

# Using ICT Tools to Manage Knowledge: A Student Perspective in Determining the Quality of Education

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## Abstract

*Within the e-learning context in a university, information communications and technology (ICT) tools have the potential to facilitate knowledge interactions between its source (instructor) and its recipient (students). Prior literature explores the types of channels that encourage knowledge transfer in this environment and discusses how ICT tools can help speed up the processes of transferring knowledge from those who have knowledge to those who seek knowledge. Within the university context, ICT tools such as email, the World Wide Web (WWW), Internet Relay Chat (IRC), discussion forums and eLearning platforms such as WebCT and BlackBoard have the potential to facilitate this knowledge transfer process – acting as a link between the knowledge sender and knowledge recipient. Effective knowledge transfer has to consider effective knowledge acquisition. These two processes are inexplicably linked. In this study, a focus group conducted with mid-level undergraduate students was conducted to explore the conversion of knowledge from one form to another using the SECI (Socialisation, Externalisation, Combination and Internalisation) model with consideration to the “pull” and “push” processes in knowledge transfer.*

## INTRODUCTION

Of the many definitions of Knowledge Management (KM), a definition provided by Swan et al. (1999) appears suitable for this paper. Swan defines KM as “any process or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organizations” (p. 669). Thus it becomes imperative to understand what *knowledge* is and why knowledge should be considered important to enhance learning and performance in an organisation. Discussions within KM literature identify knowledge as an important resource, as being multifaceted, ambiguous and two dimensional (i.e.) tacit and explicit (Swan & Newell, 2000); (Garrick & Clegg, 2000); (Marshall & Brady, 2001); (Alavi & Leidner, 2001); (Darroch & McNaughton, 2002); (Zhou & Fink, 2003).

To date, almost all research have placed an enormous emphasis on tacit knowledge<sup>1</sup> as being vital for the generation of explicit knowledge<sup>2</sup> but the process of capturing, transferring, and

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<sup>1</sup> Tacit Knowledge is defined as highly personal, subjective form of knowledge that is usually informal and can be inferred from statements of others ((Sternberg, 1997). Tacit knowledge is personal, context-specific and therefore hard to formalize and communicate (Nonaka & Takeuchi, 1995). Tacit knowledge is experience, personal interaction, craftsmanship, intuition that is difficult to be articulated in rules or procedures (Bhatt, 2000) and hence generally is considered to be difficult to capture, codify, adopt and distribute. Tacit Knowledge is made up of both technical and cognitive elements. Technical tacit knowledge consists of know-how’s, skills, and craftsmanship specific to a field. Cognitive tacit knowledge is made up of mental models, maps, beliefs, perceptions, assumptions, insights and paradigms (Alavi & Leidner, 2001).

<sup>2</sup> Explicit Knowledge is acquired through formal education (e.g.) academic knowledge and from writings, books, rules, procedures, and documents such as reports and manuals ((Smith, 2001). Explicit knowledge can be expressed in print, electronic media, transmitted through formal systematic language. Explicit knowledge can be stored in databases or repositories such as data warehouses and shared between individuals and group of people through network such as the Internet, Intranet and Extranet ((Alavi & Leidner, 2001).

creation of this tacit knowledge has always been a source of interest. Information Technology (IT) has provided many ICT tools to assist in knowledge encapsulation. Recent research advocate that it is becoming increasingly evident that technology alone cannot inspire the success of knowledge management. People's involvement and processes put in place either explicitly or implicitly are as important as are the tools per se (McDermott, 1999).

Many KM initiatives that use IT as the backbone for knowledge acquisition and transfer have not been entirely successful. These failures provides an insight that perhaps knowledge is not a thing or an object and maybe KM is not a system but an ephemeral, active process of interactions and inter-relationships between knowledge users (Stacey, 2001).

This paper while acknowledging that all processes related to knowledge are important, maintains that it is difficult to provide an in-depth discussion on all mentioned topics and therefore limits itself to Knowledge Transfer issues. Its importance is recognized by the facts that tacit knowledge is vital for the generation of explicit knowledge but how to transfer this tacit knowledge typically using ICT tool is a great challenge. This challenge is particularly evident in the academic learning environment from the student's perspective, upon which this paper is based.

## **KNOWLEDGE AND KNOWLEDGE TRANSFER ISSUES SPECIFIC TO UNIVERSITY CONTEXT**

According to Wigg (1993), learning is central to the knowledge transfer process. Central to any learning environment is the effective use of IT which provides the information needed to solve problems, make decisions and take effective action. This view is also supported by Marquard (1996) and Senge (1990). However as pointed out by Argyris & Schon (1987), individual learning is crucial for new knowledge to be created. This validates the need for knowledge transfer from source(s) to a recipient for subsequent synthesis of knowledge. This view now can be further extended by the fact that ICT tools (including eLearning platforms) could potentially expedite new learning and thus validate knowledge creation and knowledge transfer.

Individual learning is the act of finding relevant information<sup>3</sup> and applying or articulating to work processes which makes a positive difference in business results. The concept of learning has received attention and prominence within management and in academia in recent years. This could be spurred by organisations (including universities) dynamically undergoing changes to meet the increasing demands and pressure of their competitive environments. In a knowledge based economy, learning appears to be a solution for retaining competitive edge. This is done through expansion of knowledge.

Learning is no longer a separate activity that occurs in a workplace or in a class room setting but has become a by-product of people performing their work, behaviours that define learning and behaviours that define being productive are one and the same (Zuboff, 1988). Therefore knowledge transfer appears to be a unique process and is a continuous process from higher education to the work force. As such, the outcome of this research is deemed applicable and relevant to both higher education as well as business organisations.

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<sup>3</sup> Data and information can be found in documents, manuals and reports – similar to explicit knowledge. However the distinction between data, information and knowledge depends on user's ability to interpret, make sense, judge, articulate with work process that adds value to the knowledge.

Within the context of universities, recent developments further indicate that universities too work like businesses. They are on the constant lookout for innovation, encourage multi-skilling of staff, promote efficiency, seek flexibility and analyse the core issues of improving products and services, examples of which include off shore programmes leading to internationalisation and globalisation of their products (courses). Universities are explicitly recognising cultural diversity in their clients (students) leading to different target groups and the provision of online education such as e-learning and web based learning ( a subset of IT) that cater for these differences in the market segments.

While it is difficult to refute that technology helps to facilitate knowledge creation and knowledge transfer between individuals and groups, much of the learning that has been launched into the educational agenda is without a sound theoretical framework or satisfactory model to guide it (Goodyear, Salmon, Spector, Steeples, & Tickner, 2001). Although the process of learning and transfer of knowledge to an on-line environment seem to be occurring amongst academics and students, much of these have been not been fully understood. Tacit knowledge is not documented and varies from individual to individual and appears to be ill defined when recreated in the online media. Literature indicates that issues relating to tacit knowledge such as mapping of tacit knowledge (Alavi & Leidner, 2001), impediments, culture and leadership (O'Dell & Grason, 1998), detriments, absorption, retention (Szulanski, 2003) are major influencers in the conversion from tacit to explicit knowledge.

Further, while highlighting the fact that transfer of knowledge is an unexplored issue in knowledge management, studies point out that researchers should explore socio-psychological factors such as trust and culture as these have significant impact on knowledge transfer (Huber, 2001). When closely observed, socio-psychological factors such as trust and culture are factors related to human behaviour in a given environment. These factors are linked to tacit knowledge as tacit knowledge is about experience, intuition, judgment and perception which gets articulated to work process thereby creating knowledge and transferred either formally or informally to others. Thus human factors in the form of tacit knowledge are important to transfer of knowledge as well.

Busch & Richards (2002) and Richards (2002) highlight the importance of tacit knowledge in relation to research in the Information Systems field by stating that much of the Information Systems research to date has dealt with explicit or articulated knowledge and little empirical research has been done on tacit knowledge. The lack of empirical and theoretical studies on the subject of tacit knowledge is further articulated by Nonaka & Takeuchi (1995, p.viii) that '... tacit knowledge has been overlooked as a critical component of collective behavior'.

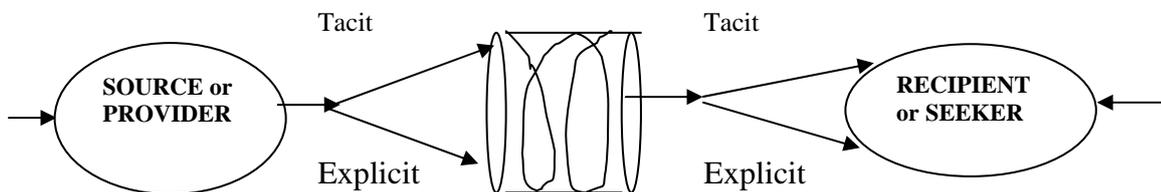
As pointed out earlier and highlighted by Alavi & Leidner (2001, p.132), the role of IT within knowledge management studies is questionable and therefore call for an inquiry by stating 'We therefore believe that the role of IT in organizational knowledge management ought to receive considerable scholarly attention and become a focal point of inquiry'. Similarly Davenport & Prusak (2000, p.106) emphasise that knowledge transfer needs to change its focus from technology to people and interaction with technology, with specific emphasis on tacit knowledge. They state that '...too often, knowledge transfer has been confined to such concepts as improved access, electronic communication, document repositories... ..it is time for firms to shift their attention to more human aspects, ... firms need to exploit both the hard and soft aspects of knowledge transfer, but in western business culture there are usually too few advocates of the soft stuff'

While many studies provide independent views on the role of tacit knowledge and IT and its importance (Kubo & Saka, 2002); (Augier, Shariq, & Vendelo, 2001; Bender & Fish, 2000;

Brockmann & Anthony, 1998); (Massey, Montoya-Weiss, & O'Driscoll, 2002) and (Russell, Calvey, & Banks, 2003), most of the studies fail to provide a bigger picture arising from the conceptual frameworks drawn by other studies in this field. This has resulted in some confusion and frustration, as there is no uniform opinion as to how tacit knowledge is transferred from one entity to another (Simonin, 1999). Therefore, there is urgency to recognise the available theories that underpin the transfer of knowledge which includes tacit knowledge as well. This paper is an initial component in that direction. The total idea of this research is to develop necessary 'grounding theory' that would enable to create theoretical underpinnings to understand how the 'transfer' process occurs in a learning environment.

## KNOWLEDGE TRANSFER MODEL FOR AN ACADEMIC ENVIRONMENT

Within a university context, ICT is put to use through tools such as email, Internet, IRC chat, bulletin board and E-learning tools such as WebCT and BlackBoard, which facilitate the transfer of knowledge and act as a link between source and the recipient. Wiig (1993) identifies that when knowledge flows from one person to another, it is difficult to ascertain or be aware of as to what sort of knowledge is sent by the source and what type of knowledge is received by the recipient. A major barrier to a beginner is the lack of awareness of which knowledge (tacit or explicit or combination of both) is being used and how to use it and which source facilitates its use. Unless one is being told about what happens and the reasons, it is usually considered hard to learn. "Effective learning" relies on "effecting teaching" (implied transfer) process and vice versa. By this argument Nonaka's (1991) spiral model further developed in 1998 as "Ba" concept helps to break the barrier in the learning process where an individual would be able to convert tacit knowledge to explicit knowledge and vice versa through knowledge spiralling in an electronic medium. This is diagrammatically shown in Figure 1.



**Figure 1: Transfer of Knowledge from Source to the Recipient**

Tacit to Explicit (TE), known as the externalisation process, helps to articulate tacit knowledge into explicit knowledge through metaphors and analogy, hypothesis and models in understanding the concepts. Explicit to Tacit (ET), known as combination process, allows a person to systemise a concept into a knowledge system by combining different bodies of explicit knowledge. Explicit to Explicit (EE), known as internalisation process, helps individuals in identifying strategies to internalize new knowledge.

Alavi & Leidner (2001) emphasise that IT can accelerate the growth of knowledge creation and transfer of knowledge. They point out that while IT can influence the creation and transfer of knowledge, it can also hinder the transfer process such as an inability to find and locate knowledge or discouraged to find them for reasons such as ease of use and motivation. The ability to get knowledge from a source can be referred to as the "pull" process (Huber, 2001). Huber points out that some individuals may not find knowledge easy to give away for variety of reasons such as trust, motivation, and reward. This process of giving away the knowledge may be referred to as the 'push' process.

Alavi & Leidner (2001) indicate that transfer of knowledge (effectiveness may be included) occurs when there is a balance between the “push” and the “pull” processes (see Table 1)

<b>Pull</b>	provider’s perspective on transfer of flow = selective pull process by seeker
<b>Push</b>	Seeker’s perspective on transfer of flow = selective push process by the provider

**Table 1: “Push” and “Pull” process**

### **Factors that affect the “Push” and the “Pull” Process**

From the empirical studies conducted by (Gupta & Govindarajan, 2000; Huber, 2001; O'Dell & Grason, 1998; Simonin, 1999; Standing & Benson, 2000; Szulanski, 2003) there are several factors that can influence the effective transfer of knowledge from the source to the technology environment. These factors include motivation, absorptive capacity, richness of transmission, retention and regeneration, casual ambiguity, trust, culture etc that influence the effective transfer of knowledge from the source to the technology environment. Similarly these factors facilitate the recipient for acceptance and understanding of this transferred knowledge.

#### *Motivational Factors*

Motivation is generally defined as minds that are able to reason, remember, learn, and form concepts or ideas. Human minds are able to direct actions toward specific goals. In other words, people can be motivated by reason and intelligence. An academic may or may not be motivated to use a specific system to push the knowledge. There may be reasons such as resentment in redefinition of work practices or lack of recognition of enhanced effort put in to making the educational experience of the recipient a good one. Fear, perceived heavy work, need for new learning, training that is required may have an impact on transfer of knowledge from the source. Willingness to share knowledge is also another criteria that may effect the motivational disposition of the source.

Some source need to be motivated to use the system as it is a new form of learning (different to the traditional teaching and learning atmosphere) and may have encountered adverse experience, which has an impact towards the transfer of knowledge. Foot dragging, feigned acceptance, passivity, outright rejection in the implementation of new knowledge are cited as lack of motivation (Szulanski, 2003). Willingness to acquire new knowledge by the source (as a reverse role of being the recipients) is also an added perspective of the motivational disposition of an academic. Thus lack motivation of the source (or as a recipient) can have a negative impact in the transfer of knowledge.

#### *Ease of use*

Ease of use is defined as “the degree to which an individual believes that using a particular system would be free of physical or mental effort” (Dias, 1998). An academic needs to push the necessary (for example subject) knowledge using a system (for example – WebCT). The role of the system and the degree to which this has an effect on source and as a recipient will have an impact on the transfer of tacit knowledge. (Dias, 1998) used “ease of use” as a factor to study the motivation.

#### *Perceived usefulness*

Perceived usefulness is defined as the “degree to which an individual believes that using a particular system would enhance his/her job performance” (Dias, 1998). The lecturer may find a particular system for example email as an easy tool to communicate a subject material such as an attachment of to a group of people. This may be found easier in comparison to uploading a document in a web based tool such as WebCT which may be time consuming, difficult, not quick and easy to complete the required job as systems can be difficult to learn technical skills. Perceived usefulness<sup>4</sup> can be a factor influencing the source and as a recipient in pushing and pulling the materials in technology facilitated environment.

#### *Training Factor 1: Absorptive capacity*

Absorptive capacity is defined as “the ability to exploit outside sources of knowledge and is largely a function of the prior related knowledge” (Cohen & Levinthal, 1990). This prior knowledge includes basic skills, shared language, and recent scientific or technological developments in a given field. According to (Gupta & Govindarajan, 2000) “absorptive capacity is an ability to recognize the value of new information, assimilate it and apply it to commercial ends” while (Cohen & Levinthal, 1990), believe that it is important to have prior related knowledge in order to absorb the new knowledge.

According to (Cohen & Levinthal, 1990), ease of learning and technological opportunity are factors correlating with absorptive capacity. An academic may undergo professional development training or may have instruction on how to use the tools in order to push the content. An academic’s ability in learning a new skill, the absorptive capacity, the lack of it may have an impact in the transfer of knowledge. As a recipient an academic must be able to relate to the new knowledge either in content, manner it is presented or have an ability to access the information such as know how to deal with a technical problem, how to search for new information with little or relative information. The ability to exploit new information is considered to be absorptive capacity.

#### *Training Factor 2: Retention and regeneration*

Retention and regeneration according to (Cohen & Levinthal, 1990), is an ability not only to acquire and assimilate new knowledge but also to use or apply knowledge when required. According to (El Sawy, I, A, & A, 1998), knowledge must go through re-creation process which depends on the recipient’s cognitive capacity to process of the incoming stimuli (Vance & Eynon, 1998). Academics after going through the professional development program, will also need to have retention power and ability to re-create the knowledge by applying those skills to create own material. (Szulanski, 2003), identified this as “ramp up” stage in the process of knowledge transfer. Where recipient begins to apply the new skill, knowledge or understanding of new practices initially with struggle and continue until the performance is considered as highly satisfactory. This knowledge is internalised and gets to become part of routine. (Nonaka & Takeuchi, 1995), identified this stage as “Internalisation” where an individual continue to embody new knowledge.

#### *Causal Ambiguity*

Causal Ambiguity is understood as uncertain imitability ((Lippman & Rumelt, 1982; Rumelt, 1984; Szulanski, 2003)). When idiosyncratic features may compromise replication of results

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<sup>4</sup> The two factors “Perceived usefulness” and “ease of use” has been cited as a measure and referred to as technology acceptance model (TAM) by (Davis, 1989), and ease of use as a measure in task technology fit model (TTF) by (Goodhue, 1995).

in a novel setting then there is causal ambiguity. Causal ambiguity is an inability to determine the success or failure of an outcome when knowledge is recreated in a novel environment, while replication refers to an inability to respond to new knowledge or re-create the knowledge. In information systems field, use of technology such as E-learning is still in its infancy and established theory regarding its potential usage is yet to emerge. An academic who makes an attempt to re-create the existing knowledge into a new form is uncertain of how the new E-learning features will affect the outcome of the re-creation effort and is unable to measure the contribution. As a recipient an academic may not be sure as to how to respond to new learning situations and unable to determine whether the effort put in is sufficient for new learning may lead to causal ambiguity.

#### *Richness of transmission of channel*

Taking inference from the study of (Gupta & Govindarajan, 2000), existence and richness of transmission channel is another factor that this research framework will consider to investigate. With many different tools/ technology available, academics may prefer to use a specific channel due to certain properties which can also effect the transfer of knowledge. These may be telecommunication factors, preferred time of transmission, and availability of academe in times other than the specified time, density of communication etc. These factors can have an impact on both source and the recipient in transfer of knowledge in the interaction that helps to facilitate the knowledge spiral.

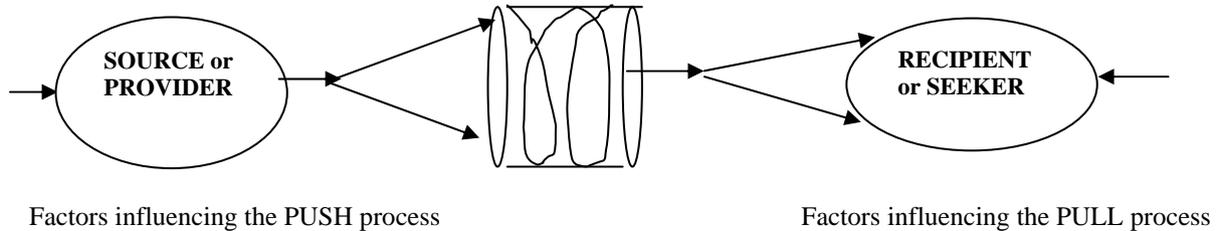
#### *Culture*

Culture is defined as shared values, beliefs and practices of the people in an organisation (McDermott & O'Dell, 2001). According to (McDermott & O'Dell, 2001) the cultural values are hard to articulate, invisible and people generally act on natural instinct of an organisation. These instincts are based on past action, stories and legends, myths and values passed on by leadership that are deep rooted. People share knowledge if it is expected to be a natural process and not a forced one. According to (Standing & Benson, 2000) organisational culture is a critical factor for knowledge sharing. They found factors such as trust to be a barrier for transfer of knowledge. Similarly factors such as leading by example, rewards and incentives, team based approach, improved communication, recognition for sharing information and improved technology were considered as facilitators to overcome cultural barrier.(O'Dell & Grason, 1998) indicated that not all people are interested in reward, but people like their expertise and knowledge to be used and acknowledged widely perhaps as award ceremony or embedding knowledge of best practice into work methods or professional development program (Ardichvili, Page, & Wentling, 2003). Removing barrier through success stories being told in meetings, reward positive behavior, promoting right people through performance management review, leading by example and showing commitment were considered to be factors motivating the source to share to knowledge. Little is known about culture factor that affects the transfer of knowledge between the sources.

This paper perceives knowledge as travelling from the source to the recipient; the source being an expert (instructor or other more knowledgeable students), for example, who is believed to have both tacit and explicit knowledge. The travel is envisaged as knowledge being “pushed” through an IT environment and “pulled” by the recipient.

The role of IT that facilitates the transfer is presently largely unknown. Factors mentioned in the previous section which influence the “push” and the “pull” process within academic environment are under researched. The following key research questions therefore emerge:

- Which IT tools such as email, chat, Internet, bulletin board encourages effective transfer of knowledge from source to the recipient?
- How do factors such as motivation, training (absorptive capacity and retention/regeneration), causal ambiguity, richness of transmission, culture have an impact or influence the knowledge “push” process and the “pull” process?



**Figure 2: Knowledge Transfer Model**

## RESEARCH METHODOLOGY

A qualitative methodology using focus groups was adopted, given the need to ask questions such as how and why; the little control the interviewer has over the interviewee; and the focus on contemporary event of this research, the appropriate options was case studies (Yin 1989). This strategy was aimed as an exploratory inquiry to relate role of ICT and human behaviours in the transfer process within a university setting – student-to-student and instructor-to-student.

According to Gavana, R., Delahaye, B., & Sekaran, U. (2001, p.108) pg 108, ‘an exploratory study is undertaken when little is known about the situation at hand or when no information is available on how similar problems or research issues have been resolved in the past’. Many studies have been undertaken in the past perhaps with E-learning context or multimedia perspective or perhaps from educational point of view. But not many studies exist with respect to knowledge management typically with knowledge transfer perspective. Implying that there is a need to investigate further the interrelationships of knowledge transfer from the student’s perspective.

Two focus groups were conducted with students from the University of Southern Queensland (USQ). Students were derived from on-campus mode of study. All the students had experience with ICT tools and had access to online learning systems such as WebCT. Further, these students accessed various online materials for their studies and submission of assignments and hence can be considered to be conversant with the concepts that were discussed in the focus groups.

The first group consisted of three mid-level undergraduate students who have had constant and high exposure to ICT tools in their studies with USQ. The second group consisted of postgraduate Master’s students who have had constant and high exposure to ICT tools in their studies with USQ.

The purpose for convergent of the focus groups is to refine the issues under study and improve the interview protocol by reviewing and comparing findings from each successive group. At the conclusion of the study, the findings were integrated with the model developed

from the literature to develop a refined model and testing protocol based on the research propositions. This paper addresses findings from the first focus group only.

The group discussions take the format of “less structured interviews” in which there is no pre-constructed interview guideline or questionnaire. This lack of structured interview format within an exploratory research is useful as it provides the focus group an opportunity to take control over the direction of the interview in terms of discussing items within the identified domain of the topic. According to Krueger (1994) and Morgan (1997), this aspect is particularly useful in exploratory research where a researcher may not initially even know what questions to ask. This ability to turn the discussion in favour of the participants themselves provides the focus group with a particular strength.

Another distinct advantage of focus group interview is that it has the ability to produce concentrated amount of data on precisely the topic of interest. Although researchers influence on data is a common issue in almost all qualitative data, within this focus group interviews, the motive is to find as many variables or constructs as possible within the scope of the study and to probe the underlying issue.

## **FINDINGS**

In terms of email access, the focus group interviews indicated that they are a good form of communication between students and efficient. The groups indicated that discussion boards are mainly a means to react to others problems and not very synchronised. Students expressed that they encountered problems in and hence were not satisfied. In terms of knowledge acquisition, students felt that the knowledge is better acquired from personal contacts. ICT tools helped them only when the personal contacts fail. IN terms of ICT tools such as WebCT, students felt that these tools help to ‘keep track of’ what is happening in the course of study. Further, students also expressed that these tools are useful only when the problems is not ‘urgent’. In terms of ICT tools helping to gain knowledge, the reaction from the focus group was varied and ranged from ‘depending on who’s there’ to ‘what you are learning’. The groups also expressed that when ICT tools are not helpful, they approached others personally to gain a lead. The groups also indicated that web resources are useful and easy to access. They felt that the structure of the courses facilitated knowledge transfer using web resources. The groups were not supportive of traditional library sources because of access issues. However, some members expressed that they ‘don’t dislike’ the library but library sources should be used as a complement to web sources. Surprisingly, the students ranked textbooks as the main source of knowledge creation and web was ranked the third among a list of knowledge creation sources. These students also placed emphasis on assignments as a main source of knowledge creation, synthesis and transfer.

In essence, the focus groups indicated that while ICT tools are useful, they are not a substitute to face-to-face contact. Students felt that ICT tools help to augment knowledge and the knowledge transfer occurs at assignment levels. They also pointed out that the tools are not mature enough as problems were encountered. Library is considered to be an important ingredient in knowledge creation but access problems and other difficulties associated with traditional libraries encouraged them to seek ICT tools for their study.

## **CONCLUSION**

The focus group interviews, while a useful exercise, clearly indicated that face-to-face contact is perhaps the best mode for knowledge management in a tertiary environment. The participants implied that while ICT tools are convenient, they are not a substitute to

'interaction' with lecturers. The text book is still considered as the main source of knowledge, followed by references provided to them and finally web resources. The focus groups indicated that emails and other internet sources facilitate knowledge transfer. However, the effectiveness of these tools was not established in this study. The push and pull process were not yet established as the data were not available in time for this paper.

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## APPENDIX

- 1), 2) and 3) are different respondents.  
1 = high school leaver (typical female mid-level student)  
2 = high school leaver (typical male mid-level student)  
3 = mature aged student (mid-level student)
- 

### Email

- good form of communication between students
- working on similar projects
- grab answers
- look over – confirm answers
- staff members (get hold of lecturers)
- time-efficient
- program code
- simple questions

### Study notes

- lecture slides
- making own notes

### Discussion boards (web ct)

#### General issues

- problems that others are experiencing – proactive (preemptive)
- reactive to others' problems – solutions
- student feedback
- lecturers and course team
- off at a tangent

### Patterns of knowledge acquisition and transfer (what tools are used, the order in determining knowledge sources, types of tools used, what are they used for)

- 1) students (face-to-face) – convenience – see them every day
  - lecturers – on-campus
  - if unable to contact lecturer, discussion and possibly emails
  - discussion – quite a few students doing the subject
  - WebCT as a break from the intensity of study
  - Just to keep track of what's going on within the course
  - Some subjects – lecturer uses discussion board as the basis of learning
  - 6-7 emails a week from lecturer

- 2) on-campus – ask students or previous students

- not a huge fan of WebCT – download limits – low bandwidth – not a patient person – usability of WebCT (time consuming for what he gets done) – convenience  
Not 1<sup>st</sup> or 2<sup>nd</sup> top choice  
If friends can't help, ask lecturer (see if they are IN)  
Discussion board or send email to lecturer  
Urgency of the problem – not very urgent – talk to lecturer, leave it for 24 hours, doesn't matter  
If very urgent, jump on WebCT (time motivation)  
WebCT = Problem-based motivation

3) WebCT is the first – 3 or 4 times per day  
- broadband connection – nice and quick – wirelessly thro laptop on campus  
- go thro every single message that's ever gone up on WebCT for every subject  
- take notes that are relevant  
If problem without info, after webct is lecturer  
Someone on campus – or student  
Accessibility of information source  
WebCT = learning and studying tool = questions/ideas = use/apply that in their studies

On WebCT = people are not just students, maybe mature students in the industry, websites, what they do at work... expands the boundaries, other information, expanded theoretical framework – to gain knowledge not just for examination but relevancy in workforce.

### **What is information? What is knowledge?**

2) Info : someone tells you  
Knowledge: when u apply and it makes sense, experiential knowledge, apply what I gain from work

3) info:  
Knowledge: what you can apply, not just a matter of – here's a, b, and c.. but what u grasp and how u can apply in everyday life... not just plain facts

1)info: everywhere  
Knowledge : acquisition process – accessibility of info – knowing where to get it

### **Does WebCT as a tool help you gain knowledge?**

Download lecture slides  
Depends on who's on there  
Level of activity (perceived usefulness)  
Broader knowledge in what u'll be learning (causal ambiguity)  
Meeting place (external students benefit, study groups – motivational factors to network for study groups, to make contact with knowledge sources)

### **How's email different?**

More one person (perceived usefulness) – specificity of source – perceived usefulness  
Ease of use

Single person – single or ½ issues (retention and generation) – their perspective only as opposed to WebCT (different perspectives)  
Email's great for organising things – time management

### **Knowledge acquisition**

Verbal communication → online communication  
What happens when you don't get the information you need?  
Booking appointment with lecturer  
Content – mainly to do with text and retention/generation  
Personal interpretation / lecturer's interpretation

### **Can't get info – now what?**

- 1) Went externally – manager of IT dept – informal interviewing  
Found the sources really helpful – causal ambiguity  
Causal ambiguity – learning from contrasts – industry vs academe  
Prior knowledge established thro an establishment of a framework (retention and absorptive capacity)  
Maybe over-generalisation – size of organisations could be an issue (absorptive capacity)
- 2) Culture of info sharing vs NOT sharing (left until last minute so source would not share information)  
Went thro data on discussion board from 2 months ago  
Practising lawyer/accountant – went outside the normal circles
- 3) I went to a past student, got their interpretation on the question  
A few words needed to be clarified  
Even if it wasn't right, put mind at ease to at least start  
Personal friend/Work (external sources)

### **Web is an option as a knowledge source**

(General comments from all)  
Knowledge transfer – library vs. Web  
Web – good for quick definitions  
Library – 10 books, not a single definition for capitalism  
Esp 2 hours before they're due  
No time to research  
Web – quick and fast and convenient, really easy to go with search engines  
Get lots of relevant material on the Web (web will filter)  
Comes down to timing as to Web or other resource  
Quality of content (motivational factors, ease of use)  
Culture of courses (impression by lecturer) determine the level of Web references in knowledge transfer  
Good as a cross-reference to text and other readings  
Up-to-date information via the Web  
Use Web to justify and back the sources up  
High currency of knowledge

### **Library**

(General comments from all)

Dislike the library – too time consuming, don't use it enough, don't know where the sources of information are (ease of use, prior framework for library searches)

Online searching vs. manual searching

Just because something is old doesn't mean it's irrelevant

Boundaries of knowledge acquisition determined by requirements of assignments (motivation, age bracket of knowledge)

Also, competitiveness in obtaining texts of high demand

Electronic Databases very similar to Web (what's the point? Ease of use is low – cluttered user interface, cryptic search strategies)

### **Ranking of tools**

1. Ease of use of the tools
2. Takes less time to find quality knowledge
3. Currency of knowledge acquired
4. Convenience
5. Quality

Interestingly, external personal sources are rated more highly than any of the knowledge acquired from tools.

Time factors (students work and do a few courses) – limited time. Therefore, convenience becomes more desirable.

### **Knowledge creation and synthesis (and transfer)**

- creation of assignments
- text and lecture slides to form the basis (framework)

1)

1. Textbook first
2. Selected Readings next
3. Web sites

Knowledge in acquiring knowledge. In high school, content is covered so thoroughly. In 2 years of economics in high school, uni covers in a semester (in less than 6 months).

2)

1. review assignments and key terms first
2. texts first at the start of semester, photocopy from the library
3. as I work thro the semester, when knowledge is communicated that sounds relevant, it triggers a response that creates more information that hooks upon framework (retention, regeneration, absorptive capacity)
4. closer to due date, the researched material is already available

motivation to synthesise knowledge– past performance (failures in previous semesters). To learn how to synthesise, ask successful students. Cousins, friends – on how to learn, take notes, keep record of content, work on assignments.

Motivation to pick up GPA.

1, 2, 3) No prior theoretical framework for content from high school. Therefore, motivation to work hard, attend all tutes/pracs and lectures.