

"*A buzzword used to excite potential investors, while distancing the venture from the previous dot-com bubble."No, our one is Web 2.0, it's different see?" Also loosely referring to sites that focus more on user interaction and user generated content, gradients, pin-strips, rounded corners, tags, and shiny buttons with mock reflections…basically take anything we've already been able to do for the past 8 years and throw some AJAX at it, offer an RSS feed and bada-bing – Web 2.0 …it's all so new and exciting isn't it? It's basically the same old shit with a marketing facelit IMO … natural progress given more hype than it deserves.*"

As you can, the term Web 2.0 evokes polar opinions on the term, some genuinely see it as the next evolution of the web and some see it as a marketing gimmick.

There were also a large number of respondents who answered along the terms of:

"*Im not familiar with this term*"

"*Do not know what it is!*"

"*I don't know what that means*"

"*Never heard of it*"

"*new version of Internet Explorer*"

"*Never heard of it*"

"*No idea*"

This would compound the argument that there is confusion over the term Web 2.0, this will have to be rectified in the future if there is going to be further advances and wide scale adoption of Web 2.0 products. These responses tend to vindicate the argument put forward in Section 4.4; *The Term Web 2.0*, that there is a large number of people are confused by the term.

5.4 Questionnaire Conclusion

It was pleasing to see the results of the survey for the majority of questions asked. Most agreed that learning was fully supported in their organisation and that the amount of people who were actively taking part in learning was increasing along with the fact that employees can contribute to overall vision of the organisation is highly encouraging. This would indicate that Personal Mastery, Shared Vision and Knowledge Sharing are occurring in their organisations.

However there were some disappointments and areas that had room for improvement, these included not having an up to date database of employee details and some finding it hard to talk to the head of their organisation. The major disappointment was in relation to Web 2.0 applications and their use, with so few using them in the business domain shows that these organisations are slightly lacking when it comes to the latest technology however since Web 2.0 applications have only just became mainstream in society and it will naturally take a while for them to be accepted as business tools.

Overall Irish organisations are on the right track when it comes to knowledge management and organisational learning even if they do not recognise that they actually performing knowledge management/organisational learning tasks, they are however forward thinking and wanting to better themselves in the future. Those that have actual programs in place are well on their way to becoming learning organisations/ knowledge management organisations. The technical aspects are not so quite as advanced but these difficulties can be quickly overcame, as it suggested in the literature review; it is not the technical aspects that are the difficult areas it is the organisational and cultural barriers that are the toughest to overcome and the survey results show that most have overcome the majority of these difficulties.

6. FRAMEWORK

The deliverable of this research was to create a working prototype that used all the aspects that were discussed in the previous chapters. This framework is a high level design that can be quite easily implemented in any organisation. Special attention was placed on the five aspects of Organisational Learning that Senge has developed, without these it would not be differentiatable from any Knowledge Management program.

6.1 Framework

Using the findings of all the sections in this research, a framework for *Organisational Learning using Web 2.0 technologies* that embraces all aspects of them can be deduced. The framework has been broken down into six distinct phases.

Phase 1: Future Vision of the Organisation

This phase is primarily concerned with the reasons as to why an organisation would want to become a learning organisation. Everyone in the organisation must support change, not only technical but also cultural and their work habits, this change process must be seen to have the full support of the board.

It is also very important that the organisation can see the long term future benefits of becoming a learning organisation; it is a long process and as such short term support can dwindle after a while. If the organisation's board can show the benefits of change, employees will in turn support change and it becomes the goal of everyone to see the organisation become a learning organisation. *Section 3.2.3: Shared Vision* deals with a lot of the changes needed in this phase. This vision could be initiated via the blog of a CEO and this would allow employee to commentate on this vision and see other people's viewpoints.

The following points highlight the main aspects of this phase.

- Reasons: Why introduce Organisational Learning /Knowledge Management?
- Results: Wanted benefits of process
- Unity: Becomes a shared vision
- Adoption: Culture has to change
- Board support: Universal support from everyone

Phase 2: Technical Change

This phase deals with the technical aspects that need to be put in place for the organisation to successful change itself. The first and probably most crucial for success is the development of a knowledge repository within the organisation. This repository will become the brain of the organisation where all knowledge that the organisation possesses and creates in the future will be stored. The *Knowledge Management Chapter* deals with all the aspects in creating and maintaining this knowledge repository.

The second part of this research dealt with the emerging field of Web 2.0 applications, these new applications will have to be installed and probably maintained. Sections *2.1.3 Knowledge Improvement* and *2.1.4 Knowledge Evaluation* will need to be supported by business intelligence software; this will have to be introduced into the organisation as well.

The following points highlight the main aspects of this phase.

- Data base: Knowledge repository
- Technology: Web 2.0 applications
- New skills: Using business intelligence software

Phase 3: Training

The third phase of this framework deals with empowering the employees in the organisation to better themselves, the employees must want to take part in this change or else there is no point in wanting to become a learning organisation, *Section 3.2.1 Personal Mastery* goes into great detail on this subject.

With regards to Web 2.0 applications this field is in its relative infancy, staff will have to shown and train in these new applications. Once these employees become proficient at these new applications it will have the knock on affect of influencing others to use them in order to communicate with each other. *Section 3.3 Importance of Dialogue* showed the importance of good communication within an organisation. Human interaction is very important for early knowledge creation, it builds relationships and trust in the early days and these bridges allow the transfer and creation of new knowledge in the future.

The following points highlight the main aspects of this phase.

- Self improvement: Senge's *Personal Mastery*
- Communication: Importance of communication/dialogue/sharing
- Reward schemes: Initial benefits to employees

Phase 4: Group Communication

Following on from phase 3 in which the employees become more knowledgeable about their work, each other and their work environment, they begin to form groups. First these groups will contain people with similar skills but after a while these groups are formed from employees all over the organisation. This is one of the core concepts of knowledge management/ organisational learning that the whole organisation comes together. As a result of these groups been formed a number of important activities happen, these are *team learning* and *shared mental models* as discussed in sections *3.2.4* and *3.2.2* respectively.

Using technology to bridge the geographical boundaries that exist in large multi-national organisations is extremely important and can be achieved using web 2.0 applications specifically *Group Blogs* as mentioned in *Section 4.3.1.*

The following points highlight the main aspects of this phase.

- The group: Senge's *Team Learning*
- Shared Mental Models: The power of the collective
- Group blogs: Many to many application
- Geographical: Technology that bridges borders

Phase 5: Implementation

If all the other phases have been successful implemented, this phase should come naturally to the organisation without much difficulty. Everyone in the organisation should now see the benefits of learning from others and be always actively wanting to learn from others. In order for this to happen everyone must be willing to share their knowledge, the methods for doing this has been discussed in detail in *Section 2.1.4 Knowledge Sharing.*

One aspect to note that when these groups are formed, they must be aware of how their actions impact the larger organisation. Traditional small groups and employees would have an insular mentality and not care what is happening outside their group once it does not affect them directly. However their actions could have a large impact on the organisation as a whole or on another department in the organisation. *Section 3.2.5* on Senge's *System Thinking* gives a useful insight into how these problems can alleviated.

The following points highlight the main aspects of this phase.

- Systems Thinking: Understanding the whole operation
- Knowledge Sharing:
- Learn from others: Implementing good dialogue

Phase 6: Continued Professional Development

The sixth and final phase of this conceptual framework, adds no new tasks it is simply repeating the phases 3 through 5. Introducing *Organisational Learning* or *Knowledge Management* is not a once off process, it is a never-ending task which always must be maintained so it is very important to review the steps and build on the knowledge gained from the previous iteration.

As employees become empowered the need for a structure of learning diminishes as they become more knowledgeable they will see what areas they are strong at and what areas they need to work on for themselves. This is true employee empowerment.

The following point highlights the main aspect of this phase.

- Repeat steps 3 to 5

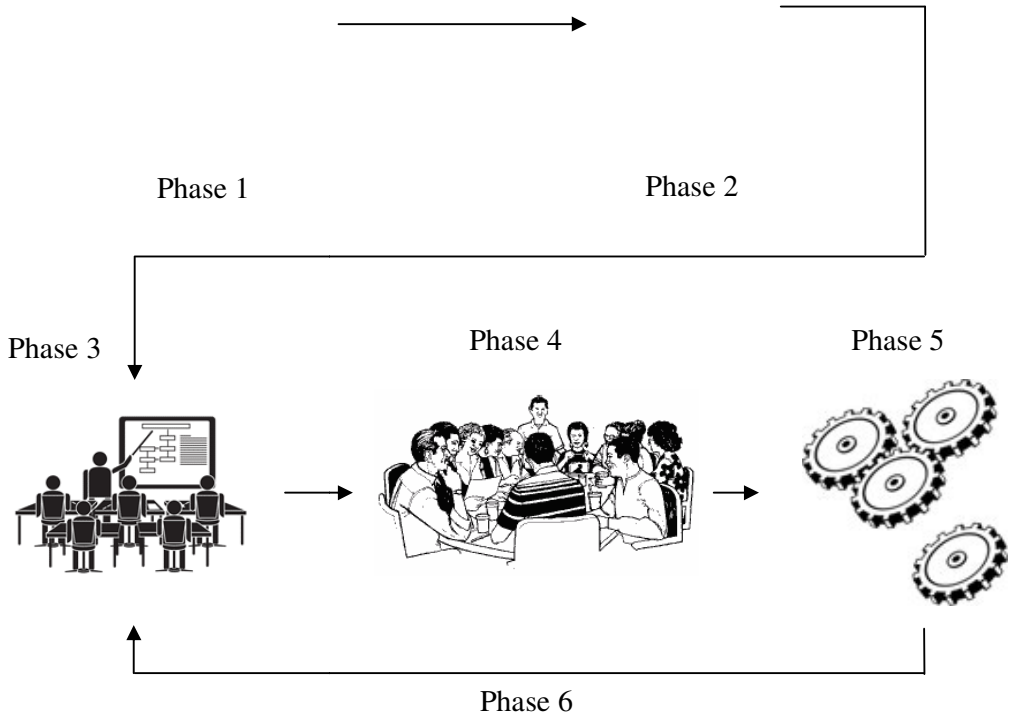

Figure 6.1: Conceptual Framework

6.2 Working Prototype

I have developed a prototype system that demonstrates a web portal that encompasses a number of the features of the framework mentioned in Section 6.1. Figure 6.2.1 shows the home page of the site. It is personalised to the employees' needs and requirements. It is evident from the image, the home page welcomes the employee to their page, in this example it highlights the latest blog entries although this can be customised to the employees' wishes. It is very important that the employee feel that they can control the look and feel of their page as this in turn will create a sense of ownership of the page by the employee and they will want to contribute more to it.

The whole site is designed to have a static format across the top, bottom and left hand side of the page, these areas will show links to other organisational features such as email, HR and scheduling. The area of the page in the middle will be dynamic and display the information that is specific to that page. Figure 6.2.2 and 6.2.3 show the difference between the blog and wiki page, everything on the edges is the same but the middle changes. The right hand side will contain popular items that are used often whereas the lesser used items are at the bottom of the page. This reduces clutter on the screen and one of the key features of Web 2.0 sites is that they are clean and simple on the eye.

Another knowledge management feature that is present in the prototype is the people search. The search will allow a number of different types of searches; employees can simply search by name, location and department but they can also perform more advanced searches based on skills and expertise.

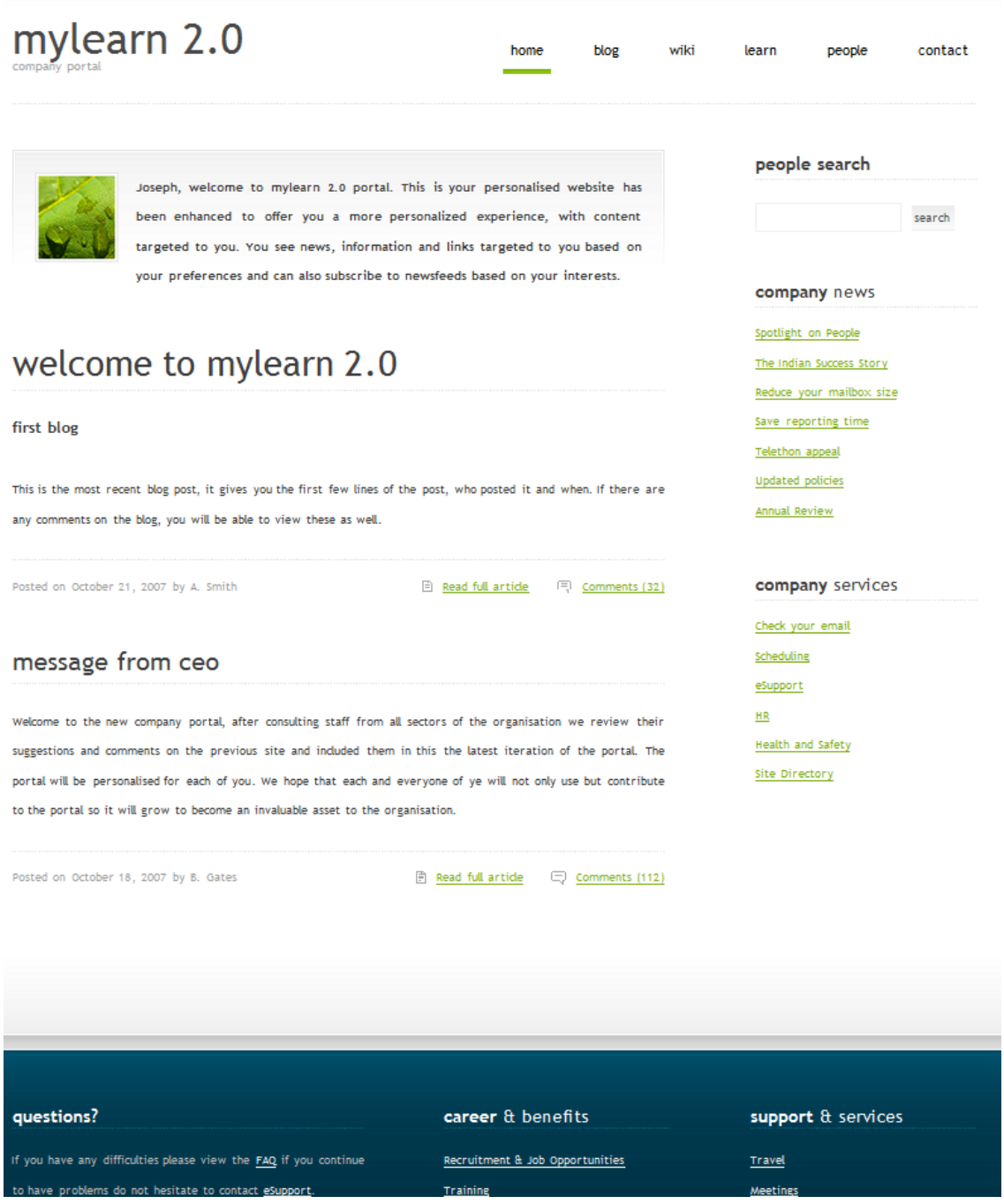

Figure 6.2.1: Homepage of portal

The customization of the site will be performed by RSS feeds, this will allow the employee to choose what information that they want to view. This should improve productivity as the employees only see the information that they want and less time will be spent traversing through hundreds and maybe thousands of irrelevant(to that particular employee) news items in attempt to find useful knowledge.

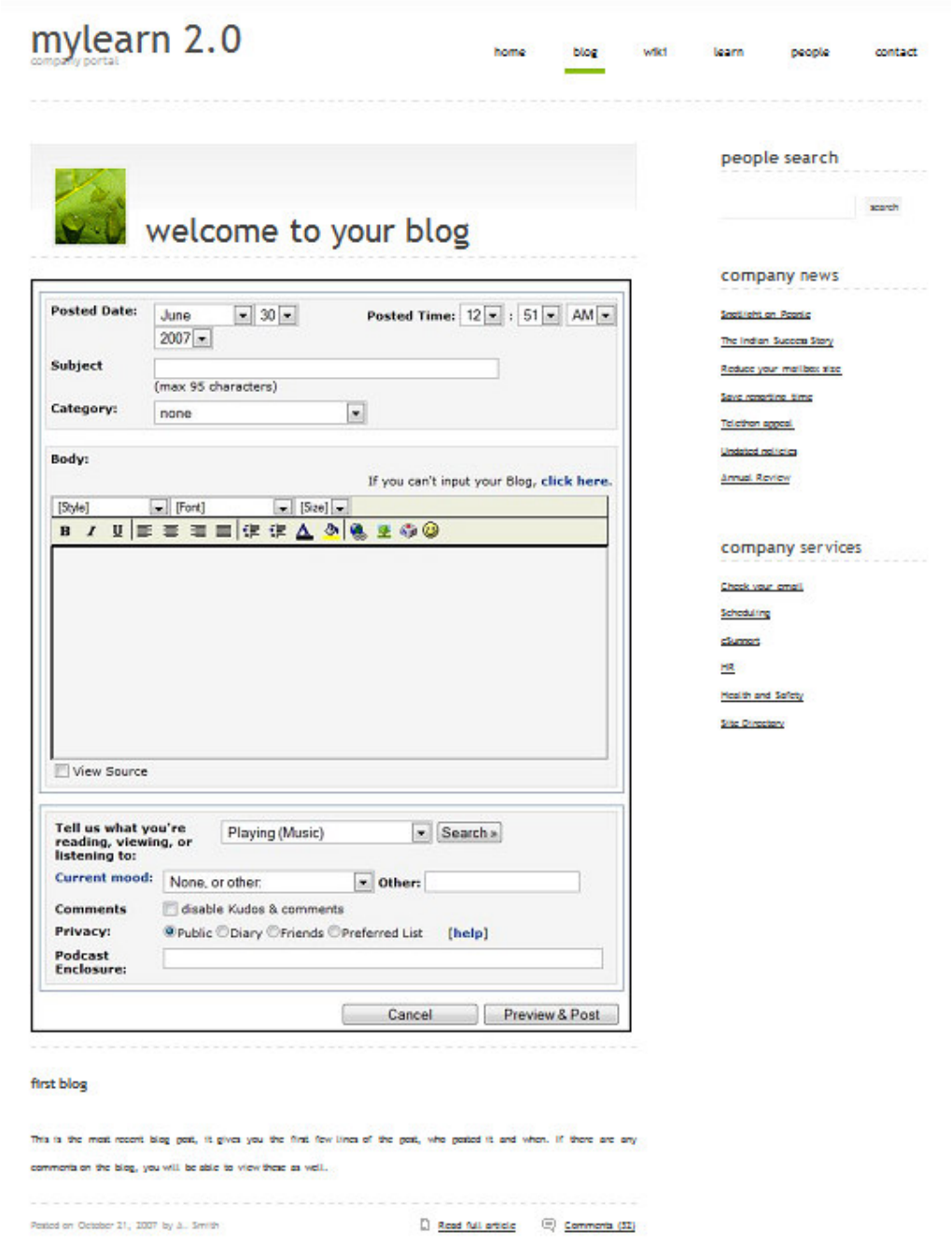

Figure 6.2.2: Blog page

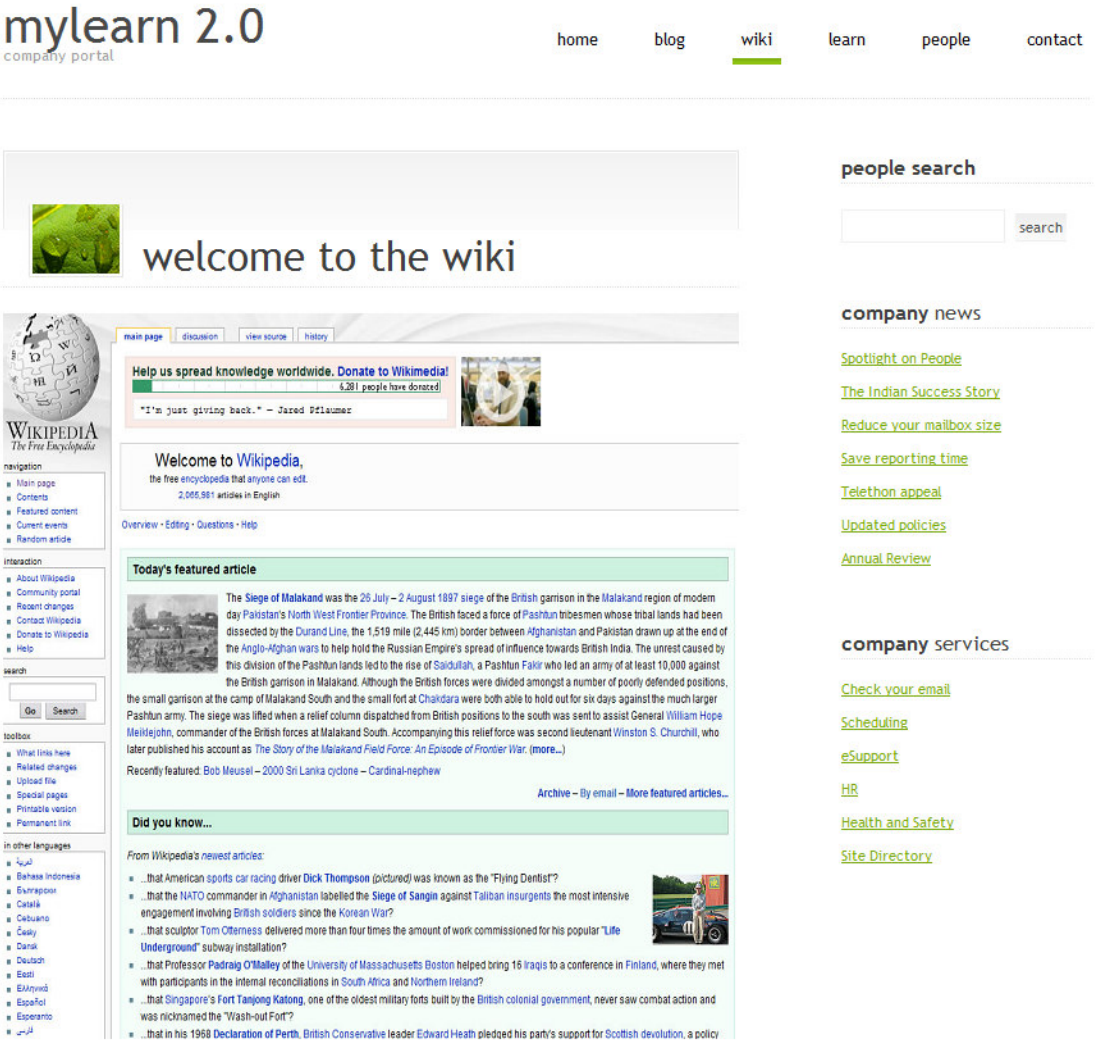

Figure 6.2.3: Wiki page

The final page of this prototype is the learning page (Figure 6.2.4). It is slightly different in format than the others. When an employee joins the company they will have e-learning courses assigned to them, these could be organisational wide courses such as business etiquette; it could also include courses that are specific to the employee's job. This will give the employee a great start and idea as to what the role entails. However the courses are not only chosen for the employee, the employee can look for courses that can aid them in their job or ones that interest them. This section encompasses a lot of Senge's Personal Mastery, but it is not only learning that occurs here, people can also create their own courses in order to share their own knowledge to a wider audience.

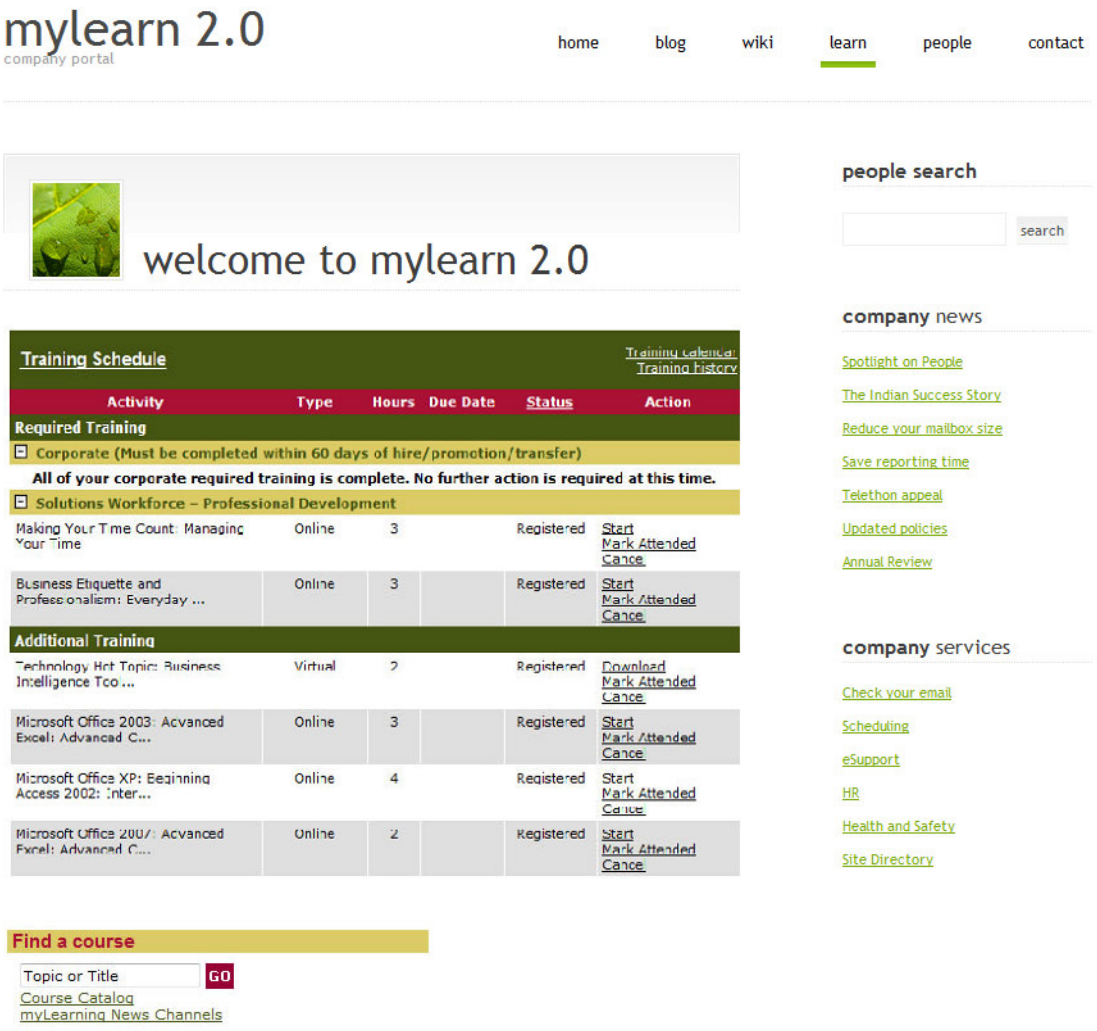

Figure 6.2.4: Learning page

After completing the working prototype I spoke to an expert in the field of both e-learning and web technologies in relation to both academia and industrial domains. The interview was based on the working prototype and a slide show demonstration; both are included in the appendix. The respondent traversed through the prototype in the same manner that an employee would if this was implemented in an organisation, as the respondent used the site I recorded their comments verbatim.

They began as you would expect at the index page (Figure 6.2.1), where they were pleasantly surprised at the personalisation element:

"*personalisation element helps the user identify with their organisation and the importance of collaboration within the organisation*"

They appreciated the use of tonal colours throughout the site, which gave it a "*clean and simple effect*". Next, they viewed the blog page, where their main comment was that it was "*very functional and easy to use*" which is the core element of any good blog page. Also noted was that this page:

"*presents an opportunity to inform other people in the organisation with up to date information*"

There was a similar response when viewing the wiki and learning pages:

"*more and more organisations are using wikis to provide collaboration spaces where contribution is not dependent on a single geographical locations or timeframes* "

With regards to the learning page, the respondent had the following response:

"*It would a good way of scheduling and keeping track of the various parts of a schedule that any employee must undertake*"

The final part of the prototype was the people search which would not only allow employees to search by name but it would allow searches based on employee skills, location and knowledge. The respondent had the following comment in relation to the people search:

"*great way of identifying appropriate contacts to solve specific problems* "

I briefly spoke to another expert in the domain of web technologies, this person has over 7 years of experience working with and using web applications, in relation to the prototype and they had the following on the site:

"*I found the index page a welcoming sight; the page was well laid out and easy on the eye. The font was easily readable and colour usage on the page was visually impressive. The navigation bar on the top/right is something different as to the usual location on the left/top of the page*."

After viewing all the pages in the sample prototype, the respondent had the following to say:

"*All in all I was impressed with the subtle use of shading, the use of the colour green stood out and made an impressive impact. I look forward to seeing the completed site after viewing the prototype*"

The comments from the two respondents were highly encouraging, they were both very impressed with the prototype, I wanted to show them how I envisaged such a site looking and their feedback highlighted that the features within the site work and most crucially appeal to people and makes them want to use the site.

Conclusion:

This framework although quite abstract and high level would be an excellent starting point for any organisation that wants to transform itself into a Learning Organisation. Each stage would have a review phase that will evaluate the previous section to make sure that it was implemented successfully and it is ok to move to the next section. Knowledge Management schemes like this can be expensive as a result this framework has been split up in six sections that can be implemented in stages over a number of years.

7. CONCLUSION

The purpose of this research was to investigate if Web 2.0 applications could be used to aid an organisation's transformation into a learning organisation and the answer based on this research is mostly positive. As with any process that invokes the introduction of software, they can aid the transformation as long the correct organisational structure has also been put in place. The correct organisational structure ranges from having the right corporate culture to good training and reward schemes to initially entice employees to change.

7.1 Conclusion

Each of the chapters of this research dealt with part of this change process. Chapter 2 was in relation to the knowledge management developmental change process.

- It showed the six steps involved, how best to employ these steps and the potential benefits of each of them.
- As stated in this chapter, Knowledge Management is not a defined process and must be customised for that particular organisation. The steps outlined were not definite and as such allowed manipulation as long as the core principles were addressed.
- Also covered was how organisational culture needs to change in order to fully embrace of the revolution of the organisation into a learning organisation.

Chapter 3 was concerned with organisational learning, specifically the five disciplines of organisational learning as developed by Peter Senge.

- These five processes consider all aspects that need to be addressed in this type of organisational change.
    - They show the importance of individual self-learning and improvement, *Personal Mastery* and *Mental Models* represent the individual's change processes in the organisation.
    - *Team Learning* and *Shared Vision* illustrate the power of collective learning and thinking and how it can transform the organisation and as a result knowledge is the most important organisational asset.
    - The final discipline is *Systems Thinking*, does not apply to either the individual or the organisation separately instead it deals with how every action taken has a reaction and it is very important to consider the complete operation of every action.
- In addition to *Senge's Five Disciplines*, the importance of good dialogue as an aid to *Organisational Learning* was discussed. Dialogue is crucial in any form of learning, it is not just talking but also advocates good listening and understanding what is being spoken and respect the opinion of others.

Chapter 4 approached the new and exciting concept of *Web 2.0* applications and how they can be introduced into an organisation. This chapter highlighted a number of the most powerful applications and showed the potential benefits for introducing these new tools, the following applications were discussed.

- Web-logs or blogs for short are easily the common *Web 2.0* application; it allows the user to publish their own thoughts, opinions and knowledge on the web without any knowledge of a scripting language. It embraces the concept of shared learning, there is the opportunity for viewers of the blog to interact with the author in a way that traditional static web-pages could not.

- The second application discussed were wiki, a wiki is a form of a knowledgebase; in which users add their own knowledge to it. Each user is afforded equal rights to add or edit any entry; this in turn creates a community around the wiki where people want to share their knowledge to help others. This application lends itself to be used in any organisation since it can be used for training purposes or every day work situations.

- RSS feeds are the backbone of any *Web 2.0* application, they give the user the ability to subscribe to blogs, wikis and other *Web 2.0* applications; this will notify the subscriber that there has been an update to the site. This results in a constant flow of information between all parties and increases the likelihood of good communication and knowledge exchange.

- Also highlighted were other *Web 2.0* applications and how they could be used within an organisational structure, for example in a large multi-national organisation it would be beneficial that a form of social networking application be put in place, this would allow communication without any boundaries. This would foster trust between departments and this trust would allow better co-operation between everybody.

- Another application that could be implemented would be video sharing (for example YouTube), when learning something new it would be extremely advantageous to have a video as a companion to text.

The fifth chapter was in relation to the primary research conducted during this project. A questionnaire was sent out to employees of organisations all over Ireland, those who replied ranged from working for large multi-national organisations such as Microsoft, Intel, Cable & Wireless and the Irish Government to small indigenous companies. The questionnaire was split into two sections.

- The first section dealt with the organisational structure of where the respondent worked. Topics covered included support for learning from management and whether or not they can contribute to the organisation's overall vision. These questions were asked specifically in relation to Senge's five disciplines in attempt to see how close organisations are to achieving the desired structure.
    - There were some surprising results; a lot of organisations here in Ireland are close to achieving this desired state. The results were highly encouraging; the clear majority support their employees completing further learning and allow them to contribute to the organisation's vision.
- Section 2 of the questionnaire focused on technology in the workplace, and in particular *Web 2.0* technologies. These questions were asked in attempt to gauge how ready both employees and organisations are to use *Web 2.0* applications.
    - Respondents were asked for example if their organisation had a central database, which is a core aspect of any knowledge management structure, most said that there was. Although this may not be used for a knowledge management purpose right now but the architecture is in place if needed.
    - One interesting aspect of this section of the questionnaire was the confirmation that people are confused over the term *Web 2.0*, a number of people said that they used blogs and wikis for both personal and business use, however when it was asked whether they used *Web 2.0* applications or not they said that they didn't.

This confusion over the term is something that will have to be addressed in the near future if the whole domain of Web 2.0 technologies is to become a mainstream part of society in the same way that email and text messaging has.

Chapter 6 discussed the results of this research;

- The aim of this research was to investigate whether or not *Web 2.0* applications would be suited for introducing *Organisational Learning* and the result is that they do in fact lend themselves to be used in the process. However having them alone does not constitute a learning organisation. In order for this to happen a number of other tasks must be completed such as culture change and other technology being put in place also.
- As part of the requirements of this research, a framework that encompassed all aspects of the research was designed as a guide for organisations wanting to follow the same path of using relatively inexpensive technologies to foster an environment where the most valuable commodity of them all; knowledge is created.
- Based on this framework a prototype system was developed to embody the key findings of this research in a dynamic framework. The prototype was reviewed by experts in the domains.

7.2 Future Work

The future work of this project would be to further investigate the power of the web in relation not only to business but to a social perspective as well. As indicated in the findings of the questionnaire, a large amount of respondents said they used some form of web 2.0 application be it a blog, wiki or another application for personal use but only a small number said that they used one for business use. This would suggest that people first use these new products themselves and then once they become familiar with them they will then use these products for business use. So it would be interesting to see what new web applications are becoming mainstream at the moment or expected to be popular in the near future.

Another aspect that could be investigated is the name Web 2.0, is it time to lose the 2.0 suffix? When do current web 2.0 applications become known as web applications? Or will there always be a divide? Is there going to be a web 3.0, and what will be different in those applications? These are some important questions to be answered if this work is to be continued. The web 2.0 domain is very popular and extremely lucrative for some and no doubt the next iteration of the web will be the same.

Since the business world evolves much slower than the web world, it will be at least 10/20 years before we begin to see the true benefits of knowledge economies. This research has been focused on the benefits that knowledge management and organisational learning would have on an organisation internally but it would be interesting to investigate what impact these knowledge economies will have on the domestic and international scene, will it create an utopian society free of hunger and war or will the change only benefit the organisation who will horde this created knowledge for themselves for economic benefit which will go against the fundamental principles of knowledge management. Or will this change be so gradual that people will not recognise the change but accept it as the norm?

7.3 Personal Perspective

During this research this author was hired by Accenture, one of the largest management consultancy firms in the world. Having worked in the organisation for just a short number of weeks it is very noticeable that they have implemented a lot of the tools and techniques that have been suggested in this research.

A large emphasis is placed on knowledge management and personal empowerment where everyone is expected and actively encouraged to be further increase their knowledge and share their own knowledge. The correct structure is already in place that facilitates knowledge sharing within the organisation. Employees are given an individual learning budget that allows them to choose courses that they wish to take part in, this embodies Senge's Personal Mastery section in that a person is responsible for their own learning.

They have also embraced some Web 2.0 applications, for example each employee has their own blog, senior executives also have their own blog and encourage employees to contact them via this medium and as a good feedback forum. There are also wikis in place that discuss certain business matters between groups of people.

As a result, it is this author's opinion that this research has been vindicated and shown to work since it has been implemented by one of the largest and most technically advanced companies in the world.

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10. APPENDIX

APPENDIX A

Questionnaire for MSc in Computing (Knowledge Management)

To develop a framework for the use of Web 2.0 applications within a learning organisation

Before you start the questionnaire, I want to explain that your answers will be treated totally confidently. Your answers will be combined with all the others for my research. Neither I, Dublin Institute of Technology nor any other third party will record you name, email address or any other personal details, nor will it be possible to identify you in any way from the report I will publish as part of my MSc dissertation. I would also like to personally thank you for taking the time to fill in this questionnaire.

To return this questionnaire please forward it to joseph.reynolds1@student.dit.ie

Section 1:

To answer the following please grade each of the following statements according to the following scale:

1. **Strongly disagree**
2. **Disagree**
3. **Neither agree nor disagree**
4. **Agree**
5. **Strongly Agree**

Statement #	Statement	1	2	3	4	5
1	There are rewards for learning in my organisation					
2	Asking "why" is encouraged in my organisation					
3	I can contribute to my organisation's vision					
4	In my organisation, thinking is revised as a result of group discussions					
5	My organisation maintains an up-to-date data base of employee skills					
6	It is easy to talk to the head of the organisation where I work					
7	My organisation helps employees balance work and home life					
8	Requests for learning in my organisation are supported by management					
9	The number of employees learning new skills has increased this year					

Section 2:

Please tick the box which corresponds closest to your answer for the following questions

Question 2.1: Does your organisation use computers/IT primarily for its business?

Yes ☐
No ☐
Don't know ☐

Question 2.2: Does your organisation have a central database which you have access?

Yes ☐
No ☐
Don't know ☐

Question 2.2: Do you have access to the internet in your workplace?

Yes ☐
No ☐
Don't know ☐

Question 2.3: Do you use IT products to communicate with other employees?

Yes ☐
No ☐

If yes, what IT products do you use to communicate?

Question 2.4: Do you think that the level of access you have to IT products has an impact on your learning experience?

Yes ☐

No ☐

If yes, how does it affect it?

Question 2.5: Do you use weblogs or wikis?

Yes, for personal use ☐

Yes, for business use ☐

Yes, for both ☐

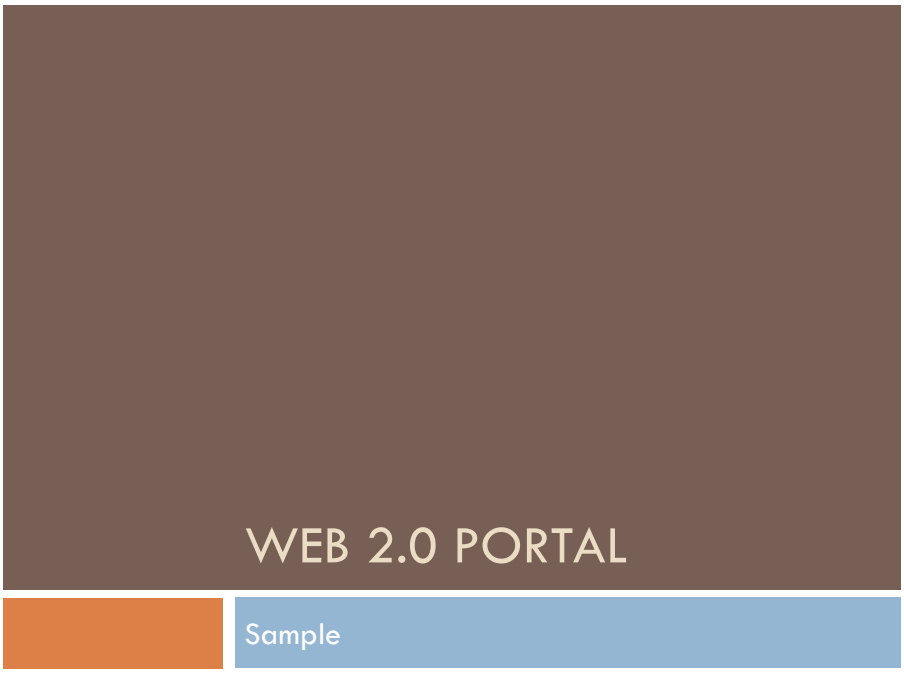
No ☐

Question 2.6: Do you use any other Web 2.0 products apart from weblogs or wikis and what are they?

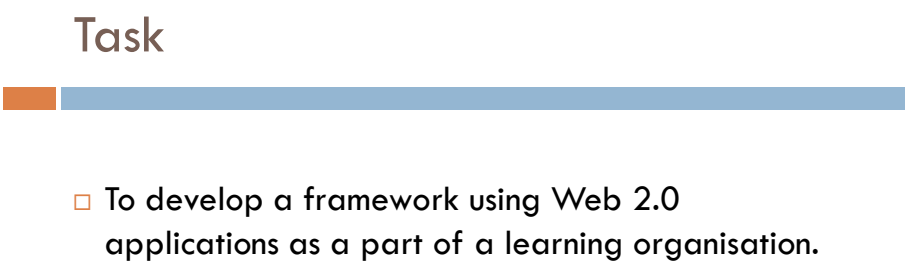
Question 2.7: Can you please give a brief description of your understanding of the term "Web 2.0"?

APPENDIX B

Slide 1:



Slide 2:



Slide 3:

Phases

- Phase 1: Future Vision of the Organisation
- Phase 2: Technical Change
- Phase 3: Training
- Phase 4: Group Communication
- Phase 5: Implementation
- Phase 6: Continued Professional Development

Slide 4:

Home page

Slide 5:

Web 2.0 features

- Clean and simple
- RSS driven
- Dynamic content
- Customised for the user

APPENDIX C

HTML Code of prototype

index.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>mylearn 2.0</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="default.css" rel="stylesheet" type="text/css" />
<style type="text/css">
<!--
.style1 {
        font-size: 14px;
        font-weight: bold;
}
-->
</style>
</head>
<body>
<!-- start header -->
<div id="header">
        <div id="logo">
                <h1><a href="#">MYLEARN 2.0<sup></sup></a></h1>
          <h2>company portal</h2>
  </div>
        <div id="menu">
                <ul>
                        <li class="active"><a href="#"> home</a></li>
                        <li><a href="blog.html">blog</a></li>
                        <li><a href="wiki.html">wiki</a></li>
                        <li><a href="learn.html">learn</a></li>
```

```
                    <li><a href="#">people </a></li>
            <li><a href="#">contact </a></li>
                    </ul>
            </div>
</div>
<!-- end header -->
<!-- start page -->
<div id="page">
            <!-- start content -->
            <div id="content">
                    <div class="box1">
                            <p><img src="images/img04.jpg" alt="" width="74" height="79" class="left" /><strong>Joseph, welcome to mylearn 2.0 portal. This is your personalised website has been enhanced to offer you a more personalized experience, with content targeted to you. You see news, information and links targeted to you based on your preferences and can also subscribe to newsfeeds based on your interests.</strong></p>
                    </div>
<div class="post">
                            <h1 class="title">Welcome to mylearn 2.0</h1>
                            <div class="entry">
                                    <p class="style1">first blog</p>
                                    <p>This is the most recent blog post, it gives you the first few lines of the post, who posted it and when. If there are any comments on the blog, you will be able to view these as well. <br />
                                    </p>
                    </div>
                            <div class="meta">
                                    <p class="byline">Posted on October 21, 2007 by A. Smith</p>
                                    <p class="links"><a href="#" class="more">Read full article</a> <b>|</b> <a href="#" class="comments">Comments (32)</a></p>
                            </div>
                    </div>
                    <div class="post">
                            <h2 class="title">Message from CEO</h2>
                            <div class="entry">
                                    <p>Welcome to the new company portal, after consulting staff from all sectors of the organisation we review their suggestions and comments on the previous site and included them in this the latest iteration of the portal. The portal will be personalised for each of you. We hope that each and everyone of ye will not only use but contribute to the portal so it will grow to become an invaluable asset to the organisation.<br />
```

```
                    </p>
                </div>
                    <div class="meta">
                        <p class="byline">Posted on October 18, 2007 by B. Gates</p>
                        <p class="links"><a href="#" class="more">Read full article</a>
<b>|</b> <a href="#" class="comments">Comments (112)</a></p>
                    </div>
                </div>
        </div>
        <!-- end content -->
        <!-- start sidebar -->
        <div id="sidebar">
            <ul>
                <li id="search">
                    <h2><b>people Search</b></h2>
                    <form method="get" action="">
                        <fieldset>
                        <input type="text" id="s" name="s" value="" />
                        <input type="submit" id="x" value="Search" />
                        </fieldset>
                    </form>
                </li>
                <li>
                    <h2><strong>company </strong>news</h2>
                <ul>
                        <li><a href="#">Spotlight on People</a></li>
                        <li><a href="#">The Indian Success Story</a></li>
                        <li><a href="#">Reduce your mailbox size</a></li>
                        <li><a href="#">Save reporting time</a></li>
                        <li><a href="#">Telethon appeal</a></li>
                        <li><a href="#">Updated policies</a></li>
                        <li><a href="#">Annual Review</a></li>
                    </ul>
                </li>
                <li>
                    <h2><b>company </b>services</h2>
                    <ul>
                        <li><a href="#">Check your email</a></li>
                        <li><a href="#">Scheduling</a></li>
                        <li><a href="#">eSupport</a></li>
```

```
                                        <li><a href="#">HR</a></li>
                                        <li><a href="#">Health and Safety</a></li>
                                        <li><a href="#">Site Directory</a></li>
                                    </ul>
                                </li>
                            </ul>
                        </div>
                        <!-- end sidebar -->
                        <div style="clear: both;"> </div>
                    </div>
                    <!-- end page -->
                    <!-- start footer -->
                    <div id="footer">
                        <div class="wrap">
                            <div id="fbox1" class="box2">
                                <h2><b>Questions?</b></h2>
                                <p>If you have any difficulties please view the <a href="#">FAQ</a> if
you continue to have problems do not hesitate to contact <a href="#">eSupport</a>.</p>
                            </div>
                            <div id="fbox2" class="box2">
                                <h2><b>Career </b> &amp;amp; benefits</h2>
                                <ul>
                                    <li><a href="#">Recruitment & Job Opportunities</a></li>
                                    <li><a href="#">Training</a></li>
                                    <li><a href="#">Career & Performance</a></li>
                                    <li><a href="#">Rewards</a></li>
                                    <li><a href="#">Benefits</a></li>
                                </ul>
                            </div>
                            <div id="fbox3" class="box2">
                                <h2><b>Support</b> &amp;amp; Services</h2>
                                <ul>
                                    <li><a href="#">Travel</a></li>
                                    <li><a href="#">Meetings</a></li>
                                    <li><a href="#">Business Support</a></li>
                                    <li><a href="#">Technology</a></li>
                                    <li><a href="#">Workplace</a></li>
                                </ul>
                            </div>
                        </div>
```

```
        <p id="legal"></p>
</div>
<!-- end footer -->
</body>
</html>
```

blog.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>mylearn 2.0</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="default.css" rel="stylesheet" type="text/css" />
<style type="text/css">
<!--
.style1 {
        font-size: 14px;
        font-weight: bold;
}
-->
</style>
</head>
<body>
<!-- start header -->
<div id="header">
        <div id="logo">
                <h1><a href="#">MYLEARN 2.0<sup></sup></a></h1>
          <h2>company portal</h2>
  </div>
        <div id="menu">
                <ul>
                        <li><a href="index.html"> home</a></li>
                        <li class="active"><a href="#">blog</a></li>
                        <li><a href="wiki.html">wiki</a></li>
                        <li><a href="learn.html">learn</a></li>
                        <li><a href="#">people </a></li>
        <li><a href="#">contact </a></li>
                </ul>
        </div>
</div>
<!-- end header -->
<!-- start page -->
<div id="page">
        <!-- start content -->
```

```
<div id="content">
        <div class="box1">
                <p><img src="images/img04.jpg" alt="" width="74" height="79" class="left" /><strong></strong></p>
        </div>
<div class="post">
                <h1 class="title">Welcome to your blog</h1>
                <p class="title"><img src="75108802kt2.jpg" alt="" width="570" height="716" /></p>
<div class="entry">
                        <p class="style1">first blog</p>
                        <p>This is the most recent blog post, it gives you the first few lines of the post, who posted it and when. If there are any comments on the blog, you will be able to view these as well. <br />
                        </p>
        </div>
                <div class="meta">
                        <p class="byline">Posted on October 21, 2007 by A. Smith</p>
                        <p class="links"><a href="#" class="more">Read full article</a> <b>|</b> <a href="#" class="comments">Comments (32)</a></p>
                </div>
        </div>
        <div class="post">
                <h2 class="title">Message from CEO</h2>
                <div class="entry">
                        <p>Welcome to the new company portal, after consulting staff from all sectors of the organisation we review their suggestions and comments on the previous site and included them in this the latest iteration of the portal. The portal will be personalised for each of you. We hope that each and everyone of ye will not only use but contribute to the portal so it will grow to become an invaluable asset to the organisation.<br />
                        </p>
         </div>
                <div class="meta">
                        <p class="byline">Posted on October 18, 2007 by B. Gates</p>
                        <p class="links"><a href="#" class="more">Read full article</a> <b>|</b> <a href="#" class="comments">Comments (112)</a></p>
                </div>
        </div>
</div>
<!-- end content -->
```

```
<!-- start sidebar -->
<div id="sidebar">
	<ul>
		<li id="search">
			<h2><b>people Search</b></h2>
			<form method="get" action="">
				<fieldset>
				<input type="text" id="s" name="s" value="" />
				<input type="submit" id="x" value="Search" />
				</fieldset>
			</form>
		</li>
		<li>
			<h2><strong>company </strong>news</h2>
		 <ul>
				<li><a href="#">Spotlight on People</a></li>
				<li><a href="#">The Indian Success Story</a></li>
				<li><a href="#">Reduce your mailbox size</a></li>
				<li><a href="#">Save reporting time</a></li>
				<li><a href="#">Telethon appeal</a></li>
				<li><a href="#">Updated policies</a></li>
				<li><a href="#">Annual Review</a></li>
			</ul>
		</li>
		<li>
			<h2><b>company </b>services</h2>
			<ul>
				<li><a href="#">Check your email</a></li>
				<li><a href="#">Scheduling</a></li>
				<li><a href="#">eSupport</a></li>
				<li><a href="#">HR</a></li>
				<li><a href="#">Health and Safety</a></li>
				<li><a href="#">Site Directory</a></li>
			</ul>
		</li>
	</ul>
</div>
<!-- end sidebar -->
<div style="clear: both;"> </div>
</div>
```

```
<!-- end page -->
<!-- start footer -->
<div id="footer">
	<div class="wrap">
		<div id="fbox1" class="box2">
			<h2><b>Questions?</b></h2>
			<p>If you have any difficulties please view the <a href="#">FAQ</a> if you continue to have problems do not hesitate to contact <a href="#">eSupport</a>.</p>
		</div>
		<div id="fbox2" class="box2">
			<h2><b>Career </b> &amp;amp; benefits</h2>
			<ul>
				<li><a href="#">Recruitment & Job Opportunities</a></li>
				<li><a href="#">Training</a></li>
				<li><a href="#">Career & Performance</a></li>
				<li><a href="#">Rewards</a></li>
				<li><a href="#">Benefits</a></li>
			</ul>
		</div>
		<div id="fbox3" class="box2">
			<h2><b>Support</b> &amp;amp; Services</h2>
			<ul>
				<li><a href="#">Travel</a></li>
				<li><a href="#">Meetings</a></li>
				<li><a href="#">Business Support</a></li>
				<li><a href="#">Technology</a></li>
				<li><a href="#">Workplace</a></li>
			</ul>
		</div>
	</div>
	<p id="legal"></p>
</div>
<!-- end footer -->
</body>
</html>
```

wiki.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>mylearn 2.0</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="default.css" rel="stylesheet" type="text/css" />
<style type="text/css">
<!--
.style1 {
	font-size: 14px;
	font-weight: bold;
}
-->
</style>
</head>
<body>
<!-- start header -->
<div id="header">
	<div id="logo">
		<h1><a href="#">MYLEARN 2.0<sup></sup></a></h1>
	  <h2>company portal</h2>
  </div>
	<div id="menu">
		<ul>
			<li><a href="index.html"> home</a></li>
			<li><a href="blog.html">blog</a></li>
			<li class="active"><a href="wiki.html">wiki</a></li>
			<li><a href="learn.html">learn</a></li>
			<li><a href="#">people </a></li>
		<li><a href="#">contact </a></li>
		</ul>
	</div>
</div>
<!-- end header -->
<!-- start page -->
<div id="page">
	<!-- start content -->
	<div id="content">
```

```
                <div class="box1">
                        <p><img src="images/img04.jpg" alt="" width="74" height="79"
class="left" /></p>
            </div>
<div class="post">
                        <h1 class="title">Welcome to the wiki</h1>
                        <div class="entry">
                                <p class="style1"><img src="wiki" alt="" width="575"
height="566" /></p>
            </div>
            </div>
                <div class="post"></div>
        </div>
        <!-- end content -->
        <!-- start sidebar -->
        <div id="sidebar">
                <ul>
                        <li id="search">
                                <h2><b>people Search</b></h2>
                                <form method="get" action="">
                                        <fieldset>
                                        <input type="text" id="s" name="s" value="" />
                                        <input type="submit" id="x" value="Search" />
                                        </fieldset>
                                </form>
                        </li>
                        <li>
                                <h2><strong>company </strong>news</h2>
                 <ul>
                                        <li><a href="#">Spotlight on People</a></li>
                                        <li><a href="#">The Indian Success Story</a></li>
                                        <li><a href="#">Reduce your mailbox size</a></li>
                                        <li><a href="#">Save reporting time</a></li>
                                        <li><a href="#">Telethon appeal</a></li>
                                        <li><a href="#">Updated policies</a></li>
                                        <li><a href="#">Annual Review</a></li>
                                </ul>
                        </li>
                        <li>
                                <h2><b>company </b>services</h2>
```

```
                        <ul>
                            <li><a href="#">Check your email</a></li>
                            <li><a href="#">Scheduling</a></li>
                            <li><a href="#">eSupport</a></li>
                            <li><a href="#">HR</a></li>
                            <li><a href="#">Health and Safety</a></li>
                            <li><a href="#">Site Directory</a></li>
                        </ul>
                    </li>
                </ul>
            </div>
            <!-- end sidebar -->
            <div style="clear: both;"> </div>
        </div>
        <!-- end page -->
        <!-- start footer -->
        <div id="footer">
            <div class="wrap">
                <div id="fbox1" class="box2">
                    <h2><b>Questions?</b></h2>
                    <p>If you have any difficulties please view the <a href="#">FAQ</a> if
you continue to have problems do not hesitate to contact <a href="#">eSupport</a>.</p>
                </div>
                <div id="fbox2" class="box2">
                    <h2><b>Career </b> &amp;amp; benefits</h2>
                    <ul>
                        <li><a href="#">Recruitment & Job Opportunities</a></li>
                        <li><a href="#">Training</a></li>
                        <li><a href="#">Career & Performance</a></li>
                        <li><a href="#">Rewards</a></li>
                        <li><a href="#">Benefits</a></li>
                    </ul>
                </div>
                <div id="fbox3" class="box2">
                    <h2><b>Support</b> &amp;amp; Services</h2>
                    <ul>
                        <li><a href="#">Travel</a></li>
                        <li><a href="#">Meetings</a></li>
                        <li><a href="#">Business Support</a></li>
                        <li><a href="#">Technology</a></li>
```

```
                        <li><a href="#">Workplace</a></li>
                    </ul>
                </div>
            </div>
            <p id="legal"></p>
</div>
<!-- end footer -->
</body>
</html>
```

learn.html:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
```

```
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="content-type" content="text/html; charset=utf-8" />
<title>mylearn 2.0</title>
<meta name="keywords" content="" />
<meta name="description" content="" />
<link href="default.css" rel="stylesheet" type="text/css" />
<style type="text/css">
<!--
.style1 {
	font-size: 14px;
	font-weight: bold;
}
-->
</style>
</head>
<body>
<!-- start header -->
<div id="header">
	<div id="logo">
		<h1><a href="#">MYLEARN 2.0<sup></sup></a></h1>
	  <h2>company portal</h2>
  </div>
	<div id="menu">
		<ul>
			<li><a href="index.html"> home</a></li>
			<li><a href="blog.html">blog</a></li>
			<li><a href="wiki.html">wiki</a></li>
			<li class="active"><a href="learn.html">learn</a></li>
			<li><a href="#">people </a></li>
	<li><a href="#">contact </a></li>
		</ul>
	</div>
</div>
<!-- end header -->
<!-- start page -->
<div id="page">
	<!-- start content -->
	<div id="content">
```

```
                <div class="box1">
                        <p><img src="images/img04.jpg" alt="" width="74" height="79"
class="left" /></p>
            </div>
<div class="post">
                        <h1 class="title">Welcome to mylearn 2.0</h1>
                        <div class="entry">
                                <p class="style1"><img src="learn" alt="learn" width="575"
/></p>
                                <p class="style1"><img src="find learn" alt="find learn" /></p>
            </div>
            </div>
                <div class="post"></div>
        </div>
        <!-- end content -->
        <!-- start sidebar -->
        <div id="sidebar">
                <ul>
                        <li id="search">
                                <h2><b>people Search</b></h2>
                                <form method="get" action="">
                                        <fieldset>
                                        <input type="text" id="s" name="s" value="" />
                                        <input type="submit" id="x" value="Search" />
                                        </fieldset>
                                </form>
                        </li>
                        <li>
                                <h2><strong>company </strong>news</h2>
                    <ul>
                                        <li><a href="#">Spotlight on People</a></li>
                                        <li><a href="#">The Indian Success Story</a></li>
                                        <li><a href="#">Reduce your mailbox size</a></li>
                                        <li><a href="#">Save reporting time</a></li>
                                        <li><a href="#">Telethon appeal</a></li>
                                        <li><a href="#">Updated policies</a></li>
                                        <li><a href="#">Annual Review</a></li>
                                </ul>
                        </li>
                        <li>
```

```
                        <h2><b>company </b>services</h2>
                        <ul>
                                <li><a href="#">Check your email</a></li>
                                <li><a href="#">Scheduling</a></li>
                                <li><a href="#">eSupport</a></li>
                                <li><a href="#">HR</a></li>
                                <li><a href="#">Health and Safety</a></li>
                                <li><a href="#">Site Directory</a></li>
                        </ul>
                </li>
        </ul>
    </div>
    <!-- end sidebar -->
    <div style="clear: both;"> </div>
</div>
<!-- end page -->
<!-- start footer -->
<div id="footer">
    <div class="wrap">
        <div id="fbox1" class="box2">
            <h2><b>Questions?</b></h2>
            <p>If you have any difficulties please view the <a href="#">FAQ</a> if
you continue to have problems do not hesitate to contact <a href="#">eSupport</a>.</p>
        </div>
        <div id="fbox2" class="box2">
            <h2><b>Career </b> &amp;amp; benefits</h2>
            <ul>
                <li><a href="#">Recruitment & Job Opportunities</a></li>
                <li><a href="#">Training</a></li>
                <li><a href="#">Career & Performance</a></li>
                <li><a href="#">Rewards</a></li>
                <li><a href="#">Benefits</a></li>
            </ul>
        </div>
        <div id="fbox3" class="box2">
            <h2><b>Support</b> &amp;amp; Services</h2>
            <ul>
                <li><a href="#">Travel</a></li>
                <li><a href="#">Meetings</a></li>
                <li><a href="#">Business Support</a></li>
```

```
                                    <li><a href="#">Technology</a></li>
                                    <li><a href="#">Workplace</a></li>
                                </ul>
                            </div>
                        </div>
                        <p id="legal"></p>
</div>
<!-- end footer -->
</body>
</html>
```

default.css:

```
body {
        margin: 100px 0 0 0;
```

```
        padding: 0;
        background: #FFFFFF url(images/img01.gif) repeat-x;
        font-family: "Trebuchet MS", Arial, Helvetica, sans-serif;
        font-size: 13px;
        color: #333333;
}

h1, h2, h3 {
        margin: 0;
        text-transform: lowercase;
        font-weight: normal;
        color: #3E3E3E;
}

h1 {
        font-size: 32px;
}

h2 {
        font-size: 23px;
}

p, ul, ol {
        margin: 0 0 2em 0;
        text-align: justify;
        line-height: 26px;
        font-size: 11px;
}

a:link {
        color: #7BAA0F;
}

a:hover, a:active {
        text-decoration: none;
        color: #003448;
}

a:visited {
        color: #333333;
```

```
}

img {
	border: none;
}

img.left {
	float: left;
	margin-right: 15px;
}

img.right {
	float: right;
	margin-left: 15px;
}

/* Form */

form {
	margin: 0;
	padding: 0;
}

fieldset {
	margin: 0;
	padding: 0;
	border: none;
}

legend {
	display: none;
}

input, textarea, select {
	font-family: "Trebuchet MS", Arial, Helvetica, sans-serif;
	font-size: 13px;
	color: #333333;
}

/* Header */
```

```
#header {
	width: 850px;
	height: 82px;
	margin: 0 auto 40px auto;
	background: url(images/img03.gif) repeat-x left bottom;
}

#logo {
	float: left;
}

#logo h1 {
	font-size: 38px;
	color: #494949;
}

#logo h1 sup {
	vertical-align: text-top;
	font-size: 24px;
}

#logo h1 a {
	color: #494949;
}

#logo h2 {
	margin-top: -10px;
	font-size: 12px;
	color: #A0A0A0;
}

#logo a {
	text-decoration: none;
}

/* Menu */

#menu {
	float: right;
```

```
}

#menu ul {
	margin: 0;
	padding: 15px 0 0 0;
	list-style: none;
}

#menu li {
	display: inline;
}

#menu a {
	display: block;
	float: left;
	margin-left: 30px;
	padding: 7px;
	text-decoration: none;
	font-size: 13px;
	color: #000000;
}

#menu a:hover {
	text-decoration: underline;
}

#menu .active a {
	background: url(images/img02.gif) repeat-x left bottom;
}

/* Page */

#page {
	width: 850px;
	margin: 0 auto;
}

/* Content */

#content {
```

```
        float: left;
        width: 575px;
}

/* Post */

.post {
}

.post .title {
        margin-bottom: 20px;
        padding-bottom: 5px;
        background: url(images/img03.gif) repeat-x left bottom;
}

.post .entry {
}

.post .meta {
        padding: 15px 0 60px 0;
        background: url(images/img03.gif) repeat-x;
}

.post .meta p {
        margin: 0;
        line-height: normal;
        color: #999999;
}

.post .meta .byline {
        float: left;
}

.post .meta .links {
        float: right;
}

.post .meta .more {
        padding: 0 20px 0 18px;
        background: url(images/img06.gif) no-repeat left center;
```

```
}

.post .meta .comments {
	padding-left: 22px;
	background: url(images/img07.gif) no-repeat left center;
}

.post .meta b {
	display: none;
}

/* Sidebar */

#sidebar {
	float: right;
	width: 195px;
}

#sidebar ul {
	margin: 0;
	padding: 0;
	list-style: none;
}

#sidebar li {
	margin-bottom: 40px;
}

#sidebar li ul {
}

#sidebar li li {
	margin: 0;
}

#sidebar h2 {
	margin-bottom: 10px;
	background: url(images/img03.gif) repeat-x left bottom;
	font-size: 16px;
}
```

```
/* Search */

#search {
}

#search h2 {
	margin-bottom: 20px;
}

#s {
	width: 120px;
	margin-right: 5px;
	padding: 3px;
	border: 1px solid #F0F0F0;
}

#x {
	padding: 3px;
	background: #ECECEC url(images/img08.gif) repeat-x left bottom;
	border: none;
	text-transform: lowercase;
	font-size: 11px;
	color: #4F4F4F;
}

/* Boxes */

.box1 {
	padding: 20px;
	background: url(images/img05.gif) no-repeat;
}

.box2 {
	color: #BABABA;
}

.box2 h2 {
	margin-bottom: 15px;
	background: url(images/img10.gif) repeat-x left bottom;
```

```
        font-size: 16px;
        color: #FFFFFF;
}

.box2 ul {
        margin: 0;
        padding: 0;
        list-style: none;
}

.box2 a:link, .box2 a:hover, .box2 a:active, .box2 a:visited  {
        color: #EDEDED;
}

/* Footer */

#footer {
        height: 400px;
        min-height: 400px;
        padding: 130px 0 0 0;
        background: #003448 url(images/img09.gif) repeat-x;
}

html>body #footer {
        height: auto;
}

#footer .wrap {
        width: 850px;
        margin: 0 auto;
}

#legal {
        clear: both;
        padding-top: 20px;
        text-align: center;
        color: #375C69;
}

#legal a {
```

```
        color: #476B77;
}

#fbox1, #fbox2, #fbox3 {
        float: left;
}

#fbox1 {
        width: 310px;
}

#fbox2 {
        width: 200px;
        padding-left: 70px;
}

#fbox3 {
        width: 200px;
        padding-left: 70px;
}
```