

School of Education

**Effective online learning experiences:
Exploring potential relationships between Voice-over-Internet-
Protocol (VoIP) learning environments and adult learners'
motivation, multiple intelligences, and learning styles.**

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DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made. This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signed:

Dated: 10/05/2009

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Abstract

This study was a 360 degree exploration of the effectiveness of online learning experiences facilitated via Voice-over-Internet-Protocol (VoIP) by incorporating the insights afforded by students, their lecturers, and the administrator responsible for a VoIP trial in an Australian university. Also examined were the teaching considerations in designing effective online learning experiences and institutional rationale for adopting VoIP. This research investigated potential relationships between the adult learners' motivations to engage with the Voice-over-Internet-Protocol learning environment and their multiple intelligences (Gardner's theory) and learning management styles (Lessem's Spectral Management theory)

A pragmatic paradigm underpinned the mixed methods approach whereby questionnaires and inventories were used to ascertain students' multiple intelligences, learning management styles, and their perceptions of the learning experiences. An interpretive orientation was represented in the use of in-depth interview data, content analysis of reflective journals, and open-ended data from the questionnaires. These data enabled richer insights into students' perceptions of their learning environment and motivations, and academics' perceptions of teaching and administrative imperatives.

The conceptual framework (Figure 2.1) paid homage to the university student as the central figure in the teaching and learning cycle. Teaching and learning should remain a cyclical process whereby students learn from the academics' knowledge and their design of sound pedagogical experiences; contrastingly, lecturers learn about the effectiveness of their practice from student feedback and achievement. Lecturers are able to improve their pedagogical practice through professional development activities. Hence, good teaching and learning are the two key aspects in the literature identified as appropriate in this study. Student focus is on their learning; hence, the domains of adult learning and motivation are important inclusions. Additionally, it is useful to explore the knowledge-base related to learning styles and multiple intelligences. As this study has educational technology as a significant theme, it is important to include literature relating to teaching with technology. The Business capstone course in this case was designed by pedagogical and content

experts and utilised a team approach as the core teaching strategy. Therefore, cooperative learning, good teaching, and an outline of the context of university teaching in Australia provided insights into this case.

A significant finding in this study was that students preferred face-to-face and blended learning over purely online delivery. Good teaching was a major issue for students and they were articulate in describing what assisted them in their learning and were critical of poor pedagogical practices. Students desired positive relationships with their lecturers, and needed instructor-guidance and clear coursework structures. Students' priorities were good teaching, having control over their learning, and working effectively in collaborative teams. Students were motivated by facilities such as VoIP which increased the convenience factor in their studies. Learning communities were established by the students within face-to-face modes but were not as successfully established within the VoIP medium. They were motivated by working together in productive groups and enjoyed developing and refining their professional skills, such as leadership, communication, and teamwork. They were motivated by aspects of the course (including the VoIP) which they perceived to be directly relevant to career-oriented, pragmatic knowledge and skills.

From the academic perspective, VoIP was successful in creating online interactive environments, although more professional development was needed so that the full power of the medium could be utilised. Administratively, it was also found to be effective in providing a stable teaching and learning medium ensuring against potential disruptions due to global instability.

Students' multiple intelligences were distributed across the eight intelligences, with the three predominant being musical/rhythmic, kinaesthetic, and visual/spatial, respectively. A similar distribution was found for the seven learning management styles with the predominant being "indigo" with a 'developmental' management and 'intuitive' learning style; "green" with an 'enterprising' management and 'energising' learning style; and, third, "orange" with a 'people-oriented' management and 'responsive' learning style.

VoIP was found to be suitable for all students regardless of their multiple intelligences and learning management styles. There was no statistical correlation found linking students' learning management styles, with multiple intelligences and their motivation to engage with the VoIP environment. Learning management styles and multiple intelligences were found to be distinct constructs with no inter-relationships. There were weak relationships found though between individuals who were 'people-oriented'; 'energised' and 'enterprising'; and/or 'managers of change' with an enthusiasm for things 'experimental' in terms of their learning management style, whereby they had greater affinity for, and motivation to engage with VoIP learning experiences. Similarly, those whose multiple intelligences were people-, interpersonally-, and verbally-oriented were more receptive to this synchronous interactive (VoIP) environment. Even so, all students reported VoIP as being a positive experience.

Australian universities have become an essential economic export commodity in a competitive global market. Therefore, university administrators and their government counterparts are understandably focused on enhancing institutional reputations to ensure the ongoing sustainability of this lucrative market. A key performance indicator of the quality of universities is students' satisfaction with their learning experiences, which relates to word-of-mouth marketing of programmes. Business, industry and other employers make judgements about the institutional quality based upon perceptions of graduates' knowledge and professional skills. Hence, graduate performance in the workplace can positively influence future enrolment, demand for graduates from particular institutions, and research funding opportunities. This highlights the importance of quality teaching and learning to institutional reputation. This means university leaders must set realistic goals for their staff and actively support teaching and learning priorities.

Two models, *Webs of Enhanced Practice* and the *Webs of Enhanced Learning*, have been developed as a result of the findings of this research. The first model focuses on the macro context and relates to the professional development of academics with the view to improving teaching practice. It is a blended networking model which encompasses academics, their leaders, technologists, content and pedagogical experts, and students. In this multi-modal interaction model, professional

development is reconceptualised as a more flexible, technologically-blended, and holistic approach. The second model, *Webs of Enhanced Learning*, is a micro model which articulates how the impact of the first model relates to good learning and teaching within the university classroom. This model describes how academic development can translate to better learning and assessment for students. It also identifies the potential for more student-to-student interaction and the learning which can be facilitated as a result of these collaborations. These models, working in concert, aim to facilitate better learning and teaching at the student level, academic professional development level, and to further organisational goals for quality teaching and learning and institutional reputation.

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Chapter 1

Introduction

Background

Australia is the fifth largest destination for students choosing to undertake their studies overseas. The 2007 Australian Bureau of Statistics (2007) report indicated that the Australian higher education market was the third highest producer worth in excess of “\$9 billion in export earnings in the financial year 2004–05” (p. 1). As a result of the national importance of higher education to Australia’s economy, it was not surprising that there was considerable government interest in prioritising teaching and learning issues within this context. This focus on the quality of teaching and learning was evident by the number of major reports, white papers and policies which emerged over the past decade (DEST, 2002a&b, 2004; DETYA, 2000a; DETYA, 2000b). This culminated in the establishment of the Carrick Institute for Learning and Teaching in Higher Education in 2004-5, which in 2008 was transformed into the Australian Learning and Teaching Council. The mission for the council states they promoted ...

excellence in higher education by recognising, rewarding and supporting teachers and professional staff through a suite of award, fellowship and grant schemes. We aim to enhance the student learning experience by supporting quality teaching and practice.

(Australian Government Department of Education Employment and Workplace Relations, 2009, n.p.)

Students regardless of whether they were local or international, were, and remain important stakeholders in higher education (de la Harpe & Radloff, 2008). Student perceptions of the quality of their education and their satisfaction with programmes continue to have considerable importance as university funding allocations were influenced by student feedback surveys. Student expectations of their educational activities, the university facilities and services, and lecturers are higher than ever before, potentially due to the expense involved in obtaining a degree. Therefore, university administrations have become more conscious of this more discerning demographic and have reiterated the importance of engagement with learning and

teaching. An aspect of this context was the role that technology assumed. More students than ever before were technologically adept, were undertaking their studies in a distance mode, and/or were desirous of greater access to learning materials, library resources, and services via a technological interface (de la Harpe & Radloff, 2008). Responding to this trend, universities were engaging with technology for a range of purposes with the view to offering excellence in service and teaching. Additionally, technology was also perceived to be a social justice mechanism enabling isolated students to access studies (Webber & Scott, 2008). Technology also offered some measure of surety in the provision of a stable learning and teaching platform within this dynamic and potentially disrupted global setting. As part of this technological provision of educational delivery, universities were investigating the virtual classroom. A new technology, Voice-over-Internet-Protocol (VoIP), coupled with learning management systems was perceived to be a valuable option in supplying a stable learning environment for students regardless of their site of studies. Voice-over-Internet-Protocol was a method of synchronous communication for individuals facilitated via the Internet. However, as VoIP was relatively new there was limited scholarly research available to explicate the implications of this emergent technology and its impact on learning and teaching. Investigating students' perceptions of the learning experiences that could have been facilitated using this media was likely to be important in informing administrators of the reception these technology innovations.

This research was designed to provide information to the administrators and academics who were piloting a new-to-the-university VoIP software, namely, *Illuminate Live!* (commonly referred to as *Illuminate*), which was a virtual classroom with an extensive range of features mirroring the face-to-face classroom. More broadly, this study aimed to investigate undergraduate students' perceptions of their learning experiences that were mediated via VoIP within the higher education context. Educational environment researchers have established that interaction in various forms was critical for sound learning. Students in university classes come from diverse cultural and educational backgrounds with varied expectations, beliefs about learning and teaching, multiple intelligences and learning styles, which may have influenced their perceptions of, and motivations to engage in, different learning experiences.

Howard Gardner (Gardner, 1983; 1990, 1993, 1997, 1999) conceptualised that humans have nine multidimensional ways of thinking or “intelligences”. Recognising that students may have multiple intelligences, their approaches to learning may also be varied. It was widely acknowledged in the literature that there were different ways a person could learn through interacting with, taking in, and processing stimuli and/or information, and developing skills. These different modes of learning were referred to as learning styles. This research study explored if there were relationships between students’ learning motivation, multiple intelligences, learning styles, and their perceptions of their VoIP-facilitated learning experiences. It also investigated the design and teaching considerations that were made to establish the online learning experiences within this new medium.

Preliminary Theoretical Framework

The preliminary theoretical framework for this study is displayed in **Error! Reference source not found.**. This was the initial conceptualisation of the range of theoretical elements, participants and potential relationships that may have been expected to inform this research. Figure 2.1 represented the final evolution of the conceptualisation of the key concepts that were considered imperative to informing this study.

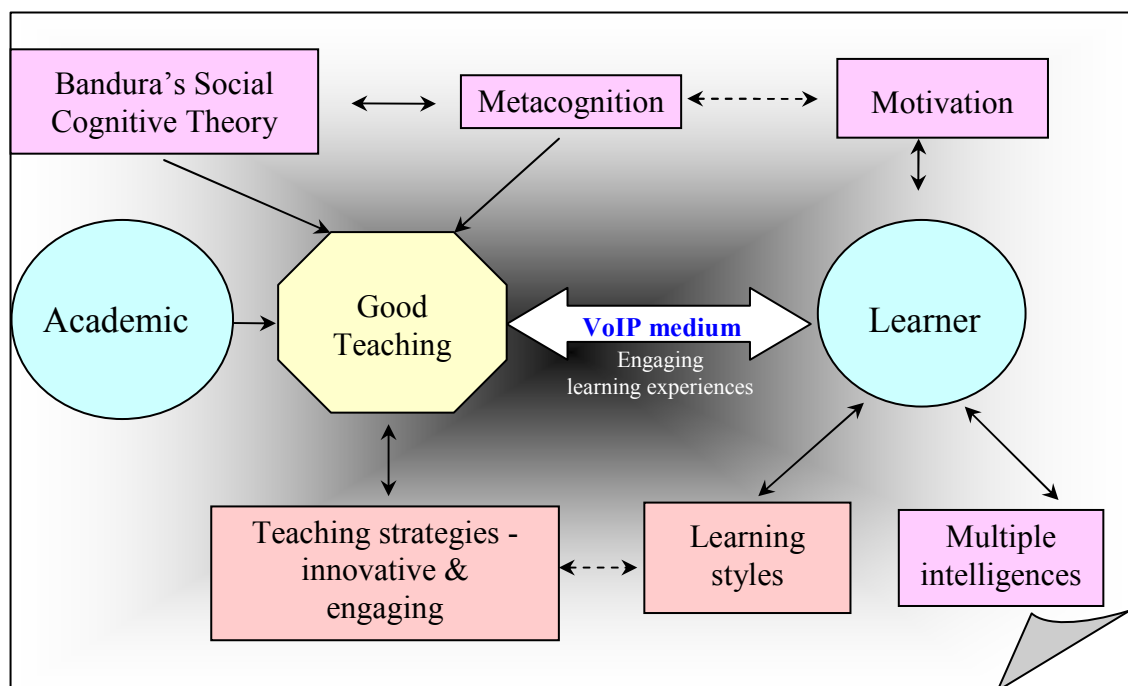


Figure 1.1: The Preliminary Theoretical Framework

In Figure 1.1 two main groups were featured, namely, the students and the academics who support their learning. This research focused on online adult learning within higher education. Additional elements that were to be explored in the literature were their motivation to engage with their studies, their multiple intelligences, and learning styles. For effective learning to have occurred the academic must have designed sound learning experiences. As humans were social learners Albert Bandura's (1986) Social Cognitive Theory served as a theoretical foundation for exploring both students' and academics' perspectives related to learning and teaching. A review of the literature related to effective teaching and learning, was included, such as:

- the principles of good teaching practice (Prosser, Martin, Trigwell, Ramsden, & Middleton, 2008; Prosser & Trigwell, 1999a; Prosser & Trigwell, 1999b);
- the need to develop a repertoire of teaching strategies (Johnson, Johnson, & Smith, 1998, 2007);
- adult learners' motivation (Knowles, Holton III., & Swanson, 2005; Merriam, 2001; Galbraith, 2004; Long, 2004; Wlodkowski, 2004); and
- metacognition (Marzano, 2000).

In order to explore the students' perspectives, Howard Gardner's (1983; 1999) multiple intelligences research and a review of the learning styles literature (Dunn, Dunn, & Price, 1996; Fleming, 2005; Lessem, 1991; Lessem & Baruch, 1999) have also been included. All learning and teaching was mediated within a context, face-to-face, blended, or fully online. Therefore, a brief review of the context in Australian universities was also included.

Conceptualising Good Teaching

The preliminary theoretical framework identified two key participants within teaching and learning: the academic and the adult learner. A number of principles and theories were selected to inform this study and these tended to align either with the academic or the student with some shading of overlap between the two. For learning to be effective, good teaching must be practised. Therefore the literature on what constituted good teaching practice was included. Chickering and Gamson (1989) posed seven principles of good practice for undergraduate education. Additionally, Ramsden's, Prosser's and Trigwell's and their associates' (1999a;

1999b; 2003; 1995) work in teaching within the university context was also included. Chickering and Gamson's principles have been hailed as a benchmark for best practice, and encompassed aspects that all academics should endeavour to incorporate in the teaching of their classes. Ramsden's work in Australian higher education brought the importance of using students' feedback to promote good teaching to the fore over the past decade. Prosser and Trigwell and their associates continued this exploration of teaching and learning issues within universities and explored deep and surface learning approaches, academic beliefs about teaching, and the nexus between research prowess and teaching expertise.

Seven Principles of Good Practice in Undergraduate Education

Arthur Chickering and Zelda Gamson (1987b) posited that there were seven key principles which, when followed by teaching academics, promoted good learning for students. These seven principles encompassed good student-staff communication; the importance of providing good quality and timely feedback to students; ensuring that students remained on-task; communicated high expectations for students; respecting the diversity in learning styles; cooperative learning as a teaching strategy; and the importance of active learning environments. Chickering and Gamson and their associates' (1996; 2001) later work explored the integration of technology and how this could facilitate the seven principles. They posited that a good instructor ...

1. *Encouraged contact between students and faculty* – An important factor in keeping students motivated and involved was frequent academic-student contact. These interactions enabled a student to cope with problems, “enhances students’ intellectual commitment and encourages them to think about their own values and future plans” (Chickering & Gamson, 1987a, n.p.). Information and communication technologies (ICTs) have enhanced university educational communication. The advent of electronic mail, computer conferencing, and the World Wide Web increased the speed of asynchronous transmission of information (Chickering & Ehrmann, 1996). Voice-over-Internet-Protocol has added a further dimension in the form of synchronous communication.
2. *Developed reciprocity and cooperation among students* – “Good learning ... [was] collaborative and social ... [s]haring one's own ideas and responding to others' reactions sharpens thinking and deepens understanding” (Chickering et al., 1989,

- p. 5). This endorsed the work of Johnson and Johnson (1998a, 2007) in cooperative learning and the value of this in the university setting.
3. *Encouraged active learning* – Passive students generally did not learn as effectively as active ones. They needed to be able to talk, write about it, relate and apply their new learning to past experience (Chickering & Ehrmann, 1996). These researchers highlighted three groupings of ICTs that related to these active learning behaviours; tools and resources for learning by doing (e.g. simulations), time-delayed exchange of written materials (e.g. email), and real-time conversation (e.g. VoIP).
 4. *Gave prompt feedback* – Performance feedback was essential to support the ongoing learning of students. They needed to be made aware of their existing knowledge. Metacognition, or awareness of the process of learning and ways of thinking, was also a critical ingredient to successful learning (Marzano, 2000). Voice-over-Internet-Protocol facilitated timely feedback and development of reflective thinking as it was a synchronous form of communication. It enabled academics to communicate immediately with their students in both one-to-one and one-to-many modes.
 5. *Emphasised time on-task* – Learning to use one’s time well was essential for students and professionals alike and the effective use of time was critical in the learning process. Students needed assistance to develop appropriate time management skills. Online learning required students to demonstrate considerable self-discipline which was frequently difficult for many. Voice-over-Internet-Protocol provided additional structure and set times to engage with peers and their academic, and incorporated a measure of peer accountability to prepare and engage in the process thereby emphasising time on-task.
 6. *Communicated high expectations* – “Expect more and you will get more” (Chickering & Ehrmann, 1996, p. 4). If academics have high expectations about student’ performances, students will often make extra effort to meet the expectations.
 7. *Respected diverse talents and ways of learning* – Chickering and Gamson acknowledged that students needed a variety of learning experiences in order to meet their differing learning styles and to be able to demonstrate their individual talents. Therefore, ensuring a range of teaching strategies supported an eclectic cohort’s learning needs. Additionally, this seventh principle also tied in with

Howard Gardner's work on multiple intelligences. Gardner referred to the different 'talents' individuals demonstrate as "multiple intelligences" identifying these as: logical-mathematical, linguistic, spatial, musical, bodily-kinaesthetic, interpersonal, intrapersonal, naturalistic, with a ninth "existential" being proposed in his latter research (Gardner, 1983; 1993; 1999). Complementing Gardner's work, the literature on learning styles outlined different ways individuals learn. Psychologists posited that most people favour some particular method of learning, that was, interacting with, processing stimuli or information, and then using it.

There was considerable research that has emerged from schools and other educational contexts which identified good teachers as having a repertoire of teaching strategies which were used innovatively to engage students in rich learning experiences (Guskey & Sparks, 2002; Joyce, Weil, & Calhoun, 2004; Lieberman & Miller, 2000). Teaching strategies were not "fixed, inflexible formula" to be applied for best results, nor should the teacher assume that students learn in only one way based upon a prescribed learning style (Joyce et al., 2004, p. 337). Teaching strategies actually became learning strategies; in that they taught students to become more powerful learners. This was done by the strategy structuring the learning experience and encouraging students to become more reflective, processing both the new content and the learning experience. Therefore, excellent teachers used their "teaching repertoires in such a way that [they] capitalize[d] on the characteristics of [their] student to help them achieve increasing control over their own growth" (p. 337). Therefore "models of teaching" could be perceived as "models of learning ... helping students expand their styles of approaching problems" (p. 338). Many of the models Joyce and his associates' articulated have collaborative and cooperative approaches as their foundation. Bandura's social learning was clearly an important aspect of students' cognitive development and was explored in this study. Therefore, the next section was presented as an outline of the key features of social learning.

Social Learning

Early psychological theories such as Skinner's Operant Learning were limited in perspective because they failed to account for cognitive processes such as

expectations, beliefs, and motivations (Biehler & Snowman, 1993; Woolfolk, 2004). The psychologist Lev Vygotsky, (1978; 1986, in Woolfolk, 2004) stated that social interaction and support played a large role in students' cognitive development.

Bandura (1986) expanded on the social aspect of learning when he developed his Social Cognitive Theory. He identified motivation and thinking, and interacting with environmental and behavioural factors as part of the learning process. As a result of his research, Bandura emphasised that learning could take place through the observation of others (Bandura, 1986; Biehler & Snowman, 1993). In the observational learning process, Bandura identified four important elements. First, *attention*, the student must have his/her attention focused on the aspect or skill that was to be learned; second, *retention*, remembering the information or behaviour through mental rehearsal or practice; third, *production*, involved practice, feedback and coaching in order to refine the performance of the behaviour and retainment of information. Practice resulted in the development of self-efficacy, the belief that we are capable of performing the behaviour. The fourth and final point involved *motivation and reinforcement*, whereby, once mastered the knowledge or skill may not be used or performed unless the required motivation was experienced. Reinforcement was when the new learning produced a positive or negative reaction. Positive reinforcement was important if the behaviour or knowledge was to be maintained and promoted (Woolfolk, 2004).

Considering the importance of observing others, discussing their understandings of the new knowledge or skills, obtaining feedback and reinforcement, it was obvious that learning in isolation was anathema to Bandura's Social Cognitive theory. This led to the research on cooperative learning strategies and their importance in the classroom.

Cooperative Learning Strategies

The key goal of a teacher was to facilitate and support the learning of his/her students. Understanding how learning occurred, what conditions supported learning, and how to maximise students' learning potential were key elements of being an effective teacher. Chickering and his associates' (1989) work overtly incorporated "reciprocity and cooperation among students" and "active learning" as key principles

as do other researchers, curriculum developers and instructional strategies experts (Bennett, Rolheiser-Bennett, & Stevahn, 1991; Joyce et al., 2004; Sharan, 1980; Slavin, Sharan, Hertz-Lazarowitz, Webb, & Schmuck, 1985). “Research show[ed] that students learn[ed] more by cooperating than they [did] by competing or working individually” (Johnson et al., 1998a; Johnson, Johnson, & Smith, 1998b, p. 28; Johnson et al., 2007). Even though it must be acknowledged that individualistic forms of learning and teaching, such as, mastery learning, direct instruction, and presentation teaching do have academic outcomes, these tend to be most effective in the primary school context and when procedural and declarative knowledge and skills were the key outcomes (Arends, 2004). These individualistic strategies have their place in certain knowledge acquisition; however, if higher order cognitive processing and social learning are desired then cooperative learning strategies are optimal. Research in cooperative learning identified that certain conditions must be established for students to avail themselves of the educational advantages that were embedded within this teaching strategy.

These conditions include attention to establishing “positive interdependence”, “individual accountability”, equal participation, and simultaneous interaction (Johnson, Johnson, & Smith, 1998; Kagan, 1994). In order for learning to be maximised the students must also be encouraged to process (reflect on) or debrief their cooperative behaviours with the view to “continuous improvement of these processes” (Johnson et al., 1998, p. 30). *Positive interdependence* “ensures that each student perceives that he or she is linked with others in such a way that the student cannot succeed unless the others do” (p. 30). This was the building of team spirit whereby each individual was less than the sum of the whole. *Individual accountability* was to ensure that each team member was responsible and accountable for his/her contribution to the overall outcome. *Equal participation* was designed to promote division of labour so that the task was completed through the cooperative efforts of all team members (Kagan, 1994). *Simultaneous interaction* was creating learning environments whereby students were able to interact simultaneously with each other on the group task. This simultaneous interaction fostered a synergy whereby the students were able to build on to the ideas, concepts and work of their peers to produce a superior product to that of an individual effort. Studies exploring the benefits of cooperative learning have established that students

felt more comfortable with these learning environments as it decreased their isolation; reduced university attrition; and fostered more positive attitudes towards learning and the subject area. It also positively influenced affective development such as tolerance to the views of others; interpersonal skill development and appreciation of values (Bodner, Metz, & Tobin, 1997). Additionally, and arguably more importantly, was that cooperative learning enhanced academic learning of content. This meant students learned more content, and to greater depth (Johnson & Johnson, 1991).

Even though there was considerable evidence to indicate that cooperative learning was a positive learning experience which can yield both social and academic gains, many university students did not prefer cooperative activities, particularly if it incorporated an assessment component (Caspersz, Skene, & Wu, 2002). Within the university context most students' priorities were individually-oriented; especially, in relation to the attainment of good grades, therefore these students may not have been naturally prepared to engage in cooperative and team-based activities (Caspersz, Skene, & Wu, 2002). Concerns raised by students frequently included "free-riding" and "social loafing" behaviours of group members, whereby, these students did less than their fair share of the workload, and yet were content to receive their share of the assigned grade. Longitudinal research within the university classroom though indicated that if the academic structured the learning experiences and incorporated strategies designed to increase individual accountability and equal participation many of these student concerns were alleviated (Scott & Issa, 2006b).

Metacognition – Facilitating Independent Learners

Metacognition "reflective intelligence" a term coined by Perkins (1995, p. 113), was the awareness of the process of learning or understanding one's thinking and cognitive processes, in other words, thinking about thinking. This process was a key aspect in learning. As students became more skilled at using metacognitive strategies they gained confidence, becoming more independent as learners. Metacognition was perceived to be an important concept in Bandura's (1986) Social Cognitive Theory. Metacognition consisted of two central processes occurring simultaneously: monitoring progress as the learning proceeds, and making changes and adapting

strategies if progress was not meeting expected standards (Winn & Snyder, 1996). Determining which strategies facilitated the best learning occurred after years of learning experiences. Metacognition entailed self-reflection, self-responsibility, and initiative, as well as goal setting and time management. It also depended on the learners' familiarity with the task, motivation, and emotion. Individuals needed to consider the strategy they were using and adjust it according to the situation (Marzano, 1988; Marzano, & Kendall, 2006). The task of educators was to acknowledge, cultivate, and enhance the metacognitive capabilities of all learners and expose them to valuable strategies. As identified in Bandura's theory and Marzano's research motivation was an important factor in learning. Hence, it was useful to explore what motivated adults to engage with learning.

Adult Learning Motivation

In the preliminary conceptual framework diagram (see Figure 1.1) the student orientation encompassed the literature on learning styles, Gardner's multiple intelligences and motivation theory. An aspect of the learning experiences was whether or not these motivated the students to engage, think and reflect on the cognitive task. Therefore, motivation was a crucial ingredient in the learning process and yet was intangible and sometimes difficult to assess.

Motivation to learn was defined as a "person's tendency to find learning activities meaningful and of benefit to them" (Brophy, 1988 in Wlodkowski, 2004, p. 4). For adults, motivation emerged when what they were learning made sense to them and was consistent with their values and perspective (Wlodkowski, 2004).

Adults learned best when they:

- had a variety of options appropriate to their learning styles (including both individual and group learning) and had opportunities to analyse and expand their modes of learning;
- felt comfortable with the learning environment and experienced success within the context of their limited time and demanding lives;
- had opportunities to engage in social learning, that was, they learn from peers as well as from a lecturer;
- had input into the planning of learning goals and processes;

- could apply learned theory/information to practical situations in their own lives; and
- could associate new learning with previous experiences.

(Knowles, Holton III, & Swanson, 1998; Wlodkowski, 2004)

Motivation was a significant driver of educational engagement, therefore providing learning activities and interactive environments promoted increases learners' motivation. Incorporating interactivity also encouraged active rather than passive learners, which also enhanced motivation. Acknowledging that individuals have "diverse talents and ways of learning" (Chickering & Gamson, 1987b; Chickering & Gamson, 1991) an exploration of Gardner's (1990) multiple intelligences theory and learning styles was important to better understand the university student.

Multiple Intelligences

Not all individuals necessarily learn the same way, at the same pace or to the same extent. These differences in apparent talent and intellect captured the interest of the psychologist, Howard Gardner. From his investigations into the measure and understandings of intelligence, Gardner (1983; 1999) identified eight multiple intelligences (MI), which provided a broader perspective to what constituted intelligence.

These eight intelligences were outlined as follows:

Logical-mathematical - consisted of the ability to think conceptually in logical and numerical patterns making connections between pieces of information;

Verbal/Linguistic - involved having a mastery of language, thinking in words rather than pictures. This intelligence included the ability to effectively manipulate language to express oneself rhetorically or poetically;

Visual/Spatial - the ability to create and manipulate mental pictures in order to solve problems and retain information. Gardner noted that spatial intelligence was also formed in blind children;

Musical - encompassed the capability to recognise and utilise sounds, rhythm and patterns. (The knowledge of rhythm may have been developed in the absence of auditory functions, however, pitch and tone cannot);

Bodily-kinaesthetic - the ability to control body movements and handle objects skilfully;

Interpersonal - the ability to understand and relate to the feelings and intentions of others;

Intrapersonal - the ability to self-reflect and understand one's own feelings and motivations;

Naturalistic - being in tune with nature and the natural world, interpreting what was happening around them; and

Existential - Gardner has proposed this ninth intelligence – “an explicit concern with spiritual or religious matters” (Gardner, 1999, p. 54), however, it was not easily measured. Therefore, he was reluctant to formalise its inclusion with the other eight intelligences.

These intelligences were interesting descriptors of personality characteristics which have been explored in numerous educational manuals and teaching resources. Learning styles were another aspect of educational theory which promoted the perspective that teachers should perceive their students as individuals with characteristics which could potentially influence their learning. The next section outlined an overview of the learning styles literature.

Learning Styles

Learning styles were different ways that individuals learned through interacting with, taking in and processing, stimuli or information. A literature review carried out in the United Kingdom in 2004 by a team from Newcastle University identified 71 different theories of learning style (Coffield, Moseley, Hall, & Ecclestone, 2004). Kolb (1976, 1984) initiated the interest in learning styles in his work in the 1970s. He explored the importance of individual's experiential knowledge and how this influenced their capacities to learn new knowledge. He also emphasised the importance of reflection within the learning process. Building upon Kolb's foundational work, Rita and Ken Dunn formulated one of the most popular learning styles theories (Dunn et al., 1996; Dunn, Beaudry, & Klavas, 1989). The Dunns' model, referred to as the VAK approach, focused on visual, auditory and kinaesthetic learning styles. Fleming and Mills (1992) expanded the VAK approach to VARK; with the categories of visual, aural, read/write, and kinaesthetic sensory modalities

used for learning. Lessem's (1991; 1999) Spectral Management Theory was one of the most unusual learning styles theories, as it incorporated learning styles and management styles within the one theory. These were referred to as learning management styles (LMS). This was focused on the business sector and sought to explicate the differences in learning and management approaches that were observed in the pragmatic commercial workplace. The previous sections introduced relevant aspects of teaching and learning and the final aspect of the literature themes introduced educational technology and how this supported students' learning.

The Impact of Educational Technology

As previously identified in the background section of this chapter educational technology had and continues to influence teaching, learning and a range of services within universities. Walker's (1999) statement that "information technology will influence society and education as much as print technology has" illustrated the significance of technology's impact (p. 18).

Adopting general tools for instructional purposes received a dramatic boost with the advent of the World Wide Web in 1990. Search engines enabled students and lecturers to locate information from much wider sources than previously available. These new technologies have had a considerable impact on education; which is frequently evident in students' demanding more sophisticated information communication technology (ICT) be made available to support their learning at university (de la Harpe & Radloff, 2008). This resulted in increasing pressure on academics to incorporate ICT into their learning activities and redeveloping resource materials (Levine & Sun, 2002). Clark (1983) asserted that media was not an influence on learning but was merely a form of delivery. Other researchers agreed with this perspective that various technological applications were a means of introducing efficiencies, rather than a phenomenon that had the potential to change content and reform curriculum (Carter, 1996). Contrastingly, other researchers perceived the potential in supporting academics' pedagogical development and interrogation of beliefs about teaching through their exploration of technology implementation in the classroom (Price & Kirkwood, 2008).

With ICT being utilised for all or large components of the learning experience, the social aspects of an educational environment may have been reduced or lost altogether if the academic did not plan for these approaches to be overtly included in the teaching strategies (Davies & Graff, 2005; Palloff & Pratt, 2005).

The dropout rate in distance education courses is often much higher than in similar courses taught face-to-face. Reasons given for dropouts ... include lack of finance, lack of time, the isolation of the distance learner, lack of self-discipline, and lack of motivation. (Curless, 2004, p. 19)

Educational psychologists have identified that communication between students and their teacher augments the learning experience (Vygotsky, 1978, 1986, in Bandura, 1986; Woolfolk, 2004). As ICTs developed, asynchronous tools such as bulletin boards, forums and emails were used to facilitate greater communication between students and their peers, and with their academics. As bandwidth increased and the cost of transmission decreased, VoIP emerged as a synchronous tool for communication with the potential to further increase the collaborative and social nature of the online learning environment.

With the development of advanced ICTs, teaching and learning has been reconceptualised to take advantage of these technological tools with the view to enhancing learning. This was evident in the use of these ICT media in providing greater access to course notes and resources, texts, communication with academics, collaboration between students, and access to research material, to name a few. Such technologies were, however, only tools enabling academics to better meet the needs demanded by their more technologically-aware students.

Research Aims

This research aimed to explore the teaching and learning considerations for online learning, in particular, those that included Voice-over-Internet-Protocol (VoIP) synchronous communication media. In this study, both the students' and their lecturers' perspectives were included, as the lecturer was the individual responsible for providing sound learning experiences, and the students were the recipients of the teaching. The effectiveness of the medium for facilitating learning was also

explored. The implications for the professional development of academics were also examined.

Research Questions

This study explored the perspectives of both students and academics from an online course where the use of VoIP was the major delivery mode. The rationale for adopting this VoIP learning environment was explored from an organisational administrator's perspective. The primary research question focused on the effectiveness of the learning experiences facilitated within a VoIP environment. The subsidiary questions focused on the partners in the learning cycle, namely, the academics and students, and to a lesser extent the institution.

Primary research question:

How effective are the learning experiences facilitated within a Voice-over-Internet-Protocol (VoIP) environment from the perspective of both students and academics in tertiary settings?

Academic orientation

- a. What are academics' rationales for utilising VoIP environments?
- b. What are the key teaching considerations to ensure good learning within VoIP environments?

Student orientation

- c. What is the relationship between students' multiple intelligences, learning styles and their motivation to learn within a VoIP environment?
- d. Does VoIP support all students' learning independent of their multiple intelligences, and/or learning styles?

Research Methodology

This study had facets of both normative and interpretive paradigms. The normative paradigm of social research posited that human behaviour was law-like and could be investigated utilising the scientific technique of observation and experimentation.

General theories were proposed to account for social behaviour. Alternatively, the interpretive paradigm was framed explicitly from the human perspective. Future-oriented intentional behaviours or actions were emphasised and theories were emergent, multi-faceted, iterative, and attentive to meanings created by participants (Cohen, Manion, & Morrison, 2000).

A case study methodology was selected to provide an insight into a particular case with “people, event, activity, or processes” – in this case, people who were studying in remote locations within a shared VoIP environment, their perspectives on the learning experiences, and how these were designed and delivered (Cresswell, 2008, p. 439). A case study “focuses on describing the activities a specific group and the shared patterns of behaviour it develops over time” (Gay, Mills, & Airasian, 2006, p. 445). It involved students within a Bachelor of Commerce, Business Capstone course. This course was the culminating course in the final semester/trimester of the three year degree. It was a new course which had been in operation for one semester. This study investigated the trialling of a VoIP learning environment designed to facilitate the roll out of this Capstone course to a select cohort of offshore students within a Singaporean partnered institution.

A mixed method approach was utilised to collect data from student and academic participants in this study. There were multiple instruments used in this research. Questionnaires with rating-type, Likert scales and multiple choice questions were employed to gauge students’ perceptions of the learning environment (Appendices 5 & 8). It must be noted that the total cohort of Australian campus and offshore Business Capstone students were included in this survey to enable comparisons between students’ perceptions of the learning environments both onshore and offshore. In-depth, semi-structured interviews (Appendices 6 & 10) were conducted with students and academics to further explore their perspectives about learning and teaching within this VoIP environment. Content analyses of offshore student journals were also employed to provide richer insights into students’ team-oriented interactions. An in-depth exploratory interview (Appendix 9) was also conducted with the administrator responsible for introducing the Capstone course and the VoIP software. Additionally, the interview with the administrator enabled insights to be gleaned about the instructional design process for the new course. The application of

a combination of both quantitative and qualitative methods facilitated deeper analysis and interpretation of meaning from both the students and academics.

Data Collection Methods

At the commencement of the Capstone course, two instruments – the Multiple Intelligences Checklist for Adults (MICA) (McGrath & Noble, 2005) (Appendix 3), and Lessem's (1991) Spectral Management Type Inventory (SMTI) (Appendix 4) – were administered to all students undertaking the Capstone course (both onshore and offshore). As part of the course assessment regime, students were expected to maintain an online reflective journal across the semester/trimester which documented their development of skills and perceptions of learning. Students in the offshore cohort were invited to submit these to the researcher as part of the data collection process. Upon completion of the course a questionnaire that explored students' perceptions of the learning environment was administered. The instrument used in the offshore site included items exploring their perceptions of Voice-over-Internet-Protocol. Additionally, a sample of Singapore-based students was selected for in-depth interviews in order to further explore their perceptions of course and learning experiences. The range of instruments and methods enabled triangulation of data and perspectives. Similarly, academic perceptions on VoIP as a teaching medium were obtained from semi-structured interviews and personal communications (Carr, 2000).

Sample

The university students selected for this case study were participating in a capstone course at a partnered campus in Singapore. Voice-over-Internet-Protocol software was utilised for class lectures and as a significant form of interaction between students and their lecturers. The entire population of students (N=664), both onshore and offshore, in this course were included in the study, although only the Singaporean students (n=84) were studied in relation to the VoIP environment. The academics (N=2) who were coordinating the course and teaching in Singapore were invited to participate. The administrator (N=1) who had oversight of this course was also invited to participate.

Data Analyses

Questionnaires were analysed using the software packages SPSS (V16, 2008) and MS Excel. Qualitative data were analysed and coded thematically from full transcripts and unedited documents. In order to facilitate the emergence of themes, data analyses were conducted using the “constant comparison method” whereby interpretations were repeatedly compared with the original response (Ryan & Bernard, in Denzin & Lincoln, 2000, p. 783). As concepts emerged, a framework that identified the relationships between adult learners’ motivation and their MI and LMS were developed. The NVivo (Qualitative Solutions and Research, 2008) programme supported the qualitative analysis along with iterative processes using a combination approach with MS Word, Excel and Access.

Ethical Issues

The research was conducted in accordance with the policies of the University’s Human Ethics Committee, *Code of Conduct for the Responsible Practice of Research*. Approval for inviting student participants in this study was obtained from the Head of Staff and Student Services prior to commencement of data collection. Prospective respondents received a written invitation to participate in the study (Appendix 1). This invitation summarised the study, provide assurances of confidentiality and anonymity, and notification that participants could withdraw at any time from the study with no penalty. Students understood that their participation in no way influenced their course achievement as the results were only available to the researcher and any reports generated were in the form of aggregated data. Additionally, the interviews and the student feedback data were available after the conclusion of the course. The respondents formalised their agreement to participate through signed consent forms which were faxed back to the researcher (Appendix 2). With the permission of the respondents, interviews were fully recorded which were deleted upon transcription. Respondents’ details were masked through the use of codes to ensure anonymity. Respondents were assured that information published as a result of this study would not be traceable to any individual as data would be reported only in aggregate form.

Significance

This study was designed to better understand learning and teaching in a VoIP environment involving students, academics, and administrators. This study had significance for:

The Scholarly Community – This doctoral research added to the body of knowledge about how adult learners’ perceived their educational experiences mediated through a VoIP environment. It also provided insights into the relationship between adult learners’ motivation to engage in relation to their multiple intelligences and learning management styles.

The Higher Education system – Realistically education has become a commodity to which increased numbers of people have access. Many courses are now being delivered in an online environment in order to allow greater access for isolated learners. Voice-over-Internet-Protocol (VoIP) is a relatively new tool for delivering education and the impact of this learning environment has not yet been fully investigated. This research aimed to inform university administrators’, academics’ and other members of the higher education community’s decision-making processes regarding the implementation and best educational use of VoIP. It also provides recommendations on how to reconceptualise professional development offerings for academics in the twenty first century.

The University Professional Developer – This research provided useful information to guide university professional developers in their design of academic development processes. The final model pertained to the establishment of more flexible, broad ranging, and multi-modal professional development approaches.

The University Academic – Many academics were becoming interested in teaching and learning issues and this study informed them about the issues that students’ deemed to be important and provided valuable recommendations about where to focus their energies.

The University Student – Avoiding a paternalistic paradigm, this study aimed to provide information to adult learners about what their counterparts perceived to be important in relation to their learning needs. The second model was focused on their learning environment and was designed to provide guidance to lecturers and their students about what processes, strategies and technologies could support deeper learning within the university context.

Limitations of the Study

With any research there are always constraints on what can be done within a certain timeframe and with the available resources. This study was no different as there were some limitations which must be acknowledged. One such limitation was that the study involved a trial process with focusing on one experimental cohort, namely, the initial implementation of a new-to-the-university software for VoIP – *Elluminate Live!* This meant that the administrators, leaders, academic and technical staff, and students were all inexperienced with this type of software and were in the process of undertaking training with it in this trial. Although the academics had received some training with the software prior to the course commencing, the lead-in time was still brief. As a result, it may have been expected that there was a lack of comfort with the new medium and unfamiliarity related to teaching within this new context.

Although the course was operating in a face-to-face mode with multiple tutorial groups on the Australian campus, there was only one cohort who was undertaking this course in an online VoIP mode. This group was unfamiliar with any form of synchronous online communication for their educational coursework, which may have influenced their perceptions of the learning experiences. There may have been differences in expectations of the course based upon their prior educational experiences.

An aspect of this research which was a limitation was that the cohort of students was predominantly English-as-a-Second-Language (ESL) learners. Even though these students had a reasonable command of English, some confusion was found in their interpretation of some of the terms used within the standardised questionnaires. This confusion was resolved to a certain extent as the students were able to ask questions of the researcher while they were completing the instruments.

Even though the course was designed by pedagogical experts with educationally sound course materials and teaching approaches established for the teaching academics, these lecturers had no formal teaching qualifications or training and were used to teaching in a face-to-face mode. Therefore, although the lecturers were experts in their own Commerce disciplines they could not be expected to provide

exemplary teaching in this case study, because they had only limited pedagogical knowledge and no comfort with the medium.

Glossary

Adult Learning – Refers to the learning of adults as opposed to the learning of children. It draws upon the research of Knowles and his associates (1980, 1984; 2005) and Merriam and her associates (2001; 1999). Their research indicates that adults have different learning needs, expectations, and motivations to those of school aged students.

Androgogy/Andragogy – Terms used synonymously to indicate the teaching of adults as opposed to ‘pedagogy’ which is the term used to specify the teaching of children. In this study the more widely understood and used term ‘pedagogy’ has been used throughout this thesis to mean ‘teaching’ in general.

Asynchronous interaction – Direct communication between parties which takes place at different times, not requiring presence in real-time. Examples of these types of communication are email, bulletin boards, forums, some forms of text chat.

Synchronous interaction – Direct communication between parties which takes place at the same time and when all are present. Examples include *Elluminate live!*[®], Skype[®], telephone calls, conference calls.

Bachelor of Commerce – An undergraduate Bachelor’s degree programme. It is available in the specialisations of Accounting, Business Law, Economics and Finance, Information Systems, Management, and Marketing. It is a three year accredited programme. This programme operates from the main Australian campus, through

numerous offshore partnership arrangements around the world, and through distance education modes.

Business Capstone Course – The culminating course operated in the final semester/trimester of the Bachelor of Commerce degree programme. It was designed as a simulation whereby multidisciplinary teams of students assumed control of a virtual software company. Each week represented a single year of operation in the company. Student teams were required to formulate business decisions for optimal operations to maximise profit. The success of each team was determined by the simulation as the teams within the class were competing against each other representative of a market place.

Capsim® – The online simulation, Capsim®, was a commercially available computer package which emulated a software development company within a competitive industry market. Students working in teams made decisions related to the business operations which were uploaded in the simulation whereupon an outcome output was generated and returned to inform them of the success of the decisions made.

Illuminate Live!® – Frequently referred to in this thesis as simply *Illuminate*. This is an Internet-enabled software which is a virtual classroom. It includes facilities such as real-time VoIP instruction and live discussion, live text-chat between all users in the virtual classroom, small group interaction in ‘breakout’ rooms, whiteboards, PowerPoint presentations, video, and linking to the web.

Internet – A global system of interconnected computer networks that interchange data through standardised Internet-Protocol-Suite (TCP/IP). It encompasses many networks involving private and public, academic, business, and government networks that are

linked by wires, fibre-optic and wireless connections, and other technologies.

Learning Styles – Ways of learning. They can involve methods or strategies which best support an individual’s learning needs. It may involve certain types of interaction and information processing. There are many learning styles and many researchers who have investigated and formulated various theories. Predominant researchers in this field include Kolb (1976, 1984), Dunn and Dunn (1996; 2001), Fleming (1995; 2001 - 2006; 2005).

Learning Management Style – Ronnie Lessem (1991; 1999) proposed a uniquely business version of learning styles by encompassing traditional learning styles concepts with management styles prevalent in the world of commerce.

Colour	Management style	Learning style
Violet	Innovative	Creative
Indigo	Development	Intuitive
Blue	Analytical	Methodical
Green	Enterprising	Energising
Yellow	Manager of change	Experimental
Orange	People	Responsive
Red	Action	Reactive
Grey	Adoptive	Reflective

Learning Management System (LMS) – Software for delivering, tracking and managing education. They can be as simple as document repositories to highly complex systems which offer features for online collaboration. Examples include Blackboard® and previously WebCT®.

Motivation – An abstract concept designed to explain the cognitive and affective influences which produce actions and outcomes in individuals. Positive motivation encourages positive outcomes.

Multiple Intelligences – Howard Gardner’s (1983) pluralistic view of intelligence that all individuals possess at least eight different intelligences or talents. Gardner’s eight intelligences include linguistic intelligence, logical-mathematical, spatial, bodily-kinaesthetic, musical, interpersonal, and intrapersonal intelligence, naturalistic. The ninth one that has been proposed but not confirmed is “existential” (for more detail see Chapter 2).

Multiple Intelligences Checklist for Adults – A standardised instrument designed to determine an adult’s strengths across the eight multiple intelligences (McGrath & Noble, 2005).

Professional skills – Frequently referred to as the ‘soft skills’ or ‘generic skills’ in which professionals need to have proficiency for success. These skills have been identified as communication (verbal, interpersonal, and written); critical and creative thinking (eg., problem-solving and decision-making); and team work; technological literacy; information literacy.

Social Cognitive Theory – Albert Bandura’s theory which related a range of actions, environmental factors, and psychological elements in play for learning to occur. This theory identifies that learning can occur from observation and interaction with others, hence the social nature of learning. The other key aspects include attention; retention; production; and motivation and reinforcement.

Spectral Management Type Inventory – Lessem (1991; 1999) developed an inventory for his learning management styles and attached colours of the spectrum to describe each particular orientation.

Semester/Trimester – Periods of study within a university year. Semesters constitute 13 weeks. Semesters were usually the study period for

the Australian campus students. There were two semesters per year, excluding summer and winter schools. Trimesters constituted 10 study weeks and were the usual period of offshore students. There were three trimesters in an academic year.

Unit – A subsection of study within a degree programme and is the same as a ‘course’. There are 24 units or courses within a three year degree programme. Full time study represents four units per semester, with two semesters per year.

Voice-over-Internet-Protocol (VoIP) – A term in common use for a range of transmission technologies delivering voice communications over the Internet. These are synchronous interactions. Examples of this type of VoIP technologies are Elluminate Live!® and Skype®.

Chapter 2

Literature Review

This study investigated students' perceptions of their learning experiences mediated via Voice-over-Internet-Protocol (VoIP). Additionally, it explored the academics perspectives to VoIP-facilitated learning experiences in relation to their rationale for implementing it and the teaching considerations necessary for it to be successful. As identified in the conceptual framework (see Figure 2.1) the student was the key focus in the study. This research draws upon a range of literature including:

- Educational theory and practice – effective university teaching and learning, adult learning, and constructivism, particularly as it pertains to interactive, active and reflective learning;
- Educational technology – Voice-over-Internet-Protocol (VoIP), synchronous interaction, the context of technological advances within higher education; and
- Psychological domains – international students' characteristics, in relation to their multiple intelligences, learning styles, and motivational factors.

Teaching and learning was a reciprocal relationship whereby the student learned from the teaching activities, and ideally, the teacher refined their practice upon personal reflection and feedback from students. The integration of technology into society and specifically in higher education was included as it had influenced teaching and learning delivery modes within 21st Century universities. As this study explored the VoIP learning environment, particularly the impact of synchronous communication on students' team work, literature on cooperative learning was included. The structures required to facilitate effective team work were covered and linked to the online communication modes.

University lecturers were encouraged to explore more effective ways to support adult learners. Therefore, investigating good teaching within university programmes, students' multiple intelligences, learning styles, and instituting effective team work were presented. Psychological elements related to adult learners' motivation and characteristics were reviewed.

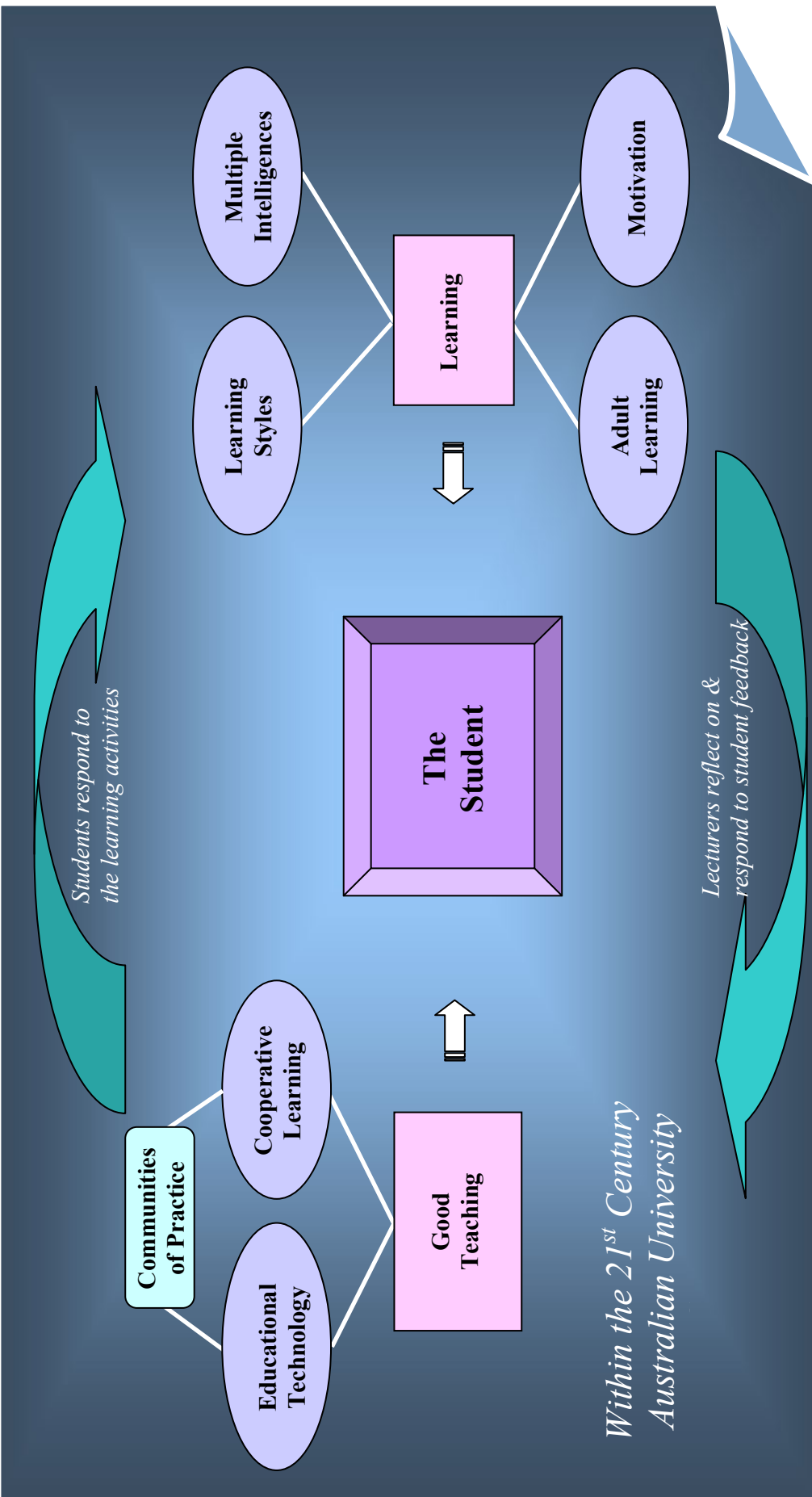


Figure 2.1: Literature Dimensions in the Conceptual Framework

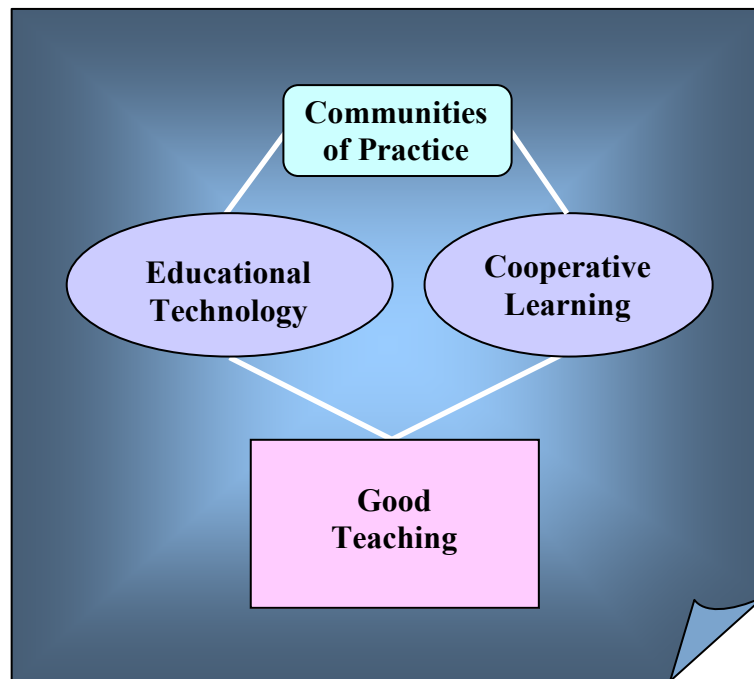


Figure 2.2: Good Teaching within a 21st Century Australian University Context

Society is undergoing a fundamental transformation from the Industrial Age to the Information Age. This ... global phenomenon [has] ... significant local implications. All ... societies, and nations are affected, although not all at the same pace or to the same degree. Those who realign their practices most effectively to Information Age standards will reap substantial benefits. Those who do not will be replaced or diminished by more nimble competitors.

(Dolence & Norris, 1995, p. 2)

The 21st Century Australian University Context

Figure 2.2 displays the elements of teaching in the 21st Century Australian university context which were important in this study and were reviewed from the scholarly literature. It was evident “[t]he world has changed dramatically from earlier ages to today’s highly technological world” (Tham & Werner, 2005, p. 15). Technology has radically altered human civilisation (Dolence & Norris, 1995). Evidence over the past decade in this new century indicated that technological change and adoption had not slowed, rather it had increased at an almost exponential pace. There were few

nations that have not been affected in some way by the technological advances of the 20th and 21st centuries. Technology was also seductive; this was demonstrated throughout the 1980s and onwards with industry investing billions of dollars into information technology. This investment was largely to reform white-collar work practices with the view to increasing productivity and efficiency, although there was an absence of verifiable indicators of return-on-investment – and yet this ‘investment’ continued (Landauer, 1997). Technology has had a significant impact on commerce and trade demonstrated by the huge jumps observed in the stock market value of Internet companies such as Netscape and Yahoo in 1999, even though they had few assets. The changes in the rules of business investment were re-evaluated subsequent to the ‘dot com’ company phenomenon crash in the year 2000. In response to changes in business and industry, the educational systems both at the school level and in the college and higher education sectors have had to keep abreast of the external demands for information literate and ICT competent graduates (Business Higher Education Round Table, 2001; DETYA, 2000a).

In the past two decades, universities adopted increasing levels of technology for their business, administrative and educational functions (de la Harpe & Radloff, 2008). As Levine and Sun (2002) described ... “[t]oday’s new technologies, particularly the Internet, present higher education with the largest megaphone in its history – the capacity to disseminate knowledge to an exponentially large number of people than ever before” (p. 1). Universities and colleges have been charged by governments with producing ‘work-ready’ graduates for a compliant workforce (Business Higher Education Round Table, 1999, 2001, 2003). Graduates have faced and will continue to face dynamic employment environments (Hager, Holland, & Beckett, 2003). Greenburg (2004) identified students’ perceptions of their university as “a means to an end ... less apt to buy into academic beliefs regarding knowledge for its own sake and other romantic educational traditions” (p. 13). Therefore, it was expected these educational organisations would support and promote students’ development of competencies with a range of technologies, in addition to a range of useful knowledge and skills. Students were not only learning about technology within their disciplines, they were also using a range of technologies to undertake and be successful in their studies (Levine & Sun, 2002).

Australian universities have experienced an increased emphasis on ensuring the quality of educational experience was of a high standard (Ramsden, Margetson, Martin., & Clark, 1995). Greenburg (2004) identified this trend stating universities had to consider and take ownership of its own renewal ... “it must think about its people, its property, and its productivity in business terms” (p. 15). Teaching academics have been encouraged to expand their range of skills and strategies (Ramsden, 2003); implement more technologically-friendly resources; acknowledge and potentially use educational theories such as learning styles; and to understand aspects of educational diversity, such as multiple intelligences, which would assist them in their teaching of a broader student demographic (Price & Kirkwood, 2008).

Australian higher education, like most western countries, has experienced a continual decline in government funding resulting in the need for universities to explore alternative sources of income to ensure ongoing viability (Currie, Thiele, & Harris, 2002). One source of income which has been found to be highly lucrative and successful was the international full-fee paying student market. Australia’s proximity in the Asia-Pacific region and its highly regarded university system ensured Australia’s desirability in this competitive international education market. Dunn and Wallace (2004, p. 292) reported “Australia’s international education market has grown by an average of 15% every year since the late 1980s” to the point where the Australian Vice-Chancellor’s Committee (2001) stated “Australia is now the third most popular destination for international students globally” (p. 9). Additionally, Tilbrook (2003) reinforced the importance of the international student market, with a 2007 Australian Bureau of Statistics report indicating that Australian university education is worth in excess of \$9 billion to the economy (Australian Bureau of Statistics, 2007).

In addition to the enrolment of international students into Australian campuses, many universities also partnered with overseas institutions in order for foreign students to undertake an Australian degree without leaving their home country. Singapore was one of the countries which enjoyed a long and positive relationship with Australian education, largely due to the previous policy that resulted in the Singaporean Government’s restriction of university places in-situ (Australian Bureau of Statistics,

2007). Dunn and Wallace presented a balanced perspective to the contentious issue of “pre-packaged” education for a globalised market:

While the export of Australian higher education can be viewed as an educationally and culturally positive development within the corporatization of higher education, more critical perspectives raise a number of problematic issues. These include the commodification of knowledge and the hegemony of Western knowledge and pedagogies (Brooks, 2001)... Almost in spite of some of the sectoral pressures, academics still focus on teaching and learning, not for the sake of ‘performativity’ ... but because of a commitment to their discipline and students. (Dunn & Wallace, 2004, p. 291)

Teaching and learning within an Australian-Asian higher education context presented differences that should be considered within other teaching related decisions (Watkins & Biggs, 2001). Professional development focused on teaching and learning was sometimes provided by the Australian university although this was not always systematic (Scott, 2002). Those who provided professional development for their local lecturers found a positive response and appreciation for the service (Scott, 2002). In addition to providing teaching staff, many Australian universities have adopted increasing forms of technology in order to increase students’ access to high quality resources. This was with the view to better support the learning of both offshore and onshore students.

The University Student

As the student was a predominant focus in this thesis it was useful to explore some background about students within 21st Century Australian universities. As previously identified most Australian universities have both local and international student populations. Some even have offshore partnerships which meant many students undertaking Australian degrees never set foot on Australian campuses, preferring to study in their home locale.

The case study cohort in this research were Singaporeans studying in an Australian degree programme within their home country. It must be stated at this early juncture that the researcher felt it was important to consider the participants as ‘students’ first, and more importantly, not to be stereotyped as ‘Chinese’ or ‘international’ students.

Hence, literature on the Asian learner was included only where it was relevant and informative to the literature dimensions selected. Therefore, literature as it related to the Confucian-heritage learner was woven throughout the chapter in preference to introducing it as a contained section.

Universities have been expected to provide increasing levels of, and access to technology services and infrastructure in their support of learning within their institutions. With more students seeking access to further education, and many of these being situated in isolated or distant locations, universities were investigating and implementing more diverse ways of supporting these students (de la Harpe & Radloff, 2008). Levine and Sun (2002) indicated that the university student demographic has changed in recent years from the “traditional college student” who lived on campus and studied full time (p. 4). They stated this student type accounted for only “20 percent” of the current university population. The demographic has shifted whereby “[t]he majority of college students are very different: They are older, attend classes part time, hold jobs, have families, and live off campus” (p. 4). They wanted a different relationship with their college to that of a traditional student, “they are bringing with them consumer attitudes to higher education ... [and are seeking] ... convenience, service, high quality, and low cost” (Lao & Gonzales, 2005; Levine & Sun, 2002, p. 4).

Technology Adoption in Universities

Universities were not isolated from the trend of rapid adoption, implementation and widespread use of technology (Collos & Moonen, 2001; Lightfoot, 2005; Price & Kirkwood, 2008). As Bork (2001) indicated ...

[m]ore and more universities are offering distance courses via the Internet, however, teaching at the front of the room remains the predominant mode of instruction in higher education.... Distance education has failed to take advantage of the Internet as a new medium. As a result, most distance learning courses resemble traditional classroom courses with all its inherent problems. (n.p.)

Lightfoot (2005) iterated online technologies in higher education contexts were not a “passing fad”, considering that in “1999 one-third of U.S. colleges offered some sort of accredited degree on-line and nearly one million of the total fourteen million U.S.

students took some sort of on-line course” (Huffstuter & Fields, 2000, cited in Lightfoot, 2005, p. 209). He continued by outlining the significant investment (\$11 million in 1992 to a peak of \$2.9 billion in December of 2000) by the private sector due to the “tremendous profit to be made if the delivery system can be streamlined and Made [sic] more efficient” (Lightfoot, 2005, pp. 209-210). With the advent of new technologies coupled with the rising costs for higher education providers and reduced government funding for this sector, Twigg (2003) identified “many universities are adopting a “re-design” approach with the view to producing substantial cost savings” (p. 30). Even though Twigg was referring to the U.S. context this was equally applicable to the Australian situation. She cautioned though that if the savings were “captured” by the “institution” rather than passing these funding opportunities on to individual faculty, this could result in their de-motivation to engage with re-designing their course delivery (p. 30).

Traditionally, university education was conducted face-to-face with large-scale lectures with a professor and smaller more interactive tutorials with either professors or postgraduate student-lecturers (Lao & Gonzales, 2005). With the increasing costs involved in this type of delivery mode coupled with ever dwindling funding, universities were exploring other instructional models (de la Harpe & Radloff, 2008).

With calls from society, business, governments and prospective students to increase the accessibility of postsecondary education to all, regardless of location, many universities implemented *distance education* delivery modes (Levine & Sun, 2002). Distance education was initiated in a predominantly paper-based model, which was largely reliant on mail communication. Katz (2002) described this early distance education mode as “first generation” (p. 3). Occasionally, students were able to have ‘face-to-face’ meetings with their lecturer via video conferences, however, this was limited due to the expense involved (Bork, 2000). In this “information transfer approach”, packages of lecturer-developed predominantly text-based materials (although sometimes including videos) were mailed out to students’ locations (p. 79). Katz (2002) described the use of “audio recordings, radio and television broadcasts” within the distance mode as “second generation” (p. 3). Students worked with these materials in relative isolation, with occasional phone, or more recently, with email contact with their lecturer. Once they completed their assignments these were

submitted to the lecturer who then assessed them, possibly provided feedback and then returned, all via 'snail mail' or email. As learning technologies including online Learning Management Systems (LMS) such as Blackboard and WebCT became available, distance education classes frequently integrated bulletin boards, and forums to increase the student-student interactivity (Brannan, 2005). Katz (2002) identified "third generation distance learning systems" as including "interactive video, email and World Wide Web technologies" (p. 3).

As greater flexibility was sought by prospective student populations and university administrators, a more recent development in this technological progression was the integration of *online learning* into university course offerings (Price & Kirkwood, 2008). In online delivery mode, students were able to access their learning materials through LMS, rather than via postal mail services (Drennan, Kennedy, & Pisarski, 2005). Traditional online delivery frequently resulted in a move from text-based materials to 'downloadable' ones. Ongoing technological developments continued to reshape 'online' delivery with a range of software being available to increase the variability and interest value of media, and to increase student communication and interactivity (Brannon, 2005). In many ways, the advances in technology were seeking to replicate the dynamics and synergies possible in 'good quality' face-to-face modes.

Bender (2003) stated a key advantage was the convenience for busy students in forming online work and study groups rather than travelling for face-to-face meetings. Bender also cited the convenience of greater access to teaching staff in "virtual office hours" whereby students can 'meet' their teacher without having to come onto the university campus (p. 128). An additional advantage was that students felt they were "on a more equal footing for learning ... in an 'invisible classroom' setting promotes unlimited access to information ... [and could] also take away social and physical boundaries (like shyness, gender, race, location etc)" (Tham & Werner, 2005, p. 15-16). Brannan (2005) indicated technology-supported learning environments may support "quiet students" more effectively, as these "may interact more online due to a perception of less peer pressure (p. 2). Everyone gets his or her say online". Additionally, Tham and Werner (2005) reported:

Online learning (or e-learning) offers many opportunities that were not possible before. The chance to learn from a reputable university from across the state or country can be extremely valuable. It does not require a typical student to make a major change in lifestyle, nor does it requires [sic] the student to forgo a career or relocate a family to pursue his or her educational dream. (p. 15)

Wang (2005) identified an advantage to online learning was in the communication it facilitated. He stated “computer-mediated communication (CMC) is considered as a powerful constructivist learning tool because of its capability to support interaction and collaboration among diverse and dispersed students” (p. 303). Katz (2002) stated “third generation distance learning is especially suited to higher education and to adult learning” (p. 4).

Although online learning has moved into higher education teaching alongside the face-to-face mode it was not without its own problems. Lao and Gonzales (2005) endorsed Carr’s (2000) work that faculty identified concerns about the amount of work and preparation time involved in teaching an online course. Materials were traditionally explained in a face-to-face classroom required considerable reworking to act as stand-alone instructional resources. They reiterated the time-consuming nature of online communication with students was in contrast to face-to-face teaching modes. Many students expected more frequent interaction and greater accessibility to teaching staff when communicating online.

Online delivery also potentially presented difficulties to effective learning. Aside from the cost involved in obtaining a computer and relevant software, online studies may exclude students who have limited access to Internet or unstable connectivity (Christensen, Anakwe, & Kessler, 2001). Individuals who were less technologically able may have found learning to use the computer, a range of software programmes, and a LMS, time consuming, frustrating and overwhelming when what they wanted to learn was their selected discipline content (Christensen et al., 2001; Sturgill, Martin, & Gay, 1999). Conversely, Drennan and her associates (2005) found risk-taking students, “willing to try new approaches”, were more likely to view technology-mediated learning experiences positively and perceived these as useful

(p. 331). Students who expected paper-based materials may balk at the expense of printing out their own materials from online sources. Reading online took longer than reading printed text which may have impacted on their capacity and time for study (Kerka, Wonacott, with Grossman, & Wagner, 2000). Additionally, for those with disabilities, such as, visual problems relying on computer text may have presented difficulties (Levine & Sun, 2002). Similarly, those with hearing impairments “may be disadvantaged when a streaming video lecture is played without closed caption displays” (p. 10). In online courses with limited use of interactive communication, students may find their studies isolating and lacking in the richness which came from learning-focused social interaction (Haythornthwaite, Kazmer, Robbins & Shoemaker, 2000, cited in Davies & Graf, 2005). Students may also have experienced more stress with their studies (Haythornthwaite et al., 2000, cited in Davies & Graff, 2005; Palloff & Pratt, 2005). Online programmes were found to be less successful and satisfying for undergraduate students. This was especially true for those who required more structure and guidance whereas postgraduate students tended to be more self-motivated and driven, and accustomed to juggling work, family and study commitments (Lao & Gonzales, 2005; Palloff & Pratt, 2005). The latter group frequently preferred the relative freedom from attending set classes, the greater choice, and capacity to self-monitor which was provided (and sometimes expected) within online environments (Lao & Gonzales, 2005; Levine & Sun, 2002).

Even though there has been ready, and in some cases eager, adoption of technology in higher education, the disadvantages of online teaching and learning have become evident. Consequently, some academics perceived the optimal mode was a combination of face-to-face and online delivery. This “hybrid” (Brannan, 2005) between traditional and new delivery forms was frequently referred to as *blended learning* (Cox, Carr, & Hall, 2004). It could take many, varied forms and included any, or all of the different forms of learning, interaction, and communication previously cited. Advocates for a hybrid approach perceived blended learning to be the ‘best of both worlds’ providing students with the advantages of face-to-face interaction with additional online support available in relation to teaching, materials and resources, and interactivity and collaboration (Brannan, 2005; Cox et al., 2004). It may also have included greater access to course offerings which may not have been available through purely face-to-face modes. In his overview, Keegan (2002)

felt these various modes of distance learning, e-learning and m-learning (that is, mobile learning) were part of a continuum. He stated “[n]o conflict is to be seen in these differing forms of provision. Clearly distance education continues to prosper with the arrival of e-learning, and both continue with the move to wirelessness in society. The vision is rather of the richness and choice that are available to learners in the 21st Century” (p. 119).

Online Interaction

Asynchronous

Initially, the most prevalent form of communication in e-learning involved ‘asynchronous’ interaction. “Asynchronous communication does not require that all parties involved in the communication need to be present and available at the same time” (<http://www.definethat.com/define/270.htm>). Microsoft PowerPoint enabled ‘voice-over’ options so lecturers were able to provide running commentaries and more detailed explanations to accompany lecture notes, which students could download. Some universities integrated i-Lectures (for example, Podcasting) which allowed professors to record their ‘live’ lectures and have these available in video or DVD format on the LMS for students who wished to review them at a later time or for those who had been unable to attend (de la Harpe & Radloff, 2008). Bulletin boards, forums, and mobile phone text chat enabled increased student-student and student-lecturer communication (Brannan, 2005; Drennan et al., 2005). These forms of communication were asynchronous, which meant students were able to formulate comments and reviews and post them up for later perusal by their peers and lecturer. Students were unable to engage in conversations in ‘real-time’ through these processes which sometimes produced stilted conversations. The advantage to asynchronous communication was that students had time to be able to read, reflect and formulate responses.

Synchronous

As concerns with bandwidth declined in the mid 1990s, and the expansion of satellite technologies emerged as strong and stable facilities supporting communication, synchronous conversations and instruction in online classrooms became possible and more viable. Synchronous interactions were defined as “[d]irect communication, where all parties involved in the communication are present at the same time (an

event)” (<http://www.definethat.com/define/270.htm>). Text-based interaction, such as ‘MSN Messenger’ (Microsoft Network Messenger), ‘AOL (America Online) Instant Messenger’, and synchronous chat rooms such as ‘Yahoo! Chat’ became commonplace. Recognising the importance and desirability of interaction within learning and business environments, the LMS markets (Blackboard and WebCT) also incorporated chat capabilities.

Following synchronous text messaging capabilities Voice-over-Internet-Protocols (VoIP) emerged. *Skype* was an example of the use of VoIP. “Skype was founded in 2003 by Niklas Zennström and Janus Friis ... a little piece of [free] software that makes communicating with people around the world easy and fun” (<http://about.skype.com/>). Skype allowed ‘real-time’ voice conversation facilitated through the Internet.

Developers of online learning environments perceived the need to develop a more complex and all encompassing online communication approach. Classrooms and business boardrooms required not only real-time voice options but also a combination of voice and presentation capacities (*Elluminate*, Inc., <http://www.illuminate.com>; *Wimba*, <http://www.wimba.com/about>). *Horizon Wimba*[™] and *vClass*[™] were examples of online solutions developed with these capabilities in mind. “Wimba’s intuitive solutions enable educators and students to quickly and easily teach and learn live online, engage in live chat and instant message exchanges, benefit from oral content being added to text-based course content, and more” (<http://www.wimba.com/about/>). *vClass*[™] evolved into *Elluminate Live!*[™] (<http://www.illuminate.com/>). This software enabled a virtual classroom with facilities such as real-time VoIP instruction and live discussion, live text-chat between all users in the virtual classroom, small group interaction in ‘breakout’ rooms, whiteboards, PowerPoint presentations, video, and linking to the web (Peters & Bell, 2006). This software was established to provide a stable online environment for a wide range of connectivity.

Technology has altered the face of higher education. Not only has technology streamlined the administration and service aspects of university processes but has also had considerable impact on teaching and learning (de la Harpe & Radloff,

2008). One issue that emerged was the need for educators to take a sound pedagogical approach to course development and delivery, particularly when learning was mediated through technology (Price & Kirkwood, 2008).

Good Teaching

With increasing focus on the importance of ‘learning outcomes’ and meeting needs of 21st Century learners, it may appear that the importance of, and emphasis on the “art and science of teaching” was in decline within university contexts (Arends, 2004, p. 24). This was unfortunate considering learning experiences were conceptualised, designed and implemented by lecturers with the view to supporting their students’ learning. Hence, the importance of a teacher’s role in ‘learning’ was essential (Chickering, 2008). It was therefore important to explore the components of what constituted good teaching. Considering universities were now catering to a steadily increasing mature age and diverse student population seeking further education, it was useful to identify key elements of sound teaching practice to ensure the learning needs of all are catered for (de la Harpe & Radloff, 2008).

Traditionally, many academics were not formally trained as ‘teachers’ but came to teaching as a part of their scholarly duties within the university situation, it was important to consider what constituted good teaching within this post-secondary context (Prosser et al., 2008; Ramsden, 2003; Ramsden et al., 1995; Ramsden, Prosser, Trigwell, & Martin, 2007). Galbraith (2004) indicated that lecturers must ensure “meaningful teaching and learning encounter[s]” and to do this they should understand “self and ... adult learners” (pp. 7-8). He outlined the conditions that university teachers should be aiming to establish for learning to occur ...

a climate conducive to learning; a contextual setting for the exploration of new ideas, skills, and resolutions; and a forum for critical reflection. Another vital characteristic is the ability to assist adults in the process of learning how to change perspectives, shift paradigms, and replace one way of interpreting the world by another. (Galbraith, 2004, p. 8)

As highlighted by Galbraith, Ramsden, Arends and others, effective teaching was a complex activity requiring attention to many important factors. Chickering and Gamson (1987; 1991) outlined a set of seven principles for good practice specifically

targeted at the undergraduate context although they also generally applied to postgraduate levels as well. Even though established in the late 1980s Chickering and Gamson's (1987) work was still recognised as relevant and significant foundational theory. Their work was intended to guide the development of better faculty teaching practices and to provide increased transparency for students and administrators.

According to Chickering, Gamson and later Barsi (1989), good practice ...

1. *Encouraged contact between students and faculty*

Establishing regular and meaningful communication between the students and their teachers was crucial for effective learning. University studies can bring many stresses, a sentiment which is even more relevant in the 21st Century university life; hence, Chickering, Gamson, and Barsi (1989) indicated a strong relationship ameliorated tough times for students. Interactions with faculty provided opportunities to greater thought about their own values and future aspirations.

With the burgeoning use and availability of technology and the faster pace of society, technology for communication purposes has dramatically increased. Faculty could take advantage of technology such as email, web pages, bulletin boards and online discussions (synchronous and asynchronous) to maintain closer communication with all students in their classes. Although some academics perceived technological communication to be a burden with students expecting them to be available online at all times, technology also relieved some of the face-to-face commitment traditionally expected of university lecturers (Woods, 2002). Technology also supported one-to-many interactions thereby streamlining this communication process. Students may have found online communication to be more comfortable ... “[i]t is often easier to discuss values and personal concerns in writing than orally, since inadvertent or ambiguous nonverbal signals are not so dominant” (Chickering & Ehrmann, 1996, p. 3).

2. *Developed reciprocity and cooperation among students*

Cooperation between students enhanced learning. Mimicking the work environment Chickering and Gamson (1987a, n.p.) identified “good learning ... is collaborative and social, not competitive and isolated”. Working with others not only increased the

enjoyment of learning but also extended, deepened and sharpened cognitive processes and ideas (Chickering, 2008).

The extent to which computer-based tools encourage spontaneous student collaboration was one of the earliest surprises about computers. A clear advantage for email for today's busy commuting students is that it opens up communication amongst classmates even when they are not physically together. (Chickering & Ehrmann, 1996, p. 3)

3. Encouraged active learning

Effective learning was not passive or transmissive. Students needed to “talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives” (Chickering & Gamson, 1987a, n.p.). Articulating to Knowles' and his associates' (1998) work meant students must integrate new knowledge into their prior schema for meaningful learning to occur. The range of technology available to support active learning was immense. These generally fell into three main categories such as “learning by doing”, “time-delayed exchange”, and “real-time conversation”. Learning by doing included “apprentice-like activities” such as adopting and utilising software tools for statistical research analysis and using research databases for gathering information which were not commonly available in local libraries (Chickering & Ehrmann, 1996, p. 3). Another aspect of “apprentice-like activities” included the use of computer simulations for tasks that were risky or not readily available in ‘live’ or ‘real-life’ contexts. “Time-delayed exchange” involved activities that were not live or synchronous. These may have included forms of communication such as email but also tasks and activities in laboratory exercises aiding skill and knowledge development. ‘Real-time conversation’ has increased steadily with the advent of greater bandwidth and satellite technologies.

4. Gave prompt feedback

All students must be provided with constructive and timely advice from faculty in order to improve their work and to learn from their mistakes. “[S]tudents need chances to reflect on what they have learned, what they still need to know, and how to assess themselves” (Chickering & Gamson, 1987a, n.p.). Instructors could use video and notes in a computer portfolio to critique student performance as well as

determine growth. Digitised efforts were often easier to store and retrieve. The use of “hidden text” in word processors had the advantage of being able to provide feedback without altering the original text.

5. Emphasised time on task

There was considerable research to indicate the more time that was spent engaged on a task the more effective the learning (Arends, 2004; Biehler & Snowman, 1993; Woolfolk, 2004). Students frequently needed assistance to enhance their time management skills to ensure they maximised their learning. Faculty must also have increased their awareness of students’ abilities ensuring their expectations of students and their allocation of time for particular tasks were realistic and attainable. “How an institution defines time expectations for students, faculty, administrators, and other professional staff can establish the basis of high performance for all” (Chickering & Gamson, 1987a, n.p.). The students’ use of online research databases potentially decreased time spent commuting to institutions to visit the library and other resources centres, and therefore represented additional time engaged with the task at hand. This time efficiency translated into “increased interactions between teachers and students, and among students ... [with] busy work and home schedules” (Chickering & Ehrmann, 1996, p. 4).

6. Communicated high expectations

High expectations were important to learners; indicating academics valued students and their studies. “Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations for themselves and make extra efforts” (Chickering & Gamson, 1987, n.p.). Chickering and Erhmann (1996) posited technologies were able to provide ... “[s]ignificant real-life problems, conflicting perspectives, or paradoxical data sets ... [which] set powerful learning challenges that drive students to not only acquire information but sharpen their cognitive skills of analysis, synthesis, application, and evaluation” (p. 5). They further extolled the virtues of displaying various levels of students’ work as a basis for peer evaluation with the premise that “learning teams can help everyone succeed” (Chickering & Erhmann, 1996, p. 5).

7. Respects diverse talents and ways of learning

Individuals were all different, with varied learning styles, talents, and intelligences. Therefore, faculty needed to have a repertoire of teaching strategies in order to meet the diverse needs of their class (Joyce, Weil, & Calhoun, 2004). This principle linked in well with the learning styles research and Gardner's multiple intelligences theory.

As Chickering and Erhmann (1996) stated:

Technological resources ... [allow for] ... powerful visuals ... direct, vicarious, and virtual experiences; and [development of knowledge and skills through] analysis, synthesis, and evaluation ... [and] ... self-reflection and self-evaluation. ... Technologies can help students learn in ways they find most effective and broaden their repertoires for learning. They can supply structure for students who need it and leave assignments more open-ended for students who don't. Fast, bright students can move quickly through materials they master easily and go on to more difficult tasks; slower students can take more time and get more feedback and direct help from teachers and fellow students. Aided by technologies, students with similar motives and talents can work in cohort study groups without constraints of time and place.

(p. 5)

More recent research on teaching and learning within universities was conducted by a team of researchers who spanned the Australian and United Kingdom contexts, namely, Ramsden, Prosser, Trigwell, Martin and others. Their early work explored students' perceptions of the learning environment and their approaches to learning. They found that students who adopted deep rather than surface approaches to learning attained higher quality and quantity learning outcomes. Adopting deep approaches were also "associated with perceptions that the teaching is good, the goals and standards are clear and that there is some independence in how and what students learn" (Prosser, Ramsden, Trigwell, & Martin, 2003, p. 37). Curiously their further research revealed that students' approaches to learning were not necessarily fixed and may be different across units, adopting deep for one and surface approaches for another course. "From this student approaches to learning

perspective, the same student might focus on merely reproducing facts in one context (surface approach), but on thoroughly comprehending the material in another (deep approach)” (Ramsden et al., 2007, p. 140-1). In their investigation as to why this inconsistency occurred they found that students’ responses to units were linked to that of the lecturer’s teaching beliefs and approach to teaching. The lecturer was crucial in the learning process as they structure the **context** of learning, and influence students’ **approaches** to learning. As Ramsden and his associates (2007) stated “the context of learning as perceived by students determines the approach they use, while the approach in turn is a critical factor in explaining the quality of the outcomes of learning they achieve” (p. 140). In his description of the linkage between student learning and good teaching, Ramsden (2003) stated:

Good teaching encourages high-quality student learning. It discourages the superficial approaches to learning represented by ‘imitation subjects’ and energetically encourages engagement with subject content. This kind of teaching does not allow students to evade understanding, but neither does it bludgeon them into memorising; it helps them respectfully toward seeing the world in a different way.
(p. 84)

Ramsden and his associates (2007) stated “we have evidence of a direct relationship between the way university teachers approach their teaching and the way their students approach their learning” (p. 153). Their research focused on lecturers’ beliefs about what was good teaching. Even though Ramsden (2003, pp. 86-7) identified that there was no “best way” to teach and his research on teaching identified thirteen “important properties of good teaching” as:

- A desire to share your love of the subject with students;
- An ability to make the material being taught stimulating and interesting;
- Facility for engaging with students at their level of understanding;
- A capacity to explain the material plainly;
- Commitment to make it absolutely clear what has to be understood, at what level, and why;
- Showing concern and respect for students;
- Commitment to encouraging student independence;

- An ability to improvise and adapt to new demands;
- Using teaching methods and academic tasks that require students to learn thoughtfully, responsibly, and cooperatively;
- Using valid assessment methods;
- A focus on key concepts, and students' misunderstandings of them, rather than on covering the ground;
- Giving the highest-quality feedback on student work; and
- A desire to learn from students about the effects of teaching and how it can be improved.

Through their exploration of good teaching at universities, Ramsden and his associates' research investigated the teaching orientation of academics. They found that lecturers who believed that their role as a teacher was to pass on information to their students tended to adopt more transmissive approach to teaching. Contrastingly, lecturers who had a more student-centred belief system ... "assume that students build their own knowledge; the lecturer's task is to challenge students' existing ideas through questions, problems, discussion and presentation" (Trigwell & Prosser, 2003, p. 233). These more constructivist lecturers ...

adopt more student-focused and more conceptual change-oriented approaches to teaching, rather than teacher-focused and more information transmission-oriented approaches, perceive that they have more control over their teaching, that their class sizes are not too large, that their workloads are not too high and that their department values teaching. (Prosser et al., 2003, p. 38)

From Ramsden's, Prosser's and their associates' research it was clear that teaching context and leadership also influenced lecturers' perception of teaching and their beliefs about what was good teaching.

Teachers reported greater use of an approach which was conceptual change/student-focused when they experienced a degree of control over the content being taught, when their department provided support for teaching, when they had an appropriate academic workload, and when they perceived that the characteristics of the students, such as

language skills and prior knowledge of the subject matter, were conducive to effective learning. (Ramsden et al., 2007, p. 141)

When comparing Ramsden's thirteen "important properties of good teaching" there was significant alignment between his points and those of Chickering and Gamson. This alignment was evident in Ramsden's "showing concern and respect for students" and Chickering and Gamson's "respects diverse talents and ways of learning" although Chickering and Gamson's point was broader taking account of diverse learning styles and talents. Similarly, Ramsden's "using teaching methods and academic tasks that require students to learn thoughtfully, responsibly, and cooperatively" linked with Chickering and Gamson's "develops reciprocity and cooperation among students". Both Ramsden and Chickering and Gamson identified expectations as an element, however, there were slight variations in intent wherein Ramsden highlighted the importance of clear expectations and the level and rationale, whereas Chickering and Gamson's principle focused on simply communicating high expectations for students. Finally, alignment was evident in relation to the importance of providing effective and timely feedback.

There was considerable research in the school system which explored the impact of leadership on teachers, and their teaching and professional development activities, and on school culture (Leithwood, 2007; Leithwood, Seashore Louis, Anderson, & Wahlstrom, 2004; Mulford, 2008; Webber & Robertson, 1998). However, as Ramsden and his associates (2007) stated "there are considerably fewer accounts of associations between perceptions of a supportive leadership ethos and a higher commitment to good teaching" within the higher education context until recently (p. 142). In their recent studies Ramsden and his associates (2007) found ...

[u]niversity teachers who reported more collaborative and transformational forms of leadership ... reported adopting more conceptual change and student-focused forms of teaching in their first year classes, and those who experienced non-collaborative (more authoritarian) forms of leadership reported adopting more information transmission and teacher-focused forms of teaching". (pp. 141-2)

They found that leadership that supported and encouraged teaching and learning development influenced lecturers' engagement with and beliefs about teaching

(Ramsden et al., 2007). These researchers (Martin, Prosser, Trigwell, Ramsden, & Benjamin, 2000) distilled the following premise:

When teachers make decisions about what is to be taught and how it will be learned they do so in line with an explicit or implicit theory of what teaching and learning the subject matter involves ... [c]ertainly both strategy and intention have their place in helping students to learn but a more fundamental question appears to be: 'what is it that teachers want their students to learn and how do they believe their students will come to know this – 'the object of study'? (pp. 387-8)

Therefore, Martin and his associates (2000, p. 411) took a broader perspective to that of Chickering and Gamson in relation to what constituted good teaching, as they stated that in professional development focused on assisting lecturers to improve in their teaching the following aspects must be addressed...

- the quality of implementation of various strategies
- the qualitative variation in the approaches to teaching
- the qualitative variation in what it is teachers want their students to learn
- how they conceive of the nature of the knowledge they wish their students to learn.

Having reviewed the work of Chickering and Gamson, and Ramsden, Trigwell, Prosser, Martin and their associates it was important to consider how these principles compared with the literature on instructional design.

Instructional Design

Chickering and Gamson's work indicated that good teaching involved, amongst other principles, encouraging active learning, emphasising time on task, and the communication of high expectations. Ramsden emphasised the importance of making the material stimulating and interesting; engaging students at an appropriate level aligned with their previous schema; ensuring that clear explanations are given particularly in learning resources; ensuring expectations are made clear; using teaching methods and tasks which would enhance the learning process; as well as, ensuring assessments were valid and educative based upon key concepts identified in the objectives. These various principles of good teaching resonated with the

principles of sound instructional design articulated in the work of Smith and Ragan (2005) and Moore and Kearsly (1996).

Instructional design was frequently discussed in relation to establishing courses and materials for online or distance delivery modes. Peters (1988) reported that these processes were generally as a result of being conceptualised, developed, delivered and facilitated by a team of experts to support the success of distance learning. He indicated that the effectiveness of the teaching process was particularly dependent on planning and organisation. He also stated that the function of the academics teaching in the distance mode had changed from their conventional teaching role. Instructional delivery was about good design of a course and ensuring that there was alignment between objectives, learning experiences and assessments. Moore and Kearsly (1996) referred to instructional design in the context of distance education as ...

[p]lanned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology as well as special organisational and administrative arrangements. (p. 2)

The delivery of any education required planning to deliberately arrange learning conditions enabling a learner to attain an intended goal (Driscoll, 1994). This process of planning was referred to as 'instructional design'. Smith and Ragan (2005) referred to instructional design as "the systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources, and evaluation" (p. 2). Educators as designers attempted to structure the experiences so that they were efficient, appealing, and cost effective (Smith & Ragan, 2005). Moore and Kearsly (1996) highlighted it was the designer's responsibility to develop an environment that supported active learning strategies and methods necessary to enhance learning. Further supporting this, Austin and Mescia (n.d.) stated "it is the instructor's (designer's) responsibility to develop an environment that supports active learning strategies and methods to enhance learning and support the learning objectives" (n.p.). This concept aligned closely with that of Chickering and Gamson's (1989) emphasis on active learning and

Ramsden's (2003) "using teaching methods and academic tasks that require students to learn thoughtfully, responsibly, and cooperatively" (p. 87). So what does instructional design entail apart from incorporating active learning?

The instructional design process employed the activities of planning, development, and evaluation. The majority of instructional design processes tended to follow the ADDIE model which involved:

- Analyse learner characteristics and the task to be learned;
- Design develop the learning objectives and choose an instructional approach;
- Develop instructional materials;
- Implement the method by which the instructional materials will be disseminated; and
- Evaluate which is to make sure that the materials achieved the goals identified in the design section.

Molenda (2003) in his search for an author for this model indicated that it was "merely a colloquial term used to describe a systematic approach to instructional development, virtually synonymous with instructional systems development (ISD)". Kruse (2009) stated that the ADDIE model has drawn criticism due to it being too systematic, linear, inflexible, constraining, and time consuming to implement. More recent models aimed for more holistic and iterative approaches, particularly those that utilised a team of developers in the inception and designing process.

Smith and Ragan (2005) identified their instructional design model as using the following three main stages:

- The identification of instructional goals;
- The instructional strategies necessary to achieve these goals; and
- The evaluation and revision of the instructional materials.

Each stage required problem-solving and creativity in order to be successful. "[D]esigners employ a high level of precision, care, and expertise in the systematic development of instruction because they perceive that poor planning can result in serious consequences, ... ineffective encounters, inefficient activities, and unmotivated learners" (Smith & Ragan, 2005, p. 4). Smith and Ragan (2005) went so far in their perception of the consequences of poor planning describing it as "misuse

of time and other resources and even in loss of life” (p. 4). Even though this somewhat dramatic statement was highly unlikely in relation to university students’ studies, the point about “misuse of time and resources” was well made when considering the demands on adult learners’ time. Smith and Ragan continued by describing the three stages of instructional design.

The first stage, that of identifying instructional goals required an understanding of what the learner was to do or know at the conclusion of the learning event. This involved the selection of content, determining how much was to be covered in a prescribed amount of time, and why this information was essential knowledge. Additionally, the learner’s previous skills and knowledge had to be taken into consideration, as generally the new knowledge was built upon previous understandings (Smith & Ragan, 2005).

The second stage considered the learning and teaching strategies necessary to achieve the goals. As part of this process designers determined the sequence of the experiences so that they coalesced into a single entity, not just segmented parts. The designer must also choose the medium or media necessary to best support the instruction. Questions such as ‘is the lesson going to be discovery or expository?’ or ‘do students read the text or do they need to research the findings?’ among others typically must be posed and answered. As Mantyla (1999) stated “[a]ctive learning is probably not going to happen in an online environment unless the interaction is deliberately planned and the instructor encourages it” (p. 83).

The third stage involved evaluation which was perhaps a two-step process in itself. First, students’ knowledge and skill improvement needed to be ascertained to gauge the effectiveness of the learning and teaching. As with all evaluation, this process had to be communicated to the learner from the commencement of the course so that they were aware of the assessment tasks and the purposes of these. Additionally, they needed to understand what input they had to undertake in order to achieve certain levels of results. Second, the designer needed to evaluate the effectiveness of the instructional materials with the view to further improvement and enhancement.

Smith and Ragan (2005) expressed the viewpoint that careful systematic planning was imperative regardless of the media of instruction.

When the instructional medium is not immediately adaptable (as with printed materials, videotaped materials, and computer-based instruction), having a design that is based upon principles of instruction is very important. Any oversights that were made in the design of these instructional materials cannot be easily remedied because the instruction is being delivered by instructional media". (Smith & Ragan, 2005, p. 2)

This statement endorsed the views of Ascough (2002), Clark, (1994), and Price and Kirkwood (2008) who all stated that good pedagogy must be paramount before the medium of delivery.

Online learning was particularly reliant on the quality of the learning materials. As contact with the instructor may not have been as readily available for explanations as in face-to-face modes the materials and resources needed to be more complete in their instructions and explanatory sections. The importance of well designed, self explanatory materials was emphasised by Holmberg (1989) who stated that his guided didactic conversation between the student and teacher was fostered by "well developed self-instructional material and two-way communication at a distance" (p. 43).

Moore and Kearsly (1996) also discussed at length the importance of considering communication processes as an essential consideration in the instructional design of online or distance learning. Woods and Baker (2004) stated "interaction is at the heart of online learning experience" (p. 2). He referred to Moore's (1989) transactional distance theory indicating that what was important was communication and the construction of knowledge. Moore proposed three distinct types of interaction in distant education, first, learner-content, second, learner-instructor, and third, learner-learner. Learner-content involved providing opportunities for the learner to engage with the content in a meaningful way. Learner-instructor was where the learner and the instructor engaged in dialogue. The final learner to learner communication was designed to enhance and expand the learning experience through

their discussion, reflection and cognitive processing as a result of social dialogue. These forms of communication were mediated and facilitated through a range of media including asynchronous and synchronous modes. Communication in these modes was discussed in the online interaction section.

Considering the importance the lecturer had in teaching and the approaches they wanted students to adopt in their learning, it was useful to explore the role technology played in facilitating appropriate learning environments and providing access to education and resources.

Educational Technology

With the proliferation of educational technology, lecturers must consider the teaching strategies and resources traditionally used, with the view to ensuring high quality learning experiences supported and/or mediated by technology. University education has been traditionally based on an information transfer paradigm where the role of the teacher was to impart knowledge, and the responsibility of the student was to acquire it. With the advent of the Internet many lecturers, keen to be involved with the technology, experimented with course designs to make best use of the new environment. Traditionally these online courses likewise followed the information transfer paradigm. Lightfoot (2005) indicated the rush to generate “on-line classes and bring curriculum online as quickly as possible ... [results] ... educational effectiveness becoming a secondary concern” (p. 210). Bork (2001) was critical of online learning as it existed, mainly as many courses were designed as a simple mimicking of face-to-face classrooms. Herrington, Reeves and Oliver (2005) indicated a difference in orientation exists whereby “teachers focus on content (the product orientation), rather than the process of educating the student (the customer orientation)” (p. 357).

Frequently, course outlines and schedules, references, problems, problem-solutions, links to other sites, and/or additional learning resources were the only materials included in online sites. Students were referred to these sites to read the information to ‘gain their education’. As Reeves, Herrington, and Oliver (2004) stated, the use of Blackboard and WebCT tended to replicate “traditional instructional classroom practices, such as lecture notes, readings, quizzes, term papers, exams, and the like”

(p. 4). Smith, Ferguson, and Caris (2001) identified a potential problem with online learning, in that the responsibility for maintaining motivation, determining the success of the learning, and/or the diagnosis of, and remediation of difficulties rested entirely on the learner. To avoid misconceptions from unclear content, the educator must have considered every aspect of the course materials, thereby providing meticulous and copious detail (Smith, Ferguson, & Caris, 2001). Boyd, Fox and Herrmann (1999) emphasised the importance of ensuring that course materials were in alignment. This meant the content selected, objectives, learning experiences, and assessments must all be in congruence to ensure positive student outcomes. Smith and his associates (2001) reported some lecturers expended considerable amounts of time preparing courses to be presented in an online mode. Schroeder and Spannagel (2006) cautioned when developing online courses “pedagogical theories like constructivist and action-oriented approaches should ... underlie the creation of new computer-based instructional material” (p. 245). This was done to create an “online presence”, whereby students develop a “psychological perception” that the lecturer was real and responding to them (Smith et al., 2001, p. 21).

Aragon (2003) explored the impact of “social presence” on learners within online environments. Aragon drew upon the earlier research of Short, Williams, and Christie (1976, cited in Aragon, 2003) who defined ‘social presence’ as the “degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships” (p. 57). Aragon posited that developing social presence created a psychologically “safe environment” essential to ensure high levels of student motivation which supported and engaged them in their learning experiences. He recognised the value of online interaction indicating that some form of audio-voice capability in combination with “[c]ollaborative learning activities” enhanced interaction thus creating social presence (p. 63). This was not a miraculously occurring phenomenon, rather he stated course designers, lecturers, and participants must all work toward developing and supporting this online social presence. Instructors could promote this by making students feel welcome through messages posted, encouraging ‘ice-breaker’ materials such as posting of student profiles, facilitating student interaction, questions and conversations before, during and after class. Aragon considered emoticons and humour important in conversations with

students (Aragon, 2003). He linked social presence with student satisfaction with online courses hence it was an important classroom climate to foster.

Price and Kirkwood (2008) identified one of the key ‘quality’ related issues in higher education online learning environments:

One of the fundamental problems in HE is that many academic teachers lack a pedagogical understanding of the form of their practice. The introduction of ICT to facilitate and support the curriculum makes this issue more acute – it tends to make teaching more visible and a less ‘individual’ activity. In more traditional universities a lecturer or professor is relatively free to design, organise conduct their teaching as they please The theoretical premise or philosophy of their teaching is rarely discussed – it is not under scrutiny, nor is it ‘publicly’ available. Rarely would one lecturer go and observe the practices of another lecturer, especially if uninvited. ... Courses that have a web presence are quite visible and are open to greater scrutiny by peers. Lecturers can observe and scrutinise each other’s websites and online materials and they are exposed to potentially increased critique. (p. 89)

Price and Kirkwood’s (2008) analysis endorsed Levine and Sun’s (2003) earlier perspective that “academe lacks a pedagogy for using the Internet. The ability to use it effectively will advance as educators learn more about individual learning styles” (p. 5). Professional development was essential to the improvement of teaching practice within online courses. The professional development which has been available to academics was focused on the use of the technology and identifying their skills shortages in order to “remedy any deficiencies [in] ... *how to use, information communication technology*” (Price & Kirkwood, 2008, p. 90, italics in the original). In fact, lecturers who sought to integrate technology into their teaching could be faced with greater opportunities to interrogate their teaching practice thereby “advancing pedagogical strategies” with the view to progressing from a transmissive to a constructivist paradigm (Suen, 2005, p. 143). Referring to Carswell, Thomas, Petre, Price, and Richards (2000) earlier work, Price and Kirkwood (2008) cautioned that professional development must provide academics with the opportunities “to reflect upon their own beliefs and practices relating to the nature of knowledge,

learning and teaching” in order to bring about transformational change rather than simply translating face-to-face materials for the web (p. 90).

Ramsden (2003) advocated for evidence-based reflection by university lecturers. One source of useful ‘evidence’ was student feedback on their learning experiences. Not all academics accepted student feedback as being reliable data indicating “students are not competent to make such judgements or ... ratings are influenced by teachers’ popularity rather than their effectiveness” (Richardson, 2005, p. 407). Contrary to this doubting perception, Marsh (1987) and Ramsden (2003) both found student data to be valuable in informing course development and lecturer reflection. Marsh reported “student ratings are clearly multidimensional, quite reliable, reasonably valid, relatively uncontaminated by many variables often seen as sources of potential bias” (Marsh, 1987, cited in Richardson, 2005, p. 392). Ramsden (1998, 2003) also suggested lecturers engaged with their student feedback data in a systematic form of inquiry that could be as satisfying as research endeavours. Mills (Gay, Mills, & Airasian, 2008, p. 501; Mills, 2000) outlined a dialectic action research spiral (see Figure 2.3) which provided academics with “‘provocative and constructive ways’ of thinking about their work” and clear pointers for action plans. In this cycle the lecturer identified an area of focus from student feedback, develops an action plan from the analysis of the data in order to implement positive changes in the classroom, whereupon the cycle began again.

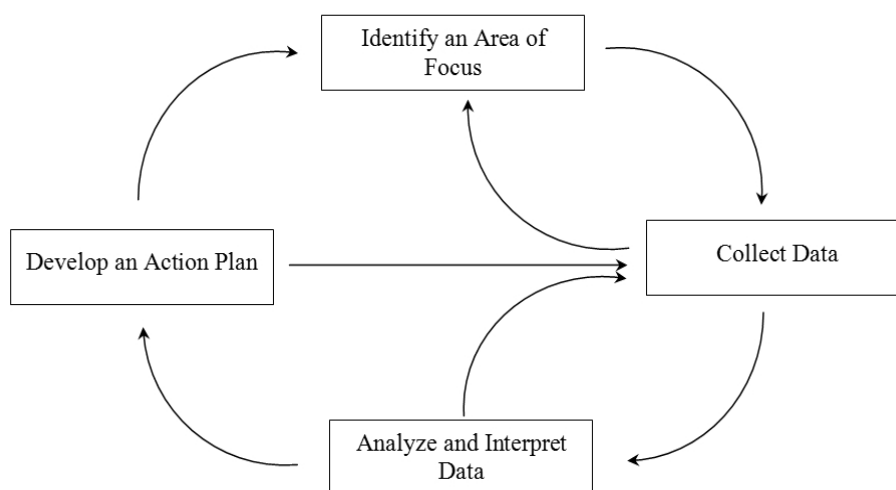


Figure 2.3: Mills’ Dialectic Action Research Spiral

Simply collecting students' feedback produced no positive changes, whereas Scott and her associates (2006; 2008) found that Mills' systematic reflection, action planning, implementing refinements to teaching strategies and assessment, resulted in positive student outcomes and higher levels of student satisfaction. This reflective-practitioner process was even more important when academics were venturing into integrating technology into their teaching approaches.

Another quality teaching-related issue that has been identified was that many educators 'jumped on the technology bandwagon' for the sake of using new and fun 'gadgets', software and technologies. Researchers in the field of e-learning came to the conclusion this was not an effective approach. As Tham and Werner (2005) iterated:

Unfortunately, educators are sometimes swayed by 'trendy' technology/software, rather than focusing on what the learner can receive and absorb through these transmissions ... educators need to be constantly mindful that technology should not 'drive' their courses instead, the course objectives and learning outcomes should be the driving forces. (p. 17)

Pedagogy should have been driving the choices of technology and approaches not the other way around ... "[y]et evidence shows that it is not the technology per se that changes learning and teaching but the pedagogical advantage we make of its use" (Price & Kirkwood, 2008, p. 83). Similarly, Ascough (2002) espoused the need to put "pedagogy before technology" to ensure high quality education regardless of the delivery mode (p. 17). Clark summed it up ... "[p]edagogy is the key factor in learning effectiveness whereas technology is only a learning medium" (Clark, 1994 cited in Beyth-Marom, Saporta, & Caspi, 2005, p. 246). He used the analogy of a delivery truck moving groceries to a market wherein the truck had no impact on the levels of nutrition in the community. He stated "the choice of vehicle might influence the cost or extent of distributing instruction, but only the content of the vehicle can influence achievement" (p. 26). Although Clark emphasised content as being important, the *way* technology was used to support students' learning was equally important, that is, were constructivist activities integrated into the online environment to maximise learning? "There has been too much attention on

developing the technology infrastructure, discipline-based software and resource repositories, while insufficient attention has been given to how and why teachers and students might benefit from the use ICT” (Price & Kirkwood, 2008, p. 88).

Considering that Chickering and Gamson’s principles of good teaching encompassed ‘encouraging contact between students and faculty’; ‘developing reciprocity and cooperation among students’; and ‘encouraging active learning’; and Ramsden’s ‘using teaching methods and academic tasks that require students to learn thoughtfully, responsibly, and cooperatively’; it was important to consider constructivist pedagogical strategies which supported these principles, and ultimately good learning. Cooperative learning strategies were acknowledged as promoting active, interactive and reflective behaviours.

Cooperative Learning

Cooperative learning has been explored for the past two to three decades and was gaining support in schools and universities due to its academic as well as social outcomes (Johnson et al., 1998a). John Dewey (~1900) proposed that the school room should be a microcosm of the democratic society within which it existed. Thelen (Arends, 2004) went further by developing particular strategies for group investigations. Some of the key researchers in this field of cooperative learning included Kagan (1994), Slavin (1995; Slavin et al., 1985), Johnson and Johnson (1991; 2002; Johnson, Johnson, & Holubec, 1994), Sharan (1980), de Vries (Arends, 2004), and Bennett (1997). Arends (2004) indicated laws alone could not bring about intergroup tolerance and reduce prejudice hence more was required in the school system to create these capabilities. Sharan (1980) worked in Israel to develop ethnic understandings between Jewish immigrants from differing backgrounds. His work resulted in the development of the Group Investigation strategy. Slavin (1995; Slavin et al., 1985) investigated the strategic use of competition within cooperative activities and developed the Student Teams Achievement Divisions (STAD) strategy. Kagan developed many cooperative learning strategies and focused on the structures required to support academic achievement of all in the classroom. Kagan (1994) emphasised the importance on developing effective social skills to ensure optimal learning outcomes from cooperative behaviours and activities. David and Roger

Johnson (1991; Johnson, Johnson, & Holubec, 1994) explored how goal structures influenced the interaction of students, and how these affected their achievement and social development. These researchers continued their exploration of cooperative structures in relation to the university and college classrooms (Johnson et al., 1998a, 2007). A number of researchers, such as Kagan, Johnson and Johnson, and Bennett and his associates (1991) emphasised the importance of structure and overt teaching of social skills in cooperative learning activities ensuring discipline content and process outcomes were maximised.

Cooperative learning was defined as “working together to accomplish shared goals. Within cooperative activities individuals seek outcomes that are beneficial to themselves and beneficial to all other group members” (Johnson et al., 1998a, p. 23). Johnson, Johnson and Smith (2007) outlined the reciprocal benefits of cooperation in university classrooms.

The more effort students expend in working together, the more they tend to like each other. The more they like each other, the harder they tend to work. The more individuals work together, the greater tends to be their social competencies, self-esteem, and general psychological health. The healthier individuals are psychologically, the more effectively they tend to work together. The more caring and committed relationships individuals are involved in, the healthier they will tend to be psychologically ... These multiple outcomes form a gestalt that is central to creating a learning community. (pp. 21-22)

Although some may argue that cooperative learning was a distinctly Western concept in teaching and learning, Watkins and Biggs (2001) identified that this learning strategy was not foreign to Asian learners. They found Chinese students frequently used study groups and other group support processes to assist each other to learn. Tham and Werner (2005) found there was a distinctive difference between the approaches of Western and Eastern learners ... “the use of group assignments may hinder the performance of westerners, but at the same time may induce non-westerners to teach them about the importance of group before self in some situations” (p. 23).

Johnson, Johnson and Smith (2007) likened the research on cooperative learning to a diamond wherein the more light you shone on it the brighter and “more multi-faceted it becomes” (p. 22). Cooperative learning theory was a blend of educational and psychological theory and practice, which had a validity and generalisability rarely found in the literature. Johnson and Johnson’s early work (Johnson & Johnson, 1991; Johnson et al., 1994; Johnson et al., 1998b) identified key aspects of cooperative learning which were essential if it was to be successfully implemented. These aspects included positive interdependence, individual accountability, equal participation and simultaneous interaction.

Positive interdependence was a situation whereby students worked in small groups to maximise the learning of **all** members. This meant, for the group to be successful each member had to be successful in the learning goal/task. Within *positive interdependence* there were additional components and ways to structure it to ensure this aspect was included, such as, “means interdependence” which included shared resources; “task interdependence” wherein there was a division of labour; and “boundary interdependence” which occurred through the physicality of the group being situated together (Johnson et al., 2007, p. 23). Bennet, Rolheiser-Bennett, and Stevehn (1991) also emphasised this in their work.

Individual accountability was one of the most important aspects in structuring for successful cooperative learning. This aspect existed when the performance of individuals within the group was monitored or assessed. The individual was held accountable for his/her performance by the group and/or the lecturer. This aspect discouraged “social loafing” (Caspersz et al., 2002), or “hitch-hiking on the backs of peers” work (Johnson et al., 2007, p. 23). Incorporating individual components within an overall group task, tracking individual’s input, and/or testing individual learning as a result of the group task were ways to promote individual accountability.

Equal participation, (later termed *promotive interaction*) was where group members “encourage and facilitate each other’s efforts to complete tasks and achieve the group’s goals” (Johnson et al., 2007, p. 23). In equal participation all members were responsible for supporting their peers to ensure all were successful.

Johnson and his associates (2007) recognised the importance of social skills which worked towards the smoothness of *simultaneous interaction*. When tasks enabled students to work on separate components and then bring these back to be compiled or used to create the final version of the group task, it enabled simultaneous interaction. They advocated for the overt teaching of social skills to ensure students were able to work “purposefully and precisely” (p. 24). The skills they identified include “leadership, decision-making, trust building, communication, and conflict-management” (p. 24).

The “fifth element” was *group processing* where students were required to “periodically reflect on how well they are functioning and how they may improve their learning processes” (Johnson et al., 2007, p. 24). This ensured students overtly considered strategies to improve the group, their own input and ways of behaving with others, and encouraged problem-solving for future group tasks. Bennett and his associates also emphasised the group processing and indicated this was as powerful to the learning of students as that of academic content (Bennett, 1997; Bennett et al., 1991).

Bennett and his associates (1991; Bennett & Smilanich, 1994) related the importance of physically situating students together so they were able to work more effectively as a contained group. He also referred to the importance of teaching social skills that were imperative for effective team interactions.

Johnson and Johnson and their associates (Johnson & Johnson, 1991; Johnson et al., 1994) and Bennett and his associates (Bennett et al., 1991; Bennett & Smilanich, 1994) advocated for the overt teaching of these elements of cooperative learning in order for these strategies to be successful and effective in producing positive learning outcomes. The necessity of overt teaching may have been as a result of the individualistic nature of Western students who may have resisted cooperative activities (Biggs & Watkins, 2001). Watkins and Biggs (2001), Tang (2001), Cortazzi and Jin (2001), Winter (1994, cited in Watkins & Biggs, 2001) identified that cooperative behaviours were more prevalent in, and acceptable to, Eastern students. These students were “typically characterised as being collectivist in nature, placing more emphasis on the group rather than the individual good” (Watkins &

Biggs, 2001, p. 8). With cooperative learning acknowledged as ‘good teaching and learning’, it was valuable to explore how these strategies translated into online environments.

Communities of Practice

In recent times, collaboration was recognised as best practice for online learning as it improved both interaction and interactivity (Johnson & Johnson, 2002). Moore (1989) stated:

A new dimension of distance education ... will be a challenge to our thinking and practice in the 1990s ... learner-learner interaction among members of a class or other group is sometimes an extremely valuable resource for learning, and is sometimes even essential. (n.p.)

Interaction referred to student-student and student-teacher contact, promoting more personal and relevant learning experiences. Interactivity meant the inclusion of materials and processes which promoted active online learning. Cooperative learning fostered the development of critical thinking skills, reflection, transformative learning, and the creation of knowledge and meaning (Palloff & Pratt, 2005). Considering constructivism “holds that the process of learning is active and is involved with constructing rather than acquiring knowledge” incorporating collaboration between students in online environments was essential to good learning (Palloff & Pratt, 2005, p. 6). Learners needed to have opportunities to “construct meaning ... influenced by the interaction of prior knowledge and new learning events” (Arends, 2004, p. 4). Care had to be exercised to ensure materials and activities promoted a “two-way dialogue”, otherwise, there was the risk the lecturer, through their course set-up, was reinforcing “passive-dependant” behaviours (Grasha & Yangarber-Hicks, 2000, p. 6). Davies and Graff (2005) espoused the social benefits along with academic ones from online interaction. Drawing upon Rovai’s (2002, cited in Davies & Graff, 2005, p. 658) work they stated that interaction supported learners’ “sense of community” whereby they were able to enjoy “mutual interdependence and a sense of trust and interaction ... [and] shared goals and values” with the other members. Their study found students who had failed in one or more modules had participated less in online interactions.

Wenger and Snyder (2000) termed these cooperative communities as “communities of practice” where people informally grouped together because of a “shared expertise and passion for a joint enterprise” (p. 139). In these communities of practice the individual could “galvanize knowledge sharing, learning” and facilitate “change” (p. 139). Wenger and Snyder felt communities of practice was the “new frontier” driving strategy, solving problems, developing professional skills, promoting the spread of best practice, and generating new lines of business. They cautioned however, that these groups must be supported, investing “time and money in helping such communities reach their full potential ... [this may mean] intervening when communities run up against obstacles to their progress, such as IT systems which don’t serve them ... and reward structures that discourage collaboration” (p. 144).

Oliver, Omari and Herrington (1998) contended computer-based environments frequently were individually-orientated which ran counter to the cooperative learning ethos involved in effective teaching practices. They stated “[i]ndependant learning can often leave a learner passive and inactive” (p. 123). Referring to Vygotsky’s (1978, cited in Oliver et al., 1998) theories on social learning they indicated “talk is an important medium for sharing knowledge and ideas” and these interactions supported higher order learning (p. 123).

Even though there was research indicating online learning was as effective as face-to-face there were studies indicating students’ reactions to online learning could also be mixed (Pena-Shaff, Altman, & Stephenson, 2005). Students may have perceived cooperative learning opportunities external to class time, such as participating in online discussion boards, as a “time consuming and burdensome activity” (p. 411). They linked this to a personal motivational issue, with some students enjoying the active mental construction involved in social learning activities, whereas others “merely wish to pass their courses with a limited amount of effort” (p. 410). Some advocated holding students accountable for their participation and the attribution of grades for online collaboration (Jiang & Ting, 1998 cited in Pena-Shaff et al., 2005) ... “mere instructor encouragement and good will are generally not enough to overcome the initial inertia most students experience when they take on what appears to be an extra burden” (Hawisher & Pemberton, 1997, p. 69, cited in Pena-Shaff et al., 2005). Grasha and Yangerber-Hicks (2000) found “online students were more

willing to participate in group activities, if the teacher created clear guidelines for participation”. They continued, stating students “collaborative and participatory styles as learners were connected to their needs to compete successfully for the incentives a teacher provided” (p. 4).

Teaching was an essential part of the education process as teachers were the “architects” of the learning experience (Fogarty, 1999). Lecturers were responsible for the selection of the content, the design of the learning experiences, the methods of assessment and for developing a positive relationship with their students. Therefore, they were essential to the course success. Academics needed to have a thorough understanding of not only the information they were teaching but also of the potential needs of the students and how to support their learning. Scholarly literature abounded with research about teaching within the K-12 sector and it was an ever increasing field in higher education, particularly as quality teaching was becoming more important. There was a good reason why ‘teaching’ and ‘learning’ were frequently linked in dialogue and research. Good learning was influenced by good teaching and good teachers were influenced by their learners’ feedback. It was therefore useful to explore the literature in relation to learning and the learners.

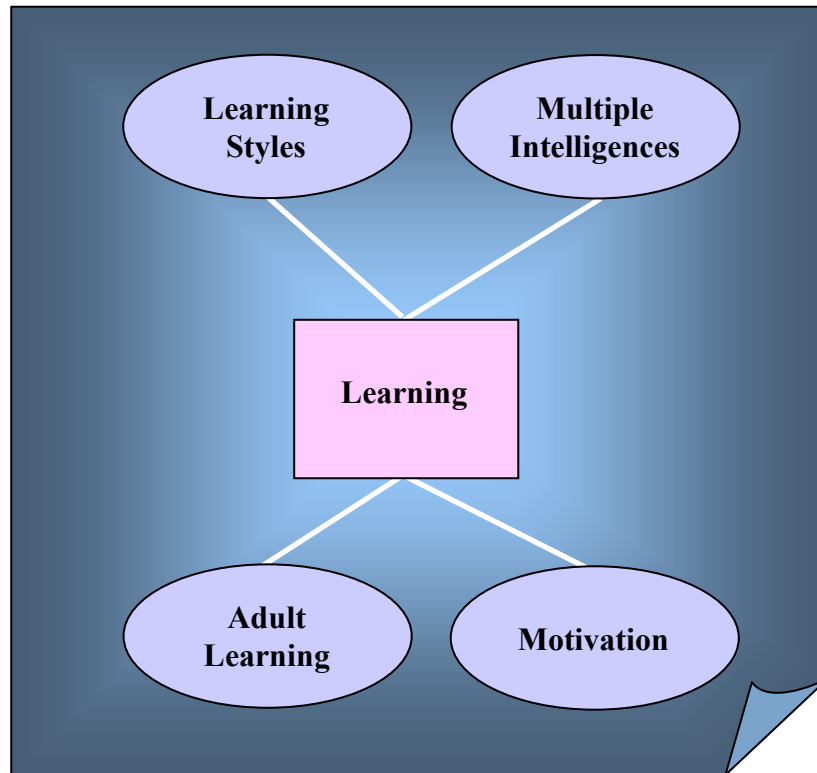


Figure 2.4: Elements of Learning

Rather than viewing knowledge as fully known, fixed, and transmittable, the constructivist perspective holds that knowledge is somewhat personal and meaning is constructed by the learner through experience. Learning is a social process in which learners construct meaning, which is influenced by the interaction of prior knowledge and new learning events.

(Arends, 2004, p. 4)

Learning and Constructivism: Philosophical Underpinnings

Figure 2.4 displays the elements of learning which were deemed to be important in this study and were reviewed from the scholarly literature. Constructivism was an educational philosophy which espoused that learning was ‘constructed’ through an individual’s interaction with data, people and influenced by his/her prior schema and experiences. Anderson (1996, cited in Null, 2004, p. 181), in his search for a definition of “constructivism”, described it as an “interactive process during which teachers and learners work[ed] together to create new ideas in their mutual attempt to

connect previous understandings to new knowledge”. This philosophy was diametrically opposed to a more traditional conception that knowledge could be transmissively transferred, relatively unchanged, from one person to another. Null (2004, p. 181) distilled the key identifying aspects of “instructional” constructivism as: teaching and learning processes frequently being “nonlinear”; “personal meaning making [was] central to the learning process”; constructivist “teachers should strive to understand students’ points of view”; learning experiences encompassed relevancy to students’ “daily lives and experiences ... [and] prior ... knowledge” and “learning [should be] as natural as possible”. The final key aspect was to “advocate teaching practices ... [which were] interactive in nature rather than domineering and one-sided”. So how do students learn in a constructivist paradigm? Bandura (1986) explored the process of learning and how it was important for students to engage with others in their learning, a basic tenant of constructivism, namely, interaction and reciprocity.

Social Cognitive Theory

There were many theories of learning, behaviourist, mastery, information processing to name a few; however, social learning or learning through the interaction with others had a constructivist dimension. The psychologist, Albert Bandura (1977; 1986), outlined a series of steps involved in his Social Cognitive Theory which explained how individuals could learn through observation of and interaction with others.

Bandura posited four important elements: attention, retention, production, and motivation and reinforcement. *Attention*, of the student was required to be focused on the aspect or skill that has to be learned; *retention*, involved mental rehearsal or practice in order to impress the new information into long term memory; *production*, involved practice, feedback and coaching in order to refine the performance of the behaviour and retainment of information. Bandura indicated that practice resulted in the development of self-efficacy, the belief that we are capable of performing the behaviour. Bandura’s theory moved beyond the mechanistic approaches inherent in behavioural or information processing theories by introducing the psychological dimensions involved in *motivation and reinforcement*. Bandura proposed that once the knowledge or skills were mastered, motivation was required in order for these to

be demonstrated. Reinforcement occurred when the new learning produced a positive or negative reaction. Positive reinforcement was important if the behaviour or knowledge was to continue to be valued and performed (Woolfolk, 2004). Bandura (1977) referred to this interaction between the contextual factors and the individual's behaviour as "reciprocal determinism" in which it was a two way process with one influencing the other and vice versa (p. 32).

Bandura continued his work in Social Cognitive Theory and expanded it to investigate the impact that this had on self-efficacy. Self-efficacy was the belief that one could produce certain actions usually as a result of having successful past experiences in similar tasks (Bandura, 1986). The more success an individual experienced the more likely he or she was of attempting new and more difficult tasks and the higher their level of self-efficacy became. Bandura indicated that the higher an individual's self-efficacy, the greater their perseverance with adverse situations was likely to be (Bandura, 1997).

Metacognition – Facilitating Independent Learners

Linking back to Ramsden's (2003) "important properties of good teaching" specifically, 'commitment to encouraging student independence', it was important to consider how fostering 'student independence' occurred within the teaching and learning process. Many good teachers understood the importance of reflection for understanding practice and personal knowledge. Perkins (1995) coined the term "reflective intelligence" which related to the process of metacognition, the awareness of the process of learning or understanding one's thinking and cognitive processes, that is, thinking about thinking (p. 113).

Robert Marzano (2000) explored metacognition particularly as it related to students' engagement with learning tasks. His work involved the interactions of knowledge, cognitive systems, metacognitive systems and "self-systems". When a student was faced with a new task the student needed to decide whether or not to undertake the task and engaged the self, metacognitive, cognitive and knowledge systems. Motivation influenced the self-system. The self-system involved a "network of interrelated beliefs" and goals (p. 82). His description drew similarities between

Bandura's (1986; Pajares & Kranzler, 1995) description of self-efficacy and self-belief. If an individual believed the task was important and was likely to be successful, then a positive affect was generated which motivated the person to engage. Conversely, if the worth of the task was deemed low or the likelihood of success was low then the motivation factor was correspondingly low and a negative effect generated. This aligned closely with Bandura's motivational and reinforcement factors that affected performance.

As all four systems interacted they were all crucial for effective learning to take place. A breakdown in any of the systems was likely to affect the learning process; for example, if the student had no personal goals in the self-system related to the task the individual undertook a compensatory activity and/or if the student had deficient or ineffective goal monitoring processes within the metacognitive system this would adversely influence the completion of the task.

Metacognition was a key aspect in learning. As reflective capacities increased, students gained confidence and became more independent as learners. Metacognition entailed self-reflection, self-responsibility, and initiative, as well as goal setting and time management. It also depended on the learners' familiarity with the task, motivations, and affective capacities. Individuals had to develop a flexibility to adopt and implement different strategies based on the situation (Marzano, 1988). The task of educators was to acknowledge, cultivate, and enhance the metacognitive capabilities of all learners and expose them to valuable strategies.

University lecturers should endeavour to provide their students with a range of opportunities to learn, adopt varied strategies of teaching, and acknowledge differences in learners in order to better meet their needs (Chickering, 2006; Ramsden, 2003). Active, interactive, stimulation-rich learning environments would promote the "flowing of dendrites" (Fogarty, 1999, p. 178) thereby increasing the "neural pathways of insight" enhancing students' capacity to learn and develop new skills (Brandt & Perkins, 2000, p. 78). Even so, students had to share the responsibility for learning with their lecturers and peers. They should be willing to participate and contribute to class discussions, initiate conversations before, during and after class and be prepared to share their experiences and stories which would

enhance interaction. The strong emphasis in the constructivist philosophy on the interaction between students' learning experiences and their prior knowledge schema liaise with theoretical constructs within adult learning theory.

Knowles and his associates (1998) identified that adults strive to make sense of their learning within the framework of their greater levels of life experience. Therefore constructivist approaches within the higher education context was extremely important for effective learning. Although it may have been assumed university students were adult learners, many academics would question this view, as undergraduates may not necessarily demonstrate the characteristics Knowles and his associates (1998) attributed to adults. These attributes included displaying self-determination, a motivation to learn, and the need to incorporate their extensive life experiences into their learning. Long (2004) stated “[e]ven experienced teachers of adults reveal inadequate awareness of adult learners” and how to best meet their needs (p. 21).

Adult Learning

Adult learning theory was proposed to explain the differences between the learning environments required for adults in contrast to that of children. Knowles (1968) explored these different learning environments during the 1960s and found that adults came to learning tasks with different agenda, motivation, rationales for engagement and needing different strategies in order to be successful. Although the term “andragogy” was coined over 150 years ago in Germany and popularised in the late 1920s by Eduard Lindeman (Davenport & Davenport, 1985) it remained a term generally understood as the teaching of adults in contrast to “pedagogy”, the teaching of children and adolescents. Knowles (1968) described andragogy as “the art and science of helping adults learn ... based on certain crucial assumptions about the differences between children and adults as learners” (p. 351).

Knowles outlined six assumptions about adult learners which framed his “andragogical” principles, namely:

1. *The self-concept of autonomy and self-direction* – Adults desired to be in control of their own lives and learning, hence power and control were key aspects.
2. *Increased life experience* – Adults collected experiences as they progressed through life and these served to adjust and shape their beliefs, understandings and behaviours. Adults therefore relished learning experiences which took into account and validated their personal experience set.
3. *Required a sound rationale for learning* – Adults needed to perceive sound value in the learning expected of them. Teacher-imposed rationale as the only rationale for learning was perceived as inappropriate.
4. *Motivation to learn was intrinsic* – Adults were motivated to learn in order to “find out” more or to obtain an answer. The action of learning was usually voluntary.
5. *Pragmatic learning* – Learners desired to perceive the real-life application to be “able to better deal with some life problem about which they feel inadequate now” (Knowles, 1968, p. 386).
6. *Motivated to solve ‘real-life’ problems* – “people become ready to learn something when they experience a need to learn it in order to cope more satisfyingly with real-life tasks or problems” (Knowles, 1980, p. 44; Knowles et al., 2005, p. 72).

The basic premise of Knowles’ theory of adult learning was that adults had basically unique learning characteristics and requirements to those of children. Initially, ‘andragogy’ was positioned in opposition to ‘pedagogy’. This was later modified by Knowles in the late 70s and early 80s whereby the conditions for the application of andragogical techniques to be applied were altered. Knowles (1980) identified that achieving adult status occurred when an individual’s “self-concept” progressed from dependency to autonomy and when he or she perceived “herself or himself to be essentially responsible for her or his own life” (p. 24). According to Merriam (2001), the characteristics that defined adults were still contested.

Some adults are highly dependant on a teacher for structure, while some children are independent, self-directed learners. The same is true for motivation; adults may be externally motivated to learn ... while children may be motivated by curiosity or the internal pleasure of

learning. Even the most obvious assumption that adults have more and deeper life experiences may or may not function positively in a learning situation. Indeed, certain life experiences can act as barriers to learning. Further, children in certain situations may have a range of experiences qualitatively richer than some adults. (p. 5)

Even though andragogy was a term used in relation to the teaching of adults it remained a controversial conceptualisation and has never reached common usage within the university context. Pedagogical in its purist form was technically the teaching of children; however, its meaning has become broader and more generally understood to mean ‘teaching’ rather than ‘teaching children’ (Price & Kirkwood, 2008). Therefore, with the view to ensuring greater understanding of a wider audience, this thesis has utilised the more commonly understood and widely used terminology of ‘pedagogy’ while acknowledging the differentiation between pedagogy and andragogy in the literature.

Due to the personal agenda adult learners bring to learning experiences, they were frequently perceived by teachers to be difficult, demanding, and opinionated. Clardy drew upon Newton’s (1977, cited in Clardy, 2005) amusing comment that “[t]he adult as a learner is pictured as an autonomous, experience-laden, goal-seeking, ‘now’ oriented, problem-centered individual” (p. 7). Salili (2001) indicated that while teacher-student interaction had been well researched in Western societies “relatively little research has been conducted in Chinese” contexts (p. 77). The same may be stated about research on Chinese or Eastern origin ‘adult learners’. The question may be proffered ... do Chinese adult learners differ from their Western counterparts?

Dunn and Wallace (2004) raised the issue of lecturers of adults using informal and facilitative teaching approaches with students of “Confucian”-oriented backgrounds, as they had different conceptions of teaching and learning and perceptions of their lecturers. Based upon Fengjiao and his associates’ findings Dunn and Wallace (2004) stated Asian students “might consider that a more formal and clearly-delineated, although warm, relationship is needed to show proper respect” (p. 294). Asian students traditionally compiled from the “work of masters” rather “than composing or creating new knowledge” (Cheng & Wong, 1996, cited in Dunn & Wallace, 2004,

p. 294). Regardless of their cultural background, as Galbraith (2004) stated, it is important for lecturers to understand the participation and motivational patterns of adults if they were to be successful in their teaching practices.

Adult Motivation

Motivation was postulated as a “*hypothetical construct*, an invented definition that provides a possible concrete causal explanation of behaviour” (Wlodkowski, 2004, p. 91). Many educators, though, ascribed to this construct as it provided insights into their students and assisted in making decisions about potential teaching strategies which may be effective (p. 91). Brophy (1988, cited in Wlodkowski, 2004, p. 4) defined motivation to learn as a “person’s tendency to find learning activities meaningful and of benefit to them”.

Adult learners’ motivation frequently involved improving their quality of life, satisfaction with their work and personal lives, self-esteem and self-efficacy, and resulted in them seeking learning experiences which provided personal value to them. Galbraith (2004) indicated that the motivation for adult learners involved ...

the need to enhance cognitive interest, social stimulation and contact, external and internal expectations, professional advancement, and vocational interests. Considering the motivational and participation patterns of learners, it is a real challenge for teachers to develop an appropriate setting for learners that allows for full engagement in learning and encourages persistence toward meaningful action as well. (pp. 12-13)

Adult learners’ lives were complex and consuming. Their worlds were “filled with competitors for individual attention and effort” such as job, family, friends, and sports (Wlodkowski, 2004, pp. 92-93). Therefore, it was hardly surprising that teachers of adults find students’ interest and attention may wander, and their efforts were “parcelled out with serious caution” (p. 92). Wlodkowski (2004) indicated this was normal and that the lecturer’s best defence ...

is to be personally convinced and readily able through the process of instruction to demonstrate that what is being learned could not possibly be considered a waste of time or unrelated to the lives and values of the

learners. Research consistently shows that adults are highly pragmatic learners ... [who] have a strong need to apply what they have learned and to be competent in that application. (pp. 92-93)

Watkins (2000) compared Western and Eastern orientations of motivation. Drawing upon Atkinson's work he stated "[i]n Western societies, achievement motivation is treated as a highly individualistic, ego-enhancing concept. ... But in East Asian societies the notion of success ... [took on a] collectivist framework which may involve significant others, the family, peers, or even society" (p. 167). Drew and Watkins (1997) identified Chinese students as "hard working and having high achievement motivation" while taking "personal responsibility for their learning" (p. 8). They tended to attribute their performance to internal and controllable factors such as effort and study skills [which was] ... more adaptive as it protects the students' self-esteem and reduces the chance of learned helplessness in failure situation (sic)" (p. 9)

Adults working in the 21st Century encountered a rapidly changing and fast-paced environment which required increased personal and professional flexibility, and professional development in order to keep abreast of these contextual factors. This was particularly true for university students who were frequently working full time in addition to their studies (Dunn & Wallace, 2004). Consequently adults were most receptive to learning when it had direct relevancy to their job or personal well-being. Their learning was usually task or life-centred and problem-solving in focus rather than subject-centred (Knowles et al., 2005).

Galbraith (2004) also reflected on the complexities of the adult learner in relation to their "diversity of learning styles" (p. 13). He stated "[i]t is quite evident that learners learn in different ways; some may be kinaesthetic, visual, aural, or print-oriented, as well as a host of other style preferences" (p. 13). He advocated that teachers recognised learners' diversity of learning styles and "use diverse learning methods in an effort to reach as many preferences in style as possible" (p. 13). Galbraith's discussion about diversity of learning styles and preferences aligned with Chickering and Gamson's (1991) seventh principle '*respects diverse talents and ways of*

learning'. It was therefore worthwhile to explore the multiple intelligences, and learning styles and preferences literature.

Gardner's Multiple Intelligences

While there has been considerable research into the processes in thinking there has also been research into intelligence and exploring the parameters of cognitive development. The psychologist, Howard Gardner demonstrated an interest in “investigating human nature, particularly how human beings think” (Sherer, 1999, p. 16). His exploration of traditional Intelligence Quotient (IQ) tests developed by Binet-Simon around 1905 and further refined by Stern in 1912, left Gardner feeling dissatisfied with these in being a ‘realistic’ measure of an individual’s true potential, intelligence and talents (Furneaux, 1990). Gardner (1990) perceived many of these standardised tests were heavily weighted towards mathematical/logical components of intelligence but did little to recognise or acknowledge other potentially stronger “abilities, talents, or mental skills” (p. 931).

In his search for a more inclusive answer to the question of accurately defining intelligence, Gardner framed the multiple intelligence (MI) theory based upon “biological origins” and cultural factors (Brualdi, 1996; Gardner, 1990, p. 932). He and his associates consulted evidence from a range of sources:

- Normal development and development in gifted individuals;
- Brain damaged individuals and the impact of their injuries on cognition;
- Exceptional populations – protégés, idiots savants, and autistic children;
- Cross cultural accounts of cognition;
- Data about the evolution of cognition over time;
- Psychometric studies; and
- Psychological training studies.

(Gardner, 1990, p. 932)

Gardner stated that “[n]eurobiological research indicates that learning is an outcome of the modifications in the synaptic connections between cells. Primary elements of different types of learning are found in particular areas of the brain where corresponding transformations have occurred” (Brualdi, 1996, n.p.). In terms of

culture framing intelligence development, Gardner proposed societies tended to value different types of intelligence. Therefore the ...

cultural value placed upon the ability to perform certain tasks provides the motivation to become skilled in those areas. Thus, while particular intelligences might be highly evolved in many people of one culture, those same intelligences might not be as developed in the individuals of another. (Brualdi, 1996, n.p.)

Gardner and Hatch (1989) defined intelligence as “the capacity to solve problems or to fashion products that are valued in one or more cultural settings” (p. 4). His pluralistic view of intelligence suggested all people possessed at least seven different intelligences. These intelligences operated in varying degrees depending upon each person’s individual profile. The seven intelligences were not independent, rather they tended to complement, and may operate in concert with each other. Gardner’s seven intelligences included linguistic intelligence, logical-mathematical, spatial, bodily-kinaesthetic, musical, interpersonal, and intrapersonal intelligence.

The Seven Intelligences

Since his initial work in the 1980s, Gardner’s theory progressed from the ‘theoretical’ into the ‘practical’. This was evident from the multitude of resources and materials produced to provide teachers with advice, activities and assessments to support, explore and cultivate the multiple intelligences of students within their classes. Gardner (1993) readily acknowledged the predominantly theoretical nature of his research stating:

While Multiple Intelligences theory is consistent with much empirical evidence, it has not been subjected to strong experimental tests ... the applications of the theory are currently being examined in many projects. Our hunches will have to be revised many times in light of actual classroom experience. (p. 33)

This work was, however, still relatively new to the higher education learning environment with research being undertaken generally in the education discipline. More recently, Gardner acknowledged there was a “comfortable fit” with the use of computer technology, the Internet and his MI theory (Gardner, 1993, p. 33).

Linguistic – this intelligence involved having a mastery of language. Language was used as a means to remember information and included the ability to effectively manipulate language to express oneself rhetorically or poetically (Brualdi, 1996). The meaning of language and words was important to these students. Online learning experiences were highly desirable to these students as much of the work involved text and reading. They tended to explore the online medium extensively and enjoyed following up on the readings and links. They frequently read all or most of the posted discussions (Green & Tanner, 2005, p. 313).

Logical-Mathematical – this was the ability to detect patterns, reason deductively and think logically (Brualdi, 1996). Learners with this intelligence enjoyed “factual input and often connect new input with what they have already learnt” and put credence to statistical information (Green & Tanner, 2005, p. 313). Ranking and analytical tasks were optimal to these learners.

Visual-Spatial – the ability to create and manipulate mental images in order to solve problems. It was not limited to visual domains as Gardner noted spatial intelligence was also formed in blind children (Brualdi, 1996). These learners had a keen three-dimensional relational sense. They tended to “think in pictures and see visual relationships”. Visual input which may include illustrations, video clips, charts, tables and so on were well received. Students liked seeing photographs of fellow online participants. Graphic tasks that required responses, such as making schemes or tables, were helpful to these learners (Green & Tanner, 2005, p. 313).

Bodily-Kinaesthetic – the ability to use one’s mental abilities to coordinate bodily movements. This intelligence challenged the popular belief that mental and physical activities were unrelated (Brualdi, 1996). These learners “enjoy physical manipulation tasks, such as dancing or acting something out” (Green & Tanner, 2005, p. 313). Online learning experiences may have been perceived as boring or problematic, hence online lecturers were advised to consider “incorporating tasks which involve movement or physical activity and reporting back to the course later” (p. 313).

Rhythmic-Musical – encompassed the capability to compose and recognise musical pitches, tones, and rhythms. Learners with this intelligence particularly appreciated audio input, video, “and tasks involving thinking about or using music, rhyme, or rap” (Green & Tanner, 2005, p. 313).

Interpersonal – the ability to understand and discern the feelings and intentions of others. These individuals enjoyed group interaction and gained energy from these (Brualdi, 1996). There was considerable appeal in online sharing opportunities such as live chat rooms, and online group work and they were most likely to be sensitive to online group dynamics and communication patterns (Green & Tanner, 2005).

Intrapersonal – the ability to understand one’s own feelings and motivations. These were considered separate from each other but were frequently linked together. Learners with a strong intrapersonal intelligence were talented at reflecting on their experiences and feelings, and learning from these reflections (Brualdi, 1996). They tended to enjoy working alone. Online education (unlike a face-to-face classroom situation) provided greater opportunities to ponder individually about online discussions and formulate written responses. It provided a more individual pacing of their participation which suited them well (Green & Tanner, 2005).

In the late 1990s Gardner proposed possible additional intelligences, naturalistic intelligence, a spiritual intelligence and an existential intelligence (Gardner, 1999).

Naturalistic – the ability to sense patterns and make connections to elements in nature. They were keenly interested in other species, the environment and the earth. They may have had a strong affinity to the natural world, fauna and flora. These learners were able to “organize and categorize the natural world” and learning tasks involving natural objects or thinking about or going into the natural world were highly desirable. They sought experiences which took them beyond the virtual classroom (Green & Tanner, 2005, p. 313).

Gardner was exploring a ninth intelligence, that of spirituality and certain individual's affinity for things beyond the physical world. This intelligence may have been manifested in an interest in religious or spiritual matters. Gardner felt spirituality closest 'in spirit' to the other intelligences. He hesitated to confirm this term, however, as he considered it best to "put aside the term spiritual, with its manifest and problematic connotations, and to speak instead of an intelligence that explores the nature of existence in its multifarious guises" (Gardner, 1999, p. 59). He now referred to this aspect of intelligence as 'existential intelligence'. Unlike the other intelligences, this was a difficult intelligence to confirm empirically, hence, although a ninth intelligence might be attractive, Gardner was not inclined to go as far as formally adding it to the list ... "I find the phenomenon perplexing enough and the distance from the other intelligences vast enough to dictate prudence – at least for now" (p. 66).

Learning was a complex process, not simply a transfer transaction from the teacher to the student, and yet a student's intelligence and what conditions were required for learning to occur was as important as what they were learning (Joyce et al., 2004). Gardner's (1983; 1999) research into multiple intelligences greatly informed the academic community in relation to the multiple ways of learning, and the types of conditions that supported learning for different people with varied 'talents'. Interest in the different conditions required for optimal learning led to the emergence of 'learning styles' and 'learning preference' research.

Learning Styles

Learning styles was typically the "way an individual likes to go about learning" (Smith & Dalton, 2005, p. 5). Searson and Dunn (2001) described learning styles as "a biologically and developmentally determined set of personal characteristics that make identical instruction effective for some students and ineffective for others ... the premise that individuals begin to concentrate, process, and remember new and difficult information in different ways" (p. 22). Smith and Dalton (2005) also drew upon the work of Sadler-Smith's more static definition that a learning style was a "distinctive and habitual manner of acquiring knowledge and skills or attitudes through study or experience" (p. 6). Sadler-Smith made the distinction between

learning styles and learning preferences stating the latter was “the favouring of one particular mode of teaching over another” (cited in Smith & Dalton, 2005, p. 6). Some psychologists indicated “‘learning styles’ address what students bring to the learning environment, how they solve problems, and how they process information” (Jones, n.d., n.p.). Some advocated for a matching between the learning styles of students and the learning strategies and experiences, indicating this led to an improvement in attitudes and higher achievement (Buch & Bartley, 2002; Dunn, 1990).

Learning styles generated considerable interest to the extent that a literature review carried out in the United Kingdom in 2004 by a team from Newcastle University identified seventy one different theories of learning style (Coffield et al., 2004). Although there was much research into the effectiveness of learning styles based within schools this was relatively new within higher education, especially in non-education disciplines (Dunn & Griggs, 2000). Only the most well known learning styles theories were presented in the following section.

Kolb’s Learning Styles

Kolb (1976) is a leader in the field of learning styles. His experiential learning theory (ELT) and learning styles inventory (LSI) was published in 1976. Kolb’s model had four distinct stages, namely, 1) Concrete Experience; 2) Reflective Observation; 3) Abstract Conceptualisation; and 4) Active Experimentation (see Figure 2.5). Kolb’s cycle commenced with *concrete experience*, viewing things as they were. The next stage was *observation* and *reflection* upon experiences. Reflection led to more *abstract conceptualisations* whereby ideas and concepts were developed becoming an internal model. The individual then *actively experiments* with this model and observed to see if it worked in reality, thus beginning the cycle again. Learning styles were juxtaposed between each stage of the cycle (Kolb, 1976, 1984).

Divergers – cogitated deeply on their experiences and determined multiple meanings to the single experience. They typically enjoyed group interaction and in implementing hands-on discovery and experimentation, but did not like conflict. *Assimilators* – were thinkers who preferred a linear and logical cognitive approach over action, and enjoyed organisation and structured understanding. *Convergers* –

were also thinkers but liked to try out their ideas for practicality through experimentation. They were independent workers and thinkers and were precise and careful. *Accommodators* – were the most hands-on, critical and creative, risk-takers and least cognitive of the styles. They preferred prediction and experimentation and favoured an ‘action-first’ approach (Kolb, 1984).

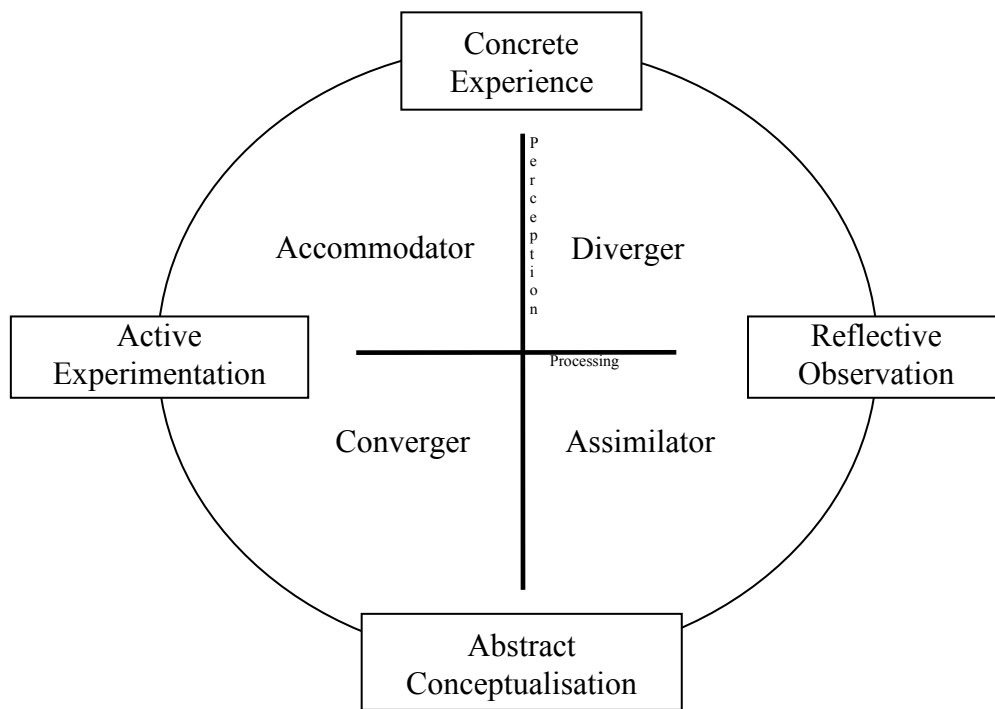


Figure 2.5: Kolb’s Model

The 4MAT system

McCarthy’s (1983) 4MAT system was a continuation and expansion of Kolb’s learning styles. She sought to match teaching strategies and approaches to learning style theory, incorporating brain theory (Beck, 2001; Smith & Dalton, 2005). McCarthy proposed that a student who was able to learn across learning styles would be advantaged. McCarthy (1983) identified four key learning styles: type 1 innovative learners; type 2 analytic learners; type 3 common sense learners; and type 4 dynamic learners.

Dunn's Learning Styles

Rita and Ken Dunn's research indicated learners' achievement (based on standardised achievement tests) could be maximised when learning experiences aligned with their learning styles (Burke & Dunn, 2002; Dunn & DeBello, 1999). They identified twenty one different elements which alone and in concert could influence students' receptivity and capacity to learn new and difficult information. These elements included environmental, emotional, sociological, physiological and psychological variables. *Environmental* – encompassed sound, light, temperature and room design. Students responded differently to these physical environmental aspects with some preferring casual, informal seating with conducive music while others preferred more formal settings and less comfort. *Emotional* – referred to students' motivation, persistence, sense of responsibility to the teacher and/or their peers, and the amount of structure needed or provided in the task. *Sociological* – involved students' capacity and preference to work alone and with others (peer pairs, teams, and with adults). *Physiological* – encompassed learning via auditory, visual, "tactual", and/or kinaesthetic processes. This could also have involved the "intake" of foods, "time of day" (Burke & Dunn, 2002, p. 104) and level of alertness, "mobility", students needed to move around to learn (Dunn & Dunn, 1993; Searson & Dunn, 2001, pp. 22-23). *Psychological* – a diverse element that included analytic, the capacity to process challenging information; "global" students used multiple and integrated learning styles; "hemisphericity" – students' capacity to use both hemispheres of their brain; "impulsive" or "reflective" learners (Burke & Dunn, 2002, p. 104; Dunn & Dunn, 1993; Searson & Dunn, 2001).

Learning Preferences – VARK

Fleming and Mills (1992) approached learning styles by selecting cognitive aspects from Dunn and Dunn's model. Fleming and Mills' work focused on the categories of **V**isual, **A**ural, **R**ead/write, and **K**inaesthetic (VARK) sensory modalities used for learning. They acknowledged that VARK was not as much about learning styles as it was "learning preferences" (Fleming, 2005). Fleming (2001 – 2006) pointed out:

A learning style has 18+ dimensions (preferences for temperature, light, food intake, biorhythms, working with others, deep and surface approaches). VARK is about one preference -our preference for taking in, and putting out information in a learning context. Although it is a

part of learning style we consider it an important part because people can do something about it. Some other dimensions are not open to change. (n.p.)

The *visual* element depicted the use of information in charts, graphs, pictures and other symbols, however, it excluded movies, videos or PowerPoint. *Aural/Auditory* was the preference for ‘heard’ or ‘spoken’ information, therefore these individuals preferred lectures, tutorials, tapes, group discussion, email, speaking, and web chat. *Read/write* was the preference for text-based input and output; therefore information displayed as words (reading and writing in all its forms) was ideal for learning. *Kinaesthetic* referred to the use of experience and practice (simulated or real); key in this was students’ connection to reality “either through concrete personal experiences, examples, practice or simulation” (Fleming, 2005; Fleming & Mills, 1992, p. 141).

Lessem’s “Spectral Management Theory”

Lessem is an international business development consultant and is a Business scholar in the United Kingdom. His interests are in “total quality” management and the “context of learning” (Lessem, 1991, p. ix).

In the 1990s Lessem explored individual and organisational learning across the public and private sectors. Lessem perceived learning as the key to transforming institutions and industries. He predicted ...

the learning organization will supplant the business enterprise as the critical entity within the national and international economy ... therefore, it will be the quality of our learning, as individuals and managers, and as organizations and societies, that will determine our overall development. (Lessem, 1991, p. x)

Although influenced by Kolb, Dunn and others in the educational and psychological disciplines, Lessem’s learning styles differed by having a strong business and managerial orientation (Lessem & Baruch, 1999). He proposed there were seven learning styles which aligned with the “seven kinds of managers” business graduates were likely to meet and/or become (Lessem, 1991, p. 73). An unusual aspect of Lessem’s learning styles was the application of colours to the style and managerial

typology. The seven learning styles included creative, intuitive, methodical, energising, experimental, responsive, reactive, and reflective.

Table 2.1: Lessem's Learning Management Styles

Management style	Learning style	Team role	Colour
Innovative	Creative	Inspirer	Violet
Development	Intuitive	Harmoniser	Indigo
Analytical	Methodical	Organizer	Blue
Enterprising	Energising	Initiator	Green
Manager of change	Experimental	Networker	Yellow
People	Responsive	Animator	Orange
Action	Reactive	Doer	Red
Adoptive	Reflective	Imitator	Grey

(Lessem & Baruch, 1999, p. 12)

Violet – Creative/Inspirer (innovative managers)

Lessem assigned the colour ‘violet’ to this group as it represented “matters regal” (Lessem & Baruch, 1999, p. 11). These individuals tended to be “simultaneous with creativity”. They tended to associate with inspiring people and be inspiring themselves, and were frequently perceived to be “daydreamers” (Lessem, 1991, p. 80). The learning activity needed to engage them totally so that they were compelled by the task. They aligned with product, market or organisational innovations and they “expect[ed] to uncover highly unconventional ground” (Lessem, 1991, p. 77). They perceived a need for management education and creative action to be the same (Lessem, 1991, p. 78). Managers with this style were rare and were the “inventors and visionaries” who were “able to create something out of seemingly nothing” (Lessem & Baruch, 1999, p. 11). These individuals may “venture wildly off the beaten track” (Lessem, 1991, p. 77). The negatives in this learning style included being “dogmatic, intolerant, and intolerable ... idiosyncratic loners” (Lessem & Baruch, 1999, pp. 11-12).

Indigo – Intuitive/Harmoniser (developmental managers)

Indigo indicated “subtlety of mood” (Lessem & Baruch, 1999, p. 11). Within their learning experiences they required rich, complex patterns of activities, methods and

concepts (Lessem, 1991). They looked for “depth of insight and breadth of exposure rather than focused instruction or personal challenge” (Lessem & Baruch, 1999, p. 12). They preferred a balance between theory and practice and sought to harmonise business functions and academic disciplines. They recognised and utilised the forces of diversity in contrast to those who suppressed or attempted to counteract these. A strength in these managers was the capacity to recognise potential, emotional and intellectual, however, they may have failed to be assertive or to fully exploit potential (Lessem, 1991). They may have been less cognitively adept and pragmatic.

Blue – Methodical/Deliberator (analytical manager)

Blue represented “law and order” and this aligned with their bureaucratic, authority-oriented perceptions (Lessem & Baruch, 1999, p. 11). Their problem-solving behaviours demonstrated a predilection for logical, linear approaches to analysis. They preferred to utilise recognised, standard techniques, principles, and models (Lessem, 1991). They valued formalised qualifications, accreditation and formal recognition processes. The problems associated with this type of manager included being pedantic, overcautious, unable to think outside the square, and were unable to be flexible (Lessem, 1991).

Green – Energising (enterprising manager)

Green represented the “colour of life” (Lessem & Baruch, 1999, p. 11). Learning situations which entailed the emotional elements and personal relevance were highly attractive to these managers. These learners were highly extrinsically motivated, and competitive, hence they disliked group work and desired ‘experts’ as teachers (Lessem, 1991). They generally “enjoy[ed] the rough and tumble of business life” and actively responded to challenge (Lessem & Baruch, 1999, p. 12). The downside to these managers was they tended to be domineering, emotionally unresponsive, willing to manipulate people for their own ends (Lessem, 1991).

Yellow – Experimental (manager of change)

Yellow was associated with “curiosity” (Lessem & Baruch, 1999, p. 11). They desired a variety of learning experiences, sought out new and challenging tasks and opportunities. They enjoyed experimentation, learning through trial and error, but got bored easily with repetitive activities. They thrived on intellectual challenge and

frequently moved from position to position to take on new and interesting tasks, not necessarily with the view to promotion. They were flexible and open-minded, and welcomed and/or initiated change (Lessem, 1991). They “like[d] change for its own sake” and experienced difficulty with long term plans (Lessem, 1991, p. 80).

Orange – Responsive (people-centred manager)

Orange was for “warmth” (Lessem & Baruch, 1999, p. 11). They needed social interaction in order to learn; required learning experiences of concrete, rather than abstract nature. They sought practical rather than theoretical constructs. They were helpful, people-oriented managers but lacked imagination and were highly dependent on others (Lessem, 1991).

Red – Reactive (action manager)

Red was indicative of “activity or immediacy” (Lessem & Baruch, 1999, p. 11). They learned from the consequences of trial and error. They tended to rush into situations and preferred action orientations to thoughtful or reflective modes. They learned most effectively through crises management and were reactive rather than proactive (Lessem, 1991). They preferred practical tips on management rather than formal education programmes. These individuals “lack[ed] patience” and were “intolerant of ambiguity” or uncertainty (p. 79).

Grey – Reflective (Adoptive managers)

This as a relatively new managerial type incorporated in Lessem’s later work (Lessem & Baruch, 1999) whereby the colour grey was selected because “it fades into the background” (p. 11). This was a largely eastern learning style (“typified by the Japanese and the South Koreans”) which was “almost non-existent in Western Europe and America” (p. 13). This manager was characterised by “minimal individual identity” with a complete “faith in the company or creed”. They learned from “a respected superior” and immersed themselves emotionally and physically in the required task. “Learning [was] a matter of meticulous imitation, of people and things, through alternating processes of reflective meditation and faithful application” (p. 13). This learning style was not included in this study as Lessem had not yet incorporated “grey” into the Spectral Management Type Inventory (SMTI).

Table 2.2: Learning Style and Programme Features

Style	Feature				
	Project focus	Coaching abilities	Learning material	Learning medium	Learning mode
Reactor	Action-centred	Energetic, practical	Practical tips	Adventure training	Action learning
Responder	People-centred	Sociable, skilled	Popular writing	Group learning	Apprenticeship
Deliberator	Organisation-centred	Respected, respectable	Business texts	Integral learning package	Formal course
Energiser	Business-centred	Dynamic, challenging	'Success' books	Dramatisations and role plays	Challenge and response
Experimenter	Project-centred	Enthusiastic, bright	Leading-edge thinkers	Menu of learning resources	Problem-solving
Harmoniser	Environment-centred	Sensitive, insightful	Profound thinkers	Multi-media experience	Discovery learning
Inspirer	Vision-centred	Imaginative, charismatic	Business originators	Master classes	Creative action

(Lessem, 1991, p. 93)

Lessem expanded on the characteristics associated with these learning management styles (LMS) in his latter text (1991 – see Table 2.2) with key features such as the types of projects, the type of teacher or mentor, types of learning modes, mediums and materials to which learners with particular styles responded. For example, a “reactor” learner/manager tended to respond well to action-centred projects, preferred an educator who demonstrated an energetic and practical approach, responded to practical tips, and enjoyed adventure training activities and action learning environments.

Lessem tracked the LMS as reflections of approaches to learning and/or management, whereas the colours were indicative of levels of creativity and/or sub processes of learning. Lessem indicated approaches to leadership and management over the past decade or so have been limited to two alternative dimensions, people or tasks, or in some cases, transaction or transformation orientations. Hence, there had been a failure to deal with the “diversity of human nature” (Lessem & Baruch, 1999, p. 11). He posited managers had to develop in work and in life, and although they

may have retained their basic managerial orientation throughout their career their “support colours might [have] var[ied] over time. Like all living organisms ‘you grow or you die’” (p. 18).

Reflecting on Learning Styles

Reviewing a range of literature on learning styles and preferences revealed little cohesion or distinct similarities across many learning styles ‘theories’. Each author appeared to explore students’ preferences and attitudes to learning, levels of activity, ways of thinking, and response styles. Each appeared to coin their own terms and provided different rationales for their approaches. This made comparison across theories of learning styles difficult as there was even conflict in opinion as to whether or not learning styles were immutable or adaptable.

An example of the inherent conflicts in this field of study was illustrated by Garner (2000) exploration of the purportedly immutable nature of learning styles against the contextualisation of them. Referring to Kolb’s claims that learning styles were ‘flexible’, Garner (2000) questioned the validity and reliability of Kolb’s learning styles indicating they needed to be “stable” to be assigned to learners and used in teaching of specific content areas. Similarly, Wong (2004) reflected on his own development as a learner and how he had altered his style from being a “passive recipient”, having been brought up in a “traditional Chinese family”, to enjoying “constructivist approach[es] in learning” (p. 154). He therefore investigated the ‘stability’ of learning styles and whether or not international students were able to alter their style depending on their exposure to other teaching strategies and contexts. He expressed the desire “[to] challenge the common view that their cultural background is some kind of stumbling block for quality learning in a western higher education system” (p. 154). Endorsing Wong’s perspective about the flexibility of Asian students, Volet and Renshaw (1996) showed Chinese students were able to adapt to the Australian university context and to be responsive to the academic and institutional demands and influences. This argument about the stability and flexibility of learning styles led to continued debate about the usefulness of these ‘learning styles theories’.

Alignment between Multiple Intelligences and Learning Styles?

In the literature there appeared to be some alignment between Gardner's multiple intelligences and the learning styles, in that, they focused on understanding and appreciating more deeply the characteristics of learners, although from different angles. Dunn, Denig and Lovelace (2001) argued though there were significant differences between Gardner's multiple intelligences (MI) and learning styles in a number of key areas. They stated MI addressed what was taught whereas learning styles address how it was taught; and in MI there was little evidence of successful implementation practice in contrast to the learning styles field (Dunn, Denig, & Lovelace, 2001). Dunn and associates indicated "learning style proponents advocate[d] changing the delivery system ... [because] ... different students need[ed] to use different instructional resources in different sequence in accord with how each learns best" (p. 14). Dunn and her associates drew a distinction between "kinaesthetic and tactual learners" and stated tactual learners "may learn well by taking notes, but may be clumsy in physical education where whole-body coordination is required" and vice versa with kinaesthetic learners (p. 14). Their final argument was that there was little evidence that MI increased achievement statistically unlike learning styles. Even though these authors indicated there were differences Denig (2004) stated multiple intelligences and learning styles were complementary in that "they are not competing concepts, and they work together to contribute to learning" (p. 96).

Denig (2004) invited further research into the potential alignment between selected intelligences and particular learning styles. He cited Milgrim, Dunn and Price's (1993, cited in Denig, 2004, p. 108) study which identified relationships between learning style elements and certain intelligences. For example, students who were gifted mathematically appeared to have essentially similar learning styles across nations, while students gifted in art, music, or athletics were different to the mathematically gifted students. Denig called for further investigation into whether or not "people who [were] interpersonal exhibit[ed] a stronger preference for learning in pairs, with peers, in groups, than people how [were] intrapersonal?" (p. 108).

Even though it is acknowledged and understood that learning styles could inform teaching and learning processes, Gardner (1993) pointed out that it was best for teachers to adopt a range of strategies to provide opportunities for students to expand their talents and to build their weaker ones. Implementing a range of strategies in order to assist all students to learn within a diverse classroom was also advocated by other researchers in education (Darling-Hammond, 1998; Joyce et al., 2004; Loo, 2004). In fact, Wong (2004) stated Asian students were highly adaptable, enjoyed more student-centred styles of learning within Australian universities and he advised “[t]here [was] therefore no apparent necessity for Australian higher learning institutions to adapt to the Asian style of teaching and learning but rather ... try to understand the initial learning difficulties [they experienced] ... and take certain measures to support them when needed” (p. 165).

Literature Review Synthesis – ‘Effective’ Learning Experiences

Figure 2.1 displayed aspects of good teaching and learning which were identified as important and informative in this study. As the primary research question was investigating the *effectiveness of the learning experiences* facilitated within the Voice-over-Internet-Protocol delivery mode it was important at this juncture to explicitly identify what constituted ‘effective learning experiences’. Therefore, this synthesis section outlined how this researcher integrated the dimensions of good teaching and learning to coalesce a list of criteria that represented ‘effectiveness’.

Learning experiences are effective if they are instructionally designed and implemented to:

- Encourage deeper rather than surface learning approaches;
- Include relevant discipline knowledge and expertise required by the profession and employers;
- Promote active engagement with the content;
- Demonstrate alignment with the content objectives and the assessment tasks that measure the learning;
- Ensure students’ have a clear understanding of expectations and processes;
- Motivate students to engage with the content and activities;
- Develop metacognitive capacities;

- Challenge students and be meaningful;
- Be varied so they enable students to learn in diverse ways; and
- Encourage reciprocal engagement with peers and experts.

Encourage deeper rather than surface learning approaches – This initial premise was drawn from Prosser and Trigwell and their associates’ (1999; 2003), Smith and Ragan’s (2005), and Moore and Kearsly’s (1996) work that identified the importance of instructionally designing the coursework in such a way that it encouraged and promoted students’ deeper approaches to learning. This meant that the coursework was not overloaded and was challenging enough to invite students to engage at a more demanding cognitive level, rather than simply learning a plethora of facts.

Include relevant discipline knowledge and expertise required by the profession and employers – Calls from government, business, industry and professional bodies exhorted universities to ensure their programmes encompassed cutting edge, relevant and pragmatic discipline content and processes. This was with the view to producing graduates who were immediately employable and who had the skills required to be competent in their field (BHERT, 1999, 2003; de la Harpe & Radloff, 2008; DETYA, 2000 a&b). Additionally, this criterion encompasses the principles of adult learning whereby the activities, content, and processes were most effective when the adult learners deemed them to be relevant, practical, and “not a waste of time” (Knowles et al., 2005; Merriam, 2001; Wlodkowski, 2004, p. 92).

Promote active engagement with the content – Active learning and engagement with the content was identified in the work of Ramsden (2003), and Chickering and Gamson (1991; 1999) as an important process. This involved selecting and designing interesting content and stimulating activities which promoted students’ on-task behaviours.

Demonstrate alignment with the content objectives and the assessment tasks that measure the learning – This is an instructional design process which is crucial to structuring objectives, activities, and assessment that are coherent. This criterion was embodied in the work of Smith and Ragan (2005), and Moore and Kearsly (1996) on considerations important in instructional design. Once the content was selected then

the learning experiences and assessment tasks needed to be aligned so that effective learning and evaluation could occur.

Ensure students' have a clear understanding of expectations and processes – Once the course had been designed in an educational sound way it was important that the lecturer facilitated students' understanding of what was expected and the level to which they were required to demonstrate their learning and competency. This had to be explicitly communicated to students. A number of Ramsden's (2003, pp. 86-7) "important properties of good teaching" embodied this criterion. This was also a key factor in adult learners' motivation to succeed (Galbraith, 2004; Knowles et al., 2005; Merriam, 2001).

Motivate students to engage with the content and activities – Motivation has psychological overtones and involved content and activities which promoted the desire to engage with the activities and to learn more about the topics. This encompassed the stimulation of interest and intrinsic motivation (Wlodkowski, 2004), but also may be pragmatically oriented in terms of wanting to solve real-life problems (Knowles et al., 2005; Merriam, 2001). Encouraging students to become involved in communities of practice also enabled them to work together to create their understandings rather than to struggle in isolation (Wenger & Snyder, 2000). The synergies made possible in community learning experiences further fostered motivation to learn.

Develop metacognitive capacities – Bandura (1987; 1997), Marzano (2000), and Perkins (1995) all emphasised the importance of metacognition or reflective practice in facilitating learning. Bandura's social cognitive theory related that metacognition was crucial to the development of positive self-efficacy. Marzano and Perkins outlined that metacognitive activities empowered the individual through self-knowledge and deeper understandings. Developing this capacity also fostered increased ability to learn.

Challenge students and be meaningful – Learning experiences needed to be sufficiently challenging to promote the construction of new knowledge, and to encourage students to strive for higher quality learning outcomes. This criterion

involved Chickering and Gamson's (1987) "principles" and Ramsden's (2003) "properties" related to high expectations for students, activities which were stimulating and interesting, and ensuring students were engaged at an appropriate level of understanding in order to progress their knowledge. Adult learners needed to experience learning that was meaningful to them and to which they could perceive the applicability to their profession or real-world situations (Knowles et al., 2005; Merriam, 2001).

Be varied so they enable students to learn in diverse ways – Utilising a repertoire of teaching strategies provided opportunities for all students to learn, respecting their diverse learning needs (Joyce, Weil, & Calhoun, 2004; Joyce, Weil, & Showers, 1992). This meant that students who have varied learning styles (Kolb, 1984; Dunn, Dunn & Price, 1999; Lessem, 1999) and multiple intelligences (Gardner, 1983; 1999) would be able to engage with the learning experiences due to their variety. It also promoted the strengthening of weaker multiple intelligences through these varied learning experiences.

Encourage reciprocal engagement with peers and experts – Cooperative learning has been found to be effective in supporting learning and the development of social and cultural outcomes (Johnson., Johnson & Smith, 2007; Sharan, 1980; Slavin, 1995). Bandura (1987) Chickering, Gamson and Barsi (1989), and Ramsden (2003) all emphasised the importance of student interaction with peers and experts in the learning process to the extent that learning was actually limited if undertaken in isolation. Wenger and Snyder (2000) also identified the advantages to learning through engagement with communities of practice. Ramsden advocated for the providing of timely and useful feedback to students by experts (usually the lecturer) in order to guide students further learning and development of skill.

These ten criteria were extracted from various dimensions identified as key to teaching and learning within university contexts. They represent this author's synthesis of what constituted 'effective learning experiences' and were used in subsequent chapters as a guide to determining effectiveness.

The Gap in the Literature

This study explored technology-facilitated teaching and learning from the perspectives of students and academics. It also examined if there were relationships between students' motivation to engage in VoIP learning environments and their multiple intelligences strengths and learning management styles.

In undertaking an extensive literature review about technology-facilitated teaching and learning at universities, the most significant gap was that even though there were numerous studies exploring the impact of educational technology, almost all of these investigated first and second generation technologies. This current study explored third generation technology, namely, VoIP-facilitated learning experiences. The niche for this study was in the scarcity of research on effective VoIP learning experiences due to its recent integration into higher education learning environments.

From reviewing the literature about educational technology, teaching and learning, learning styles, and multiple intelligences there was no information about whether or not VoIP learning environments were effective in meeting the learning needs of **all** students. Therefore, investigating if students' multiple intelligences strengths and their learning management styles influenced their motivations to engage with these third generation emergent technologies represented a significant addition to the current knowledge base.

From the search it was evident that much of the scholarly literature related to good teaching, stemmed from research and theoretical postulation that was old, established 'foundational theory'. This was evidenced in the work of Chickering, Gamson's and Barsi's early work in the late 1980s, followed up in the 1990s by Ehrmann. Ramsden's work was more recent (emerging in the late 1990s and published in the new millennium). Prosser, Trigwell, Martin and their associates' research in the late 1990s on surface and deep learning approaches was particularly focused on exploring academics' beliefs about teaching and how these influenced students' behaviours. Therefore, this study provided the opportunity to update the knowledge base about what constitutes effective teaching and learning. The majority of these older studies on teaching and learning were framed within the prevailing teaching mode of the

time, namely face-to-face instructional delivery. This current study therefore, provided the opportunity to explore if these principles of good teaching and learning still applied in this new technological era.

As many researchers emphasise the importance of context this was another potential gap that this current study sought to fill. For example, Chickering, Gamson and Barsi undertook their research within the United States of America university context. That context although similar also presented significant differences. Likewise, Prosser, Trigwell and Martin's research, while having relevance to the Australian context, was also based largely in the United Kingdom. This current study was about an Australian-based programme particularly in relation to the international students' perspectives. This research therefore would have direct relevance to Australian academics, students, and university administrators; especially in relation to enhancing the quality of teaching and learning, raising the profile of the institution and its reputation, and in increasing the satisfaction with the experience for both students and their lecturers.

Another unexpected gap to result from the search was that no 'one' definitive piece of literature, from either that of good teaching or aspects of good learning, provided a comprehensive list of attributes of 'effective learning experiences'. The synthesis in this current literature review chapter provided the opportunity for this researcher to distil a comprehensive set of principles of 'effective learning experiences' drawing upon quite eclectic topics such as those spanning both teaching and learning. These topics included the foundation theory on good teaching; instructional design; adult learning principles; motivation theory; metacognition; cooperative learning; communities of practice; learning styles; and multiple intelligences. Reviewing the range of topics which have the capacity to inform good teaching and learning it is not surprising that this gap existed. This current study sought to fill this gap through the coalescence of theories from education, andragogy, educational psychology, educational technology and business literature domains.

Summary

Referring to Figure 2.1 Conceptual Framework, teaching and learning were not stand-alone concepts or activities. Rather, they were ‘two sides of the same coin’, in that, lecturers supported students in their learning activities, and students provided learning opportunities for the reflective-practitioner through their feedback. Hence, both parties were in a learning situation, with one learning about their teaching practice, and the other learning the knowledge and skills encompassed in the course. This relationship was represented in Figure 2.1 Conceptual Framework as a positive cyclical process.

This study explored students’ perceptions of their learning experiences mediated through a VoIP environment. Academics’ perspectives were also explored in relation to their rationales for involvement in the trial, their choice of *Elluminate* and the design and implementation of the course. Additionally, exploring if there were any relationships between students’ motivation to engage in this online environment, and their learning styles, and multiple intelligences was included. The main areas under investigation essentially distilled down to teaching and learning within the 21st Century Australian university context as depicted in Figure 2.1 Conceptual Framework. Literature areas deemed important to inform this research included from the academics’ perspective related to ‘good teaching’; ‘teaching with technology’; ‘cooperative learning’; and ‘communities of practice’. From the learners’ perspective ‘learning and constructivism’; ‘Social Cognitive Theory’; ‘metacognition’; ‘the adult learner’; ‘motivation’; ‘multiple intelligences’; and finally ‘learning styles’ were deemed important to explicating their orientation.

‘*Good Teaching*’ encompassed the seven principles of good teaching in undergraduate education which was devised by Chickering and Gamson in the 1980s. Also included was a review of Ramsden’s important properties of good teaching and Trigwell, Prosser, Martin, and their associates’ research emerging from higher education on improving teaching. These researchers’ work focused on exploring teachers’ use of deep and surface approaches to learning and how these related to their belief systems. As this research was investigating a predominantly online course, the work of Smith and Ragan, and Moore and Kearsly on instructional

design and implementation was also included. Their research focused on the design process and what should be included and why. They also identified the importance of good teaching as part of the implementation stage. Price and Kirkwood advocated for the academy to engage with professional development to assist them to develop their pedagogy; thereby, increasing the overall quality of teaching and learning in the university context.

The *'Teaching with Technology'* in higher education section presented an outline of the historical progression from early adoption to more recent developments in educational technology. Levine and Sun; Bork; Herrington, Reeves and Oliver among others described some of the advantages of integrating technology into learning environments. However, they also critiqued poor practices and cautioned where these potentially negatively impacted the learners. Aragon explored the impact of social presence as a crucial component within online learning experiences and outlined approaches that the lecturer could take to enhance this. The quality of educational practice, particularly within the online classroom, was highlighted by Price and Kirkwood, Ramsden, and Levine and Sun. Professional development for academics was discussed in relation to improving the quality of the learning experiences. The most significant issue in this discussion was that the technology should not have been the most important consideration; rather, it should remain the quality of the pedagogy.

'Cooperative Learning' was identified as crucial for online learning being as important as it was for face-to-face classrooms. The work of cooperative learning researchers including Kagan, Slavin, David Johnson and Roger Johnson, Sharan, de Vries, and Bennett were outlined. Cooperative learning was defined and a brief outline of the emergence of cooperative learning and its advantages to students were reviewed. Key aspects of structuring for cooperative learning were described, such as, positive interdependence, individual accountability, equal participation and simultaneous interaction. This section naturally led to a discussion about establishing communities of practice.

The *'Communities of Practice'* section outlined the definition of these and how these recent constructs had emerged in the literature. It also explored definitions from the

work of Palloff and Pratt, Wenger and Snyder, and DuFour and Eaker. The desirability of these community approaches to learning was described with a critical review being included from the perspectives of Pena-Shaff, Altman, and Stephenson's work.

'Learning and Constructivism' explored the philosophical underpinnings of approaches for learning within this study. It outlined a definition of constructivism and briefly discussed the importance of this in learning contexts.

The *'Social Cognitive Theory'* outlined the main conceptual framework describing Bandura's theories in this area and explained how students learned through their interaction with the content and each other. The processes involved in learning within a social context were outlined as attention, retention, production, and motivation and reinforcement. Bandura's research identified the interaction between the contextual factors and the individual's behaviour as "reciprocal determinism" and he explored the impact that this had on self-efficacy.

'Metacognition' was thinking about thinking and the importance of reflective practices to informing learning as discussed through the work of Marzano and Perkins. Marzano's work involved understanding the nature of the interactions of knowledge, cognitive, metacognitive and self-systems. He identified that all four systems interacted and each crucial for effective learning to take place.

'Adult Learning' explored the work of Knowles, Holton III, and Swanson; and Merriam in an outline of the emergence of theories related specifically to the learning needs of adults. The literature was presented about the demands and desires of adult learners and how these may have influenced students' perceptions of their learning experiences.

'Adult Motivations' to engage with their learning experiences was explored through the lens of researchers such as Galbraith, Long, and Wlodkowski. Their findings related to the adult learning literature and identified the similarities and differences between andragogical and pedagogical learning environments.

'Multiple Intelligences' drew upon the seminal work of Howard Gardner in his exploration of broader conceptualisations of intelligence than the traditional intelligence quotient work developed by Binet-Simon and further refined by Stern. From Gardner's extensive work he formulated nine multiple intelligences, namely, linguistic intelligence, logical-mathematical, spatial, bodily-kinaesthetic, musical, interpersonal, intrapersonal intelligence, and naturalistic.

'Learning Styles' was a comprehensive field to explore in this research due to the considerable numbers and varied nature of learning styles theories that were available for review. A brief outline of the predominant theories were included, such as, the work of Kolb, McCarthy, Dunn and Dunn, Fleming and Mill, and finally Lessem. The Spectral Management theory was the one selected due to its overt applicability for the business context.

A final synthesis of all of the literature dimensions resulted in the coalescence of ten criteria identified as representing effective learning experiences. These ten criteria specified that for learning experiences to be considered as effective they needed to be instructionally designed and implemented to:

- Encourage deeper rather than surface learning approaches;
- Include relevant discipline knowledge and expertise required by the profession and employers;
- Promote active engagement with the content;
- Demonstrate alignment with the content objectives and the assessment tasks that measure the learning;
- Ensure students have a clear understanding of expectations and processes;
- Motivate students to engage with the content and activities;
- Develop metacognitive capacities;
- Challenge students and be meaningful;
- Be varied so they enable students to learn in diverse ways; and
- Encourage reciprocal engagement with peers and experts.

Chapter 3 focuses upon the research design for this study which follows this literature review. Chapter 3 presents an outline of the epistemological approach

adopted, details about the mixed methods for gathering the data using questionnaires, and interviews and other relevant information about the sampling, sample and procedure employed for this research.

Chapter 3

Research Design

Introduction

This research explored students' perceptions of their learning experiences which were facilitated by academics using Voice-over-Internet-Protocol (VoIP) as the main delivery mode. It also explored the rationale for using VoIP and the teaching and learning considerations needed for this to be successful. Additionally, students' motivation to engage in this environment was examined in relation to their multiple intelligences and learning management styles.

This study involved Bachelor of Commerce students undertaking their final Capstone course. The VoIP-mediated activities included lectures, discussions, and review of documentation. Students were also encouraged to interact with each other via this online environment. Teams assumed control of a virtual multi-million dollar software development company over a simulated eight year period. Team companies competed with each other and all decisions influenced the companies' performances. Key outcomes in this course were to provide students with opportunities to demonstrate their development of a range of professional skills. Skills included communication (written and verbal); teamwork; critical thinking skills – problem-solving, analysis and decision-making; and information literacy; and information technology. Students also explored their learning management styles and were encouraged to reflect on their development as the course progressed.

The Research Aims

The primary research question in this study investigated the effectiveness of the learning experiences that were facilitated by the lecturers within a VoIP environment from the students' and academics' perspectives. It was deemed important to determine if students' motivation to learn, in concert with their learning management styles and multiple intelligences influenced their perceptions of learning within the VoIP environment. With the increasing integration of technology in university education it was queried if VoIP could support all students' learning independent of their multiple intelligences and/or learning management styles. From the academics'

perspectives, it was important to understand their rationales for implementing VoIP in their classes and to ascertain what teaching considerations they made to ensure good learning was occurring in this course.

The Approach

This research was oriented within the pragmatic paradigm by adopting a “mixed methods” approach (Cresswell, 2008). He stated:

The core argument for a mixed methods design is that the combination of both forms of data provides a better understanding of a research problem than either quantitative or qualitative data by itself. Mixed methods designs are procedures for collecting, analysing, and mixing both quantitative and qualitative data in a single study or in a multiphase series of studies. (p. 62)

Over the past two decades, mixed methods have become more commonly employed and more readily accepted by scholars due to the strengths they engender in research. In this study there was the need to use both quantitative and qualitative data collection processes in order to answer the research questions. As McMillan (2008) stated as one of the advantages of mixed method approaches “the ability to answer complex research questions that cannot be addressed through the use of quantitative or qualitative methods alone” (p. 310).

This study was largely interpretive in approach where students’ perceptions of their learning experiences and environment, and academics’ perspectives related to teaching and course design were important to the outcomes of the research. Therefore, students’ and their lecturers’ construction of their own reality was fundamental to answering the research questions. The interpretive elements were encompassed in the use of exploratory and semi-structured interviews with both students and staff. Additionally, student reflective journal assignments were used to provide more in-depth qualitative data. Even so, there was a desire by the researcher to explore more quantifiable components, such as, students’ perceptions of certain aspects of their educational experiences. This was achieved through rating type questions in questionnaires which provided a measure of objectivity to the data. Additionally, students’ learning management styles and their range of multiple

intelligences were measured using quantitative instruments. As a result of the nature of the research questions a pragmatic approach which utilised both qualitative and quantitative data was deemed most useful in meeting the aims of this study.

Procedure

Phases of the Study

The data collection and preliminary analysis were conducted over a year in this study. Figure 3.1 displays diagrammatically the five phases of the study and the various instruments used to collect these data.

In Figure 3.1 the hexagons indicate questionnaires and inventories (quantitative data forms) while circles are qualitative data collection methods. The Business School's standardised student feedback questionnaire combined both quantitative and qualitative data in the form of rating type and open-ended response questions and is depicted as an octagon. Rectangles outline processes and lines and arrows indicate flow and linking relationships in the processes.

The *first phase* of data collection was early in the teaching semester/trimester, whereby the Multiple Intelligences Checklist for Adults (MICA) and Spectral Management Type Inventory (SMTI) were administered to the entire course cohort (both Australian and Singaporean students). The multiple intelligence and learning management styles data were analysed immediately and individual results were returned to students within a week. This provided information, not only to the researcher, but also to students, enabling them to reflect more comprehensively on their own development as the course progressed. It was also designed to provide supportive information to assist in their journal writing and reflective assignment.

Lessem's (1991) inventory (SMTI) measuring students' learning management styles was not imposed as part of the research, rather was a normal component of the course, designed to provide these soon-to-graduate Commerce students with insights about their own styles prior to entering their careers. Early in the semester/trimester exploratory interviews were conducted with the course controller and the coordinator of teaching and learning within the Business School. Both of these staff were key players in introducing and trialling the VoIP learning environment. They were able to

provide insights into their rationale for using VoIP and how the learning experiences were structured.

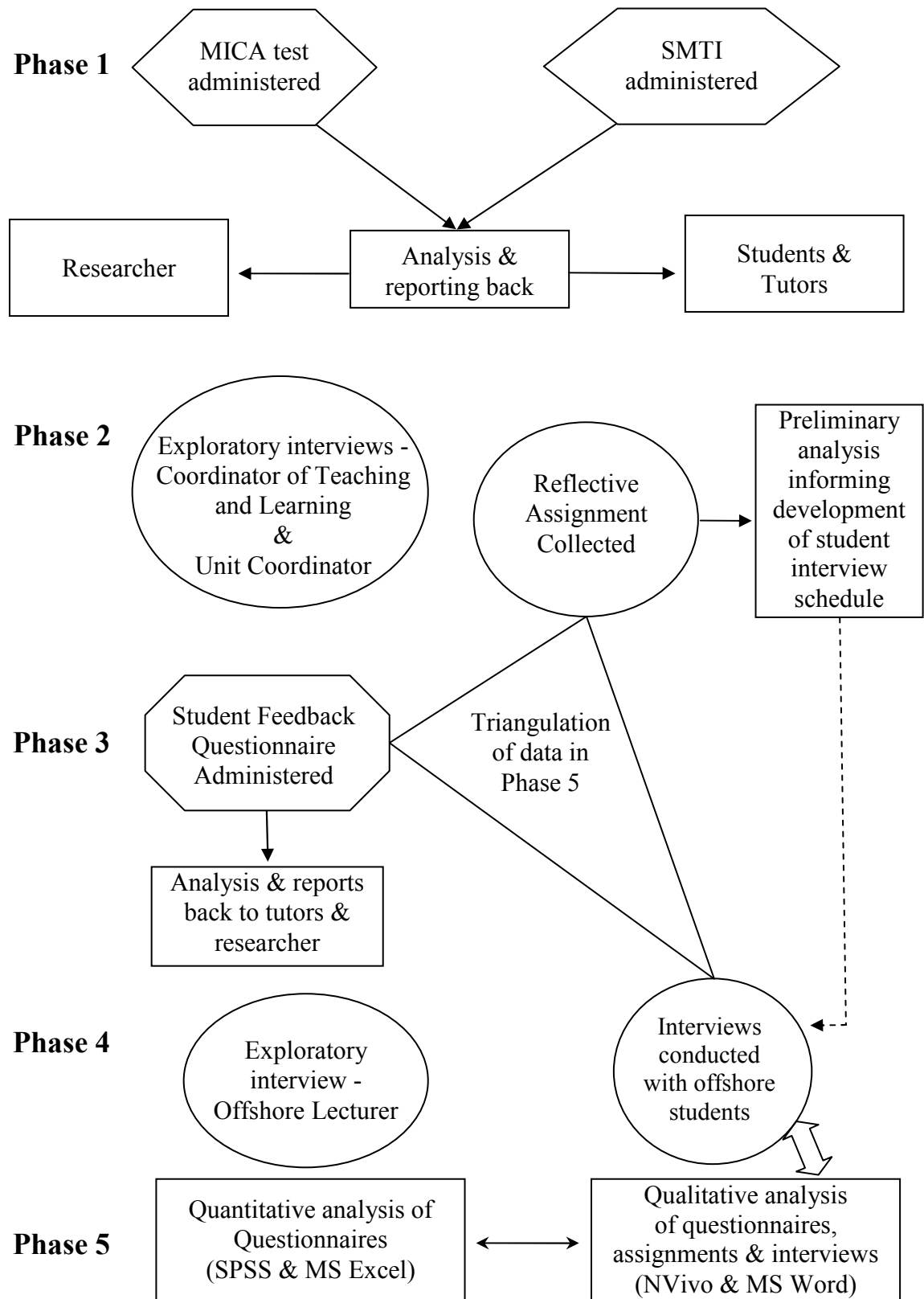


Figure 3.1: Phases of Data Collection and Analyses

The interview with the coordinator of teaching and learning administrator also explored the instructional design process and the organisational rationale for these course and technological inclusions.

Phase Two was the collection of students' reflective assignments (qualitative data) later in the trimester (during the last two weeks). The reflective assignments provided initial information about students' perceptions of their learning within this course and these data informed the development of the interview schedule (Appendix 6). In addition, interviews were commenced with the administrator who was the coordinator of teaching and learning and the course coordinator. These interviews were iterative and tended to be conducted over multiple sessions through the semester as these respondents had time to discuss their perspectives. *Phase Three* was the administration of a Business School approved systematic student feedback questionnaire in the final two weeks of semester/trimester (Appendices 5 & 8). This instrument was administered to all the Capstone students, although there were additional items about VoIP in the offshore (Singaporean) questionnaire (Appendix 5). In *Phase Four*, after the conclusion of the course, a staff interview was conducted with the offshore lecturer. This interview was triangulated with the participant observation of the recorded *Illuminate* sessions. Additionally, in-depth telephone interviews (qualitative data) were conducted with a random sample of offshore students. Iterative analysis of the interview data meant that the researcher continued to interview respondents until saturation of data was achieved; and this encompassed *Phase Five*, wherein the analyses of both the quantitative and qualitative data continued into the next year of the project.

Apart from the interviews, all data from the target cohort in Singapore were collected through an online process. Online surveys generally yield very poor response rates due to the impersonal method of administration. However, in this study the issue of poor response rates was ameliorated by the researcher developing a more personal relationship with the students through contact in class, and by email contact and follow-up messages.

As a result response rates were considerably higher than may have been anticipated from online administration processes. Questionnaires were administered either through the online environment (*Elluminate*) or by broadcast email. The instruments were in electronic format and were returned by email directly to the researcher. Telephone interviews were deemed most appropriate due to the distant locality of the respondents and for the convenience of undertaking these during students' non-work hours.

Student feedback questionnaires were administered by a centralised department in the Business School to all tutorial groups for the Australian campus students in this course. This was a normal Business School process which resulted in a routine minimum response rate of 60 percent.

Instruments

Student Perception of Learning Experiences Questionnaire

The student feedback instrument (Appendix 8) in this study was a modified form of Ramsden's (1991) Course Experience Questionnaire which was a set of validated scales available through the Department of Education, Science and Training in Australia (DEST). In the scale items, changes were superficial and included modifying identifiers of 'lecturer' and 'tutor' to a uniform – 'the staff member'. Additionally, the word 'course' was changed to 'unit' and three open-ended items were included; namely:

1. *What were the best aspects of the unit?*
2. *What aspects of the unit are most in need of improvement?*
3. *Suggest how the staff member could improve the learning experience.*

Additional skills were added to the 'professional/generic skills' scale to represent the breadth of skills included in this course. Seven scales were included in this instrument, 'good teaching' which was related to both the Australian course coordinator and the local (offshore) lecturer in the offshore site, 'clear goals and standards'; 'appropriate workload'; 'appropriate assessment'; 'professional/generic skills'; 'intellectual motivation'; 'learning community'; two items with an 'international awareness' intent, and an 'overall satisfaction with the quality of the

unit' item. They were measured against a Likert attitudinal scale of 'agree', 'strongly agree', 'neither disagree nor agree', and 'disagree', 'strongly disagree'.

In the instrument targeting the offshore Singaporean cohort, certain demographic items were included, for example, mode of study. Various questions related to students' experience with a range of technologies, including *Elluminate*, were also added (Appendix 5). Additionally, a final item invited students to participate in the in-depth telephone interview.

The offshore survey was administered through an online process by the researcher, who, during a class session, explained the purpose of the survey; upon whom students were providing feedback; and how their data were going to be used. The administration of the questionnaire at the Australian campus was undertaken by staff (frequently graduate students external to the business school) who were employed specifically for this purpose. These survey administrators entered tutorial classes, explained the purpose of the survey; upon whom students were providing feedback; and how their data were going to be used. Students completed the surveys and returned them to the survey administrator who then went to the next class scheduled for the survey. Students were informed that participation in this survey was entirely voluntary and totally confidential. Processing and analysis of these surveys were undertaken by the centralised Business School department. Results were aggregated and provided to researcher and the course lecturers to inform their development of teaching practice and course improvement.

Multiple Intelligences Checklist for Adults (MICA)

Students' multiple intelligences were assessed using the Multiple Intelligences Checklist for Adults (MICA), which was an instrument published in McGrath and Noble's (2005) text – *Eight Ways at Once: Classroom Strategies based on the Seven Intelligences: Book 1*. This inventory has been in common classroom use since the publication of the first edition in 1995. Noble and McGrath themselves advocated the use of this inventory in their study exploring the "Positive Educational Practices Framework" (Noble & McGrath, 2007). Arce (2006) also indicated the value of exploring multiple intelligences and Lessem's learning management styles in relation to adult learners. Arce (2006) stated "[a]s more adults return to school, knowing the

best ways to develop curriculum has become crucial to their ultimate success. And as business has become ever more competitive, attracting the best workforce possible and getting the best out of them has become a high priority” (p. 89). Perry and Ball (2005) used the MICA inventory in their study as a validation of Gardner’s interpersonal and intrapersonal intelligences being elements of emotional intelligence in relation to preservice teachers’ reactions to teaching situations (RTA).

The MICA questionnaire (Appendix 3) included 56 items in which students responded on a Likert type rating scale of “very true of me”, “somewhat true of me”, and “not true of me”. Each item is a positive statement of a particular intelligence or affinity for a particular activity affiliated with that intelligence. For example, “I can successfully adjust my behaviour so that I can get along well with a wide variety of people” indicating a strength in interpersonal intelligence, while “I am motivated to find out about myself and I do quizzes or read books to improve my self-knowledge” is related to an interpersonal talent. “I am good at brainteasers, maths puzzles and playing strategic games like chess and Mastermind” was indicative of logical mathematical intelligence. These items were scored according to the instructions in McGrath and Noble’s text. It was expected that students would have a range of multiple intelligences as their strengths.

With the Singaporean cohort being largely ‘English as a Second Language’ speakers there were a couple of items which caused some confusion. The two items were “I am good at miming and playing charades” and “I like to spend time in bushland and I see details in insects, plants and trees that others miss”. The two issues were with concepts underpinning the words “charades” and “bushland”. A number of students wrote that they were unsure what these words meant and either missed these items out or made a guess from the context of the item. There did not appear to be any confusion over wording from the Australian campus students.

Lessem’s Spectral Management Type Inventory (SMTI)

In this study, Lessem’s (1991) seven learning management styles were deemed to be more appropriate and informative for business students than other learning styles such as Kolb (1984) or Dunn and Dunn’s (1996) inventories as it combined both learning styles as well as a managerial dimension. Since Lessem’s early publications,

Baruch and Lessem (1997) validated the use of their Spectral Management Type Inventory (SMTI) in a study published in 1997. The SMTI consisted of eight questions with seven items in each (see Appendix 4). Respondents were required to rank the items in each question (see Table 3.1 for an example). The scoring instructions in Lessem (1991) were followed to determine students' learning management styles. It was possible for students to have multiple styles.

Considerable explanation and an example were provided to ensure students ranked the items in each bank of questions. Some students undertook this inventory more than once due to incomplete or an inaccurate approach to numbering within the boxes. In the case of incomplete or inaccurate numbering of boxes, students were allowed to resubmit their questionnaires. As this was part of their coursework it was important for students to complete this inventory accurately; hence, the researcher was asked by lecturers to return faulty submissions to students for resubmission. This was done so that students all had their learning management styles information returned to them for learning purposes, but also ensured accuracy of data collection.

Table 3.1: Sample Question Item and Ranking

Question 1.	Rank
a I am a hands-on-learner b The projects that really grab me are the unique ones, particularly those that transform people or things c The sort of mentor I respect will inevitably be a deep person d I respect a boss who is authoritative e I am most likely to learn from relevant concepts, experiences, or techniques f I usually seek out someone I can bounce my ideas off g I learn best through other people I like	

Instructions: For each **Question** rank the set of statements **a-g** with the numbers **1-7** in the '**Rank**' column

Reflective Journal Assignment

As part of the course requirements in this course, students' were expected to keep a journal of their experiences and how they were reacting to the learning environment. This journal provided them with a rich source of information from which they wrote a reflective assignment. The aim of the assignment was to encourage students to

reflect on their skill development over the semester/trimester. Students in the target group in Singapore were invited to send a copy of their assignment to the researcher at the same time they sent it to the lecturer. Australian campus students were not included in this data set. Students understood from the ethics processes undertaken at the beginning of the course that their data would be aggregated with confidentiality and anonymity assured (refer to Appendices 1 & 2). This provided the researcher with rich insights about how students were reacting to not only the content they were learning and applying but also their capacity and attitudes related to the skills they were expected to demonstrate and utilise to be successful in this unusual business course (For more detail about what was included in the journal please refer to Phase 2 – Analysis).

The Academic Staff Interviews

There were three academic staff involved in exploratory interviews. The three academics included the offshore lecturer in Singapore, the course coordinator who was responsible for all tutorial groups both on the Australian campus and offshore, and the administrator who was the coordinator of teaching and learning for the entire Business School. The offshore lecturer was an experienced teacher and was interviewed about his perceptions of teaching using the new VoIP environment and the simulation in the Capstone course. The course coordinator was interviewed about his perceptions of the design of the course and the teaching and learning considerations he had made with the VoIP environment. He was also interviewed about the professional development he had provided to the offshore lecturer and his perceptions of the students' initial reactions to the course and the delivery mode. The administrator was interviewed regarding the instructional design process she had been involved in for the development of the Capstone course. She was also invited to discuss the organisational rationales for implementing the Capstone, the use of *Illuminate*, and the professional development implications as a result of this new delivery mode. Not all interviews were conducted in one session as these academics were busy people and were prepared to have 'conversations' with the researcher as time permitted. Averaging out the various conversations and formal interview processes, each lecturer and course coordinator interview was approximately an hour and a half in duration. In the case of the coordinator of teaching and learning, it was more of an iterative interview process with an initial interview followed by review of

the documentation that she provided and then two subsequent interviews. Each interview lasted at least an hour and in some cases an hour and a half. The total was approximately five hours in duration.

The Student Interview Schedule

Students in the case study cohort were randomly selected from those who had previously indicated a willingness to participate in the telephone interview. The student interview schedule development was based upon the information collected in the exploratory interviews with staff (see Appendices 9 & 10), the scholarly literature, and from students' reflective journals. The interviews followed a schedule of questions, and included four sections (see Appendix 6). In Section A, students were invited to describe activities in which they had participated within the VoIP environment. Section B asked them to rate the effectiveness of those activities reported in Section A. Section C explored students' perceptions of the interactive VoIP environment. Section D encouraged students to discuss their learning management style(s) and multiple intelligences and how these related to their learning experiences in the VoIP environment and their projected career development. Interviews were conducted in the evening when respondents were home from work or had free time from studies. Interviews ranged in length from a half an hour to one and a half hours with the average being approximately one hour. All interviews were conducted over the telephone with a speaker phone which enabled recordings to be made. In accordance with the university ethics guidelines recordings were made with the consent of the respondents. All students consented to the recording of the conversations.

Participant Observation

Recordings of class sessions in *Illuminate* were routinely made by the lecturer for those students who had not been able to attend classes during class times. As a result of the rapport developed with the offshore lecturer during the study, the researcher was allowed to review these *Illuminate* recordings which had been made of the classes. Permission to access these recordings were given by all three academics. These recordings enabled the researcher to engage in participant observation at the conclusion of the trimester, without influencing the dynamics of the class in their live setting. Reviewing the recordings enabled the researcher to validate the interview

data from the lecturer and the students, and to triangulate the actual classroom activities and interactions with those reported by all participants.

Validity and Reliability

Validity was an important construct in the design of this study. Gay, Mills and Airasian (2008) described validity as ...

the degree to which a test measures what it is supposed to measure and, consequently, permits appropriate interpretation of scores. When we test, we test for a purpose ... That is, will responses to the opinion questionnaire or ... test allow the researchers to make appropriate interpretations about the respondents' attitudes or learning? (p. 134)

Instrument Selection and Development

In consideration of reliability and validity, the researcher chose to select instruments which had been proven to be “stable and consistent” and had a track record of use over “multiple times at different times” (Cresswell, 2008, p. 169). The MICA and SMTI had been used previously in a number of studies (Arce, 2006; Baruch & Lessem, 1997; Noble & McGrath, 2007; Perry & Ball, 2005). The student feedback questionnaire had been modified by the Business School’s teaching and learning department from Ramsden’s Course Experience Questionnaire (Ramsden, 1991; Ramsden et al., 1995; Ramsden & Martin, 1996). The Business School’s modified instrument had been validated through its use in numerous studies (Dixon & Scott, 2005; Scott & Issa, 2006a&b; Scott et al., 2008). The interview schedule was validated both through triangulation against other data sources and in a piloting process. The pilot involved a mock interview with an undergraduate student from a different cohort who provided feedback on clarity of question wording and intent.

Using student feedback to inform teaching and learning has had a contentious history within the college and university context (Johnson, 2000). There has been resistance to using students’ opinions about their learning experiences largely due to some academics’ perceptions that “students are not competent to make such judgements or ... ratings are influenced by teachers’ popularity rather than their effectiveness” (Richardson, 2005, p. 407). Researchers such as Ramsden (2003) and Marsh (1987;

Marsh & Roche, 1994; Marsh & Dunkin, 1992) however, have strongly advocated for the use of these data as useful in guiding teacher development and for administrative purposes. Marsh's research in this area indicated "student ratings are clearly multidimensional, quite reliable, reasonably valid, relatively uncontaminated by many variables often seen as sources of potential bias, and are seen to be useful by students, faculty, administrators" (Marsh, 1987, in Richardson, 2005, p. 392). Therefore, using the student feedback questionnaire was deemed to be a reliable data source in this study.

Triangulation

With a concept as complex as students' perceptions of their learning environment and experiences it was deemed important to obtain insights on this from a range of sources. Therefore, the reflective assignments were included in the data set with the view to provide a triangulation process with the student feedback questionnaire and the in-depth interviews. Gay, Mills, and Airasian (2006) stated:

Triangulation is the process of using multiple methods, data collection strategies, and data sources to obtain a more complete picture of what is being studied and cross-check information. The strength of qualitative research lies in collecting information in many ways, rather than relying solely on one, and often two or more methods can be used in such a way that the weakness of one is compensated by the strength of another. (p. 405)

Therefore, triangulation was adopted in this study to increase the "trustworthiness" of the data – that is, increasing the validity and reliability of these data by using a range of data sources.

Thematic Coding

Reliability was a crucial underpinning construct in qualitative data analyses wherein the researcher read for emergent themes within and across participant interviews and qualitative comments (eg., in the reflective journals and the open-ended responses in questionnaires). As Patton (2002) described the challenge of making sense of "massive amounts of data":

This involves reducing the volume of raw information, sifting trivia from significance, identifying significant patterns, and constructing a framework for communicating the essence of what the data reveal...No absolute rules exist, except perhaps this: Do your very best with your full intellect to fairly represent the data and communicate what the data reveal given the purpose of the study. (pp. 432-3)

Iterative reading of the qualitative data enabled coding to be undertaken. To ensure the reliability and validity of the coding, “interrater reliability” was established by an independent researcher who undertook coding of a sample set of interviews and journals (Cresswell, 2008, p. 171). Coding was compared with a second experienced researcher’s coding and was found to be within acceptable parameters, namely $\pm 2\%$. The themes identified were identical in wording or in intent, for example, positive and negative perspectives related to teaching, group work, and the professional skills that were developed.

Data Processing

Data processing in this research was a multilayered approach using both the quantitative and qualitative data. The multiple intelligences (MICA) and the learning management styles inventories (SMTI) were processed according to their prescribed instructions. The student feedback questionnaire was processed using Excel and SPSS. Relationships within the three quantitative data sets were explored using SPSS. For example, correlation relationships between multiple intelligences, learning management styles and students’ perception of the learning environment from rating type question items in the feedback questionnaire were compared. Using MS Word and QSR NVivo, short answer responses from the student feedback questionnaire, text analysis from the reflective assignments, and analyses of the interview data were explored through an emergent thematic approach. Some coding of emergent themes had already occurred in an “emerging design” process whereby the researcher had collected data and initiated the coding for themes and then returned to interviews. This enabled the researcher to determine when no new information was continuing to result from new interviews.

Phase 1 – MICA and SMTI

The MICA and SMTI were administered early in the semester/trimester and were immediately analysed so that individual results could be returned to students for their learning purposes. Both instruments were converted from their paper format into an MS Excel spreadsheet for distribution to students in an electronic format. This format was deemed appropriate as it provided a number of advantages. First, it was emailed to each student during class time. Students not at the ‘lecture’ were able to access a copy from those students who were there or directly from the researcher. The electronic copy could be corrected easily if a mistake in filling out the form was made, rather than having to reprint the form. Second, the researcher ‘protected’ the document so that only the parts requiring student input were available for entry/correction. It was anticipated that this would make it easier for the student to complete the questionnaire as they only had to press the tab key to advance to the next input area. Third, MS Excel macros were able to be used to extract student input into a form suitable for copying and pasting into an SPSS data table. Upon completion and return the next stage of data analyses began.

Within SPSS, the returned questionnaire data were re-organised according to the instrument instructions. This reorganisation of results – by grouping of responses to questions – determined the multiple intelligence and learning management style of each student. Each individual’s results were copied and pasted back into MS Excel, whereby graphs of both learning management styles (see Figure 3.2) and multiple intelligences (see Figure 3.3) were generated to be placed into a form explanation document. This document, based on a template, was returned to each individual student for their personal use (see Appendix 7).

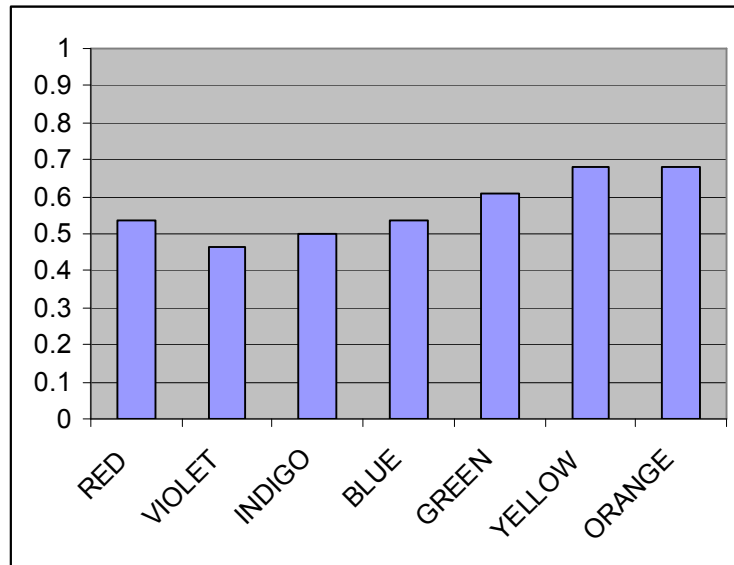


Figure 3.2: Learning Management Style

Sample text to students: Remembering that 1 = high and 7 = low priority to you, your Learning Management Style (LMS) is determined by the lowest value on the graph. Hence your LMS is VIOLET.

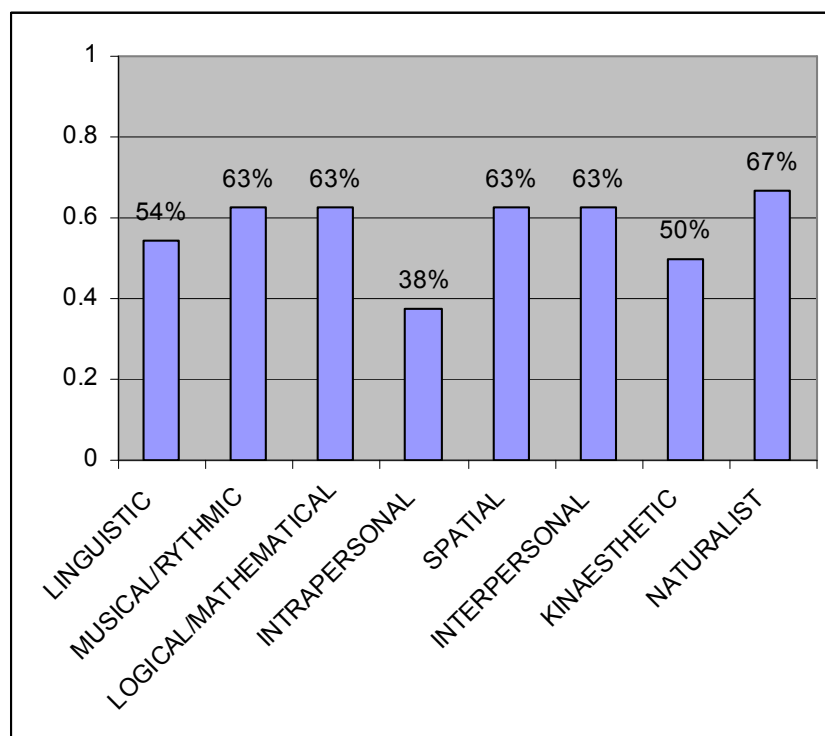


Figure 3.3: Multiple Intelligence

Sample text to students: The graph displays your Multiple Intelligences and the relative strengths of each (the higher the value the more predominant the strength). At the conclusion of individual analysis all results were collated into a single SPSS table for subsequent group analysis. The lecturer and coordinators involved with the course were given a graph of the collective multiple intelligences and learning management styles inventories to inform their teaching practices.

Phase 2 – Staff Interviews and Students’ Reflective Assignments

The lecturer, course coordinator, and coordinator of teaching and learning were each invited to participate in informal exploratory interviews to explore his/her perspectives about this course, the teaching, the technology integration, and the professional development implications (refer to Appendices 9 & 10). Three separate interviews were conducted with these academics. The lecturer’s interview was conducted through *Elluminate* while the other two interviews were conducted in a face-to-face setting. Recordings were not made in each of these interviews, however, notes were made of the key points. Documentation of meetings, reports, professional development sessions, and other salient information were provided by the coordinator of teaching and learning to illustrate and provide more detail to her interview data. These notes and documents were analysed through MS Word.

Recordings were made of student interviews and notes were taken and collated using MS Word immediately after the conclusion of the interviews. Full transcriptions were made of the recorded interviews with the view to increasing the validity by reducing bias in undue editing of data. Due to the limited number of staff interviews (N=3) coding and analysis was undertaken using MS Word rather than QSR NVivo(7) which was reserved for the larger samples (student interviews and reflective journal analysis).

Students were assigned a reflective assignment in which they were expected to document both positive and negative thoughts about and reactions to their own successes, leadership capability, and group’s interactions, as well as the success of the programme. The researcher read each journal a number of times throughout the analysis process. The first round of reading was to explore the reactions of the individuals. The second round of reading was overtly looking for and noting of

common emergent themes. The assignments were then entered into QSR NVivo(7) where previously identified themes were coded. QSR NVivo then allowed each of the coded comments from individuals to be collated into an overarching document based on each theme, referred to as a ‘tree node’. Figure 3.4 below displays a sample of the NVivo tree nodes.

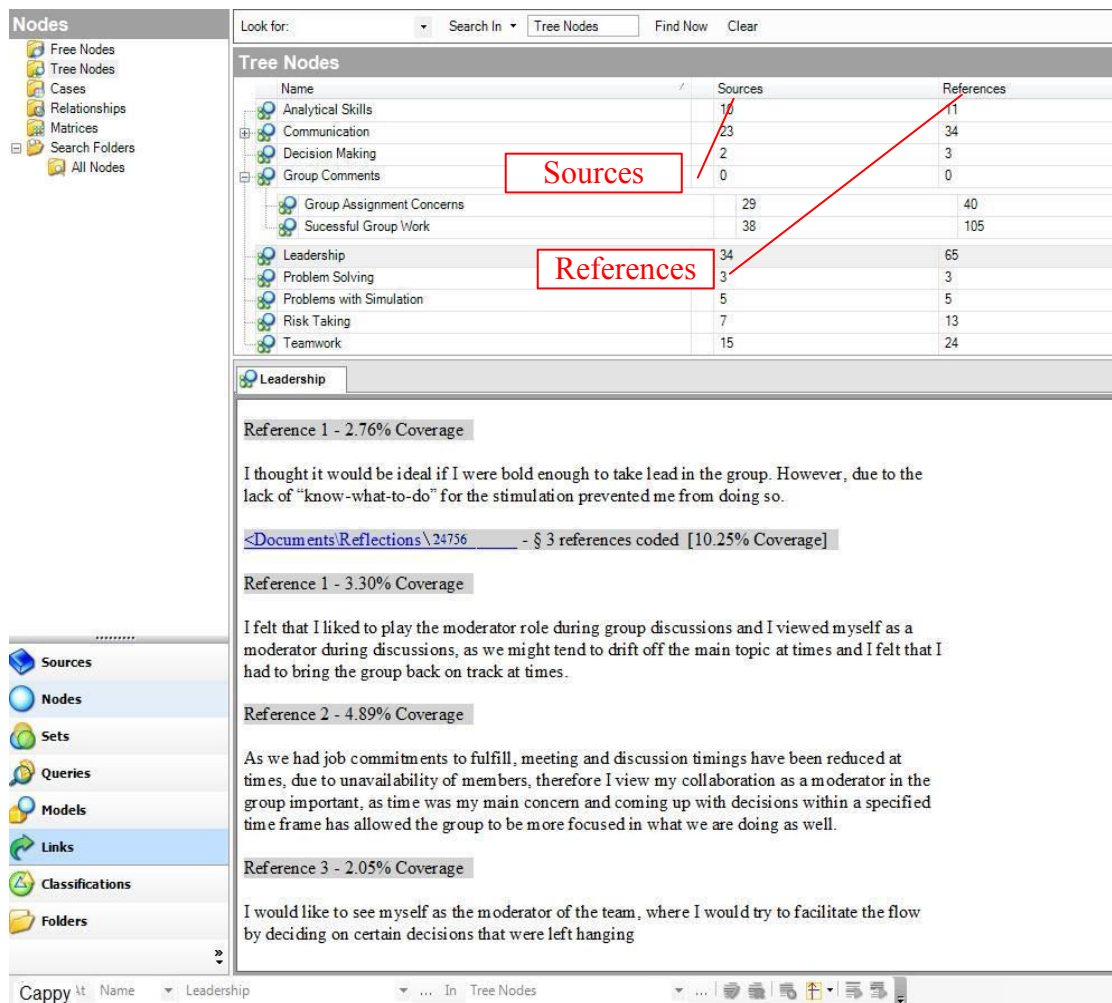


Figure 3.4: Screen Capture of NVivo Tree Nodes

The numbers displayed in the ‘sources’ column identified the number of individuals that were coded into this tree, allowing for a frequency count to be calculated based on the total number of individuals in the reflective assignment sample. The ‘references’ column identified the total number of comments made for that theme. This aided in determining the emphasis in which students articulated the theme as demonstrated by the level of iteration.

Phase 3 – Student Feedback Questionnaire

The same base questionnaire was employed for both the Australian campus students and the case study cohort in Singapore. The differences are outlined in ‘the instrument’ section at the beginning of this chapter. In order to administer this instrument online the questionnaire had to be transformed into an electronic version. The form document (see Appendix 5) was created with form field codes allowing respondents to enter pre-determined answers. For example, Yes/No, or place a cross in Likert response box. The case study group (Singapore) student feedback questionnaire was compiled in MS Word and the document was ‘protected’ for similar reasons outlined in Phase 1. This instrument was sent to every student in the Singapore group via email during class time two weeks prior to the conclusion of the trimester. The timing coincided with the Australian campus administration of the student feedback questionnaire. This process followed the university’s usual approach of gathering student feedback on units of study. Obtaining student feedback was part of the normal University practice for most units hence students were experienced at completing a paper-based questionnaire. The Singaporean students were asked to return their completed questionnaires directly to the researcher who then made the data available (with all identifiers removed) to the university officer who normally processed these types of data. From this shared data set (the study cohort), the university officer developed reports for the course lecturer and coordinator which was the usual practice of the university Business School teaching and learning department. The researcher also processed these shared data for use in this study.

The electronic information was retrieved from each student feedback questionnaire by saving just the responses in the form fields. If the question response box had a ‘check’ mark, it recorded as a ‘1’ in the corresponding position in the text document. Conversely, if the question response box had no ‘check’ mark it recorded as a ‘0’ in the corresponding position in the text document. This ‘response only’ text document was then copied and placed into an SPSS table for analysis.

Phase 4 – Student Interviews

A semi-structured interview schedule was used for all student interviews (see Appendix 6). Manual note taking was also undertaken to provide additional notations

and to keep a track of points to follow-up during the interview. All interviews were fully transcribed and these documents were imported into NVivo and thematically coded. This process followed a similar approach to that described for the journals (Phase 2 – Analyses).

Phase 5 – Statistical Tests

In triangulating four separate instruments it was necessary to have some mechanism in place in order to match up the corresponding separate data sets for each individual. A number of options were explored, while remaining cognisant of the ethical implications of anonymity and confidentiality. A multi-variable approach was finally adopted as no ‘single’ approach would have worked in this study. An MS Access table was created containing student name, ID number, and email address to track data. Each instrument used within this study required the inclusion of student identification (ID) number as the means of tracking responses; however, many student responses had identification information missing or altered. Similarly, Asian names had been substituted on some instruments with Anglicised versions or completely different names used. Additionally, emails were not a reliable tracking option as students frequently employed multiple email accounts simultaneously. These omissions, changes and variations made it difficult to accurately combine results for every individual student. For ethical reasons, only the researcher was privy to the databases with the linked names and data sets. Once these data sets had been compiled and linked together the identifiers were removed in line with the ethics approval.

All statistical processes were conducted using SPSS. The non-parametric statistical method, Chi-Square, was used to test “the distribution of frequencies varying from what you expect to occur by chance” (Salkind, 2008, p. 263). Additionally, it was used to determine whether or not a *statistically* significant relationship existed between the three variables across the multiple intelligences, learning management styles, and student feedback on learning experiences data sets. Correlation was utilised to investigate the relatedness of these categorical variables, where one may be regarded as the predictor of the other.

Sampling

Cluster sampling was deemed to be the most appropriate method for selecting the potential respondents for the case study. As Gay, Mills and Airasian (2008) state “[a]ny location within which we find an intact group of similar characteristics (population members) is a cluster” (p. 106). “In **cluster sampling**, the unit of sampling is a naturally occurring group of individuals” (Gall et al., 2007, p. 173).

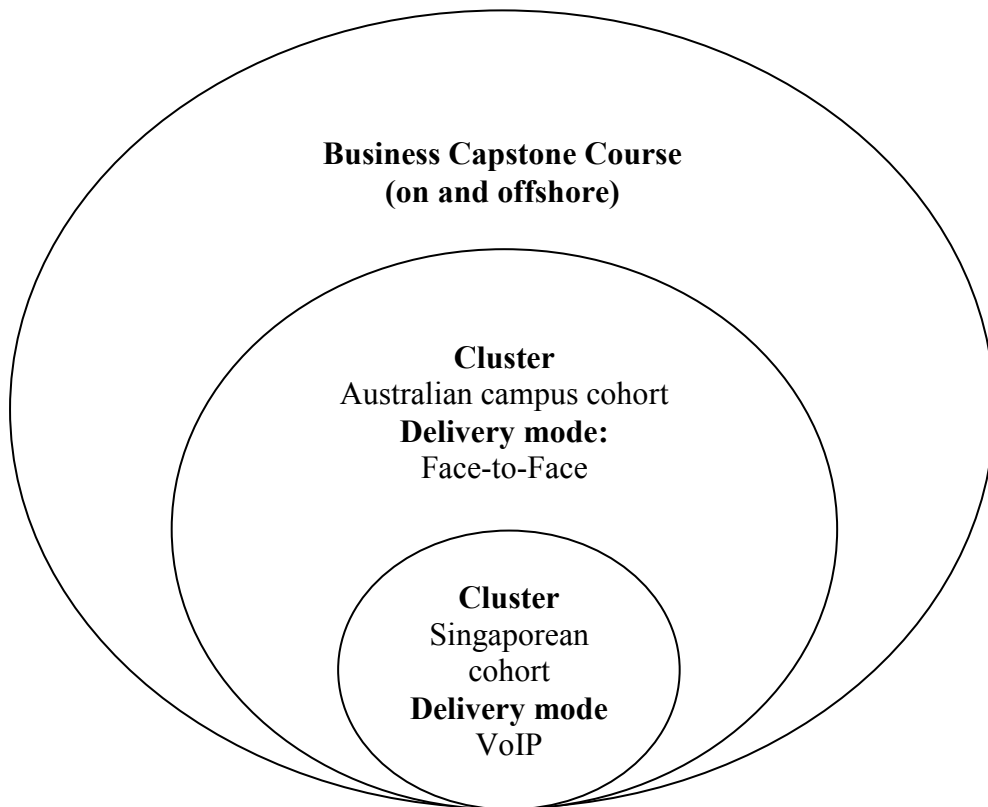


Figure 3.5: Diagrammatic Representation of the Sampling Process

Figure 3.5 is a diagrammatic representation of the sampling process used in this study which displays two distinct subsets within an overall cluster – the Business Capstone. The main subset which was the focus of this research was the entire population of Singaporean students undertaking the Capstone course via a VoIP-mediated learning environment. This cluster was compared with their counterparts on the Australian campus who were undertaking the same Business Capstone course but in a predominantly face-to-face delivery mode. Again, this counterpart cohort were the entire population of the Australian campus group. Entire populations of each

group were selected with the view to obtaining statistically significant data which enabled generalisability to other similar cohorts.

Table 3.2 displays the total numbers and response rates for the various data instruments. The Business Capstone course had 612 students enrolled. There were 528 students studying at the Australian campus with 84 students located at the Singaporean partnered institution. The entire cohort of offshore students (N=84) was surveyed in the questionnaires and all reflective assignments were invited to be included for analysis in this study. However, in all of these data collection processes students' participation was voluntary. Random sampling was undertaken for the interviews and the number of respondents (n=16, response rate of ~19%) was based upon the "saturation" principle (Creswell, 2008, p. 443). Saturation is where "the researcher makes the subjective determination that new data will not provide any new information or insights [related to the research themes]" (p. 443). Of the MICA questionnaire, 76 students completed the test (response rate of 90%), and 72 students returned the LMS inventory (response rate of 86%); the final student feedback questionnaire yielded 76 responses and a response rate of 90 percent. Therefore, the exploration of relationships across individual multiple intelligences, learning management styles and student perception of the learning experience questionnaire data was conducted on a 'same person' sample of 72 responses (response rate of 86%). There were 528 students enrolled in the Capstone course on the Australian campus. Of these 528, 490 returned MICA (93% response rate) and 464 returned the LMS inventory yielding an 88% response rate. The open-ended data from the offshore cohort student feedback questionnaire was validated using the reflective assignments and the in-depth data from student interviews.

Table 3.2: Sample Numbers and Response Rates

Cohort	Total	Student Feedback Questionnaire	LMS	MICA	Interviews	Reflective Journals
Australian	528	528 (100%)	464 (88%)	490 (93%)	0	0
Singaporean	84	76 (90%)	72 (85%)	76 (90%)	16 (19%)	84 (100%)

Demographics

The demographic information drawn from the Singaporean cohort's student feedback questionnaires indicated that just over half of the students in this study were studying part-time (54%) and working within the business sector. The majority were female (75%). Two thirds (63%) of the sample were within the 19-24 age range, another 30% being within the 25-29 range with only 4% in the 30-34 and 3% in the 35-39 age ranges respectively. In the Australian cohort 51% were male and 49% were female which was distinctly different to the Singaporean cohort. The majority of the Australian cohort was in the 19-24 year age range (86%) with the 25-29 range having 10% of the sample, and the 30-34 having 2% and the final 1% were in the 35+ age range.

Summary

This chapter outlines the conceptualisation involved in designing the methodology for this study and the associated decision-making processes for this inquiry. Five major data collection processes were employed in this multi-phasic study. Three standardised instruments were used to determine students' multiple intelligences, learning management styles, and their perceptions of the learning experiences within this VoIP-facilitated course. Additionally, student reflective journals and in-depth telephone interviews were more qualitative sources and provided richer insights into students' attitudes and opinions about their own activities within the course and their satisfaction with the learning environment. Interviews with the academics and administrator provided in-depth information about the design of the course, the teaching and learning considerations, and the professional development implications for the use of VoIP within the university setting.

Comparisons between students undertaking the Capstone course on the Australian campus with the case study cohort in Singapore were enabled through the multiple intelligences instrument (MICA), the learning management inventory (SMTI) and the student feedback questionnaire. Interviews were recorded and fully transcribed. Quantitative and qualitative data analyses were performed through a combination approach utilising MS Word, MS Excel, MS Access, NVivo qualitative data analysis software and the SPSS statistical package. Triangulation was made possible through analysis of the student feedback questionnaires, student journals, and interview data.

Chapter 4

Results

The research explored how effective the learning experiences were that had been facilitated by the lecturer within a Voice-over-Internet-Protocol (VoIP) delivery mode from the perspective of the students and lecturers. The criteria for effective learning experiences were distilled in the literature review synthesis from a range of authors who had researched teaching and learning. Students' motivation to learn was also investigated and the factors which influenced their motivations were explored. Additionally, this research examined whether or not there were relationships between university students' multiple intelligences, learning management styles and their perceptions of the VoIP-mediated learning environment. Insights about the rationale for implementing a VoIP-mediated coursework and the teaching considerations were also obtained from lecturers and associated administrators. A mixed method approach was used in this study. This was a multi-phasic study involving the use of five major data collection instruments. Within the mixed method approach, the quantitative elements were encompassed by the rating-type questions in the student feedback questionnaire; Multiple Intelligences Checklist for Adults (MICA); and the Spectral Management Type Inventory (SMTI). Qualitative data were collected from the open-ended comment sections in the student feedback questionnaire; reflective journal assignments, and the staff and student interviews. Statistical tests were performed using SPSS statistical package and MS Excel. Qualitative data analyses were conducted using a combined approach with MS Word, MS Excel, MS Access, and NVivo software. In this chapter the qualitative comments have been woven throughout the quantitative data sets. To facilitate visual identification of the qualitative comments, *italics* have been used and different "voices" are separated by the use of quotation marks.

There were a total of 612 students enrolled in the Business Capstone course. Eighty four, out of the 612 in total students, in the case study cohort were situated in the offshore site of Singapore and were the focus of the research because their learning had been facilitated by the VoIP delivery mode. The complement cohort (528) was students studying this course on the Australian campus in a predominantly face-to-face delivery mode. There were 16 in-depth student interviews (response rate of 19%

out of the total population) with the case study cohort in Singapore. There were 76 Singaporean-based responses to the student feedback questionnaire out of the total population (response rate of 90%). There were 72 Learning Management Styles (LMS) inventories returned (85% response rate) and 76 Multiple Intelligence inventories (MICA) submitted (90% response rate). All reflective assignments were returned (n=84, response rate of 100%). Therefore, there were a total of 72 individual student responses (response rate of 86%) that provided correlation across all three instruments and the reflective assignment. This meant that these 72 students had completed and returned all three different instruments which served as the basis for the statistical measurement and comparison. The qualitative data from the reflective assignments, the open-ended sections in the student feedback questionnaire and the in-depth interviews were compared with the statistical data. The demographics of the sample was remarkably homogenous in terms of their age with almost two thirds (63%) being within the 19-24 age range, and another 30% in the 25-29 range. The complement included 4% in the 30-34 and 3% in the 35-39 age ranges. The major difference was the imbalance in their gender with the majority being female (75%). Over half (54%) of the students were working part time and juggling their part time studies.

There were 528 students undertaking the Business Capstone course in the Australian cohort. Of these 528, all students (100%) completed the student feedback questionnaire, with 464 (88% response rate) returning the LMS and 490 (93%) submitting the MICA to the researcher. Comparisons between the Singaporean and Australian cohorts within the same course was possible only with the student feedback questionnaire, LMS, and MICA data sets, as no in-depth qualitative interviews were undertaken with the larger cohort. This was because the smaller Singaporean cohort was the focus of the research.

Organisation of the Results

In Chapter 3: Research Design Figure 3.1 Phases of Data Collection and Analyses displayed the chronological sequence of data collection undertaken in this study. There were five phases which encompassed both the academics' and students' perspectives. Phase 1 was at the beginning of the Capstone course and involved the administration and analysis of the Multiple Intelligences (MICA) and Learning

Management Styles (SMTI) inventories. Phase 2 was during the semester/trimester and included interviews with the coordinator of teaching and learning and the course coordinator. It also had a student aspect; wherein the reflective assignments were collected. Phase 3 was the administration of the student feedback questionnaire. Phase 4 was again a staff and student interview process whereby the offshore lecturer and a sample of offshore students were interviewed about their perspectives in teaching and learning, respectively, within this course. Phase 5 encompassed the processing of some data and the analysis and write up of the entire data set.

Teaching Staff and Administrator Perspectives

This section reported on the academics' perspectives which emerged from the interviews undertaken in Phases 2 – coordinator of teaching and learning and the course coordinator; and 4, with the offshore lecturer. These results directly relate to the primary and subsidiary research questions outlined below:

Primary research question:

How effective are the learning experiences facilitated within a Voice-over-Internet-Protocol (VoIP) environment from the perspective of both students and academics in tertiary settings?

Academic orientation (subsidiary question)

- a. *What are academics' rationales for utilising VoIP environments?*
- b. *What are the key teaching considerations to ensure good learning within VoIP environments?*

Effectiveness of learning experiences can be a subjective term unless it is referenced against a set of criteria. The criteria to determine effectiveness was synthesised in the literature review chapter from a range of authors who had investigated instructional design and good teaching and learning. Ten criteria were identified as contributing to the overall effectiveness of learning experiences. These criteria included the structuring for deeper rather than surface learning approaches; including relevant discipline knowledge and expertise required by the profession and employers; promoting active engagement with the content; demonstrating alignment between the content objectives, learning experiences and the assessment tasks that measure the

learning; ensuring students' have a clear understanding of expectations and processes; motivating students to engage with the content and activities; developing metacognitive capacities; challenging students and providing learning experiences which are meaningful; providing variation enabling students to learn in diverse ways; and encouraging reciprocal engagement with peers and experts. These ten criteria serve as the touchstone for assessing the effectiveness of the learning experiences within this study. They also informed the evaluation of the teaching considerations academics indicated they had undertaken to ensure good learning (Subsidiary question "Academic Orientation – b").

There were three staff interviews conducted in this study. The first was with an administrator, the second with the coordinator of the course and the third was with the Singaporean cohort lecturer. The administrator was able to provide insights into the design of the course, the rationale for adopting a simulation as a culminating learning experience in the Bachelor of Commerce degree; and for the trialling of *Elluminate* as the preferred VoIP delivery mode. Additionally, the professional development implications were also discussed as well as the organisational rationale for this course and the trialling of the *Elluminate* software. The coordinator provided information about his perceptions of the establishment of this pilot and his own rationale for involvement. He was also able to outline what professional development had been offered to the lecturer. These interview data were triangulated with a number of reports, meeting minutes, and marketing information made available to the researcher by the Administrator.

The Administrator's Perspective

The administrator was the coordinator of teaching and learning in the Business School. A large component of her work was to support teaching and learning in the Business School. One aspect of her work had been to work with discipline experts to design a culminating experience for students that would provide authentic learning and assessment. A committee process with experts representing each discipline, namely, Accounting, Business Law, Economics and Finance, Information Systems, Marketing, and Management, was formed to guide the selection of topics, discipline-

specific course outcomes, and a potential software solution to simulate an authentic capstone experience.

It was also really important that as many academics from the disciplines were involved in the discussion about how to set up a really sound unit in terms of the pedagogy and design of learning experiences and assessment tasks ... it was all about getting that alignment between the outcomes for the unit, the right learning activities that scaffolded students attainment of knowledge and demonstration of skills, and developing appropriate and educative assessments. ... In effect I wanted this consultative process to be a form of academic professional development.

A focus of the Business School's Bachelor of Commerce programme was to provide students with opportunities to develop a range of professional skills that were important for graduates' success. These skills were identified through intensive literature reviews and consultation with business alumni. The skills that were part of the Business School's mandate included: communication (written, verbal and interpersonal); team working; critical and creative thinking (e.g. problem solving and decision making); computer literacy and information literacy. These skills needed to be further developed and assessed in a final capstone course as described in the course outline. At the conclusion of the course the students were expected to have demonstrated their ability to:

- Communicate by writing papers and reports, interacting with other participants, applying cultural awareness and presenting their opinions;
- Think critically and creatively by participating in problem-solving and decision-making;
- Condense large amounts of information into useful knowledge;
- Utilise information technology; and
- Participate as an effective team-member and efficiently manage their time.

Business Capstone XXX Course outline (2006, p. 3).

These skills were overtly integrated into the assessments and learning activities and highlighted as outcomes to impress on students their importance in the workplace.

This final Capstone course focused on integrating students' knowledge and skills accumulated during their degree preparation programme. As described in the course outline:

Capstone is designed to provide you [the student] with an authentic problem based learning experience where you will be able to demonstrate the professional skills that employers expect from competent business graduates. You will be given the opportunity to utilise your individual capabilities within a simulated business environment. By participating in and overcoming a series of challenging tasks you should further develop your professional skills. ... Capstone provides an opportunity for you to apply your business knowledge and fine-tune your professional skills as you strive to achieve acceptable business outcomes.

Business Capstone XXX Course outline (2006, p. 1)

The course outline described a series of outcomes that students were expected to have demonstrated as a result of their coursework in this course. Students demonstrated that they could:

- Utilise their critical thinking and information processing skills;
- Apply their understanding of functional area strategic alignment, tactical business planning, competitor analysis, market positioning, and financial report analysis;
- Take ownership of their decisions and the impact of those decisions;
- Reflect on their personal performance as a team player;
- Assess the contributions of their peers;
- Provide leadership and direction;
- Write a brief business report;
- Contribute to the preparation of a corporate performance report; and
- Participate in the production and delivery of a corporate presentation.

Business Capstone XXX Course outline (2006, p. 3)

These outcomes detailed the usual business operating skills for a business person. They incorporated both content knowledge (e.g. business planning, competitor

analysis, market positioning, and financial report analysis) and skills, such as leadership and preparing business reports.

Students in the Business School pursue degrees in the previously cited disciplines. In their degree programmes students had a common first year which provided them with a sample of experiences from all of the disciplines. In their second and third year, students specialised with units pertaining to their particular majors. The Business Capstone course aimed to provide a mandatory final coalescing experience wherein students in all disciplines came together to work in teams in a simulation of a real commercial enterprise within a software programme called, Capsim®. A key teaching structure in the course was the formation of multidisciplinary teams, which included students with backgrounds in the seven business disciplines. Each team represented a ‘company’ and the range of teams in a tutorial group was a ‘market’. The online simulation, Capsim®, was a commercially available computer package which emulated a software development company within a competitive industry market. In order to be successful in this course *“the students had to work collaboratively within their multidisciplinary teams to make sound business decisions which were uploaded each week into the Capsim® programme”*. The software provided output on the success of the teams’ decisions with subsidiary information on why their decision was successful or not according to the parameters in the virtual ‘marketplace’. The class sessions were dedicated to the lecturer providing broad descriptions of potential learning related to the outcome of decisions from the previous week. These lecturer-led discussions were necessarily in broad terms as *“industrial espionage”* would result from too much detail on any one Company strategy being revealed to the audience.

This software was selected because it provided students with the most authentic learning experience possible without sending students into the field for an expensive practicum. Even though real world practical experiences would have been more desirable it was not viable or sustainable

in a moderate sized city centre with a defined number of businesses available to support student practicum experiences.

The administrator (a pedagogical expert) and a discipline expert collaborated to design and write the course materials and to develop the learning experiences. *“The consultative committee process and the development of the unit materials took 12 months preparatory lead-in time ... it was a lot of work but was worth it”*. This course was created with a handbook of supporting teaching documentation, lecture PowerPoints, and assessment tasks and associated rubrics. These materials were trialled by these two experts in the initial pilot prior being handed over to other lecturers as a complete teaching and learning package for wide-scale roll-out across the entire Business School. Additionally, students had a handbook with content information, materials and other supporting documentation to assist them in their studies in this challenging course. This included the assessment information and rubrics. *“This unit was aimed at showcasing good instructional design which could then be used as a model by lecturers in informing their own unit design”*.

The assessment regime required a lot of thought and negotiation to determine appropriate approaches, which *“matched the curriculum outcomes and the scaffolding for student learning so that they were educative and not just focused on testing factual knowledge”*. Table 4.1 displays the types of assessment and the breakdown of the weighting for each component. *“It was important that we made it clear to the students how much of the assessment was group oriented and that which was individual due to the contentious nature of group work in universities”*.

Table 4.1: Assessment Regime in the Business Capstone Course

Assessment Activity	Group assessment %	Individual assessment %
Interactive simulation activities:		
• Quiz		5%
• Company written report	10%	
• Company presentation	10%	10%
• Simulation result	25%	
Assignment: Outcome attainment		25%
Reflections on my participation		15%
Total	45%	55%

CapSim® Quiz (5%)

The Capsim® quiz was a simple multiple choice quiz that was designed to “motivate” students to initiate “*early engagement with the software user manual*” in order to develop an understanding of the programme requirements quickly in the course. As many students will not undertake their readings without some form of assessment and mark allocation it was deemed a “*useful goodwill token*” to obtain early engagement with the requisite written materials.

Company Written Report and Presentation (30%)

This task was divided into two sections, the report worth 10%, and the presentation worth 20 percent. Using the information gathered from the simulation results the report was to be written as if it was to be presented to the Company’s shareholders. The presentation was to outline the “*Company’s performance over the virtual eight years of operation ... to their board of directors*”. All members of the company were required to participate. The discipline expert and the committee members all identified the importance of being able to write and present a business report to stakeholders within the commercial setting. As written and verbal communication were key skills outcomes for the Business School this assessment task appeared to be a relevant and appropriate demonstration of content knowledge and skills outcomes for Business graduates.

Simulation Result (25%)

The Company’s performance was calculated using the following simulation success measurements:

- Cumulated profit (25%);
- Averaged return on equity (25%);
- Averaged stock price (25%); and
- Averaged return on sales (25%)

The simulation calculated these values using a complex calculation. This assignment was focused on the team’s performance in the simulation through their application of content knowledge in a range of situations which were likely to arise in a real company. It required students to respect and work with the range of disciplines in the team, and to overcome the silo effect where one discipline expertise is perceived as

privileged over another. It also required them to implement a range of professional skills to be successful, such as leadership, organisation, active listening, and critical thinking in their predicting the likely outcomes of the decisions they were considering as appropriate for that ‘virtual year’ within the simulation.

Assignment: Outcome Attainment (25%)

Students were required to select a topic that was related to their own discipline specialisation and to prepare a report on a “*prediction, forecast or claim ... and details of corresponding outcomes*” in an actual business setting. This meant that students had to undertake research to explore the prediction and the resultant outcome of an actual company within their chosen topic. This assignment was targeting critical thinking skills through the application of specific discipline knowledge. Students were required to consider a predictive situation and work in the hypothetical, and then undertake research using a range of sources to find the outcome(s) of the event or prediction. This meant that students were implementing their information literacy skills, frequently using computers and databases, in the researching of the information for this assignment and applying their own content knowledge to make sense of the data they found.

Reflections on My Participation (15%)

Students were expected to maintain a reflective journal containing personal observations on their participation in team activities. An electronic diary facility was made available for each individual student within the Blackboard™ learning management system “*to facilitate their ease of note-taking*”. At the conclusion of the semester/trimester students were required to submit a reflective assignment from their ongoing journaling that detailed their personal development in the areas of:

- Collaboration;
- Contribution; and
- Aspects of improvement needed to become an effective team member within a Business setting.

In order to support students’ reflective practice throughout the semester/trimester, guiding questions were supplied:

Heading 1) my collaboration

- At the start of the unit, how did I think I could best collaborate?
- What was my approach to interacting with the other team members?
- Was my collaboration effective?

Heading 2) my contribution

- What did I expect to get out of working within my team?
- What incidents occurred?
- Was my input important?

Heading 3) what I need to improve on to become an effective team member

- What should I have done differently?
- What are my strengths?
- What are my weaknesses?

Business Capstone XXX Course outline (2006, p. 9)

Students were not expected to write on every question every week, however, they were encouraged to consider these in relation to the events that had occurred in their team work each week as applicable.

This assignment was specifically about encouraging ongoing processing for team work which is advised in the literature to support cooperative learning behaviours ... This was focused on developing metacognitive abilities to facilitate students' capacities to become more flexible and responsive to a range of situations within the business context.

When asked why the VoIP-mediated learning environment had been selected for the pilot this administrator reported that the Capstone course was highly successful when conducted on the Australian campus with one tutorial group and in a predominantly face-to-face delivery mode. However, the need for this course to be available to all students, namely those on the Australian and offshore sites “*presented significant logistical problems*”. Most of the offshore partnered institutions only offered one discipline; hence, the “*multidisciplinary team approach*” in this compulsory course required an innovative solution to linking students with their counterparts in other sites and institutions. As a result of this imperative the administrator had been

charged with exploring what was available to enable this course to be successfully implemented across international boundaries.

The administrator described the broader implications of finding a delivery mode which would enable the streamlining of current offshore teaching operations. The university administration, finding itself in a “*financially constrained situation due to continually reduced government funding*”, was also considering alternative approaches to their offshore operations as these, in their current face-to-face format, “*were extremely expensive*”. The current offshore teaching arrangements involved the Australian academic (usually the course coordinator) travelling to the offshore site to conduct half of the teaching course hours (12 hours) in an “*intensive mode*” (Friday evening, Saturday and Sunday). The complement of the teaching hours was conducted in situ with an offshore tutor (local lecturer) over the normal period of a “*trimester timeframe*” (10 weeks in duration compared with a normal semester which was 13 weeks). The “*overseas travel and accommodation expenses*” raised the cost of these offshore programs, and these financial considerations necessitated “*us looking at alternative ways to deliver our educational programs offshore but at a reduced cost*”. She described her experiences with *Elluminate* at an overseas university where it had been successfully implemented in an educational setting with distance students. She returned from her overseas visit and presented *Elluminate* as a potential solution to the delivery mode challenges her university was facing.

The administrator identified the three main aims of the pilot Capstone course project using this VoIP delivery mode.

The Elluminate Live! pilot was initiated with three main aims. To explore 1) a synchronous online environment that has the potential to provide a financially less expensive alternative to current models of offshore teaching and operations, 2) more innovative and effective models of undergraduate and postgraduate teaching, particularly suitable for overseas and/or isolated students, and 3) the potential of a synchronous online environment that may provide a superior risk management strategy in the event of global threats that deleteriously impact [the university's] core operations.

(*Elluminate Live!* Report of Pilot Study Conducted at [XXX] Business School, 2006, p. 1).

The administrator also indicated that not only were undergraduate programs of interest for VoIP learning opportunities but also “*the need to provide better service and more personalised response to Masters and Doctoral students who were either in distant locations or who’s supervisors had gone on sabbatical, conference leave*”. Additionally, with research being core business at any university, “*facilitation of research partnerships across universities and indeed across the world is increasingly important and VoIP [was] one important way to productively connect scholars*”. Skype had been considered as it provides a VoIP medium for communication which is one-to-one; however, *Elluminate* had the additional functions which “*enabled the facilitation of group work, as well as application sharing so that documents could be worked on collaboratively, which made it more suitable to teaching and research activities*”.

Existing technologies such as conventional telephony, email, mail, and learning management systems have limitations by being costly over distance (in the case of telephony) and are limited in richness and participation due to the nature of unsynchronised interaction and collaboration.

(*Elluminate Live!* Report of Pilot Study Conducted at [XXX] Business School, 2006, p. 1).

The administrator was focused on introducing an online medium which was strategically advantageous but also facilitated sound teaching practices. She related these as “*providing students with units that promote interaction, action, and reflection and Elluminate enabled these activities to occur in real-time and collaboratively*”. She explained that part of her role was as a professional developer encouraging academics to engage with their teaching and to improve their practice ...

universities in Australia have had to engage with the teaching and learning ‘quality’ agenda. So it is useful to consider any mechanism which may encourage business academics to reflect on their teaching and to explore different strategies and ways of engaging their students... I am hopeful that having to learn how to teach in Elluminate will initiate broader engagement with improving teaching ... because

academics are having to rethink their materials, practices, learning experiences design, and assessments for this new medium ... and this may translate back into face-to-face modes.

One of the issues the administrator identified was that many academics within the Business discipline find teaching a challenge. This was frequently due to their lack of educational knowledge and consequently they resorted to teaching the way they were taught – “*a transmissive, and sometimes didactic, approach*”. Her hope was that with the introduction of a new instructional delivery mode, namely VoIP, would trigger “*lecturers’ interest and willingness to engage in professional development focused on constructivist teaching methodologies*”. The administrator indicated that this pilot was important to determine what was needed in terms of technical support, professional development of lecturers and students, restructuring of course materials and resources, and for funding considerations.

Technically-oriented professional development and support had been provided to the course coordinator, lecturer, and the students to enable them to become familiar with both the Capsim® software programme and *Elluminate* environment. The professional development was provided by a technical expert who was associated with both teaching and learning department and the information technology support department. This technical support officer ran tutorials for the lecturer, administrator, and the course coordinator so that they could become familiar with the functions of both software programmes.

XXXX was absolutely marvellous in supporting all of us both technically and in getting a handle on how the two software packages worked. He was an invaluable staff member in this hectic pilot implementation and so much was riding on us being successful ... he really did his bit to make it all successful. ... XXXX came to our offices and helped install the software and spent hours making sure that our microphones worked and that we knew what to do.

Students were able to avail themselves of this expert’s support in installing and operating the software on their personal computers in Singapore. He was also

available at the beginning of each *Illuminate* class for technical support. The administrator reported that this support was invaluable in establishing sound understandings of the programmes, their functions and to establish user comfort. It was also crucial in establishing smooth operations of this new media. The only disadvantage was that the technical support required an after-hours financial commitment in ensuring this support was available when needed.

The final interview with the coordinator of teaching and learning was a post-course reflection on the lessons learned from her perspective. She was asked how effective the learning experiences were in the Capstone course which had been facilitated within the VoIP environment. Her overall impression was favourable, in that she indicated ...

students' were satisfied with the unit and appreciated the significant amounts of supporting documentation available to them to provide clear and consistent information to guide their learning.... They indicated in the open ended feedback from the [student feedback questionnaire] that they felt that it was fairer to have the rubrics available at the start and written explanations about the goals and expectations for each assignment. ... They enjoyed the Capsim simulation and felt that the realism and practical application was hitherto unsurpassed in the rest of their degree experience. ... Illuminate as the delivery mode was positive for them in that it provided increased flexibility and convenience to students. The negative aspects were potentially due to the rushed implementation and lack of prior experience which tends to influence individuals' levels of comfort and acceptability.

The administrator indicated that this pilot was highly successful for not only teaching and learning but also had implications for professional development of academics, informing appropriate induction for staff and students when introducing a new course, and for organisational goals. She articulated five main lessons learned from this pilot:

- ***Induction of staff*** – all staff must have more time and greater engagement with new course materials in order for them to develop a deeper understanding of the underpinning pedagogy and philosophy of learning experiences and assessments. This course was designed as a showcase course and this now needed to be advertised to staff to act as a model of exemplary instructional design.
- ***Pedagogical professional development for academics*** – “*Professional development in relation to sound pedagogy is essential to ensure effective learning experiences and student satisfaction*”. It was obvious that even with a sound course structure the teaching was still a significant influence on students’ satisfaction with their learning experiences. The lecturer, even though experienced, was less comfortable with student-centred approaches and did not necessarily understand the importance of metacognition and professional skill development and assessment. As a result ...
there may have been a disconnect between his verbal explanations of the assignments and the written rationales provided in the handbook. This disconnect may have negatively influenced students’ perceptions about the assessments. Therefore it is important that the tutor or lecturer who is using materials designed by someone else has the opportunity to gain an understanding of the rationale underpinning the instructional design.
- ***Greater understanding of the functionality of Elluminate*** – There was a need for greater understanding of *Elluminate* and its capacity to facilitate student-centred learning experiences through the use of break out rooms and students having booking control for additional meetings.
- ***Induction of students*** – with greater exposure to the technology, students became more comfortable with the VoIP environment. They were able to see the potential in VoIP for real-life activities, for example, greater networking opportunities, supportive study groups, and more interactive learning experiences. The newness of this environment to students and academics was the biggest concern in this pilot.
- ***Protecting organisational sustainability within a dynamic global context*** – *this Elluminate software proved its worth in terms of providing a stable*

classroom environment. In a world fraught with threats to ongoing sustainability of operations the use of a VoIP environment has significant advantages to teaching and learning, research, postgraduate supervision and administrative operations.

The Course Coordinator

The course coordinator had been involved in the Capstone course committee process. As with all the committee members, he had expressed interest in this new course and the novel approach to its delivery offshore and had therefore been included into the committee at its initial formation. As a result of his attendance at all the committee discussions he was aware of the pedagogical and philosophical underpinnings to the instructional design and the assessment tasks. He was supportive of the development of the student handbook which provided supplementary content information, rationales for the assignments, and marking guides to clarify expectations and provided outlines for students' assessments.

These materials were excellent in that they took the burden off the lecturer to develop all of these for the students ... and meant that the students had consistent information about their assignments regardless of which tutorial group they were in. ... It also helped the offshore lecturers who are often kept a bit in the dark regarding the expectations for marking which the onshore unit coordinator has.

The only reservation the course coordinator expressed with the handbook was that it required significant amounts of effort on the part of the students to actually read these materials. He questioned if 'English as a Second Language' (ESL) students would be prepared to engage with this amount of reading ... *"they are used to being spoonfed by their lecturers so they may resent having to read the handbook"*. If they did not then they would be at a disadvantage with their more fluent or committed peers.

The course coordinator outlined that the Capstone pilot was an innovation for the Business School which had real potential for teaching and learning activities. He reported that the Capstone course had only been conducted for onshore (at the Australian campus) students previously and this pilot was exploring the potential for greater involvement of offshore students with their counterparts at other campuses,

along with the use of a VoIP environment to facilitate this greater inclusion. It was necessary to find an online environment because the Capstone activities required multidisciplinary teams. Many of the offshore students were at institutes which run one or two majors within the Commerce degree, so they were unable to participate in the Capstone course alone. They had to be teamed up with students in other institutes (possibly in other countries) who had the range of disciplines required to be successful in the simulation, which was the basis of the course coursework. *Illuminate* appeared to offer the optimal solution to this course's unusual activities.

The course coordinator indicated that he was enthusiastic to have the opportunity to coordinate this course in the pilot as the innovative elements of it would be "*personally interesting*" and "*valuable experience*". He was conscious of the "*scrutiny*" this pilot was receiving from his Head of School and other senior administrators within the Business School, as well as the university. Therefore, he felt that it was likely to have a positive impact on his career trajectory. *Illuminate* was new and unfamiliar to this course coordinator and he was motivated to engage with this technological innovation as he could "*see the potential*" for this in regular offshore teaching assignments.

When asked about his perceptions of the assessment tasks he indicated that he preferred a heavier weighting on the discipline content aspects of the tasks, such as, the 'Interactive Simulation Activities', particularly the simulation result. He felt that there was too much emphasis on their professional skills development. He queried why students needed to engage in reflective activities and felt that the reflective journaling was a distraction from their "*core business*" focus in the course. He was not familiar with the Learning Management Styles literature and as a result did not perceive any value for students in understanding their style ... "*there is some stuff in the handbook which is irrelevant to this unit and the objectives and should be removed*".

Professional development related to the technology and how to use it in an educational setting. It was provided by the technical support staff and the teaching and learning team within the Business School, who had all been involved with the *Illuminate* project. The professional development included:

- assistance in getting lecturer computers configured with the software and hardware;
- tutorials were run to familiarise the course coordinator (who was also a lecturer) and the offshore lecturer with the Elluminate functions available; and
- information about how the functions could be used in a teaching and learning situation.
- Similar technical support was provided to students to assist them with the configuration procedures.

During the intensive teaching time with the students, the course coordinator actually provided professional development to students, not only in relation to the *Elluminate* classroom, but also provided an orientation with the online simulation game. In addition to the students' induction into these processes, the local offshore lecturer attended these tutorials to orientate himself with the new simulation and teaching environment. Both the lecturer and the course coordinator worked together in out-of-class time to discuss the teaching approaches and the *Elluminate* environment.

The course coordinator expressed similar perspectives to that of the administrator in relation to the lesson learned. He too indicated that the pilot of the course within the VoIP environment was successful. He articulated that most of the concerns about the effectiveness of the learning experiences were as a result of the unfamiliarity with the VoIP and the Capsim® software. Potentially he felt that these two unfamiliar software programmes may have exacerbated students discomfort and slightly skewed the perspectives of students. He acknowledged that there was likely to be a “*satisfaction implementation dip*” due to lack of comfort when implementing “*new content, unit activities, and technology*”. Understanding that there is always going to be some discomfort, he stated ... “*I believe this will be an excellent tool for offshore delivery in the future ... the students generally liked it, even though they preferred face-to-face but it will overcome many of the issues we are facing*”.

Offshore Lecturer

The offshore lecturer had not been involved in the “expert committee” group and as a result was not as informed about the course structure and pedagogical rationales underpinning the activities and assessment tasks. His involvement commenced

approximately two weeks prior to classes. The offshore lecturer was a highly experienced face-to-face teacher within the Business discipline; however, the online teaching environment was completely new, unfamiliar, and “*an uncomfortable way of teaching and I am learning as I am going*”. He reported that the rapid roll out of the course caused him considerable discomfort ... “*I did not have enough time to learn the unit content much less become familiar with Elluminate*. He wondered if there were other functions in the programme which could have been used to get students more involved and “*talking more both to me and each other ... rather than texting all the time*”. He stated that if he taught this course again in the future within the VoIP environment he would feel more comfortable and willing to try other strategies and functions to get more engagement and interaction happening.

The two handbooks of materials – one for the academic and one for students, was an aspect of the course which the offshore lecturer expressed distinct approval of, and satisfaction with. He discussed his prior experiences teaching in the Business School and how these materials were unusual in their provision and also in the depth of information which was supplied. He indicated that these were “*highly valuable and useful*” to him in being able to direct students to these and to explain the expectations for the course and the assessments. The staff handbook had PowerPoints which the lecturer could use if desired to assist them in their weekly debriefing lectures. He remarked that the handbook was extensive and he was not really familiar with all of the materials or where they were to be applied in the course and why some activities and assessments were included. Even so, the rubrics/marketing guides were an excellent support to ensuring that he was marking what was important and was consistent with the onshore tutorial groups ...

in other units you often wondered how close your marking was to other lecturers and tutors, and this opened us up to complaints from the students that we were marking too hard because we knew the students well and knew how much effort they were putting into their studies.

The level of professionalism in the design of the course materials and the simulation was remarked upon by the offshore lecturer. He indicated this course should serve as a model for other units within the Business School. He reflected upon his range of teaching experiences as an offshore lecturer. He indicated there was considerable

variability in the level of support supplied by the course coordinators for offshore lecturers ...

Frequently we have nothing other than the brief unit outline to guide us in our selection of content to teach ... or in the assignments that students had to do. Many of us [offshore lecturers] have to explain the assignments when we really don't understand what the [onshore] unit coordinator wanted or expected ... this placed us in very difficult positions with the students as they [the students] did not view us as real lecturers. ... It all depends on how close a relationship you have, and how much open communication with your unit coordinator at [XXX campus in Australia] ... and how much pre-prepared materials were supplied to you [by the unit coordinators] to help you to teach the way the students are at [XXX campus in Australia].

It was reported that good working relationships between the offshore lecturer and the onshore course coordinator resulted in greater consistency of content being taught and in the marking of the assignments. He reported that when the offshore and onshore academics worked together and had sound course materials to work from students reported higher levels of satisfaction with the teaching. This was a big issue for the offshore lecturer as his continued employment was based upon student feedback and in particular their level of satisfaction with the offshore lecturer. He expressed concerns with this job security situation and felt that it influenced his perception of the students and his interactions with them.

The offshore lecturer expressed some concerns that the students were used to a particular teaching mode and there was the potential for a lack of student engagement because it was not “*face-to-face which students' preferred*”. When asked about the *Illuminate* sessions, the offshore lecturer reported feeling frustrated when students would not respond to his questions, or participate in verbal commentary or dialogue. He noted that they extensively used the text features with “*many, many conversations, comments and asides occurring during the lecture*”. Even though this was in fact interaction, he really wanted more verbal discussions occurring in class and he felt that the VoIP was the barrier to student engagement.

When asked if they tended to be more interactive in face-to-face classes he reported

...

no not really, many just sit there and expect you to just give them notes... some students will discuss with you in question and answer but not all the students participate ... many of the ones from China are quite passive, possibly because they are struggling with English.

This lecturer appeared to be quite disillusioned with the students and indicated that they were in many cases “*lazy and unmotivated*”. He reported that in his time teaching many students wanted to do less and less in terms of assessments and he linked it with the fact that they were full fee paying and therefore expected to have an easier time in their studies as a result. “*This makes it really difficult for us [offshore lecturers] because we are responsible for maintaining standards ... they criticise us because they say we refuse to help them and it is about them wanting to be spoonfed*”.

When asked if any accommodations or changes had been made to the teaching approach, course materials or the manner in which the coursework had been delivered, the response was that little variation or adaption was possible or even desired as this was regulated by the Australian campus ...

my main role was to do a lecture which reviewed the success of the previous week's team decisions and identify some of the common errors and problematic areas that teams encountered which affected their performance ... I was not supposed to guide or interfere with the teams' decision-making or discussions as they were supposed to be quite autonomous ... and the unit resources were very good if they [the students] just got around to reading them. ... I encouraged them to meet at the end of the lecture in groups to start their discussions for the next week's decision round but many of them never seemed to want to do this ... just wanted to leave early.

The offshore lecturer expressed doubts about the viability of introducing VoIP as an instructional delivery mode for Singaporean students as he indicated they were very attached to face-to-face modes. He perceived potential advantages in the *Illuminate*

classroom but felt that it would take time for students to become accustomed to this blended learning approach. He acknowledged there had been mistakes made in terms of how this course had been established and felt that many of the problems encountered would be overcome in the next iteration.

The academic interviews were conducted throughout Phase 2 and 4. The next section reports the results from the “student data collection” processes. For example, in Phase 1 student data was collected on students’ multiple intelligences and learning management styles through the administration, of the Multiple Intelligences Checklist for Adults (MICA) and Spectral Management Type Inventory (SMTI). Phases 2, 3, and 4 encompassed student perceptions of their learning experiences within this VoIP environment. These student-oriented data were drawn from the student feedback questionnaire, reflective assignments, and the interviews.

Student Data Collection

The student data reported in this section were directly related to the primary and subsidiary research questions as they pertained to the student perspective. The questions were as follows:

Primary research question

How effective are the learning experiences facilitated within a Voice-over-Internet-Protocol (VoIP) environment from the perspective of both students and academics in tertiary settings?

Student orientation (subsidiary question)

- c. What is the relationship between students’ multiple intelligences, learning styles and their motivation to learn within a VoIP environment?*
- d. Does VoIP support all students’ learning independent of their multiple intelligences, and/or learning styles?*

Multiple Intelligences and Learning Management Styles (Phase 1)

In Phase 1 of the study, the Multiple Intelligences Checklist for Adults (MICA) and Spectral Management Type Inventory (SMTI) were administered via email to students. As there were many different learning styles found in the literature, a choice the selection of an appropriate tool was important. In this study the SMTI was

deemed more appropriate than other learning styles inventories as this SMTI instrument was directly focused on the Business demographic.

Some students appeared to experience confusion as to how to fill out the ranking process in the SMTI instrument with many requesting clarification and further instructions. These queries were all responded to by the researcher to ensure greater accuracy of data. In the interviews after the conclusion of the trimester, students were asked whether knowing about their personal learning management style (LMS) and multiple intelligence (MI) strengths influenced their learning and interactions with others in the course, particularly in relation to VoIP. They were also asked to predict how this knowledge of LMS and MI would influence them in their current employment or future career. The following results outline the distribution of MIs and LMS across the cohort as well as drawing upon the qualitative data from the student feedback questionnaire, reflective assignments, and interviews.

Multiple Intelligences

The MICA was administered to all students in the Capstone course. Out of the total population of 84 students studying in Singapore, 76 (90% response rate) submitted the instrument for processing and analysis. Of the total population of 528 students studying the same course on the Australian campus, 490 (93% response rate) submitted their MICA inventory.

Multiple Intelligences (MICA)

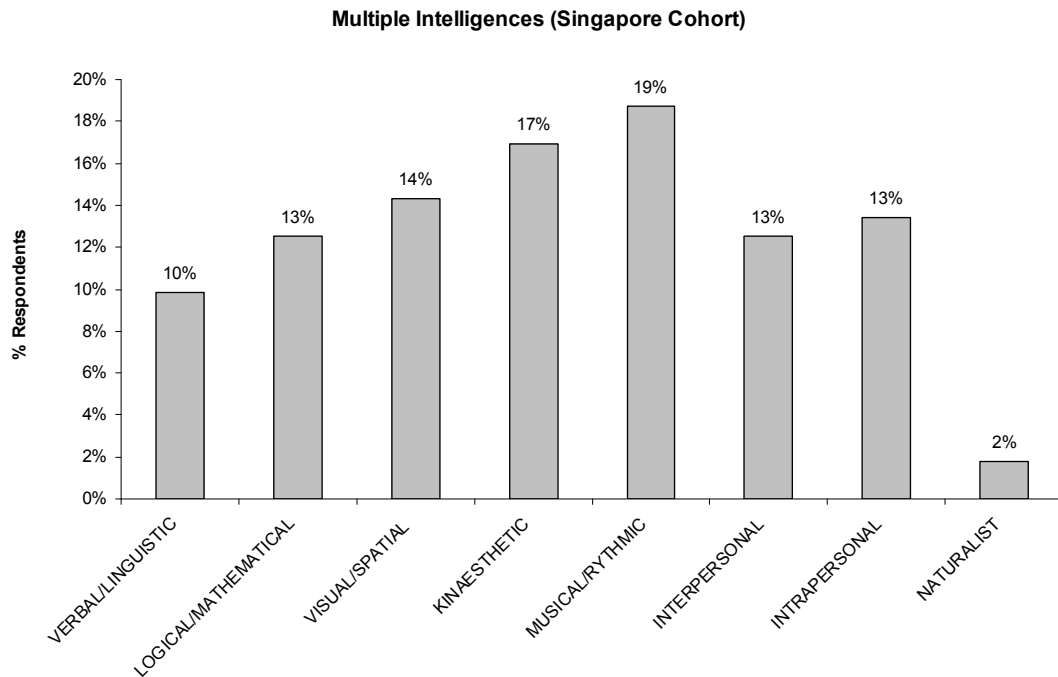


Figure 4.1: Respondents' Multiple Intelligences Distribution (Singapore Cohort)

Figure 4.1 displays the percentage of students who had particular multiple intelligences in the case study cohort (Singapore students). The most frequently scored multiple intelligence was musical/rhythmic. This means that 19% of students had this intelligence as their predominant intelligence. Kinesthetic (17%) was the next most predominant intelligence. Visual/spatial (14%), intrapersonal (13%), logical/mathematical (13%), and interpersonal (13%) were the next most frequently scored intelligences respectively. The least frequently scored intelligences were verbal/linguistic (10%) and naturalist (2%).

The non-parametric statistical method, Chi-Square (χ^2), was used to test “the distribution of frequencies varying from what you expect to occur by chance” (Salkind, 2008, p. 263) to see whether a statistically significant relationship existed between the eight variables across the multiple intelligences data set. In this case $\chi^2_{(7)} = 17.47$, $p < 0.05$ meant that the frequency of results across the eight

categories was not distributed evenly as would be expected by chance¹. This meant that the variation in multiple intelligence results were significant.

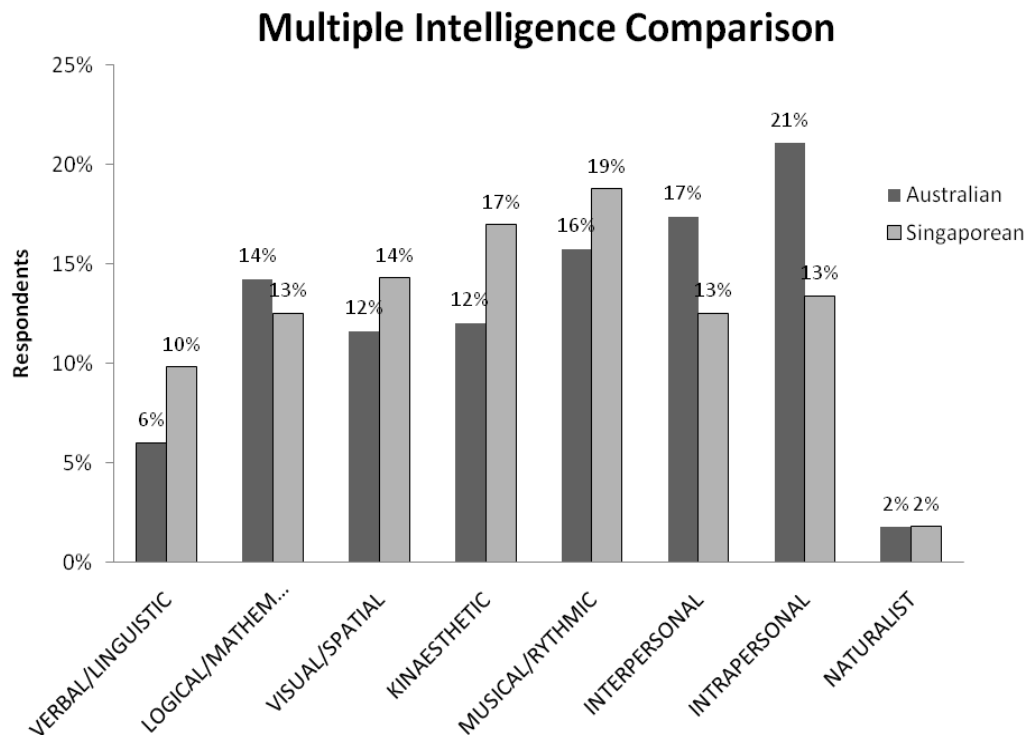


Figure 4.2: Comparison of Singapore and Australian Students' Multiple Intelligences Distribution

Figure 4.2 displays a comparison of the multiple intelligences distribution in the Singapore cohort against the students studying the same course in Australia. Unlike the Singaporean students, the Australian cohort's most frequently scored multiple intelligence was intrapersonal (21%). The second highest was interpersonal with 17% and the third most scored was musical/rhythmic (16%). Logical/mathematical was next at 14% with visual/spatial and kinaesthetic both scoring 12 percent. Verbal/linguistic and naturalistic were the lowest scored items with 6% and 2% respectively.

¹ Chi Square tests a null hypothesis that the frequency distribution of certain events observed in a sample is consistent with a particular theoretical distribution. The events considered must be mutually exclusive. In this study mutual exclusivity was not strictly the case but the number of students who had multiple values for MI was considered small enough as to negligibly affect the results.

It is worth noting that the most highly scoring intelligences within this Singaporean business-student cohort were musical/rhythmic and kinaesthetic. It may have been expected with a group of business students to find higher scoring for logical/mathematical and visual/spatial due to the economic factors in this career area. Similarly, with the people-focus of management and marketing dimensions of the commercial world it may have been anticipated that there would be higher scoring in interpersonal and verbal/linguistic intelligences.

The Australian cohort demonstrated more anticipated multiple intelligences for Commerce students, in that their most frequently scored multiple intelligences were intrapersonal and interpersonal. This finding was not as unexpected as musical/rhythmic and kinaesthetic in the Singaporean cohort considering the people orientation and desirability of metacognitive capacities required in the commercial world. It was unexpected to find such a difference in distribution across the multiple intelligences in the two geographically diverse cohorts.

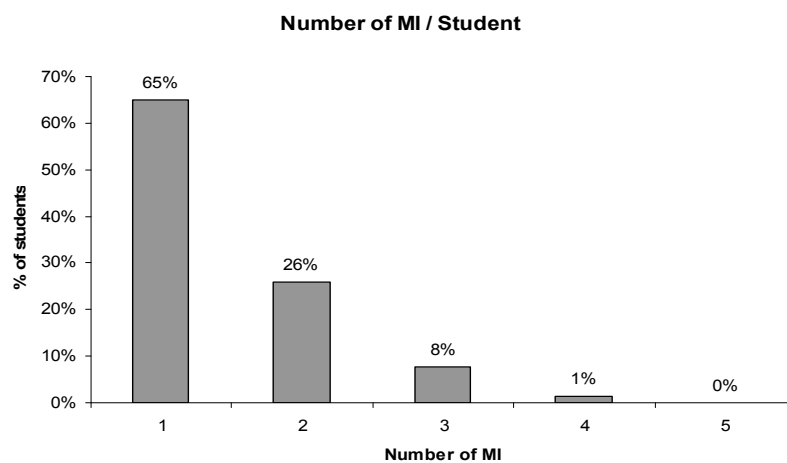


Figure 4.3: Number of Multiple Intelligence of Equal Strengths per Student

Figure 4.3 displays the percentage of case study students who scored several multiple intelligences as equal predominant strengths. Over a third (35%) of the Singaporean cohort reported more than one predominant intelligence, with just over a quarter (26%) found to have two equally predominant strengths. Eight percent of students had three equal multiple intelligences strengths. One percent of students had four equal predominant intelligences.

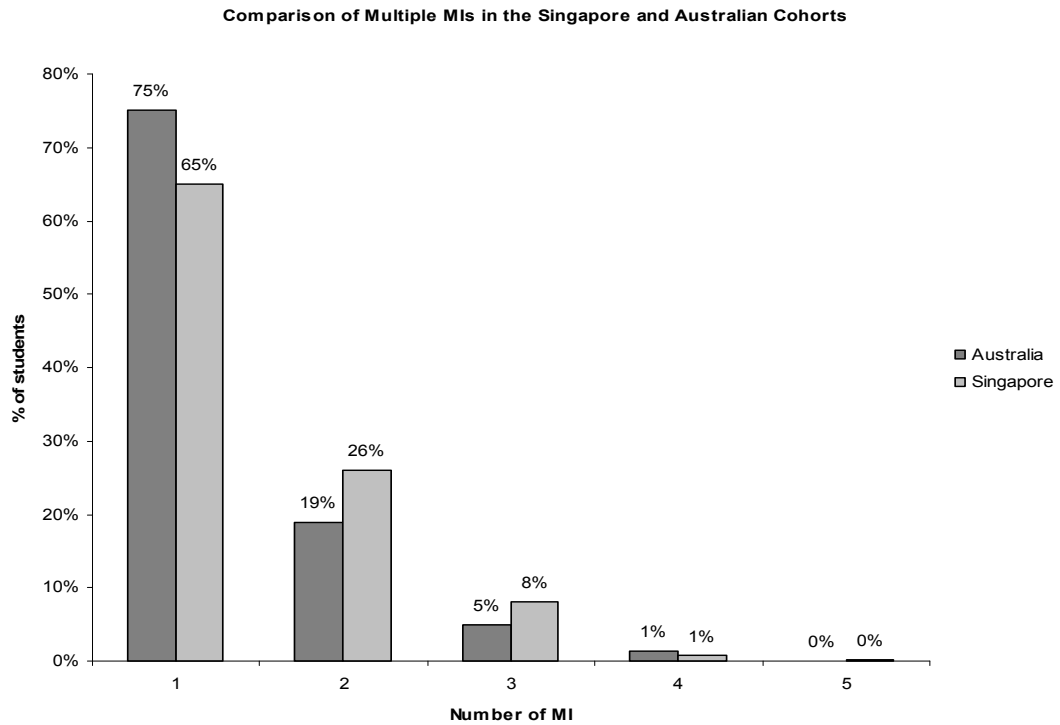


Figure 4.4: Comparison of Multiple MI in the Singapore and Australian Cohorts

Figure 4.4 displays a comparison of multiple MI as equal predominant strengths in the Singaporean and Australian cohorts. The distribution of students in both cohorts who had one, two, three, and four equal multiple intelligence strengths was similar. The majority of the two cohorts (75% in Australia; and 65% in Singapore) had only one predominant intelligence. Just over a quarter (26%) in Singapore had two compared with 19% in Australia. Five percent of Australian students in relation to eight percent of Singaporean students had three equal multiple intelligences while both cohorts had just one percent who had four equally predominant intelligences.

Student Perspectives on the Multiple Intelligences

Analyses of the reflective assignments from the Singapore cohort indicated students had used the MI information in their reflections and had conceptualised their interactions, attitudes and behaviours. For example, one respondent referred to his/her interpersonal intelligences stating ...

my peer evaluation revealed ... I have a powerful interpersonal intelligence skill ... the ability to communicate with my group members and to have empathy for their feelings and beliefs that maintain good

relationship with them. ... I'm also a good listener that recognised distinctions among people and to appreciate their perspectives with sensitivity to their motives.

The MI information assisted some to become more self-reflective and open to critiquing their own interaction styles ...

I should learn to listen more to what others have to say before jumping to my own conclusion and shut everyone out ... It also made me understand that everyone is different; the same applies for expectations and level of understanding.

Similarly, students appeared to be more aware of the diversity of intelligences and to be appreciative of these differences ...

the range of genius in any individual, however great he may be, is imperfect, therefore individual achievement has to be confined within certain limit. In order to fulfil a task, we need to pool the wisdom of a variety of people, each possessing his/her own distinctive talent.

There was the view that the “*knowledge of self*” was useful in making the correct career choices, and as managers, for increasing worker performance ...

“it is useful for employers to know as to maximise the workers’ potential and to make us faster and more efficient ... maximise projects according to strengths”, “A successful business or individual needs to maintain a fine balance between being objective in delivery of performance, and also not forget the human element that binds the business together. A failure of either side of this equation, will only lead to undesirable outcomes”.

Included in Phase 1 was the administration of the Spectral Management Style Inventory (SMTI). This instrument was designed to determine students’ learning and management style within the same inventory. The SMTI was an unusual instrument in that it linked colours to certain learning management styles. The following section outlines the findings of from Spectral Management Style Inventory.

Learning Management Styles

To aid the ease of reading and interpretation of results, Table 4.2 Lessem's Spectral Management Theory has been reproduced from Chapter 2. It displays Lessem's Spectral Management Theory linking learning and management style characteristics with their corresponding colour.

Table 4.2: Lessem's Spectral Management Theory

Management style	Learning style	Team role	Colour
Innovative	Creative	Inspirer	Violet
Development	Intuitive	Harmoniser	Indigo
Analytical	Methodical	Organizer	Blue
Enterprising	Energising	Initiator	Green
Manager of change	Experimental	Networker	Yellow
People	Responsive	Animator	Orange
Action	Reactive	Doer	Red
Adoptive	Reflective	Imitator	Grey

From the total population of students studying the Capstone course in Singapore (n=84), 72 (85% response rate) students submitted their SMTI to determine their learning management styles (LMS) for processing and analysis. From the total population of students studying the Capstone on the Australian campus (n=528), 464 (88% response rate) had their SMTI processed and returned to them by the researcher. The following findings are based upon these two data sets – the Singapore cohort and those studying on the Australian campus.

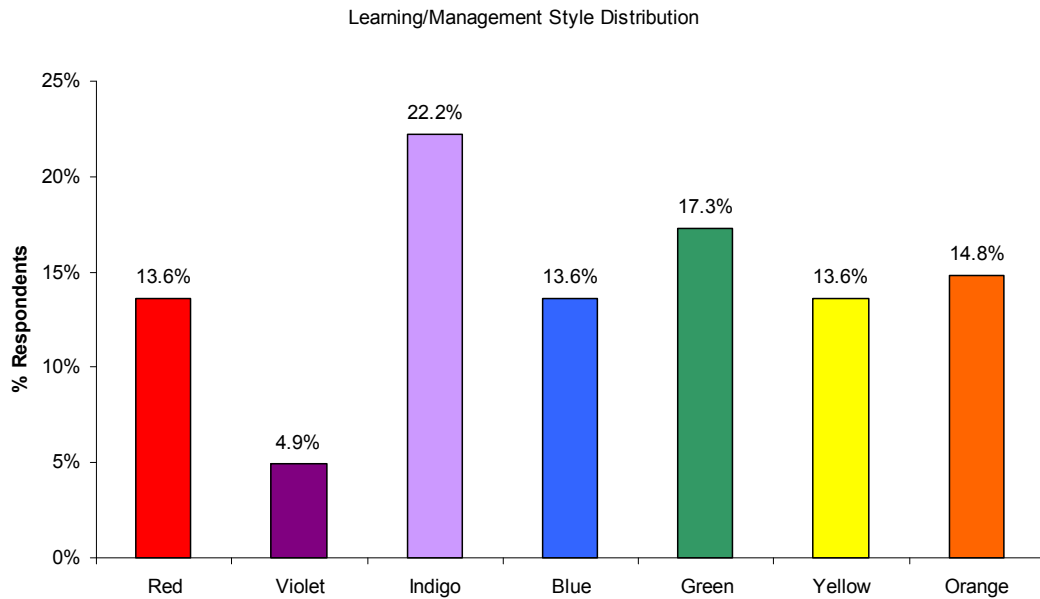


Figure 4.5: Respondents' Learning Management Styles

Figure 4.5 displays the percentages of Singapore-based students who were found to have particular learning management styles ascribed as colours in Lessem's theory. Just over 22% of the Singapore cohort were scored as 'indigo' which was indicative of harmonic learning and a developmental management style. Approximately 13% were 'green' representing an energised learning style and enterprising management approach. Those students with 'orange' (~15%) were responsive and people-oriented. This group was marginally more than those who scored in the 'red' (~14%), 'blue' (~14%) and 'yellow' colours – whose characteristics were reactive and action oriented; deliberative and analytical; and experimental and change oriented styles, respectively. Very few (~5%) scored as 'violet' which represented inspired and innovative styles. For Learning Management Styles a Chi Squared test resulted in $\chi^2_{(6)} = 25.22$, $p < 0.05$ meaning that the frequency of results across the seven categories was not distributed evenly across all categories as would be expected by chance. Therefore, these results were statistically significant².

² Chi Square tests a null hypothesis that the frequency distribution of certain events observed in a sample is consistent with a particular theoretical distribution. The events considered must be mutually exclusive. In this study mutual exclusivity was not strictly the case but the number of students who had multiple values for MI was considered small enough as to negligibly affect the results.

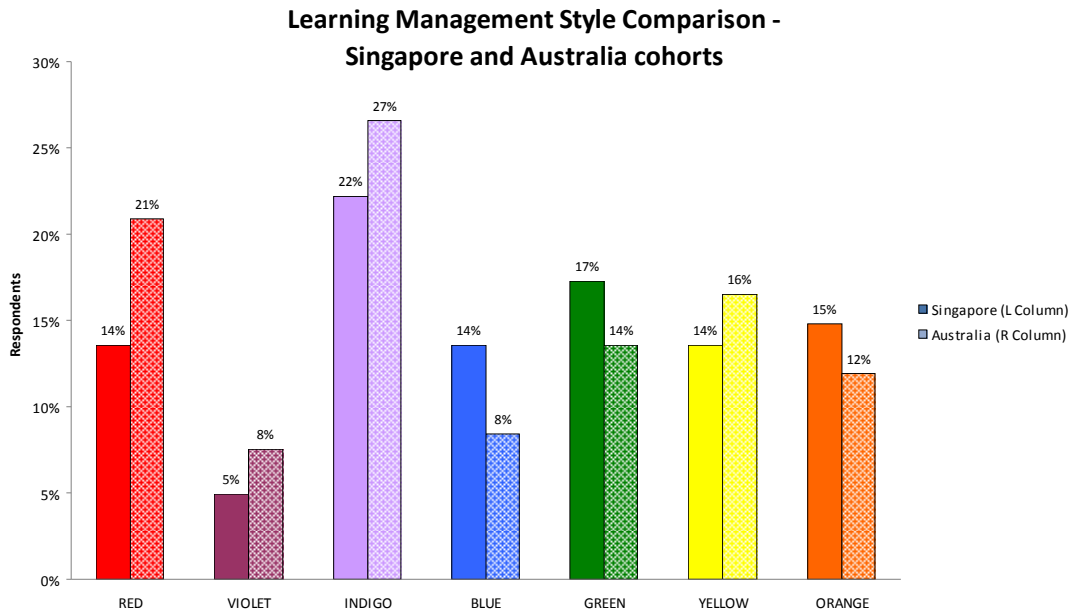


Figure 4.6: Learning Management Style Comparison – Singapore and Australia Cohorts

Comparing the students studying at the Australian campus with their Singapore-based counterparts Figure 4.6 displays some significant differences in students learning management styles. The largest difference (7%) was in those who were scored as ‘red’ whose characteristics were reactive and action oriented with 13% of the Singapore students and 21% of Australian-based students with this learning management style. The second most obvious difference was in the ‘blue’ deliberative and analytical group wherein the Singapore group had 13% represented and the Australian group was only 8%, a difference of six percent. The third greatest difference between the two populations was in ‘indigo’ representing harmonic learning and a developmental management style with the Singapore group having 22% while the Australian group had 27% scoring with that learning management style. The other LMS variances were minor and did not represent a significant difference.

Student Perspectives on the Learning Management Styles

Students identified more closely with the learning management styles as demonstrated by the recurring references made to their own style within the qualitative data. Many references related to the leadership role students assumed in the team work and how they interacted with group members ...

“I am ... an enterprising manager based on the [SMTI] test... I have taken most of the responsibility on myself hoping the group will move towards the desired goal”, “My strength lies in good leadership skills and being creative”, “I can be an influencer in the group, rousing their interest and excitement in what they are doing. I also possess a leadership skill which can lead the group to a higher level”.

Similar to the MI, students appeared to be more self-reflective and aware of areas for improvement ...

I was quite weak when playing a balancing role. I need to improve on being more people oriented. Sometimes I have assert[ed] too much stress on other members without knowing hence here is an area I have to be more sensitive and stay in harmony [SMTI category] in the group.

When specifically questioned about the value of knowing about their personal LMS and MI, a quarter of those interviewed reported they were unsure about the MI and LMS information. However, as the interview progressed most of these students did recall their own styles and intelligences and expressed positive opinions related to these insights into their personalities and response styles. The other 75% did remember and overtly used this information after undertaking the initial tests.

Student Perceptions of the Learning Experience (Phase 2, 3 & 4)

In Figure 3.1: *Phases of Data Collection and Analyses* (Chapter 3) three sources of student perception data were collected from the Singapore-based cohort with the view to triangulating the findings. These three data sources were the student feedback questionnaire, the reflective assignments arising from students’ ongoing journaling, and the in-depth interviews. From the total population situated in Singapore (n=84) there were 76 student feedback questionnaires returned yielding a 90% response rate. All (100% response rate) students supplied the researcher with their reflective assignments. A sample of 16 students was interviewed representing 19% of the population.

Triangulation was chosen in order to provide a richer and more comprehensive picture of how students perceived their learning experiences and the VoIP environment they were using to facilitate their studies. In this section, the quantitative data were presented first followed by the triangulated qualitative findings.

There were two student feedback questionnaires utilised in this research. The first was administered to the Singapore cohort and was referred to as the student feedback questionnaire. The second student feedback questionnaire was administered to the Australia-based students and had no items related to the VoIP learning environment included. This latter questionnaire was referred to as the Australian campus student feedback questionnaire.

Both student feedback questionnaires utilised in this study were modified versions of the Course Experience Questionnaire (CEQ) in common use within Australian universities. The CEQ was used to gauge students' perception of their overall programme experience, whereas these modified instruments were designed to gauge students' perception of their course experience. Only the Singapore instrument included items related to the VoIP-mediated learning environment. As familiarity with certain technologies is a key factor in levels of acceptance and comfort, some demographic items related to students' experience with a range of technologies including *Elluminate* were included in the Singapore instrument. Other than the VoIP related items, both student feedback questionnaires were identical. Student responses were measured using a Likert attitudinal scale of 'agree', 'strongly agree', 'neither disagree nor agree', and 'disagree', 'strongly disagree'.

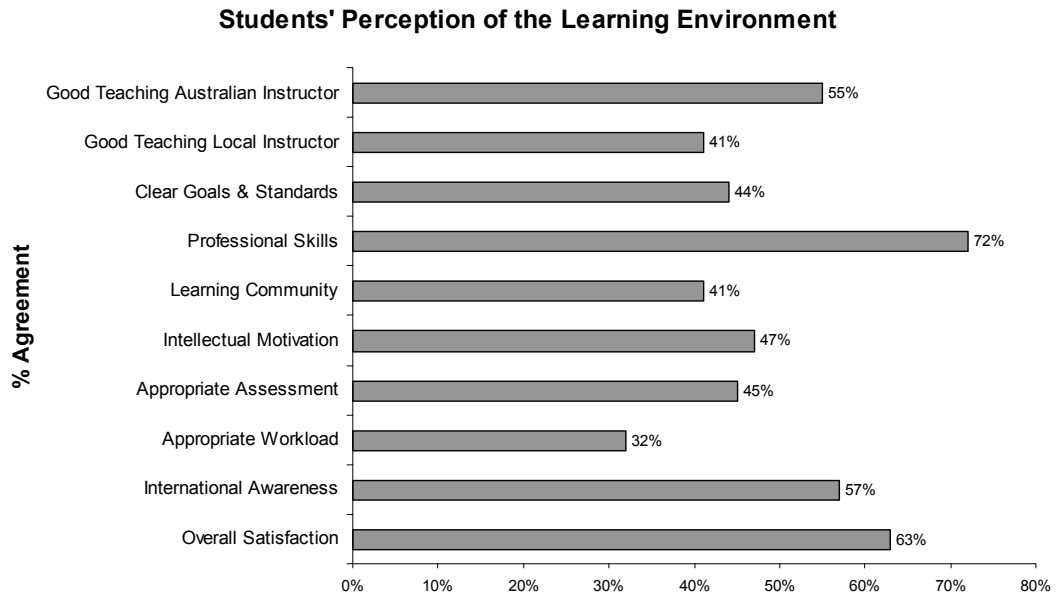


Figure 4.7: Students’ Perceptions of their Learning Experiences – Singapore Cohort

Figure 4.7 displays the Singapore students’ perceptions of their learning experiences. There were eight scales and one ‘overall satisfaction with the quality of the unit’ item. The ‘percent agreement’ indicated the level of agreement (agree/strongly agree) students rated each item which was then aggregated across the scale. For a breakdown of each scale please refer to Appendix 5. The ‘good teaching’ scale was identical for both the onshore and local lecturers. This enabled a comparison to be made between students’ perception of the two lecturers with whom they interacted in the course of their studies. The Singapore students’ perceived the Australian course coordinator as a better teacher (55%) than his local counterpart (41%). Under half of the students agreed that the course presented ‘clear goals and standards’ (44%). Almost three quarters of the students indicated that a range of professional skills (72%) were developed as a result of their participation in this course. Again only 41% agreed that a learning community had been established in this course. Just under half of the students agreed that the course was intellectually motivating (47%). Assessment and workload were poor performing scales with fewer students agreeing that the assessment (45%) and workload (32%) were appropriate. Over half (57%) of the students agreed that their level of awareness of international issues within business had been increased as a result of their coursework. Almost two thirds (63%) of the students indicated they were satisfied with the quality of the course.

Comparison of Student's Perception of the Learning Experiences

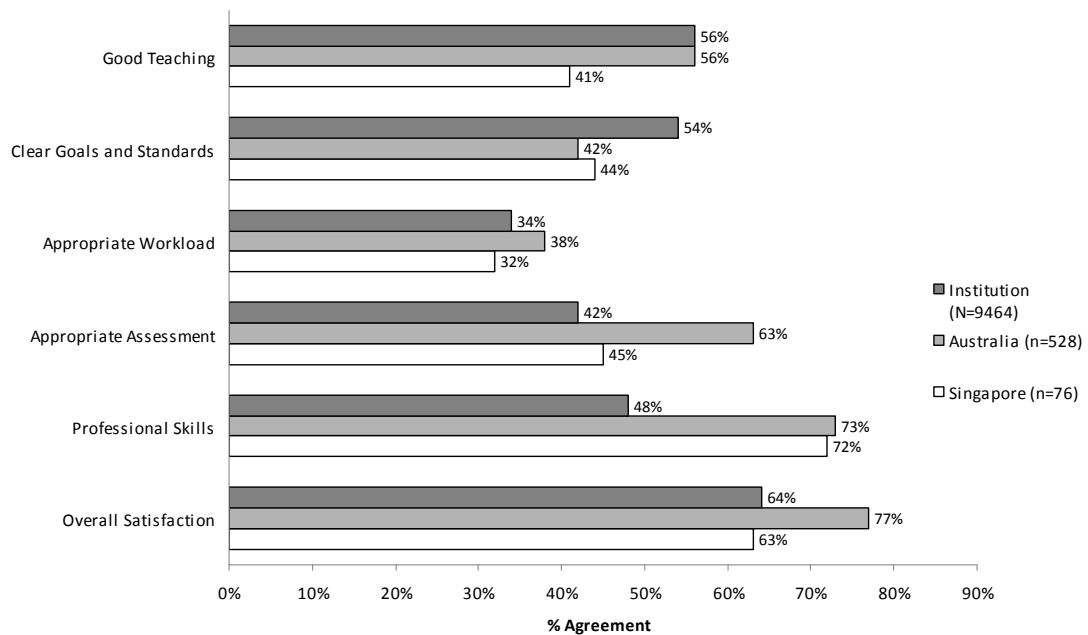


Figure 4.8: Comparison of Student’s Perception of the Learning Experiences – Singapore, Australia and the Institution.

Figure 4.8 displays a comparison of students’ perception of their learning experiences in the course. This comparison is with the Capstone students studying in Singapore, and their Australian counterparts, as well as overall institutional ratings. The institutional ratings encompass all surveyed units across the seven schools within the Business School. These data include a total of 76 (90% response rate) individual surveys from the Singapore cohort; 528 (100% response rate) from the Australian-based students; and 9464 (~70% response rate) surveys from the entire Business School. Apart from the good teaching scale which provided information on both lecturers, the Singapore data directly reported on the experiences students had within their tutorial group. As the offshore lecturer taught all tutorial groups this data was consistent. The Australian-based students were in multiple tutorial groups with numerous tutors, therefore their reports were rating their own tutorial experiences. These learning experiences represent aggregated data across the various tutorial groups (19 tutorial groups).

Good teaching was clearly an issue in the Singapore group (41% agreement) in comparison with the institutional (56%) and Australian campus (56%) ratings. Even

though there were useful course materials supplied which should have presented ‘clear goals and standards’ this was still a cause for concern to the offshore (44%) and onshore students (42%) within this course in comparison with the institution ratings (54%) for the same scale. Workload was a challenge to all of the Business School students with 32% agreeing within the Singapore cohort, slightly more in the Australian-based cohort at 38% and the institutional rating being 34 percent. The Singapore cohort 45% appeared to be aligned more closely with their institutional counterparts with 42% agreeing that the assessment were appropriate. This was significantly different to their Australia-based counterparts who rated these with approval at 68% agreement. The majority of students in both the Singapore (72%) and Australian-based cohorts (73%) indicated that the professional skills were developed as a result of their coursework in this course. This was markedly higher than the institutional rating for the same items at 48 percent. The overall satisfaction item revealed that the Singapore cohort (63%) were on par with the institutional ratings (64%) for this item, however, their Australian-based peers were significantly more satisfied with the quality of the course (77%). These results indicated that there were some challenges and some real positive aspects in this course. The quantitative data simply provides an indicator of student perspectives; however, richer insights can be drawn from the qualitative comments, reflective assignments and the interviews as discussed in the following sections.

The Importance of Good Teaching

In Figure 4.7 Singapore-based students indicated their approval of the Australian lecturer with 55% agreeing that he demonstrated ‘good teaching’, however, this was not the case with the local offshore lecturer (41%). This was surprising considering that the Australian lecturer was only with the students for a short intensive period (three days) at the beginning of the trimester; whereby, he provided orientation to the software, covered the requirements of the course and undertook some practice decision making sessions with them in preparation for their Capsim® work. Following the Australian lecturer’s period, the local lecturer undertook the majority of the teaching throughout the complement of the trimester. The importance of ‘good teaching’ was preeminent to students in this study with just under half (48%) of the comments relating to various aspects of teaching and learning. There were considerable concerns though with the quality of the instruction with 39% reporting

they did not receive sufficient explanations, and the lecturer did not return their emails and/or refused to assist them in their coursework...

“better communication between lecturers and students as prompt responses were often not received from lecturers. This in fact defeat[s] the purpose for having ... [the unit] online. Having lessons online meaning everything will be completed virtually, if lecturers are not able to reply to student's queries promptly, I would rather have lessons at the campus”, “XXX seem to lack the teaching ability”, “Perhaps, getting two local lecturers to be in-charge of this unit would be more appropriate so that at least one of them might be able to respond to students' queries.”

From these previous comments it was obvious that students were feeling under pressure and the independent nature of the team work left some feeling dissatisfied with the level of academic support.

The Challenging Nature of the Course

The coordinator and administrator interviewed in this study indicated this course had been designed to be the ‘Capstone’ of the course, highly challenging to students, whereby they were expected to apply their knowledge and skills attained over their degree. It obviously was perceived to be just that, as attested by students’ lower agreement levels for ‘clear goals and standards’ (44%), ‘appropriate assessment’ (45%), and ‘appropriate workload’ (32%). The intellectual motivation scale measured the level of intellectual challenge, stimulation and motivation to find out more about the course topics. Curiously, even though this was one of the most challenging units in this degree, under half (47%) agreed with the items in the intellectual motivation scale. Not all of the comments were negative though about the course, as some students (9%) reported appreciating a course that did not have exams and preferred working on projects throughout the trimester.

Course challenge alone may not have totally accounted for the lower agreement scores for ‘clear goals and standards’ (44%) as many students commented they had experienced difficulties in knowing what to do because they had not undertaken the requisite pre-readings. Many of the negative comments indicated they were still relying heavily on their lecturer for explanations and explicit instructions ...

“The explanation of the unit was not clear enough during the first two sessions of the class. Especially as the materials were only given to us to read a week before the first session. Many of us did not read and can't really understand what the lecturers were trying to explain. The demonstration on the use of Elimination [Eliminate] was too short - Quick demonstration of half hour. By reading the text is very difficult to understand how to play the game and use of Elimination. A lot of time was spent checking with classmates and reading the text again and again”, “He [the lecturer] always asks us to refer to our textbook whenever we face any problems. We thought he could guide us along”.

Students agreed (57%) that the course had increased their awareness of international perspectives in business which was reflective of the Business School's outcomes ... *“this was so close to the reality of the corporate world”*. A number of them indicated this course had provided them with the opportunity to work with students with whom they had not previously worked including those from other cultures ...

“we had a group of students from China who we were teamed with”, “To become an effective team member, I strongly believe that all individuals are different. There will definitely be different views and opinions, due to different culture and background. Therefore, it is very common to have conflicts in a team when two parties cannot come to a consensus. I believe that in order to become an effective team member, it is very important to respect and be sensitive to one another”.

Approximately, two thirds (63%) of the students indicated they were satisfied with the quality of the course. This can be a contested item if students do not provide information to qualify what their criteria are for judging the quality of the course. In this study the students indicated that they:

- liked the *“relevance of the unit to the real-world of work”* (12%);
- appreciated the relevance of their previous coursework to the running of a business ... *“working as a team in a simulated business environment. Make the 4Ps of marketing Alive!”*;
- enjoyed the VoIP because of the freedom it offered them to do their studies from home or work locations rather than travelling into the campus;

- found the group work to be stimulating and interesting; and
- indicated it extended their thinking, interaction and communication skills development beyond what could be expected in normal course activities.

The following section explores the professional skills which were overtly incorporated into the Capstone course. These skills had been a focus of the Business School as they were considered core characteristics for a Business graduate.

The Professional Skills

The professional skills were an eclectic group which encompassed: communication – verbal, written and interpersonal; critical and creative thinking – decision making, problem solving and analysis; team work – which includes risk taking; information literacy; and information technology. As this course was likely to be demanding organisation and planning was included in the instrument to assess how much the students developed these capacities.

Figure 4.9 explored in greater detail the levels of agreement students indicated for each of the previously cited professional skills that were overtly targeted in the Capstone course. Because each item in this scale measured a different construct, the skills are only roughly grouped into the ‘professional skills’ scale. It is more statistically accurate to consider each item separately as an individual dimension.

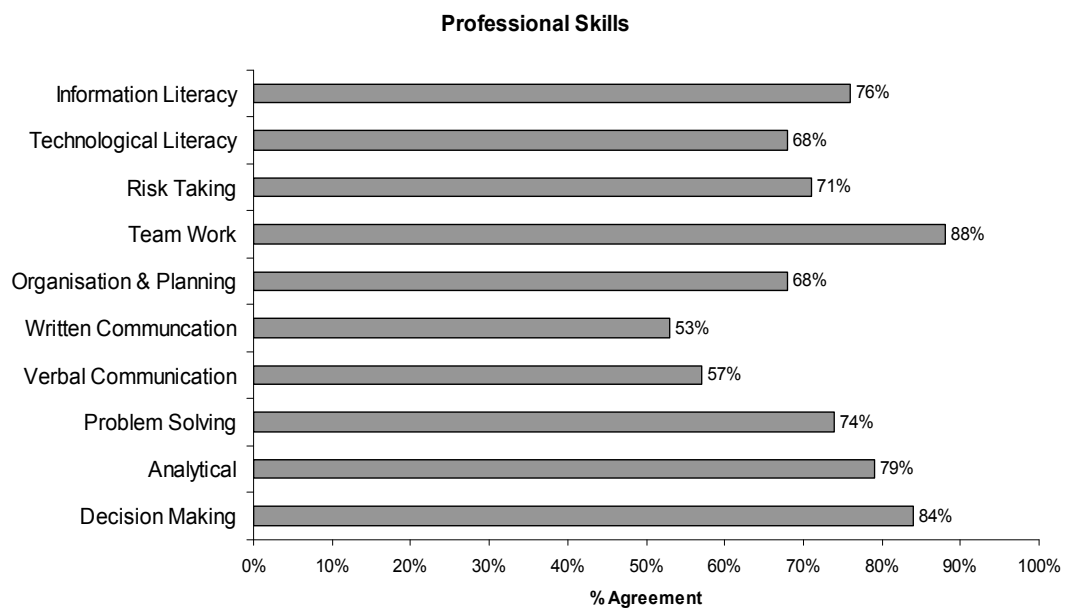


Figure 4.9: Professional Skills Items from the Students’ Feedback Questionnaire

It was not surprising that the majority of students agreed (72%) that the professional skills (see figure 4.9) were developed as a result of this course considering that the instructional design was overt in providing students with opportunities to, not only develop their skills, but to apply a full range of them in course activities. Likewise, a core element of their course coursework required students to critically analyse materials generated by the simulation programme and make appropriate and strategic business decisions – therefore decision-making (84%), analytical (79%), and problem-solving skills (74%) were perceived to have been developed. Students agreed that their information literacy skills (76%) were developed indicating they had had to conduct searches to find information they needed to inform their decision-making activities. Many agreed their risk taking skills (71%) were developed which may have been an artefact of working in unfamiliar partnerships. It was curious that information technology (68%), which was the basis of the activities in this course, was not perceived by as many students as a significant dimension in this course. This may have been due to students' previously established sophistication with technology, hence this was not perceived as 'developed' within the coursework. In a similar manner, verbal and written communication skills (57% and 53% respectively) were not rated quite as highly and yet these were key components of effective team work and the assessment components.

Establishing Team Work

The rationale for 'team formation' articulated by the academics interviewed was that teams needed to have a multidisciplinary focus in order to be successful within the simulation. This meant 'company' teams should have students with expertise in a range of business topics such as accounting, economics, information technology, business law, management, and marketing. This teaming of diverse disciplines was necessarily configured by the lecturer to ensure heterogeneous (and equitable) groupings, encompassing all requisite expertise.

The learning community items related to how cohesive the group was and whether students felt part of a learning community. This sense of learning community was obviously not well created in class for students, as only 41% agreed with these items. The other rationale for students not responding in a positive way to these items is that they may not have understood what a learning community entailed as this was not a

common term within the Business School learning environments. One of the biggest frustrations voiced by students (40%) was that the teams had been formed by the lecturer prior to the class commencement and they had no input into what groups they were to be assigned ...

“I was taken aback when I realised that the group was already preformed by the lecturer. Looking at the unfamiliar faces, many questions started to pop in my head. I am afraid that some group members might turn out to be free riders or is difficult to manage in terms of attitudes and contribution of the work”, “I was very surprised that we were being allocated group mates instead of sticking to our usual comfortable group. This allocation had brought me some discomfort and unease as I was brought out of comfort zone to work with total strangers”.

Conversely, others could see that the grouping being performed by an outside individual may be representative of the real work situation...

“[the] lecturer said that this is stimulation of a real working environment. In real-life, we have no choice but to work with people whom we do not like as well. This stimulation prepares us to face the real working environment ... Though I agree with what he said, there is still much reluctance in me”, “we need to understand each group members working style. At the beginning, it was very difficult to communicate with the other group mates”, “it is a great experience to work with people from different majors ... This is relevant especially in an actual market when competition stays strong”.

Some groups were overt in their decisions to make this team process work as illustrated by this teams approach ... *“during the first meeting was one of the best decisions as we slowly set aside our differences and preconceived notions about each other and decided to tackle this game together to the best of our abilities”.*

Multidisciplinary Teams

Although the multidisciplinary team formation had had a contentious initiation, students were balanced in their views of this teaming once they experienced the advantages of drawing upon each other's expertise ...

“we have team members from different majors; therefore everyone could contribute their fair share of understanding and comments for a particular aspect of the game and guide each other along the way”, “Everybody would be displaying his or her expertise in the different criteria of the game. From finance, logistics to marketing. Everybody played a role”.

Positivity about Group Work

From the student feedback data, the majority of students (88%) agreed that this course developed their team working capacities. From the qualitative data, students’ indicated (53%) they were highly favourable about the team working opportunities in this course. They enjoyed interacting with others who they had not had opportunities to work with before and reported ...

“having ‘fun’”, “to accomplish a common set of goals”, “I always love to work in groups as it will bring out the best of my capabilities. Doing projects and group work during the course of my studies actually enriches my learning experiences”.

Many participants (53%) identified and specifically articulated qualities, characteristics, and behaviours that were essential in establishing, maintaining, and promoting productive and constructive team work. For example, students mentioned ...

“bravery in working with new people”, “optimism”, being “a sympathetic listener, and never used what I learnt against people and never gossip”, “we have [to] work harmoniously and our attitudes are always positive which helps to build a cohesive team”, “Team synergy is important for developing a productive team that can work effectively and efficiently towards common organisational goals”.

Shared responsibility for the success of the team accounted for a number of comments ...

“As everyone is jointly responsible for the decisions, everyone is jointly responsible for the outcome”, “I tried to keep my end of things flowing

smoothly to help others in the group. I realised that if one person did not get her work done, it could hold up everyone else”.

Just over 60% of students outlined the importance of developing and maintaining tolerance to the views of their team-mates ...

“Everyone in the team has the right to comment on any decision made and if anyone who does not agree on the decision would like to provide a relevant explanation for her alternative decision but no one is allowed to make a decision on behalf of the team without prior discussion”, “I may not agree with them, but I support them”

Some students clearly experienced difficulties with the team-working while expressing appreciation for supportive team members. For example, one student made a poor decision which impacted the whole group but he/she realised the mistake and *“apologised to the whole group. They were gracious enough to pardon my action and take this as a group responsibility”*. Others identified they lacked specific knowledge and yet their group assisted them by coaching them ...

I was fortunate my team members did not ‘cast me away’ but coach me even it was time consuming. My team members has a high sense of team involvement in the pursuit of team work, hence explained their willingness to share their knowledge with me.

In the interview with the coordinator of the course, he identified the importance of establishing the team’s expectations, sharing contact details to facilitate group meetings, and role and workload allocation. These were formalised into a ‘Team Contract’ and a copy of the contract given to each member of the group as well as the lecturer. This procedure worked to provide structure and set the ground rules for operating in this team-oriented environment ... *“simple introductions began and contracts were exchanged that were extremely crucial to maintaining and developing a better relations for doing the online business”*. This regulated approach using a team contract also assisted to overcome the natural reticence to participate in groups demonstrated by some students ...

to counter this situation, we decided that each of us have to contributed an idea which will be reviewed and agreed by the rest of the team members before it is executed. ... after we add on this clause in our

group [contract], ideas start to come out from our mouth and we even had a difficulty to choose the best of all.

Roles within the Team

Perceptions of self-efficacy were on a continuum within this cohort. At the extreme end there were students who reported a complete “*lack of confidence*” and who in some cases viewed themselves as “*incompetent*” or “*lacking knowledge*” and/or “*expertise*” useful to the team. Many of these less confident students recognised their perceived deficiencies and articulated the desire to work on these flaws because the potential consequences in the real-world of business would be much greater ...

I need to improve on my leadership quality and try to voice out more to give my opinions. When it comes to real business world, every small mistakes made might lead to heavy consequences. ... I must build up my confident level.

At the other end of the continuum were those who perceived themselves as having “*good leadership skills*” ...

“I had the innate ability to reduce any form of tension amongst members while improving the work atmosphere”, “my strengths are ensuring high level of contribution, taking on an initiative role when progress are not moving and ensuring that all communications are understood by all members”.

Even though many identified themselves as leaders there was also a level of self awareness that some of their personality traits negatively influenced their capacity to lead effectively ...

“[I need to be] more ‘open’ to the group’s suggestions and not be too dominating in discussions. Also, I could be a better team member by listening more and talk less”, “my character is too domineering and ... this leads to some unhappiness in the group. By listening more to others is never enough, I need to understand what and how they really think”.

Placed around the mid-point of the continuum were those who reported behaviours and attitudes representative of a leader but who did not perceive themselves in this role designation ...

“I consider myself as an effective team member as my strength lies in my willingness to work and participate as a team, I am willing to listen and consider other people’s ideas. On the other hand, my leadership skills are weak as I am not able to provide direction on where the company should head”, “I ... see myself as the moderator ... where I would try to facilitate the flow by deciding on certain decisions that were left hanging”.

Critical and Creative Thinking

Decision-making (84%), analytical (79%) and problem-solving skills (74%) were perceived to have been developed (see Figure 4.9 – student feedback questionnaire) in this course. This was endorsed by the qualitative data, whereby 21% of the cohort made overt references to making decisions and/or analytical or *“to find methods to solve problems”*...

Decision-making skills

“it allowed us to do every decision ourselves ... [making it] more interesting during the discussion ... we always thinking about the results ... In other units, we may only follow the lecturers, and just finish what we need to finish”, “... my expectation of my group shifted to making quick and decisive decisions by doing a competitive analysis of the other groups, minimising the amount of mistakes made in each decision”.

Analytical skills

“I have enjoyed the entire project, as it has sharpened my analytical skills”, “Improving in analytical skills. And the best thing is, it was the first time for me to combine all my studies to make decisions”.

Problem-solving skills

The strength I possess is that I excel in problem-solving. I like to crunch numbers and come up with a logical and systematic method of finding a solution. I know that this is not always the case and

sometimes I have to use qualitative rather than quantitative measures to solve the problem.

The professional skills were clearly both a focus of the coursework and this overt emphasis was clear to the students as it was evident in their journals, responses on the student feedback questionnaire and in their interviews. Part of the Singapore cohort student feedback questionnaire was items related to students' level of experience with technology, and their perceptions of the learning environment facilitated via *Elluminate*. The following section outlines the results from these technology-focused items.

Students' Experience and Comfort with Technology

In the Singapore cohort's student feedback questionnaire, respondents were asked to identify what Internet-facilitated software and technologies they had used prior to commencing this course. This was to serve as an indicator of potential familiarity and comfort with technology.

Table 4.3: Students' Experience with a Range of Technologies

	<u>% Used</u>
Microsoft Network (MSN)	99
America On Line (AOL)	15
Yahoo	45
Blackboard	18
WebCT	8
Horizon Wimba	3
Other	34

When specifically questioned about whether they had ever used synchronous software tools before (see Table 4.3), 62% reported a positive response, and yet 99% reported having used Microsoft Network (MSN) which is a synchronous software tool. Possibly students' perception of synchronous was ambiguous. As outlined in Table 4.3 students in this cohort had considerable experience with Internet-facilitated software and technology, particularly, MSN (99%); Yahoo (45%); and Blackboard (18%). The finding related to Blackboard appeared anomalous considering most previous courses undertaken for the degree would have had a Blackboard presence.

Table 4.4: Perceived Value of the *Elluminate* Features

	% Agreement of usefulness
Audio	57
Text	53
Group	21
Whiteboard	37
Application sharing	34
Recording	21

Table 4.4 displays students' perception of the value of each of the available functions within the *Elluminate* 'classroom'. Students most preferred the audio (57%) and text (53%) features and these were the mostly commonly used in their instructional context. The third most frequently used function was the whiteboard (37%) whereby MS PowerPoints were displayed. Group 'breakout rooms' were rarely used which may explain why 21% of students agreed they were valuable. Similarly, the recording of classes was rated at 21% and would probably have been deemed valuable by those who were unable to attend.

When interviewed some students reported that the combination of voice, text and visual media was more useful in this business setting than just having the voice ...

Whiteboard and voice functions were equally important in helping the us to learn and we frequently needed to draw a diagram to be able to explain things. You couldn't just rely on one ... Frequently you need to have the graph or diagram and point to that in your conversations so that the others could see what you were talking about.

In a similar vein, some identified the value of the texting function in that they were able "to document the figures so that there were no mistakes which can happen with the voice". A contrasting perspective about the text was that some found it distracting ...

while the lecturer was talking some students were conducting private conversations in the text chat But if you use it to ask questions then the text chat was alright. It can be a problem though because if the lecturer doesn't look at the text then your question does not get answered.

Students' Perception of the VoIP-facilitated Learning Environment

Student orientation

- c. *What is the relationship between students' multiple intelligences, learning styles and their motivation to learn within a VoIP environment?*
- d. *Does VoIP support all students' learning independent of their multiple intelligences, and/or learning styles?*

This section explored the final two research questions which related to students' perceptions of the learning environment facilitated via VoIP. It also explored students' motivation to engage with the learning experiences. This section only reported data collected from the Singapore-based cohort.

Table 4.5 displays the percent agreement or percent neutral responses from student feedback relating to the VoIP environment facilitated through the use of *Elluminate* software. The inclusion of neutral responses was deemed informative at this juncture because many students were not negative about the online environment, rather had an ambivalent disposition.

Table 4.5: Students' Perceptions of the VoIP Learning Environment

	I was able to explore academic interests with other people more effectively because of <i>Elluminate</i>	<i>Elluminate</i> assisted me to feel part of a group who were committed to learning	Students' ideas and suggestions were used during the <i>Elluminate</i> discussions	I found that <i>Elluminate</i> motivated me to engage with others in this unit	I learned to explore ideas confidently with other people more easily with <i>Elluminate</i>	I felt I belonged to the learning community as a result of the synchronous interaction in <i>Elluminate</i>
Agree/Strongly Agree	36%	47%	42%	46%	48%	31%
Neutral	37%	33%	41%	25%	28%	45%
Combined responses	73%	80%	83%	71%	76%	76%
Disagree/Strong Disagree	27%	20%	17%	29%	24%	24%

Students were asked specific questions that related to their levels of motivation, interactivity on the VoIP environment, sense of online community and how these influenced their studies. For example, the following six items were rated.

1. I was able to explore academic interests with other people more effectively because of *Elluminate*.
2. *Elluminate* assisted me to feel part of a group who were committed to learning.
3. Students' ideas and suggestions were used during the *Elluminate* discussions.
4. I found that *Elluminate* motivated me to engage with others in this unit.
5. I learned to explore ideas confidently with other people more easily with *Elluminate*.
6. I felt I belonged to the learning community as a result of the synchronous interaction in *Elluminate*.

The three highest rated items were 'learning to explore ideas confidently with others' (48%), '*Elluminate* assisted students to feel part of group committed to learning' (47%) and '*Elluminate* motivated the student to engage with others' (46%). When the neutral responses were included the 'students' ideas and suggestions were used during the *Elluminate* discussions' item was the highest rated with 83% and '*Elluminate* assisted students to feel part of group committed to learning' as second with 80%. The least highly rated was 'I found that *Elluminate* motivated me to engage with others in this unit' (combined response 71%) or 'I felt I belonged to the learning community as a result of the synchronous interaction in *Elluminate*' (31% agree/strongly agree). When considering the neutral responses of 'neither agree nor disagree' it can be seen that fewer students disagreed with the items than those who expressed a neutral or positive response. It must be noted that not all students had access to their own computer with some sharing a computer with their team members during class times which may have accounted for the more ambivalent responses.

In the interviews students were invited to discuss their perceptions of the VoIP environment. Respondents were generally very positive about the VoIP with the following comment being representative of their views ... *I would definitely recommend Elluminate to other students ... in my opinion nothing can beat meeting face-to-face but Elluminate is a good substitute*".

One student indicated that it was more comfortable to talk to the lecturer through *Elluminate* ... “sometimes it is more convenient to talk to your lecturer online where it is not convenient to talk to them face-to-face”. A common issue identified in the interviews was “the only thing that could have been improved was to make the voices synchronous instead of one [speaking] at a time”. Apparently, the lecturers and students were unaware that at least four synchronous ‘simultaneous’ voices were possible within *Elluminate*.

Table 4.6: Perceptions of the Impact of *Elluminate* for Learning

	<i>Elluminate</i> enhanced your learning opportunities	Do you think that meeting online (at the same time) is preferable to travelling to classes
Yes	65%	63%
No	35%	37%

Table 4.6 displayed students’ perceptions of the impact of the VoIP learning environment on their learning. These were ‘yes/no’ rating-type questions rather than Likert scale items. Over two thirds of students agreed (65%) that *Elluminate* enhanced their learning opportunities. Similarly, two thirds (63%) of students agreed meeting online was preferable to travelling to classes. This item aligns with the open-ended comments where students (38%) explicitly reported on the convenience and comfort of online learning

“the ability to [participate] in online class at own convenience”, “to attend online class ... anywhere”, “flexibility to work from home or office”, “in addition, the travelling time to class was lessen[ed], hence enabling us to manage our time between school and work better”.

One individual also indicated the online environment removed some discomfort in that “the best aspects were that students could interact more freely with lecturers without face-to-face communication [which] at times may be intimidating”.

Table 4.7: Students Preferred Communication Mode with Peers and Lecturer

	<i>Elluminate</i>	Face to Face	Telephone	Email	Discussion board	Video conferencing
Peers	28%	93%	34%	63%	12%	16%
Instructor	37%	79%	12%	57%	12%	13%

Table 4.7 displays students’ modal preferences for communicating with peers and their lecturer. Students preferred face-to-face communication with their peers (93%) and lecturer (79%). Their next preferred mode was through email (63% for peers; 57% for lecturer) with *Elluminate* coming in at third preference for communicating with their lecturer (37%) and telephone (34%) with peers.

When interviewed all of the students reported the use of VoIP as the key feature of the learning environment. The majority of students (82%) reported they preferred to see greater use of *Elluminate* in the course. Of the interviewees, over three quarters rated the effectiveness of the ‘speech’ function higher than 8 on a 10 point Likert scale while another 12.5% rated it at six. This compared favourably with the overall satisfaction with *Elluminate* (65%). Reasons given for the high ratings included ... “*miscommunications reduced because of instant feedback*”, “*clarify doubts to lecturer immediately*”. Conversely, some expressed the concern that you had to “*queue*” to ask questions or to get a response as only one person was able to speak at any given time. To overcome this perceived problem many resorted to using the ‘text-chat’ facility within *Elluminate*. They were able to communicate directly with individuals, the lecturer, or the entire group using this medium, and receive instant feedback. This preference for use of text-chat may be aligned with the greater comfort and familiarity of the cohort with Microsoft Network (MSN).

Considering this was a trial of the *Elluminate* software at the university it was deemed useful to ascertain if students felt *Elluminate* was useful for a range of purposes. Students responded that they felt that there would be a place for this type of online environment to facilitate the live and recorded broadcast of seminars/lectures (42% and 41% respectively); student meetings and study groups (41%); and student consultation with lecturers (32%).

Students were also asked if there were any potential disadvantages to learning within a VoIP environment. Their responses were drawn from the student feedback questionnaire open ended responses and the interviews. The results are outlined in the following section.

Potential Disadvantage of VoIP

It must be noted that not all students had access to their own computer with some sharing a computer with their team members during class times which may have accounted for some of the more ambivalent responses. In the interviews some students identified that more self-discipline was required in this delivery mode ... *“while I am on Elluminate I am also doing household chores and this is very bad. You need a lot of discipline to concentrate on your class”*. A similar response was that VoIP provided *too much flexibility* ...

some did not come to class which meant we had to arrange meetings out-of-class time. We could see when some of the group members left the room because they just signed out... but this was really no different to face-to-face classes because some come late to class and some leave early.

This response was interesting as other students reported the opposite reaction ...

I liked this learning environment more because in face-to-face it can be very distracting with people going in and out of the classroom whereas in online you can really concentrate. I go into my room in my office and shut the door and then I can concentrate on my studies.

Another student indicated that she was a highly ‘interpersonal’ person who found the VoIP limiting in her communications ...

because of my style I like to interact face-to-face rather than Elluminate because you can see their expressions and if there is something wrong I can see... Ohhh I have said something wrong or I have been offensive and on Elluminate you can’t really see that you just have the voice.

Similarly, the lack of intimacy in VoIP appeared to concern a couple of students ...

In the face-to-face we got more intimacy than just with the voice over the Internet and it was more objective and lacking that intimacy and

we didn't get a chance to really understand what our group members were thinking.

A concern that was reported in the interviews was that students would have liked to have the capacity to book team meetings later in the week so that they had time to cognitively process the previous week's results from the simulation ...

Having the group meeting times right after the lecture when we got our results back from the last week was not good timing because we really needed more time as a group to think about the results and formulate good questions to ask the lecturer but we did not have that time between getting the results and having our meetings in breakout rooms.

Many of those interviewed were emphatic that their experience with VoIP was going to be valuable to them in their current or future employment. For example, one student indicated that she had been looking for a more effective method of conducting meetings with section managers located in other offices ...

"I was quite excited when I heard that this class was using VoIP for lecturing ... this gave me an idea of how we could use this for conferencing with our country managers instead of using email, phone calls and letters ... the experience was going to be wonderful for me".
"... in terms of our future career ... this is the trend of new technology and with conferencing.... More businesses are going this way with this new technology and this was good exposure for us".

The higher neutral responses to items in Table 4.5 may have been influenced as a result of some of the technical difficulties some students (18%) reported experiencing ...

"There are always disconnections in classes but I think it might be the network connection", "Kept experiencing braking up of voice and being 'kicked out' of the classroom, probably due to a bug ... Perhaps stability of the software is very important to ensure a smooth sailing session", "Elluminate can only allow two persons to speak at the same time and it was a hassle 'oning' and 'offing' the microphone. Preferably, these technical issues are resolved before the

commencement of the class so that inconvenience caused can be minimised”.

The ease of implementing an innovation in technology was assessed by asking students what problems they experienced in the set up and ongoing use of this technology. Around 41% reported problems with the software setup; with 24% reporting ongoing problems with the software “*it was echo-y*”. Hardware issues, specifically the microphone input devices and speaker output devices, accounted for 58% of the technical concerns. There were 21% who reported miscellaneous technical difficulties.

This section outlined students’ perceptions of the VoIP learning environment, however, the next section outlines the statistical tests which were conducted to determine whether or not there was a relationship between the students’ multiple intelligences, learning styles and their motivation to engage in this synchronous online environment.

Correlations and Relationships in the Data

Student orientation

- c. *What is the relationship between students’ multiple intelligences, learning styles and their motivation to learn within a VoIP environment?*

The research question outlined above focused on whether or not there were relationships between the variables of ‘adult learners’ motivation’ (qualitative data), ‘eight multiple intelligences’ (MI – quantitative data), and ‘seven learning management styles’ (LMS – quantitative data) and their ‘perceptions of the VoIP-mediated learning environment’ (qualitative and quantitative data). To this end, a correlation test was utilised to investigate the relatedness of these categorical (quantitative) variables, where one may be regarded as the predictor of the other. The variables that were used in this test were MI (quantitative), LMS (quantitative), with the item ‘*Illuminate* enhanced your learning opportunities’ (quantitative). This test (see Table 4.8) revealed no significant correlation relationship between these three quantitative variables.

Even though there was no statistical correlation between the three quantitative variables of MI, LMS and students' perception of VoIP (related to one quantitative item), there were qualitative relationships between students' motivation (qualitatively determined) and the VoIP learning environment and course activities (qualitatively coded). Qualitatively analysed, LMS and MI strengths did not influence students' perceptions of the VoIP learning environment. Students' motivations (qualitatively) did influence their perceptions of the learning environment. For example, students' motivation within their studies was related to perceptions of their level of control over team meeting times, and team formations.

Table 4.8: Correlation between Multiple Intelligences and Learning Management Styles and Perception that *Elluminate* Enhanced Students' Learning Experience

		Multiple Intelligence	Learning Management Style	<i>Elluminate</i> enhanced learning
Multiple Intelligences	Pearson Correlation	1.00	0.13	-0.05
	Sig. (2-tailed)		0.24	0.67
	N	77	77	77
Learning Management Style	Pearson Correlation	0.13	1.00	0.18
	Sig. (2-tailed)	0.24		0.12
	N	77	77	77
<i>Elluminate</i> enhanced learning	Pearson Correlation	-0.05	0.18	1.00
	Sig. (2-tailed)	0.67	0.12	
	N	77	77	77

Note: the highlighted figures (in bold) is the significance (2 tailed) and to be considered 'valid' the value must be less than 0.05 ($p < 0.05$). These values are all greater than this acceptable value and therefore indicate that there is no statistical correlation between the elements displayed.

Additionally, motivation was affected by perceptions of the convenience that the VoIP environment provided, as well as lecturer skill in teaching using the VoIP software. Self-efficacy appeared to be a factor in students' motivation to engage with their learning, with other students, and the lecturer. Many students expressed doubt about their understanding of the range of discipline content knowledge required in

the coursework, ability to think analytically, capacity to work proactively in teams, and to venture into the voice interaction with the lecturer in the VoIP classroom.

Table 4.9 displays the frequency of students' positive responses (Agree/Strongly Agree) to the Singapore cohort's student feedback questionnaire items which related to *Elluminate*. These items identified a different aspect of the learning environment, such as, intellectual challenge, positive interactions, students' level of motivation, risk taking, and feelings of belonging to a community of learners.

The total Singapore sample's responses for these items were displayed in the first row with each learning management style and multiple intelligence category identified in subsequent rows. The ordering of the learning management style and multiple intelligences were from the most predominate LMS and MI to the least in terms of the number of students who were found to have these as their strength.

In each category, the data for students who had a particular learning management style, for example orange, were analysed separately to those with a different style. As some students had more than one predominant learning management style or multiple intelligence there were overlap in these data.

Each category though has been individually analysed in order to compare the level of positive response compared with the specific category. For example, students who had an orange people-oriented/responsive learning management style represented almost 15% of the total population of students who participated in the study. Of that 15% who were orange, 29% responded positively to the item – *“I was able to explore academic interests with other people more effectively because of Elluminate”*. The violet learning management style appears to yield the greatest positive response in comparison to all of the other LMS, however, as the number of students who had this LMS was so small the frequency of positive responses is indeed misleading. As a result the 'violet' positive response is not significant. Excluding the 'violet' responses, the next highest and most consistent positive responses across all items was the 'yellow' students who had management styles that related to 'change' and enjoyed 'experimental' learning styles.

Table 4.9: Frequency of Positive Responses to VoIP Items Compared with Learning Management Style and Multiple Intelligence

	I was able to explore academic interests with other people more effectively because of <i>Elluminate</i>	<i>Elluminate</i> assisted me to feel part of a group who were committed to learning	Students' ideas and suggestions were used during the <i>Elluminate</i> discussions	I found that <i>Elluminate</i> motivated me to engage with others in this unit	I learned to explore ideas confidently with other people more easily with <i>Elluminate</i>	I felt I belonged to the learning community as a result of the synchronous interaction in <i>Elluminate</i>
Total sample responses	36%	47%	42%	46%	48%	31%
Learning Styles						
Indigo (development/intuitive)	43%	50%	50%	29%	64%	29%
Green (enterprising/energising)	32%	56%	69%	44%	44%	38%
Orange (people oriented/responsive)	29%	44%	71%	43%	43%	29%
Yellow (manager of change/experimental)	40%	70%	70%	60%	60%	0%
Blue (analytical/methodical)	38%	38%	13%	13%	50%	13%
Red (action/reactive)	0%	0%	0%	0%	0%	0%
Violet (innovative/creative)	100%	100%	100%	100%	100%	0%
Multiple Intelligences						
Musical/Rhythmic	44%	56%	44%	33%	44%	33%
Kinaesthetic	47%	67%	73%	47%	53%	33%
Visual/Spatial	50%	76%	66%	66%	67%	50%
Intrapersonal	50%	75%	75%	50%	50%	25%
Logical/Mathematical	60%	60%	50%	60%	70%	30%
Interpersonal	33%	66%	50%	66%	66%	88%
Verbal/Linguistic	33%	55%	11%	11%	22%	78%
Naturalistic	50%	50%	50%	50%	50%	50%

Generally, more than half of these students responded positively to these items. The second highest set of positive responses was the students who were 'green' with 'enterprising' management styles and an 'energising' learning style. The third highest set of positive responses was students who were 'orange' and had 'people oriented' management styles with a 'responsive' learning style. Undertaking a similar analysis with the multiple intelligence data revealed that the greatest positive responses came from those students who were predominantly 'visual/spatial', with 'intrapersonal' and 'kinaesthetic' as close second in their positive responses to the items.

Considering the nature of the synchronous interaction enabled by *Elluminate* it may have been expected that students who were people-, interpersonally-, and verbally-oriented would be more receptive to this synchronous environment, and therefore, would respond more positively to these items. These analyses did in fact indicate there was a relationship; however, the numbers of students with each of the previously mentioned MI and LMS were insufficient to draw definite conclusions. There did appear to be some relationships in these data as the groups that may have been expected to particularly not respond positively to the synchronous learning environment were 'red' - action-oriented, and musical/rhythmic and this LMS did yield lower positive frequencies.

This analysis of the correlation data indicated that the research question that linked multiple intelligences and learning styles with their motivation was confounded from a statistical standpoint. There were relationships found, however, in the qualitative data between students' motivation to learn and the VoIP environment.

Summary

This research investigated the effectiveness of learning experiences that were facilitated via a VoIP delivery mode. It also sought to explore the perceptions of students and the academics involved in this trial project. It explored the academics' rationales for implementing this VoIP environment, and their teaching and learning considerations in establishing this new Capstone course.

Students' motivation to engage with their VoIP mediated learning experiences were explored in relation to their multiple intelligences, and learning management styles. The students undertook a blended learning approach in the course being studied, even though the course had been established as purely online, apart from a face-to-face induction.

A mixed method approach was adopted utilising questionnaires, in-depth interviews of both staff and students, and content analysis of students' reflective assignments. Questionnaires were administered to the two cohorts – the Singaporean pilot group (the main focus of this study), and the Australian cohort. The questionnaires included a multiple intelligence inventory (MICA), a learning management styles inventory (SMTI), and a student feedback questionnaire. The student interviews focused on their perceptions of the learning experiences mediated through a VoIP environment.

Interviews were undertaken with three key staff, namely, the coordinator of teaching and learning, the course coordinator and the offshore lecturer. The staff interviewed indicated this course was designed to be the culminating experience in students' entire Bachelor of Commerce programme, hence, highly challenging. The course required students to work in teams to assume control of a virtual international software business. The majority of the coursework was heavily reliant on teamwork, communication, and critical thinking skills including problem-solving and decision-making. Students were expected to apply their knowledge and skills attained throughout their degree.

The coordinator of teaching and learning indicated Voice-over-Internet-Protocol had been introduced into the university as a means to provide a new cost effective model of offshore teaching delivery. With the increasing numbers of international students, both in undergraduate programs and in postgraduate research, implementing an educationally effective, synchronous online environment was reported as essential to ongoing viability of Australian university operations. With the political instability experienced globally since the 9/11 terrorist attack on the USA, having educationally desirable online learning environments in place was reported as strategic to ensure the financial and operational viability for this Australian university.

The course coordinator reported that taking up the challenge to implement online synchronous VoIP teaching was both exciting and personally strategic for career development. This Capstone course could not be optimally implemented in offshore sites without the use of this synchronous technology; hence, the lecturers were keen to be involved with this pilot. Professional development was conducted, albeit limited due to time constraints, with staff and students to support the technical and teaching implementation.

Students provided fair and balanced feedback about the instruction, the learning environment, their own learning abilities and the lecturers' capacities. The students' feedback endorsed the level of difficulty in the course. Even so, they reported enjoying the challenges. In their self-reflections students were candid about their weaknesses and strengths and pondered on their personal and professional development as a result of the course activities. They expressed increased confidence and pride in their capacity to meet the challenges head on.

The team work environment played a significant role in their professional growth (88%), both in the knowledge and skills dimensions. Students enjoyed the group work (53%), even while discomfited by the lecturer-initiated group member allocations (40%). Even so, almost all students described motivations of real commitment to making these teams effective and successful. Critical and creative thinking, namely, analytical (79%), problem-solving (74%) and decision-making (84%) were identified as developed in this course. As a result of their activities students reported an increased awareness of the importance of the professional skills to their long-term career success.

Students preferred interacting face-to-face, and as they were all located in the same city they chose to do this in addition to using VoIP. Even so, the majority of students favourably viewed VoIP and indicated they would have liked to see this used in a more effective way. All students had had experience with synchronous modes, albeit texting not voice. Students reported feeling comfortable within the VoIP environment after two class sessions. They indicated they would recommend more extensive use of VoIP in the university programme. They reported the desire to have greater control and access to the VoIP environment so that they could meet online

when it was convenient for their team members, rather than having a prescribed meeting schedule within class times. They did like the convenience of using VoIP to reduce the need for travel and preferred formal instruction to be conducted via VoIP. They indicated it had potential in university programmes but there was need to ensure that teaching staff were better trained to fully utilise the range of functions available in the online environment. They reported the lecturer used the VoIP environment purely as a lecture format, with little opportunity for interaction, thus limiting the experience. Student preference for VoIP was greatly influenced by the lecturer's skill in using this online learning environment in an educationally sound manner. They tended to utilise the synchronous 'text chat' facility in preference to 'voice' communication options, which frustrated the lecturer.

The Multiple Intelligence inventory data for the Singaporean cohort indicated the most frequently scored intelligence was musical/rhythmic (19%). Kinaesthetic (17%) was the next most predominant intelligence, with visual/spatial (14%), intrapersonal (13%), logical/mathematical (13%), and interpersonal (13%) following in order of score rating. The least frequently scored intelligences were verbal/linguistic (10%) and naturalistic (2%). This distribution contrasted with the Australian cohort whose strengths lay in intrapersonal (21%) and interpersonal (17%) intelligences. The third highest scored intelligence was musical/rhythmic (16%) with logical/mathematical coming up as fourth at 14%. Clearly there were differences between the two cohorts multiple intelligences distribution.

In terms of the Learning Management Styles (LMS) inventory, the Singaporean cohort data indicated that over one fifth (22%) of the students were scored as 'indigo'. This indicated they were 'harmonic/intuitive' learners and had a 'developmental' management style. Just under a fifth (17%) of the sample reported as having a 'green' LMS, representing an 'energised' learning style and 'enterprising' management approach. Students with 'orange' (15%) were 'responsive' and 'people-oriented'. The next three spectral rankings were evenly distributed through the cohort with 'red' (14%), 'blue' (14%) and 'yellow' (14%) representing 'reactive' and 'action' oriented; 'deliberative' and 'analytical'; and 'experimental' and 'change-oriented' styles, respectively. Very few (~5%) students scored 'violet' – an 'inspired' and 'innovative' style.

Similar to the multiple intelligences data there were differences between the two cohorts in terms of their learning management styles. The largest difference was in the reactive and action style (red) with a 7% difference. Deliberative and analytical characteristics (blue) differed by six percent. The other main difference was in the harmonic learning and a developmental management style (indigo) which was five percent.

The research question ‘What is the relationship between students’ multiple intelligences, learning styles and their motivation to learn within a VoIP environment?’ was somewhat confounded in this study. Correlation tests indicated there was no *statistical* correlation between students’ multiple intelligences and learning management styles and their perception of the learning experiences mediated via the VoIP environment. Even though no statistical correlation was found between the MI, LMS and students’ perception of VoIP (related to one quantitative item), there were qualitative relationships between students’ motivation and their perception of the learning experiences delivered through *Elluminate* in the course. As may have been expected, students who responded more positively to the VoIP learning environment were those who were ‘yellow’ – ‘experimental’ and ‘change’ learning management styles; second, ‘green’ – ‘energising’ and ‘enterprising’ learning management styles; and third, were ‘orange’ – ‘responsive’ and ‘people oriented’ learning management styles. In relation to the multiple intelligences, ‘visual/spatial’ were the most positive in their response to VoIP, with ‘intrapersonal’ and ‘kinaesthetic’ as close seconds in their positive responses.

Chapter 5 outlines a discussion of the key findings related to the literature and how there is coincidence or disparity between the established knowledge base and this study. This next chapter explores the issues related to good teaching, the effectiveness of the learning experiences facilitated through VoIP, and students’ motivation to engage in the learning experiences. It also presents a discussion of students’ perceptions of the cooperative learning activities and their professional skills development.

Chapter 5

Discussion

The key findings indicated that VoIP was an effective learning environment dependant on the level of good teaching demonstrated by the teaching academic. There were no statistical correlations between students' learning management style (LMS) and their multiple intelligences (MI). However, qualitative relationships were found to indicate that students who were people-, interpersonally-, and verbally-oriented were more receptive to this synchronous environment. Additionally, action-oriented and musical/rhythmic characteristics tended to have lower positive perceptions of the VoIP learning environment. Even so there were insufficient numbers of individuals in each of these categories to make definitive statements.

Students responded positively to the team work orientation of the course and indicated they had developed and refined their professional skills as a result of the activities. The professional skills which were most frequently cited as important were team work, communication, critical and creative thinking and leadership. Students' metacognitive behaviours were positively influenced as a result of the learning activities and the sophistication of their reflections increased over the course of the trimester.

This chapter explored how these major findings related to the knowledge base. The main dimensions of this chapter included the effectiveness of the learning experiences mediated through VoIP; the elements of good teaching; cooperative learning; adult learning and motivation; and multiple intelligences and learning management styles, professional skills.

Effectiveness of Learning Experiences

Instructional Design

Instructional design as described by Moore and Kearsly (1996) was the planning of learning that occurred in a “different place from teaching” and required “special techniques” in “course design, special instructional techniques, special methods of

communication by electronic and other technology as well as special organisational and administrative arrangements” (p. 2). This accurately described the instructional design process that had occurred in the development of the Capstone course. The administrator described the adoption of *Elluminate* for the purposes of incorporating “special methods of communication by electronic and other technology” in order for the delivery of this course to be possible in the Singaporean context (p. 2). She indicated that there was a team of experts who had informed the selection of topics for inclusion which was similar to the process described by Peters (1988). She related that there had been *analyses* of the learners who would be undertaking this course and their needs in terms of presenting a culminating experience in their degree. She also described at length the *design* process in terms of the objectives being a match between discipline knowledge and professional skills development and demonstration. Additionally, the materials were *developed* collaboratively between her as an educational expert and a discipline expert but with the view to ensuring that the learning activities, strategies, and assessments were educationally useful and sound. There was professional development provided to the course coordinator to support his understanding of the delivery technology, the simulation technology and the purposes of the resource materials and assessment tasks. *Evaluation* was conducted through this research study and through systematic student feedback on the process and the effectiveness of the learning experiences. From these descriptions of process and the rationale underpinning these it became clear that this administrator and her team had followed the ADDIE instructional design process. Kruse (2009) indicated that one of the criticisms of the ADDIE model was that it was time consuming to implement and this was certainly endorsed by the administrator. She reported that the process of developing and establishing this course had taken well over a year of careful and consistent work.

Smith and Ragan’s (2005) comment that “designers employ a high level of precision, care, and expertise in the systematic development of instruction because they perceive that poor planning can result in serious consequences” was absolutely accurate in this case study (p. 4). The administrator stated that this Capstone course had to be an exemplar of sound instructional design for lecturers from a range of disciplines to be able to teach. She had high hopes that observing the course design with the alignment between objectives, instructional strategies and appropriate and

educationally sound assessments would act as a form of professional development for those lecturers who were going to teach in this course. The consequences of failure of this course were described as severe as this course had to be the “culminating experience” and a showcase of exemplary instructional design. Therefore considerable time, effort and thought went into the design and development of the course.

Good Teaching – Implementation of the Instructional Design

Understanding that even though Ascough (2002), Clark (1994), Price and Kirkwood (2008), and Smith and Ragan (2005) all advocated for good pedagogy being the main driving force in choosing technology and approaches, it was strategic positioning that was a major influence in the choice of VoIP in this institution. Even so, the administrator hoped the professional development that supported the transition to online teaching would have fostered lecturers’ development of knowledge and expertise in educational theory and good practice. This aligned with Ramsden’s (2004) and Price and Kirkwood’s (2008) views that professional development must provide academics with the opportunities “to reflect upon their own beliefs and practices relating to the nature of knowledge, learning and teaching” (p. 90). Price and Kirkwood stated that this was required in order to bring about “transformational change”, rather than simply translating face-to-face materials for the web.

The findings indicated there was a disconnect between the instructional design and the implementation or teaching that occurred in this course. The instructional design of the course was an exemplar in terms of educational validity and sound assessment. The disconnect was introduced at the teaching level. This was evidenced by the lack of understanding of the value of certain learning activities such as reflection, journaling, processing of cooperative learning, and understanding personal learning styles, which were questioned by the course coordinator and the lecturer. This meant that even though the educational rationale for such activities was explicitly stated in the handbooks, lecturers did not reiterate these overtly to the students; rather, advised students to read the materials directly. This lack of reinforcement and endorsement of the value of the activities and assessment tasks may have negatively influenced students’ perceptions of these. This situation indicated that these lecturers were encouraging superficial approaches to learning (Ramsden, 2003). As Ramsden,

Prosser, Trigwell, and Martin (2007) stated this was an indicator of these lecturers' beliefs about teaching revolving around the transmission of discipline content knowledge only, rather than about encouraging students to construct their own knowledge and to learn about themselves as learners. It also demonstrated deficiencies in good teaching approaches as there was a failure to: "explain the material plainly"; "make it absolutely clear what has to be understood, at what level, and why"; and in providing the rationale for "using teaching methods and academic tasks that require students to learn thoughtfully, responsibly, and cooperatively" (Ramsden, 2003, pp. 86-7). As Ramsden and his associates (2007) stated this may have explained why students rated the teaching lower in this offshore cohort. Therefore, for optimal teaching and learning results to be achieved there must be both good instructional design and good teaching. The next section explores the students' perspectives of the course learning experiences as they were the main recipient of the instructional design process.

Creating Learning Communities

A core aim of this course was to create online learning communities where students were formally grouped together because of their "shared expertise and passion for a joint enterprise", that of, the operation of their virtual company (Wenger & Snyder, 2000, p. 139). Designing this learning communities approach was in order to "galvanize knowledge sharing, [and] learning" (p. 139). As these researchers indicated this communities approach also drives the development of professional skills and drives strategy, problem solving and the promotion of best practice. This was deemed important in this final course to prepare students for the demands of Commerce. Team work and critical and creative thinking skills were described as essential for business success. This imperative was endorsed by Morehead (1997, Caspersz, Skene., & Wu, 2002) who identified that 47% of workplaces reported in the 1995 Australian Workplace Industrial Relations Survey used team building in managing workplaces. This emphasis on team skills was reiterated in the DEST (2002b) *Employability Skills for the Future* report. Additionally, the demand for professional skills was featured in numerous Business Higher Education Round Table (1999, 2003) articles. The most frequently discussed professional skills in this study were group/team work, and critical and creative thinking - analytical, problem-

solving and decision-making skills, as well as leadership capacities. As Caspersz, Skene and Wu (2002) identified:

Students will undoubtedly end up as team members and team managers in workplaces of the future. Equipping them to effectively manage this task is fast becoming as critical a life skill as possessing key knowledge competencies. Just as universities facilitate student expertise in the latter area, it is becoming a responsibility to also facilitate student expertise in the former. (n.p)

As the experts (Johnson et al., 1998b; Kagan, 1994; Slavin, 1995) in cooperative learning suggested, structuring tasks that promoted cooperative or team working behaviours were crucial to the effectiveness and success of this course. Additionally, they suggested that students needed to be explicitly taught how to work effectively together with overt processing of the requisite skills. This course did have tasks that were structured for sound cooperative learning and students were encouraged, through guiding focus questions, to reflect on their cooperative behaviours and effectiveness of the group work in their journaling. The students were also provided in-class time to engage with their teams. However, they were not overtly taught how to engage as this was assumed to be knowledge that adults have already attained through prior learning within their degree.

It was anticipated from the literature review on cooperative learning and group work in university contexts that these team activities could be a contentious area (Caspersz, Skene., & Wu, 2002; Scott & Issa, 2006a). Students in this study certainly demonstrated concerns about the teams being formed by the lecturer without input from students. Some actually identified their concerns in relation to not knowing the kind of work ethic their group members had, fear about who was going to assume the leadership role, and lack of self-efficacy in working with unfamiliar peers. This endorsed Caspersz and her associates' (2002) descriptions of common concerns with group work at university, citing ...

“social loafing” or “free riding” behaviours; “lack of familiarity with other students’ attitudes and behaviours”; “the desire to retain control over project outcomes”; “social approval”; “individualism versus

collectivism”; and “self-efficacy or belief in abilities to complete team work projects”. (n.p.)

Part of the previously mentioned structures that supported the team work was the contract which teams were required to engage with, fill out, and lodge with their lecturer. These contracts facilitated group’s discussions and agreement on how they were going to work with each other and promoted Ramsden’s (2003, p. 86) thought of “making it absolutely clear what has to be understood, at what level, and why” in a thoughtful, responsible and cooperative setting. These structures overcame Casperz and her associates’ (2002) aspects deemed as disadvantages to cooperative learning within the university setting.

Students initially were disturbed by the lecturers’ “commitment to encouraging student independence” through their team work activities (Ramsden, 2003, p. 86). However, once they started working in these lecturer-assigned groupings they quickly adjusted and made a firm commitment to the collaborative process and being successful as a team. Their final perceptions were of enjoyment and considerable satisfaction with the team outcomes. Similarly, Ramsden’s (2003) property of “using teaching methods and academic tasks that require students to learn thoughtfully, responsibly, and cooperatively” was inherent in the core tasks and teaching approaches designed in the course (p. 87).

Some Western academics may have been surprised at these Asian learners’ ability to cope with new group situations, and their commitment to making this successful for all involved. Watkins and Biggs (2001) however, argued that cooperative learning was not as foreign a concept or philosophy as some Western scholars believed. They found that Chinese students used cooperative study groups regularly as a support mechanism for learning. Students in this study commented about their pro-activity in establishing team meetings in face-to-face settings as a means to collectively come to terms with the challenges this course presented. Again this supported Watkins and Biggs (2001) comments about the importance of “collectivism” versus “individualism” in Asian contexts. This also reiterated Tham and Werner’s (2005)

findings that Eastern learners perceived the “importance of group before self in some situations”, which certainly was the case in this study (p. 23).

Student team behaviours were characterised by Johnson, Johnson and Smith’s (2007) comments where they described the positive social, psychological and product outcomes:

The more effort students expend in working together, the more they tend to like each other. The more they like each other, the harder they tend to work. The more individuals work together, the greater tends to be their social competencies, self-esteem, and general psychological health. The healthier individuals are psychologically, the more effectively they tend to work together. The more caring and committed relationships individuals are involved in, the healthier they will tend to be psychologically. (pp. 21-22)

Students’ open-ended comments and interview responses strongly endorsed the Johnson, Johnson and Smith’s sentiments above. These positive outcomes were all the more surprising considering how challenged these students felt, frustrated they were with the lecturer, and concerned they were with the group formation. Their high levels of satisfaction with the group work indicated that students’ “self-esteem” and “general psychological health” were indeed positively influenced as a result of their team activities (Caspersz et al., 2002; Johnson et al., 2007, pp. 21-22; Scott & Issa, 2006b; Scott et al., 2008).

Positive interdependence “is a situation whereby students work in small groups to maximise the learning of *all* members” (Johnson et al., 2007, p. 23). This was found to have evolved in this study’s teams, even though it was not overtly targeted in the teaching process. An example of positive interdependence was where one of the students reflected on the “*forgiveness*” of his group following the disastrous team outcome from his personal leadership decision. He indicated the group forgave him, insisting this unsuccessful outcome was a “*group responsibility*” and with no individual fault assigned. This may have been as a result of the strong team orientation required in the course or it may have been an artefact of the Asian learners’ Confucian heritage (Watkins & Biggs, 2001).

Comments embodying “individual accountability” and “equal participation” (Johnson et al., 2007, p. 23) were overt in students’ reflective assignments. Many students identified personal shortcomings in their individual efforts or reliance on others in the team. They articulated their motivations, “*intentions*” and behaviours to improve their “*reticent*”, “*hesitant*” or “social loafing” attitudes (Caspersz, et al, 2002) [italics indicates direct quotes from students]. Many students also reflected on the importance of developing their interpersonal, “*leadership*” or other professional skills to ensure the team operated at optimal performance. These comments demonstrated that students were undertaking the processing of group skills within their reflective activities (Johnson et al., 1998b, p. 28).

Wenger and Snyder emphasised that learning communities do not happen automatically, the environment needed to be structured and controlled. In this course the majority of the cooperative learning and team activities occurred in face-to-face settings even though the course had been designed to be conducted within the online medium. However, as Mantyla (1999) stated “[a]ctive learning is probably not going to happen in an online environment unless the interaction is deliberately planned and the instructor encourages it” (p. 83). It was obvious then that the cooperative learning widely accepted as being advantageous to good learning needed to be scaffolded in the online environment to ensure its facilitation. The lecturer then needed to be the architect of this scaffolding process (Fogarty, 1999).

Acknowledging the importance of the lecturer in establishing the learning community within online environments, the offshore lecturer appeared to be at a disadvantage as he had no formal teaching qualifications; rather, he was a business expert with a purely experiential teaching background. Additionally, he had not had sufficient time to acclimatise and become comfortable with the new VoIP technology before teaching the course. This potentially prevented him from establishing a more active and interactive VoIP learning environment. Contrastingly, students’ attained comfort with the VoIP medium within two class sessions. This may have been age-related as the majority of the cohort were in the 19-30 age range and therefore more likely to be receptive and adaptable to *Elluminate* due to this generation’s exposure and acceptance of emergent technologies. Even with their quick attainment of comfort with the technology, this did not appear to increase their level of online

'voice' participation. It may be conjectured that these Asian adults were demonstrating a 'respectful' relationship with their "master" or "expert" in the discipline, namely, the lecturer (Dunn & Wallace, 2004, p. 294; Wong, 2004).

The lecturer found students' reticence to engage in verbal discussion within *Ellluminare* to be very frustrating and perceived it to be a purposeful disengagement by them. Blaming students was characteristic of an external locus of control which Martin and Prosser and their associates (Martin et al., 2000; Prosser et al., 2003) associated with lecturers who have a transmissive teacher-centred orientation to teaching. This perspective may have been triangulated by the fact that students' rated the offshore lecturer's teaching effectiveness lower than the Australian course coordinator.

Wang (cited in, Dunn & Wallace, 2004, p. 300) indicated "educators have to re-engineer their thinking to teach with OSD [online synchronous discussion] in order to discover effective pedagogy that uses OSD as an integral component in teaching". He continued with his rationale that "real time interaction ... can build a sense of social presence and a heightened sense of involvement in the ongoing communication events through quick feedback on ideas, support consensus and decision-making" (p. 304). It was curious that students rated the offshore lecturer's teaching effectiveness lower, considering he had more time to develop a relationship with them over the course of the trimester. Additionally, the Australian course coordinator, similar to his offshore counterpart, had no formal teaching qualifications but was also a business expert with experiential teaching expertise. Therefore, the course coordinator's professional development of his offshore colleague may have been limited in relation to optimal pedagogical approaches. As Clark (2005) summed up this matter "[p]edagogy is the key factor in learning effectiveness whereas technology is only a learning medium" (p. 303). Therefore, the flaw in the professional development provided to the offshore lecturer potentially transferred this unease and lack of clear understanding of the rationale of the learning experiences and assessments to the students. It may also explain students' lack of agreement that there were clear goals and standards, as well as a lower agreement score for appropriate assessment in this course.

The class sessions were not totally devoid of participation though, as students did use the texting facility within *Elluminate* to discuss with team members aspects of the work and to interact with the lecturer. Their consistent and extensive use of the texting functions may have been because the class activities were predominantly lecture-based ‘direct instruction’ and review, and these ‘polite’ students did not want to interrupt the lecturer’s flow (Dunn & Wallace, 2004). This limited form of communication indicated that the lecturer had not established “appropriate guidelines and expectations” for communicating online to ensure “meaningful educational experience[s]” and to “create and sustain a sense of community” as advocated by Garrison and Vaughan (2008, p. 32). As Hawisher and Pemberton (cited in Pena-Shaff et al., 2005, p. 69) stated “mere instructor encouragement and good will are generally not enough to overcome the initial inertia most students experience”.

Critical and Creative Thinking and Metacognition

Palloff and Pratt (2005) identified that collaborative learning promoted the development of critical thinking skills, reflection, transformative learning, and the creation of knowledge and meaning. This was certainly true in this study as students commented frequently about their development, enhancement and use of analytical, problem-solving and decision-making capacities. Even though they initially did not like the routine reflections, their reflective assignments were comprehensive and demonstrated personal improvement over time.

Students’ response to these collaborative approaches and activities were positive and their journals indicated their cognitive functioning was stepped up into a higher metacognitive processing level which endorsed Perkins’ (1995) findings about the development and importance of “reflective intelligence”. The journaling activities that culminated in a reflective assignment certainly appeared to have generated superior reflective practices on the part of the majority of students. The content analysis revealed students’ metacognition capacities developed over the course of the trimester with rudimentary observations, insights and levels of intrapersonal understandings demonstrated in the early weeks of the trimester. The sophistication of their metacognitive processes became more refined as the trimester progressed and with more concentration on their journaling processes. Some students found this process, and the metacognitive learning possible from their reflective approaches, to

be a revelation in their intrapersonal development. This finding supported Marzano's (2000) theories of metacognition, particularly as they related to the interactions between the knowledge, cognitive systems, metacognitive systems and self-systems. Students' motivation (self-system) to engage with, and be successful learners in this unfamiliar learning environment provided the impetus for their engagement with the knowledge, cognitive, and metacognitive systems.

There was a significant sense of empowerment at the conclusion of the course when students achieved success in their simulation. Many reported their attainment of increased understandings about the content and how to operate a business, which was surprising considering that many of them were already employed in commerce environments. These findings also linked to Bandura's (1986) work on self-efficacy and self-belief as these students revealed a leap in the level of their self-efficacy and self-belief as a result of their efforts and perseverance with a challenging and hitherto unfamiliar simulation (content) and learning mode (instructional delivery). There was evidence that the metacognitive system did influence the knowledge and cognitive systems, in that, students described changes to their decisions and their understandings of the discipline content through their reflections and interactions with other students. This again emphasised the validity of Bandura's (1986) social cognitive theory of learning from others.

Adults' Motivation to Engage with the Learning Experiences

Effective learning experiences were the primary concern of the adult learners in this study which endorsed Merriam's (2001) research regarding adults' priorities. Voice-over-Internet-Protocol (VoIP)-mediated learning experiences were perceived to be effective by the students, particularly when in a blended mode incorporating face-to-face interactions. This reinforced Cox and associates' (2004) views that 'blended learning' presented the best of both worlds, in that, students were able to have the face-to-face interaction they preferred and yet enjoyed the convenience of the online teaching, resources, interactivity and collaboration mediated by Voice-over-Internet-Protocol.

Although Chickering and Gamson's (1987-1996) research was initially conducted in the 1980s this current study confirmed the importance of incorporating their

principles of good teaching even now with VoIP learning environments. The main focus in utilising VoIP for teaching and learning should be to ensure that lessons are interactive, active, reflective and relevant to students' needs in achieving the outcomes of the course. It was evident from the results that these adult learners were motivated to learn in this challenging course. Their motivation was evident in their engagement with this challenging coursework, in their determination to make sense of the unfamiliar and complex simulation, their commitment to their groups, and their willingness to engage with group meetings out-of-class time. Students' motivation to engage with VoIP was also indicative of their perception that this emergent technology was likely to be of use in their actual real-world workplaces. Endorsing the adult learning literature, these students perceived this coursework as pragmatic and relevant to the building of their career skills and prospects. This indicated that there was praxis for the students in relation to the course, the technology utilised and their career orientation. They did not perceive the coursework to be "a waste of time" (Wlodkowski, 2004, pp. 92-3).

Endorsing Knowles and his associates' (Knowles et al., 2005; Merriam, 2001) work on adult learning, these students prized good teaching and were critical when the practices fell short of their expectations. This linked back to the literature on the credibility of the instructor and how it influenced students' perceptions of their expertise (Long, 2004). It must be stated though, that students' comments relating to their concerns with the "*lack of guidance from the lecturer*" about the simulation and what decisions their team should have been making also may have indicated they were used to being "*spoonfed*" as described by their lecturers. Students expected both lecturers to give them more detailed assistance in their decision-making for the simulation but this was counter to the goals and design of the course. This finding contradicted adult learning theory indicating university students' desire personal control, empowerment, and self-sufficiency within their learning context (Knowles et al., 1998). It may be hypothesised that previous learning experiences within units in this degree programme may have established a dependency between the students and their lecturers which carried over into their final course. Therefore, the expectations and independence required in this Capstone course was unaccustomed and disconcerting to some students. A curious phenomenon noted in the data that were collected over time, was that because the lecturer stepped back from hands-on

guidance (or potential ‘spoonfeeding’) students became more cohesive in their teams – supporting their weaker members – and were motivated towards team success. As Drew and Watkins (1997) stated, this “collectivist framework” involving “significant others ... peers” reinforced the perception of Asian students as “hard working and having high achievement motivation” while taking “personal responsibility for their learning” (p. 2).

Students were impatient and vocal in their criticisms of technical difficulties which highlighted the literature about the demanding nature of adult learners (Newton, 1977, in Clardy, 2005, p. 44). Additionally, they “desire[d] to be in control of their own ... learning”, which was highlighted by their frustration with the seemingly (to them but not to the lecturer) arbitrary formulation of groups (p. 44). Although students had time allocated at the conclusion of their lectures to meet with their team members in *Elluminate* they expressed dissatisfaction with the lack of student control over booking additional meeting times within the *Elluminate* medium. As a result they resorted to establishing face-to-face meetings for their learning community activities. This endorsed Knowles and his associates (2005) and Merriam and her associates (2001) findings about adult learners desire for control over their learning experiences. This also linked with Chickering and Gamson’s (1989) principle that good teaching “develops reciprocity and cooperation among students” and these adult learners were proactive in establishing their own team meetings. This was a significant issue in supporting (or not promoting) online engagement as adults prefer to manage their studies at times convenient to their other life activities (Merriam, 2001). As Long (2004) identified “[e]ven experienced teachers of adults reveal inadequate awareness of adult learners” and how to best meet their needs (p. 21).

The importance of utilising both quantitative and qualitative data collection methods was evident from the apparently conflicting information revealed by these two data sets. For example, when reviewing the student feedback questionnaire rating scales from both the Singapore and Australian cohorts it may lead the researcher to draw the conclusion that students rejected or were dissatisfied with the *Elluminate* learning experiences. This conclusion could be drawn from comparisons of the various scales where the only apparent difference between the two cohorts was the use of a VoIP delivery mode. For example, the overall satisfaction item showed differences in

perception between the onshore Australian and offshore cohorts in this course. Over three quarters of students at the Australian campus (77%) were satisfied in comparison with just under two thirds (63%) at the Singapore site. This may have been linked with the perception of good teaching with the same relationship existing in this scale – with fewer students in Singapore (41%) viewing the teaching as ‘good’ in comparison with the Australian cohort (56%). It may be conjectured that potentially the Singapore cohorts’ perceptions of their learning experiences were influenced by perceptions of poor teaching and not being happy with the assessments (45% compared with 63% in the Australian cohort). Was possible that they felt they were guinea pigs with a new simulation and a new learning mode coupled with perceptions of a lack of support from their lecturer? The other factor that may have been incorporated was that there were eighteen different tutorial groups undertaking this new Capstone course on the Australian campus and there was an air of excitement, interest, and competition in this new course reported by the course coordinator, which may have been missing in the overseas setting.

As stated previously assessment was where the largest statistical disparity occurred across the two cohorts – a difference of 18% agreement – so the question was posed why was this? Considering there was the same amount of assessment and same guiding materials for both Australian and Singaporean cohorts and yet fewer in the offshore group agreed that the assessments were appropriate – did this mean that international students wanted less assessment or easier assessments? Was it because they were being asked to think for themselves instead of being ‘spoonfed’ as indicated by the lecturer? Were they unclear about the value of reflection and how that increased their metacognitive abilities? One possible answer may have been that there were potential problems in completing the assignments for those English-as-a-Second-Language students, who were reported as struggling in both the written and verbal communication in English.

On surface value the statistical disparity in the results between the onshore and offshore student cohorts may have appeared to be an indictment on the delivery mode that was Elluminate. However there also appeared to be other factors influencing these results. These factors may have involved including a range of demographic differences between international and local Australian students. The

qualitative data then provided greater guidance as to the students' perceptions of the learning experiences rather than relying purely on the quantitative results. These findings endorsed Creswell's (2008) contention that "the combination of both forms of data provides a better understanding of a research problem than either quantitative or qualitative data by itself" (p. 62).

Multiple Intelligences and Learning Management Styles

It was an interesting methodological phenomenon that the quantitative tests conducted in this study revealed little support to indicate there were statistical correlations between students' perceptions of the VoIP and their multiple intelligences (MI) and learning management styles (LMS). Contrastingly, qualitative data analyses did reveal some relationships between students' perceptions of the VoIP and their learning management styles. Therefore, a case for mixed method approaches is made in this study as using just one methodology would have led to misleading conclusions. This highlighted the importance of triangulation of data to verify more accurate meanings elicited by the data (Gay, Mills., & Airasian, 2008, p. 88).

Considering Gardner's (1983; 1999) descriptions about individuals with 'verbal/linguistic' and 'interpersonal' strengths, it was anticipated that students with these characteristics would prefer the VoIP learning environment. This was due to the synchronous interactions and potential for synergies made possible by this medium. However, only 10% of the sample had 'verbal/linguistic' and ~13% had 'interpersonal' talents in the Singaporean cohort, which may have accounted for the lack of verbal interaction within the VoIP classroom over their preference for text chat. Exploring linkages between the MI strengths and those students' responses, identified there were few indicators that students with 'verbal/linguistic' strengths overall responded more positively to the VoIP environment, even though those with 'interpersonal' strengths tended to respond more positively (see Table 4.9). One of the limitations of drawing conclusions from these individual MI groups was that there were limited numbers of the Singaporean sample who had each of the 'verbal/linguistic' and 'interpersonal' MIs to be able to draw firm conclusions. There were some relationships found though where these students did identify positives about working in groups and enjoyed taking a leadership role.

The lower numbers students to have ‘verbal/linguistic’ (10%) and ‘interpersonal’ (13%), and intrapersonal (13%) talents in the Singaporean cohort was surprising considering one may have anticipated Commerce students, particularly those in management and marketing, to have the more people-oriented talents. This expectation was affirmed by the distribution of MI strengths in the Australian cohort which demonstrated greater numbers of students who had verbal/linguistic’ (6%), ‘interpersonal’ (17%), and ‘intrapersonal’ (21%) talents. As the Australian cohort did not use the VoIP medium as their learning environment there was no way to be able to compare these two data sets in terms of student perception of the VoIP learning environment, only in terms of their perceptions of the learning experiences and instructional design of the course.

Exploring the LMS in relation to their characteristics and perceptions of the VoIP learning environment, it was expected that students who were orange – ‘people-oriented’ would prefer the synchronous interaction that VoIP offered. Similarly, those students who were ‘green’ – ‘energised’ and ‘enterprising’ may have been expected to be more inclined to engage with innovations in technology. The final group, ‘yellow’ who were ‘managers of change’ with an enthusiasm for things ‘experimental’ would have been anticipated to be more receptive to the VoIP innovation. Indeed, these hypotheses were supported in both the quantitative data analysis exploring the frequency of their positive responses to the *Illuminate* items and also in the qualitative data analyses (see Table 4.9). These findings endorsed Lessem’s (1991) theories that these individuals would be more receptive to engage with this innovation – VoIP learning environments.

It was interesting to note that 22% of students had ‘indigo’ – ‘developmental’ and ‘intuitive’ LMS, while 17% had ‘green’ – ‘energised’ and ‘enterprising’. These results may account for the apparent dichotomy in findings, where teamwork was rated highly as “rich, complex patterns of activities and methods” (Lessem & Baruch, 1999, p. 12); and yet they desired the “‘expert’ teacher” to provide greater assistance (Dunn & Wallace, 2004). Similarly, it was not surprising some students did not prefer the online environment over face-to-face considering 17% of them had

a 'kinaesthetic' strength; hence, the sedentary nature of VoIP contexts may have been less desirable for them (Gardner, 1983).

It was interesting to find there was no relationship between students MI strengths and their LMS. This indicated that these two constructs were not interrelated and were accessing different dimensions of personality and behaviour. As Denig (2004) stated these were complementary in that "they work together to contribute to learning" but were not necessarily interdependent (p. 96). Even though there was no interrelatedness between MI and LMS, there were relationships between the individual constructs and students' preferences for the VoIP-mediated learning environment. Students fully endorsed face-to-face as their most preferred learning mode but all students indicated certain aspects of the VoIP they liked and preferred. Therefore, blended learning was the optimal approach for these adult learners. A key finding was that learning experiences facilitated via VoIP were suitable for *all* students, regardless of their individual MI or LMS, providing that good teaching was implemented within this medium. This endorsed Clark's (1983) earlier assertion that media was not an influence on learning but was merely a form of delivery. Additionally, Price and Kirkwood's (2008) later research confirmed that it was sound pedagogies which were important rather than the technology.

Speculating as to why there was less statistical correlation between students' preference for VoIP and their MI or LMS, it may be conjectured that Volet and Renshaw's (1996) observation that Asian learners were highly adaptable to Australian institutional demands and influences resulted in their success. This was further supported by Wong's (2004) personal reflection on the flexibility of his own learning style that had changed from "passive recipient" to enjoying "constructivist approach[es]" in order to be successful (p. 154). It may be posited that university students are so focused on being successful in their studies, they are strategic in their approach by being more flexible and adaptable to different learning environments, not allowing personal talents and learning styles preferences to impede their achievement. This endorsed Wong's (2004) perceptions about Asian students that they were highly adaptable, enjoyed more student-centred styles of learning within Australian universities and there was no need to attempt to adapt teaching strategies to more Asiatic styles of learning.

Summary

The findings of this study indicated that learning experiences facilitated with VoIP were particularly effective if there was sound instructional design *and implementation aligned with good teaching*, which reinforced Smith and Ragan (2005) and Moore and Kearsly's (1996) work on instructional design. As outlined by many researchers who focused on university teaching and learning, good teaching was the crucial factor for effectiveness of learning experiences not the technology (Chickering, 2008; Chickering & Ehrmann, 1996; Chickering & Gamson, 1987; Prosser & Trigwell, 1999; Prosser et al., 2003; Ramsden, 2003). As Schroeder and Spannagel (2006) stated "pedagogical theories like constructivist and action-oriented approaches should ... underlie the creation of new computer-based instructional material" and this was particularly true in this study and was essential for educational success and student satisfaction (p. 245). Even though students liked the experiences mediated by VoIP, they also wanted greater structure and guidance which resonated with Lao and Gonzales (2005), and Palloff and Pratt's (2005) findings about undergraduate students.

The academics rationale for utilising VoIP learning environments revolved around perceived advantages in enabling more flexible teaching and learning environments which endorsed Palloff and Pratt's (2005) findings. It also had the potential to enable students from varied disciplines and at different locations around the world to interact thereby establishing learning communities. With increasing threats to university operations due to global instability the potential for ensuring the stability of teaching and research activities through VoIP media was also a rationale for adopting this technological innovation. The final rationale was that lecturer engagement with teaching using a new technological delivery mode was likely to serve as an opportunity to encourage pedagogical professional development.

The findings in this study clearly identified that good pedagogy should shape how learning experiences facilitated through the VoIP delivery mode were structured and supported (Price & Kirkwood, 2008). Attention needed to be given to ensuring that learning experiences within the VoIP environment were active, interactive, reflective, and engaging as identified in the ten criteria synthesised in the literature

review. As Aragon (2003) stated the lecturer needed to create a psychologically “safe” space which promoted a “social presence” (p. 57). He advocated that lecturers did this through the establishment of a warm classroom atmosphere where students felt welcome, use of ice-breaker strategies, use of humour, and being available to students. He linked social presence with student satisfaction in the online classroom.

Professional development of lecturers, in relation to exploring sound pedagogical practices and their underlying philosophies, was crucial to the successful implementation and ongoing effectiveness of learning experiences within the VoIP classrooms. Similarly, students must also be provided with professional development in the use of the range of functions available in the VoIP-mediated learning environments to ensure they are proactive and able to facilitate their own learning and collaborations. University students, regardless of their culture, should be considered adult learners with their associated needs, motivations and demands. Therefore, technical support should be made available to ensure smooth, ‘hassle-free’ teaching and learning.

Voice-over-Internet-Protocol delivery modes were suitable for all students regardless of their multiple intelligences and learning management styles. Application of VoIP technologies would be optimal when integrated into a blended learning mode of delivery. Voice-over-Internet-Protocol represented emergent technologies which had the potential to provide increased convenience and flexibility for adult learners within the university context. The negative aspects of VoIP recognised by staff and students could have been easily rectified and did not outweigh the advantageous dimensions of this innovative medium.

Endorsing the adult learning literature these students’ motivation to engage with the learning experiences mediated through VoIP was influenced by their perceptions of relevancy to the real workplace; opportunities for increased flexibility in meeting their work-life balance; interest; and pragmatic orientations (Knowles et al., 2005; Merriam, 2001; Wlodkowski, 2004). Using the VoIP for their studies was deemed to be highly relevant and interesting in relation to their career development and the role technology was playing in it. As most of these students were working in the

commercial sector they perceived both the content and delivery to be interesting and practical to building their knowledge and expertise.

A doctoral study is designed to contribute to the knowledge base in a particular field. In this study, the findings led to the synthesis of two models – the *Webs of Enhanced Practice* and the *Webs of Enhanced Learning*. These models addressed the need for a new conceptualisation of professional development for academics and how these professional development experiences could influence the teaching and learning practices in the university classroom. The models in Chapter 6 do not represent the inclusion of new material as such, rather are the synthesis or new knowledge that has been proposed as a result of this research. It also provides a brief overview of the entire study.

Chapter 6

Final Synthesis of the Research: Models for Enhancing the Quality of Education in Universities

To be effective, all our citizens must be able to function at the high levels of intellectual, emotional, and social complexity required for meeting our beleaguered globe's economic, environmental, human, and political challenges. ... Institutional program evaluation needs to examine the degree to which varied interventions concerning curricula, pedagogical strategies, student-faculty relationships, peer interactions, experiential learning, and new governance arrangements actually improve civic learning and social responsibility among students, faculty, staff, and administrators.

(Chickering, 2008, p. 87)

Implications of the Results

The implications of the results from this study are that face-to-face instructional delivery remains a first preference for learners; however, if this mode of delivery is not possible then VoIP is an effective alternative. Blended learning opportunities represent the best of both modes. With 21st Century university students leading complex and busy lives, the convenience of distance education mediated through innovative technologies is an important advance in the delivery of courses. This enables greater access to higher quality institutions and courses for more students regardless of their physical location. It also offers a decrease in the isolation inherent in traditional distance learning modes through the use of the synchronous communication technologies.

Effective teaching, no matter what the instructional delivery mode, remains a crucial issue for students. The university teacher, who is the most significant influence on the quality of university teaching, must have sufficient pedagogical knowledge and expertise, and constructivist beliefs about learning in order to design and implement effective learning experiences for students. Therefore, professional development

focused on developing good pedagogies is essential in promoting quality teaching and learning within this context.

Today's university students are increasingly sophisticated in their knowledge of what teaching strategies and resources support their learning. With the consumer orientation within the Australian university education context, students have higher expectations of quality teaching and learning than ever before. This brings into sharp relief the need for systematic and effective professional development for academics to support their learning about the other half of their role aside from research, namely, teaching. Traditionally, university academics' priorities were focused on their research agenda – the 'publish or perish' motto remained at the forefront of their minds. Even though the past decade has seen a shift in the rhetoric surrounding the emphasis on research versus teaching, teaching remains a lesser priority due to the reward structures which prevail. There is a need to reconceptualise the priority of teaching and learning issues into a more dominant place in academics' working lives. Student expectations are for academics to be proficient as content experts, teachers, and with the technologies that are frequently being integrated into learning environments. Therefore, professional development of academics comes under scrutiny. As stated previously within this thesis, academics' professional development opportunities frequently are de-contextualised, ad hoc within centralised university departments, and rarely recognised within the reward systems. As a result, few academics outside of faculties of education undertake formal and systematic education in teaching and assessment.

With technology continuing to advance and become more readily available, affordable and user friendly, there are increasing opportunities for these technologies to support the ongoing learning of lecturers and their students. With the competition between institutions, the expectations of a more sophisticated student demographic, and greater potential of external scrutiny of Web-based course materials, it is incumbent on academics to engage with instructional designers, successful colleagues, and professional developers to actively enhance their teaching practices and materials. Engagement is aimed at creating optimal educational environments for student success, thereby maintaining business competitiveness for the university. This chapter presents two models – one that relates to professional development,

supported and facilitated via modern technologies; and the second model describes the potential impact within the university classroom of the professional development, namely, increased students outcomes and higher levels of student satisfaction.

Webs of Enhanced Practice – A Model for Academic Development

The first model presented in this chapter (see Figure 6.1) is called the ‘Webs of Enhanced Practice’ (WoEP) and is set at a macro level. This model, while initially conceptualised for the higher education context, can just as easily be integrated into any professional development setting such as the school system, and/or business and industry.

The philosophy underpinning this model is shaped by the fact that 21st Century employees work in frenetic, insecure, and diverse workplaces. They are faced with the concerns of developing a sound career, maintaining a successful family life, and seeking personal fulfilment. These pressures are driving professionals to find alternative, multi-tasking ways to interact with others, maintain and update their knowledge and expertise, and nurture and expand their personal and professional networks. Technology is increasingly meeting the needs of individuals in their striving to remain in contact with friends, associates, colleagues and useful sources of expertise.

Webs of Enhanced Practice in Higher Education

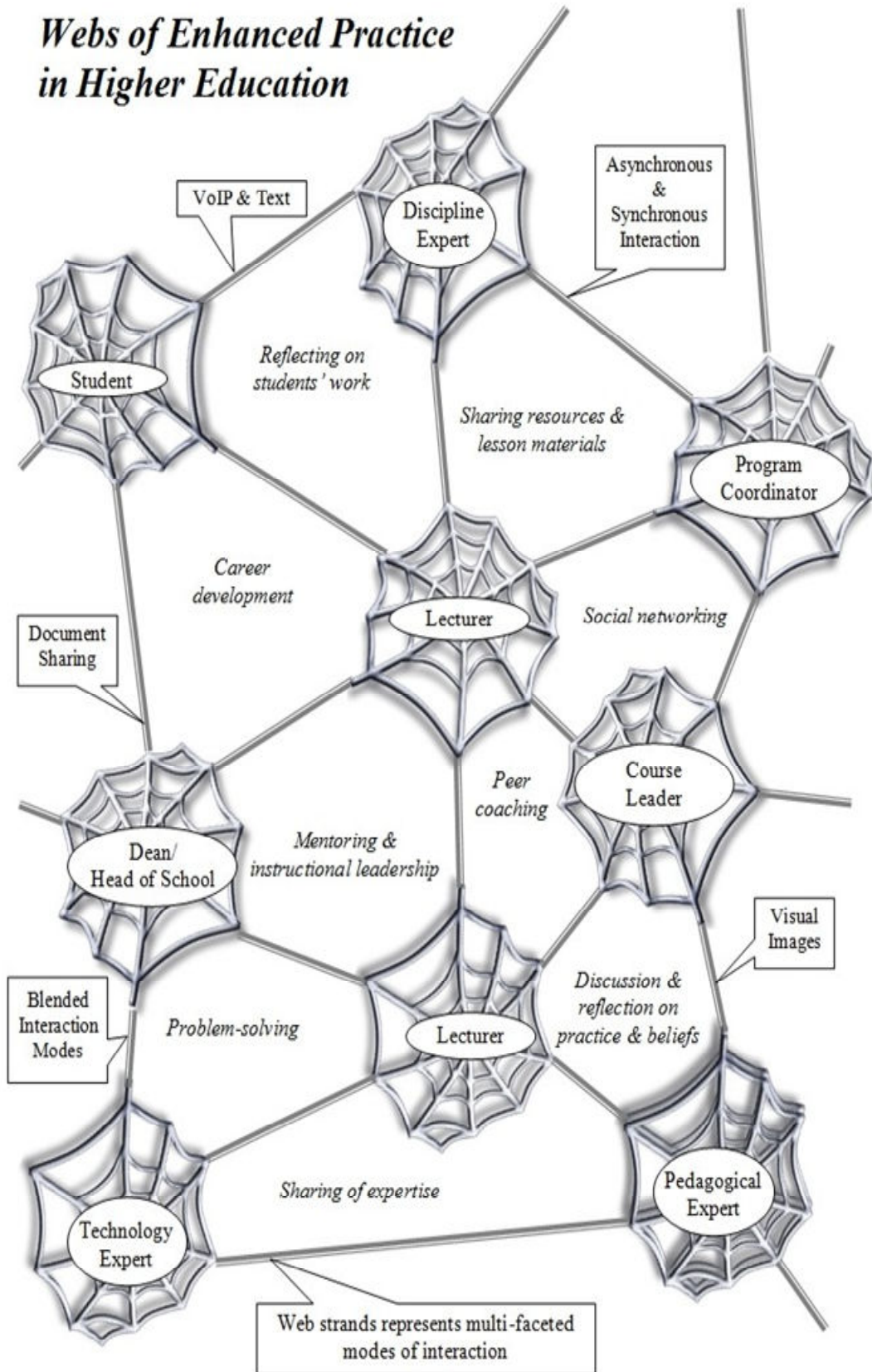


Figure 6.1: Webs of Enhanced Practice

The *Webs of Enhanced Practice* aims to present one potential alternative to traditional networking processes. It is designed to represent a professional development blended web, involving:

- people with various roles and interests;
- a range of purposes for their interactions; and
- diverse technologies that can facilitate their learning, interactions, and sharing of ideas and resources.

The literature on effective professional development based upon research in schools and universities distil a number of key principles. For example, participants must have opportunities to collaborate on planning and resource development; observe colleagues' implementation of innovative teaching strategies; reflect on their learning and the success of trialling various new teaching and assessment practices; discuss and problem-solve teaching issues; and receive support from experienced mentors and experts (Joyce & Showers, 1995; Lieberman & Miller, 2000; Ramsden, 2003; Ramsden et al., 1995; Scott et al., 2008; Showers & Joyce, 1996). The *Webs of Enhanced Practice* model also draws upon the “professional learning communities” (DuFour, 2004; DuFour & Eaker, 2004) and “communities of practice” research (Wenger, 1998; Wenger & Snyder, 2000) but moves beyond these approaches to a broader, more diverse and flexible perspective. Therefore acknowledging the value of these research-based principles, this model has been designed to incorporate these elements. *Webs of Enhanced Practice* (WoEP) expands traditional conceptions of professional development processes to encompass the increasing availability of emergent technologies, and to present a more eclectic approach to the purposes inherent in the interactions. This means that the professional development blended network is designed to facilitate more than just teaching and learning enhancement, rather it also encourages and promotes career development; mastery of emerging technologies; and expansion of vision of how these technologies can be valuable to nurturing good quality teaching and learning opportunities for students.

The Key Dimensions

The web-like representation illustrates three key dimensions: first, *the participants* – the interconnectedness of the individuals and flexibility for them to move in and out

of multiple webs which may or may not be connected; second, *the purposes for involvement* – a range of potential learning outcomes and social and professional networking that are possible; and third, *the modes of interaction* – using a range of technologies, both traditional and innovative, to suit the purposes of the participants.

The Participant Dimension

In the WoEP the participants would involve educators at all levels of the university or organisation potentially within a department or school, across the university, across the state, or indeed across the world. Entrepreneurial technology-facilitated professional development enables the crossing of “traditional boundaries of culture, politics, time, and space” and enriches the global community (Scott & Webber, 2008, p. 766). Traditionally, participants in professional development are the individuals seeking new knowledge and skills, and the professional developers who are experts in a particular discipline, topic or skill. In the WoEPs the participation can and should snowball to incorporate pedagogical experts, as well as discipline and technology expertise, thereby further expanding the knowledge and skills caught within these webs. Additionally, acknowledging that support and learning can and does occur within the collegial sphere, professional developers would also include colleagues, course leaders, programme coordinators, and mentors in the form of the Dean or Head of school/department. In adult learning environments, students can also be participants in these webs. Their participation can be active, introducing lecturers and others to new ideas and technologies, sharing their own expertise, and keeping the web community informed about current trends and expectations. Students’ involvement can also be passive in that their feedback on their learning experiences can inform the professional development agenda.

Webs of Enhanced Practice would not be static, being in a constant state of flux with current and new members flowing out and in according to their preferences and learning needs. An individual may in fact belong to multiple webs, which is a divergence from the community of practice (COP) literature where the COP is focused on a specific goal and to “drive strategy, generate new lines of business, solve problems, promote the spread of best practices, [and] develop people’s professional skills” (Wenger & Snyder, 2000, p. 140). An example of this divergence is that a lecturer may be involved in one web for the purposes of enhancing their

teaching practice, while simultaneously being a content expert in a different web. Similarly, the technology expert may play a key role in up-skilling the lecturers in multiple webs and also involved in his/her own professional development in a technological web. The extent of involvement may vary from full commitment to incidental.

Purposes for Involvement Dimension

The WoEPs coalesce the ‘professional’ and ‘personal’ elements desirable to many academics. It more accurately captures the complexity and potential existing in the technology-rich 21st Century work-lifestyle. The ‘professional’ element encompasses the efforts to increase the quality of teaching and learning and thereby the level of professionalism within the academy. The ‘personal’ element revolves around reducing the isolation lecturers frequently encounter in their teaching activities through collegial interaction. It promotes socialising opportunities, the potential for developing friendships and mentoring relationships, the nurturing of interpersonal and intrapersonal skills, and the development of self-efficacy. It also provides opportunities for colleagues and friends to remain in contact on a more social level even when physically located in different campuses or even across the world.

Key to the professional element in the WoEP is reciprocal learning, whereby all participants can potentially learn from other members of the web as a result of the diversity of expertise, and contexts. Lecturers would be encouraged to explore their personal beliefs about good teaching and how to support good learning. Participants would be able to engage in discussions focused on improving student outcomes, reflect on students’ work, problem-solve, and share expertise, ideas, resources, and lesson materials. They could use the web as a sounding board to reflect on personal teaching effectiveness. Partnering with colleagues from similar disciplines could also reveal peer coaching opportunities with the view to expanding their repertoire of teaching strategies.

Leadership features as an element within this model. Instructional and transformational leadership (Leithwood, 2007; Mulford, 2008), and distributed leadership (Hargreaves & Fink, 2008) are all encompassed. Transformational leaders within the webs can support organisational change and progress, which is an aspect

of a leader's role within the institution. As instructional leaders, they are responsible for ensuring the quality of teaching and learning and facilitating their staffs' development in this area. Through providing instructional leadership, they may undertake mentoring personally and coordinate mentoring teaming. They can also support and advise their staff in terms of guiding their career aspirations. Leaders can provide exemplars of practice, and recognise and reward this in their staff. Even experts can share their knowledge with other experts providing professional development for these highly knowledgeable individuals. Colleagues assisting colleagues, and technical experts assisting colleagues, represent distributed leadership.

In fact, leadership capacities are fostered within the webs as leadership is distributed. This means if a leader moves to another web or drops out altogether, their loss would not irreparably disrupt the linkages for participants. Disruptions are minimised because other leaders in the 'webs' would take over the role. This integrates the evolutionary and adaptability qualities that promote ongoing sustainability.

Modes of Interaction Dimension

The *Webs of Enhanced Practice* identifies two dynamics of participant interaction. The first is the multi-modal delivery dimension whereby participants interact either directly or indirectly with each other; and second, the technological dimension, describing the modes of communication between participants.

The multi-modal delivery dimension – Interaction in this model is truly multi-modal, in that, it allows for synchronous, asynchronous, face-to-face or online modes using a range of technologies to meet the unique needs of the participants and the their types of interactions. The communication modes would be blended as this represents optimal integration - face-to-face and technologically-facilitated.

Synchronous is the oldest and most accepted form of professional development, namely face-to-face. Many professionals still desire face-to-face interactions because of the human social dynamics that are encompassed through this mode. In this model there would still be a place for this 'tried and true' form of communication as it nurtures the interpersonal interactions promoted through visual, aural, and gestural cues. Face-to-face can be one-to-one as in the collegial meeting, mentoring or peer

coaching conversations or similar, or one-to-many which would include the conference event and workshop opportunities. The disadvantage to this mode is that it requires a level of inconvenience, with participants having to travel or physically be located within the same venue. It frequently results in a cost factor in terms of travel, registration payment, and time to be in the same locale as the other participants. More recently synchronous communication has been made possible, and more convenient, through the use of a range of technology. Synchronous interaction offers the advantages of immediacy and increased clarity of discussion intent gleaned from verbal cues, however, the disadvantage is that participants must be engaged simultaneously which for busy professionals can represent a problem. Asynchronous modes of interaction are generally supported through technology. This form of interaction facilitates engagement at the convenience of the participants, as they can access and review ‘conversations’ when they have the time and requisite attention.

As no *one* mode can meet all individuals’ needs and no one innovation is pre-eminently superior to another, this model advocates for multi-modal delivery opportunities. This is proffered to increase the advantages and flexibility, and reduce the disadvantages through a coalescent approach.

The technological dimension – This model displays the facilitation of the interactions as ‘strands’ that connect the participants ‘caught in the web’. This web-like professional development model uses eclectic forms of technology to meet the needs of the participants and their activities. Both 1st and 2nd generation technologies find a place as strands, as each presents its own set of advantages to participants. For example, 1st generation technologies such as online bulletin boards, forums, email, blogs, and wikis can offer busy academics opportunities to keep up-to-date with the knowledge base, and each other. The potential for immediacy in their interactions with others and synergy creation is offered by 2nd generation technologies, such as text chat and Voice-over-Internet-Protocol media. The uniqueness of this model is its advocacy for utilising a range of technologies to ensure the optimal and timely professional development engagement by participants. Acknowledging this emergent issue in the literature, it is the pedagogy and social networking, not the technology, which is crucial. Therefore the technology is simply the means to the end – the medium for facilitating positive educational outcomes.

With the ever increasing pace of technological development it is difficult for busy academics to maintain the currency of their technological knowledge and how these technologies can support teaching and learning. A potential subsidiary learning outcome from this model could be that participants actually learn about and expand their 'technological repertoire' through engagement with these webs. The level of flexibility the strands offer may initiate participants to forms of technology they had not encountered or considered using prior to their professional development involvement in the webs. Continued implementation of a range of technologies would increase participants' comfort and willingness to experiment with different technological options within and across webs.

The WoEP is a macro model designed to promote sound, flexible, relevant professional development within a technologically-rich context. The potential advantages include:

- Increases in participants' content knowledge;
- Increases in participants' pedagogical knowledge;
- Increases in participants' technological knowledge, comfort levels and willingness to experiment further;
- Increases in social networking opportunities;
- Career development opportunities;
- Increases in mentoring opportunities;
- Increases in academic collegiality within and across campuses and wider;
- Greater flexibility to engage in professional development than previous face-to-face approaches;
- Enables leaders to engage with their staff development to a lesser or greater extent; and
- Provides increased access to expert colleagues, expert technicians, pedagogical experts, content experts, and leader-mentors.

The literature related to professional development describes the main purpose as focused on increasing the quality of educational experiences resulting in positive student outcomes. This new model is no different. It is aimed at supporting academics in their learning about their content knowledge, but more importantly,

about their pedagogical knowledge, beliefs and practices. It is anticipated that a flow-on effect would occur from engagement with the *Webs of Enhanced Practice* leading to change within the university classroom. These potential changes are identified in the second model referred to as the *Webs of Enhanced Learning (WoEL)*, which represents the impact of the *Webs of Enhanced Practice* facilitated professional development.

Webs of Enhanced Learning – A Model for Quality Teaching and Learning

While the *Webs of Enhanced Practice (WoEP)* (see Figure 6.1) was a macro model, the *Webs of Enhanced Learning (WoEL)* (see Figure 6.2) is more focused on the micro level as it involves academics, their own university classroom, their design of the learning experiences, and their interactions with their students and colleagues. The WoEL is a close-up exploration of students' learning that results from lecturers' architectural expertise in designing innovative learning experiences. It aims to scaffold the bridging of the divide between the technologically-omnivorous generation of university students and their knowledge-rich but less technologically-comfortable lecturers.

This model involves a simpler participant list to that of the WoEP, namely the lecturers and students. The purposes of the interactions are focused on teaching and learning objectives. Similar to the WoEP, the WoEL has a number of dimensions - the technology, delivery, interaction, and social and professional networking.

Figure 6.2 depicts two lecturers teaming up their classes through a blended network to support their students' learning outcomes. These lecturers may be in adjacent rooms or even in different campuses across the globe. Similarly, the classes may or may not be in the same time-zone and/or in the same course. In this model, undergraduate lecturers following the constructivist paradigm would scaffold learning and assessment which requires students to engage with each other within their classroom and with teams of students external to their class. Teams of students could employ a range of technologies and face-to-face meetings to interact in synchronous and asynchronous modes in their pursuit of educational goals.

Webs of Enhanced Learning

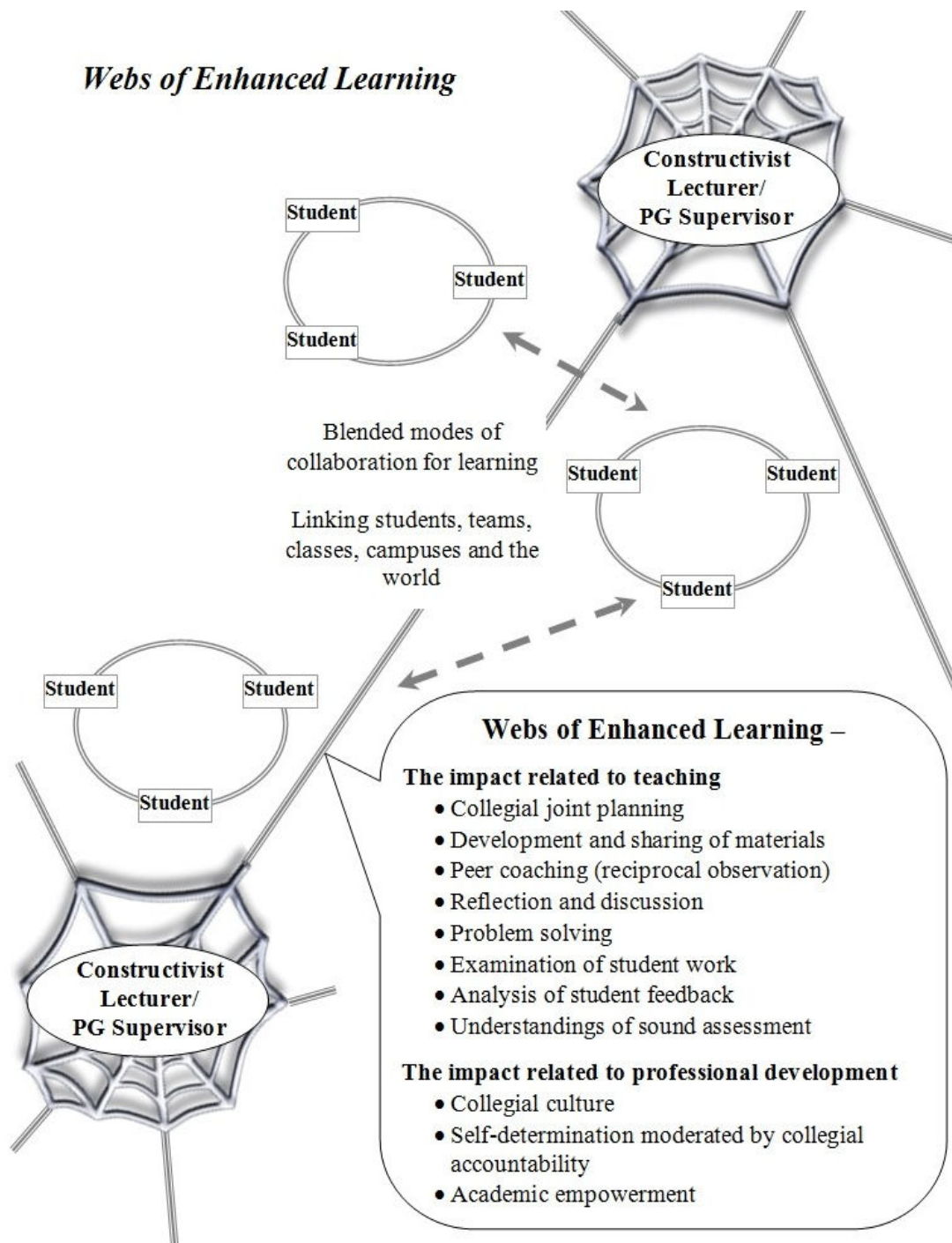


Figure 6.2: Webs of Enhanced Learning

Students would draw upon each others' expertise and knowledge, from a range of sources, and potentially from experts accessible through *Webs of Enhanced Practice*. Interactions could be as complex as full-scale teamed projects, to incidental mentoring.

In postgraduate supervision, supervisors could establish forums for their research-focused students to expand their dialogue with other postgraduate students. Their interactions would revolve around discussing their research, sharing ideas, accessing alternative sources of information and expertise, and mentoring each other. In this postgraduate scenario, scholars who engage in this process with other scholars would in fact be establishing another *Web of Enhanced Practice* wherein research skills and expansion of the knowledge base would be the focus of the professional development. Similar to undergraduate teaching, interactions could be as complex as formal research conferences, to incidental student meetings.

Multi-modal delivery dimension – With higher education expanding to encompass increasing numbers of students, international partnerships and overseas campuses, universities have progressed from the traditional, face-to-face, lecturer dependant, on campus classrooms to more flexible, virtual and distance oriented contexts. Interactions between staff and students can be reconceptualised from the traditional one-to-one in ‘student consultation’ office hours to more flexible options which include one-to-one and one-to-many broadcasts and online class consultations. This enables busy lecturers to streamline their information provisions and to facilitate meetings with students regardless of the physical location of both parties. This also ensures students have greater accessibility to their lecturers and/or supervisors and enables students to experience greater “social presence” (Aragon, 2003).

Business and industry expectations specify graduates must have a range of professional skills which among others include technology literacy, communication skills, team working capacities, and critical and creative thinking (Business Higher Education Round Table, 2001, 2003; DETYA, 2000a). Therefore, blended approaches that incorporate asynchronous and synchronous technologies, and which provide opportunities for students to work with their peers regardless of geographical location or time-zones, are important in the preparation of these potential employees. Through a range of technologies students can engage with peers, experts, and clients in project work which yield positive learning outcomes.

Social learning dimension – Social learning is a key element in effective education. Constructivism indicates that individuals learn best when they have opportunities to engage with experts and resource materials, and to collaborate with others to

interrogate their own understandings and compare them with others. Twenty first century constructivist learning experiences have the potential to be deeper and richer when students can interact with global peers who have completely differing frames of reference influenced by variations in cultures, climates, political societies, and social systems. Another feature which enriches learning opportunities is the potential for engagement with experts from outside the classroom. Lecturers can gain access to these experts as a result of their expanded networks drawn from the *Webs of Enhanced Practice*. The virtual classroom means that student learning no longer needs to be confined to what can be experienced in a set time and place, and with only one group of students – the possibilities for innovative, collaborative learning experiences are endless.

Technological dimension – One of the learning outcomes possible from the WoEP is that lecturers have opportunities to develop their ‘technological-efficacy’ as a result of exposure and use of a range of technological media. It is logical that with use comes familiarity and comfort; hence, these technologically-efficacious lecturers would be more likely to integrate these into their regular classroom practice. Today’s university students are frequently au fait with a range of technologies because they are omnivorous consumers, though largely for social and recreational activities. Using a range of technologies to meet different learning outcomes enables students to develop their content knowledge. It may also expand their technical expertise as it exposes them to different technologies, particularly suited to supporting course learning rather than social and recreational outcomes. Integrating these innovations into learning experiences has the potential to increase students’ motivation and engagement, and also to positively influence their attitudes towards the lecturer and the coursework.

Professional and social networking dimension – Even though the other dimensions are focused on students and their learning, this final dimension in the WoEL is about lecturers and their context. Many academics teach the way they were taught or follow the model of a scholarly mentor; therefore, university teaching is frequently limited to lecturing and occasional question and answer sessions. Rarely do tutors and novice lecturers have opportunities to observe models of exemplary teaching or

to interact with pedagogical experts. The WoEL model offers an amelioration of the isolation inherent in university teaching.

Figure 6.2 displays two lecturers who have teamed their classes to promote positive learning outcomes. What may be initially overlooked is that the lecturers themselves can be teamed together to work collaboratively in their teaching and assessment processes. The WoEL displays the potential *impact* of the WoEP through the collaborative lecturing relationships. The impact directly relates to either teaching, the professional development of the lecturers themselves:

Impact Related to Teaching

- *Joint planning of lessons to implement innovative teaching strategies* – This process is ideal when lecturers are working with colleagues who are teaching the same unit or course. It is about easing lecturer workload and enhancing the quality of practice. When the workload is reduced academics have more time to consider experimenting with new teaching strategies. Dividing the workload of developing resource materials also reduces the stress involved in teaching multiple classes and maintaining the other duties of academic life. Collaboration diminishes feelings of isolation and has the potential of nurturing personal friendships (Ramsden, 2003; Showers & Joyce, 1996).
- *The development and sharing of materials* – Sharing of resources entails potential critique by respected colleagues. This is an important reputational issue particularly for online classes where materials are transparent to a wider professional audience than just students (Price & Kirkwood, 2008). Therefore, lecturers who share and receive lessons and materials are more likely to expend greater effort developing better quality resources. This situation results in an overall increase in the quality of teaching materials than if left to a lone individual.
- *Peer coaching (reciprocal observation)* – Implementing complex teaching strategies requires commitment, effort, and perseverance for transfer to occur from pedagogical workshop settings into regular practice. Observing classes and learning from how other lecturers have implemented various strategies is valuable in extending lecturers' teaching repertoire.

- *Reflection and discussion* – Reflection is a powerful motivator and guide to improving practice; and yet most lecturers do not have sufficient time to engage or understand the value focused reflection represents. If lecturers' workloads are reduced as a result of collaborative efforts there is the potential to buy out time for reflection. Engagement with collaborative practitioner reflection on teaching will result in positive learning outcomes (Ramsden, 2003).
- *Problem-solving* – 'A problem shared is a problem solved' is an age-old adage which resonates as a truism in teaching. With the increasingly diverse student demographic entering universities, many academics are finding that they are encountering more challenges to engaging students than in the past when only the elite student made up the majority of their classes (Cote & Allahar, 2007; de la Harpe & Radloff, 2008). There are few problems that exist in teaching that cannot be resolved with assistance from colleagues, experts, and leaders. Drawing upon the expertise and experience of participants 'caught in the webs' can assist the most isolated of lecturers to resolve problems encountered in their teaching.
- *Examination of student work* – Examining students' work can reveal much about the effectiveness of the learning experiences. Analysing and reflecting on the quality of students' work enables lecturers to interrogate their own understandings of the curriculum and assessment processes. It also encourages them to consider alternative ways to teach and assess that will provide more educative approaches for students. High quality samples from students are valuable in providing exemplars for subsequent cohorts to clarify curricula outcomes.
- *Analysis of student feedback* – As adult learners, university students tend to know what supports their learning. Feedback from students on their perceptions of the learning experiences can be valuable in informing the lecturer of aspects of the coursework that is working well for students and may reveal avenues for improvement. Reflecting on these data and discussing them with pedagogical experts and mentors can provide specific points that

should be targeted in their professional growth and personal teaching change agenda (Cote & Allahar, 2007).

- *Increases in understanding of sound assessment* – Assessment is always a contentious area in teaching as it places the educator under the potentially critical scrutiny of administrators and competitive students (Cote & Allahar, 2007). It is desirable for collegial collaboration to occur for the purposes of ensuring parity and moderation of marking across tutorial groups within the same course. Collaboration also enables the sharing of tests, assignment protocols and marking guides with colleagues, which results in lecturers feeling more confident to introduce increased transparency of process and clarity of expectations for students (Caspersz et al., 2002; Chickering & Gamson, 1991). Working with colleagues facilitates lecturers' interrogation and extension of their understanding about the principles of sound assessment and promotes the development of efficacy.

Impact Related to Professional Development

- *Collegial cultures* – The academy is renowned for competitiveness, isolation, and individualism which is recognised in many of the reward structures (Ramsden et al., 1995; Ramsden & Martin, 1996); hence, faculties may experience issues with non-collegial departmental cultures (Ramsden, 1998). If quality teaching is established as a common goal for faculty members, with collegial mentoring, open discussions, and recognition being given to those who engage with these teaching related activities there is increased opportunities to positively influence departmental cultures. Faculties that are friendly, supportive and responsive to the professional development needs of all lecturers result in higher levels of satisfaction, comfort, productivity, and quality of practice (Currie, Thiele, & Harris, 2002).
- *Self-determination moderated by collegial accountability* – Within the academy 'academic freedom' is a sacrosanct concept (Altbach, 2001); therefore, the desire to be self-determining in relation to their professional development is important. Unfortunately, absolute academic autonomy can result in a lack of engagement with teaching issues due to the perception that

it is of lesser priority to that of research (Dixon & Scott, 2008). Facilitating collegial mentoring and collaboration can not only result in positive departmental cultures but may also weave in peer-accountability. This peer-accountability occurs when an individual feels a sense of obligation to give and receive support to a colleague and will engage with teaching development activities rather than letting his/her peers down. This situation has a positive element as it acts as a motivator in implementing changes to teaching behaviours.

- *Empowerment* – All of the aspects described as impacts of the ‘professional and social networking dimension’ of the WoEL are about positively influencing lecturers and their context. When lecturers are highly efficacious they feel empowered. Empowered lecturers work more effectively to produce enhanced student outcomes (Dixon & Scott, 2008). With the increasing emphasis in universities on quality teaching and learning, academics who enjoy the results of professional development engagement, namely, positive student ratings and high student achievement will attain security from administrators’ criticism.

Implications for University Leaders

Higher education is Australia’s third highest export industry reported at a worth of over \$9 billion in the 2004-5 year (Australian Bureau of Statistics, 2007) and as a result, quality learning outcomes are crucial to institutional reputation and ongoing sustainability of the industry. Therefore, it is no surprise that there has been governmental pressure brought to bear to increase the quality of teaching and learning in universities (DEST, 2004; DETYA, 2000b). Teaching is a problematic issue in universities wherein the majority of academics have no formal teaching education or qualifications. Coupled with this lack of expertise in teaching is the limited nature of the recognition and rewards for teaching excellence which are available in many universities (Ramsden & Martin, 1996; Ramsden et al., 2007).

University administrators and department leaders play a critical role in supporting this quality teaching focus (Ramsden, 1998; Ramsden et al., 2007). Their support and advocacy for quality teaching and learning must be more than rhetoric. From the

findings in this research it is recommended that university leaders and professional developers expand their conceptualisation of ‘acceptable’ professional development from the ineffective one-shot workshops (Goldenberg & Gallimore, 1991) to encompass the ‘alternative’ approaches embodied in the *Webs of Enhanced Practice* and *Webs of Enhanced Learning* models. These more eclectic approaches should be viewed as another growth mechanism for academics in their exploration of personal philosophies about teaching and refinement of practice.

The *Webs of Enhanced Practice* and *Webs of Enhanced Learning* models are dependent upon support from educational leaders, experts, lecturers, and technical providers. Support would be in the forms of financial, technical, administrative expectation and recognition, and buy-in demonstrated by participant engagement. For these models to be effective and sustainable, university funding must be allocated to invest in the technology infrastructure required to create the *Webs of Enhanced Practice* and the *Webs of Enhanced Learning*. Financial investment would also include the provision of technical support personnel to staff a 24-hour service ensuring maximum flexibility regardless of time-zone. The technical services must have sufficient expertise to be able provide training for ‘best practice’ in the use of the technologies. They need to be able to problem-solve and assist in establishing the multi-modal ‘strands’ of the webs cognisant of the participants’ accessibility to various technologies and contexts.

Frequently concerns related to institutional quality, reputation, and ongoing programme viability remain cloistered at the upper levels of university leadership. Unfortunately, this may have the effect of distancing the average lecturer from these issues and their leaders. This can result in lecturers’ lack of understanding of the pressures on their leaders, of the importance of institutional quality, student satisfaction with learning experiences, and quality teaching. In fact, lecturer job security directly relates to these institutional issues and yet many would not perceive the linkages between them. Therefore, university leaders must make explicit the direct relationship between academics’ engagement with teaching-oriented professional development (eg., WoEP and WoEL), improved student outcomes, and the sustainability of programmes within the university. When considering then the importance of quality teaching, the recognition of staff and rewards they receive as a

result of engagement with this ‘quality’ agenda cannot be simply intrinsic in nature, otherwise the status quo will remain.

Recognition and rewards may be in the form of grooming for leadership positions, formal qualifications, awards, promotional opportunities based upon teaching excellence, and financial bonuses. *Webs of Enhanced Practice* may provide a valuable pool of future leaders. Those who are prioritising ongoing, systematic professional development should be those groomed for leadership roles and career advancement, particularly, if they have transferred their knowledge and skills into making a difference to student learning outcomes.

One of the issues all educators must accommodate is that of a lack of time in their schedules. Heavy workloads, large classes, and the pressure of maintaining a strong research agenda concatenate to impede academics’ professional development. One of the incentives administrators and leaders may find effective in promoting engagement with the WoEP and WoEL is to allow time within the academic workload model for professional growth activities.

Limitations of the Models

As with any educational model, *Webs of Enhanced Practice* and the *Webs of Enhanced Learning* models can mask as much as they reveal and therefore have limitations. These models attempt to articulate a range of interactions, technologies, and professional opportunities and actions that are possible; however, this is not an all inclusive listing. It is merely a representation of some of the potential interactions, sharing, learning, and delivery technologies. Even though the model appears to be straightforward and easy to implement the reality may be far from the truth. For these models to be successful in yielding the desired outcomes, there must be support for the infrastructure and underpinning philosophies, engagement by all participants, and an understanding of the necessary flexibility required for the models to be valuable to participants. If any one of these elements is missing the models may fail to be effective.

Within universities a frequent problem is the lack of effective leadership to support teaching and learning excellence. For these models to be successful there must be a

shift in leaders' understandings related to what constitutes 'effective' professional development. For example, leaders must:

- perceive the importance of pedagogical expertise;
- acknowledge the time required to gain this;
- understand the types of processes which make for effective professional development; and
- recognise the unique role that technology can play in supporting more flexible and pragmatic models of academic development.

It is rare that any one leader alone has deep understandings of all four key elements; therefore, professional development continues to be a largely ineffective and contentious aspect of university priorities. This lack of leadership must be overcome for change to occur within universities.

One of the most potentially problematic aspects in these models is obtaining participant engagement. Academics frequently do not:

- value educational knowledge and expertise as these are not overtly valued within university reward systems;
- have sufficient available time to engage; and/or
- have the necessary motivation to engage with pedagogically focused professional growth opportunities.

Another limitation of the model is that many academics are resistant to change and are technologically challenged. Their resistance to change relates not only to teaching practices but also to integrating different forms of technology that can support their teaching, students' learning, and streamline their workload. Therefore, some staff would refuse to engage because of the technological elements within the strands of the models.

The final limitation of the models relates to university accountability mechanisms. The inherent flexibility and blended nature of the interactions would be difficult to quantify and track for accountability purposes; hence, some university administrators would resist these models as 'appropriate' and 'effective'. Concerns with accountability and measurement of effectiveness could be alleviated through the leader involvement and resultant knowledge of the impact of these webs. Systematic research which tracks changes to classroom teaching practices, student feedback, and

academic engagement with the webs could also serve to meet the needs of the university accountability requirements.

Chapter 7

Conclusion

Higher education is going through a revolution. There are more students, much less public money, and steadily greater pressures from employers and students for universities to be more accountable. At the same time, lecturers face job insecurity and confront bigger workloads, while universities are forced to become more efficient and business-like.

The future success of our universities depends on academics' capacities to respond energetically to change. To help academics face new and uncertain demands, we need an entirely different approach to their management and leadership ... [so] they can turn adversity into prosperity.

(Ramsden, 1998, forward)

Overview of Major Findings

This study explored university students' and academics' perceptions of effectiveness of learning experiences facilitated by Voice-over-Internet-Protocol (VoIP) medium. The academics' rationales for selecting the VoIP learning environment were explored and their key teaching considerations for online teaching and learning were investigated. Additionally, this researcher sought to determine if students' learning management styles and multiple intelligences influenced their motivations to learn within the VoIP context.

In this research the case study Commerce undergraduates were situated in Singapore and undertaking their final Capstone course delivered through a programme called *Illuminate*. Students' multiple intelligences and learning management styles were ascertained through the Multiple Intelligences Checklist for Adults (MICA) and the Spectral Management Type Inventory (SMTI) questionnaires, respectively. Students' perceptions of their learning experiences were explored through both quantitative and qualitative data collection processes, namely a 'Student Perception of Learning Experiences' questionnaire, students' reflective assignments, and through in-depth telephone interviews. Quantitative data were analysed using SPSS and qualitative

data were analysed using a combined approach with MS Word, MS Excel, MS Access and NVivo.

Primary Research Question:

How effective are the learning experiences facilitated within a Voice-over-Internet-Protocol (VoIP) environment from the perspective of both students and academics in tertiary settings?

Although students reported a preference for face-to-face interactions and group problem-solving and decision-making, their ratings of effectiveness indicated their approval of the VoIP environment. Students particularly preferred the convenience of lectures and group meetings held within the VoIP classroom. They perceived this medium to be an innovation in learning and teaching within university coursework and stated these experiences served them in enhancing their technological expertise in the real workplace. Students' main criticism was that the lecturers needed to implement better teaching strategies within the VoIP environment rather than simply lecturing at them.

This course was designed to encourage deeper rather than surface learning approaches and to develop metacognitive capacities through the activities and assessment tasks. Students responded well to the reflective journaling and this enriched their learning about themselves in their team-based activities. The course was designed to be the culminating experience of the Commerce degree and as such was designed to challenge students and at the same time to be as authentic as possible, therefore, meaningful. These aims were achieved as students did indicate the challenging nature of the course but responded by stepping up to a higher level of activity, cognitive demand, and implementation of professional skills. Even though they were discomforted by working in teams of unfamiliar peers, they quickly overcame their reticence to engage and enjoyed working together to a common goal. Students were motivated in their engagement with the technology. They found the simulation to be interesting, challenging, and authentic and the VoIP was deemed to be a useful medium for them to gain knowledge about the success of their company's interactions and decisions, and to engage with the lecturer and peers. They perceived

VoIP as an innovation which they needed to engage with in order to maintain their own personal technological expertise.

Academic orientation

- a. *What are academics' rationales for utilising VoIP environments?*
- b. *What are the key teaching considerations to ensure good learning within VoIP environments?*

The rationale for adopting a VoIP learning medium was: first, to introduce a more cost effective mode of instruction for offshore programmes than what had been in place previously; second, to explore more innovative and effective models of education for both undergraduate and postgraduate programmes, particularly those in the overseas settings; and third, to introduce a more stable synchronous online learning environment which would ameliorate the threat to educational services from global instability.

The teaching academics' stated their rationale for implementation of the VoIP learning medium was to extend the potential of current teaching opportunities to provide a more inclusive classroom. They indicated that the Capstone course required multidisciplinary teams of students to work collaboratively in real-time in order to meet the demands of the coursework. The offshore programmes were specialised to one discipline per campus, therefore the traditional face-to-face instructional delivery mode with multidisciplinary teams was not possible. Hence, there was a desire to explore technological solutions to this problem. As the VoIP was successful in providing a stable and effective learning environment in this trial they anticipated the VoIP environment would eventually be expanded (after this trial) to facilitate teams of students working together across institutions and countries within the same course.

The lecturers were both from the business discipline and had no formal teaching qualifications; therefore, they were not overly comfortable with collaborative learning experiences. They had received basic professional development about the VoIP environment and indicated they used it in a lecture-based format. They experienced frustrations with students who were reticent to participate in the voice

options and who refused to engage with the online group meetings. They were also irritated when students demanded guidance and assistance from the lecturer rather than first reading the requisite instructional materials in their handbook. The lecturers involved did express the desire to further refine their VoIP teaching practices as their discomfort was largely due to inexperience with this new medium and their lack of pedagogical knowledge in implementing more interactive experiences.

From the academic administrator's perspective the VoIP-facilitated learning experiences were highly effective. First the implementation of this stable learning environment did indeed ensure that educational core business of the university's programmes would be deliverable regardless of global instability. Additionally, the stability offered by VoIP meant that lecturers no longer needed to travel to other countries for their teaching which was likely to yield significant savings to the universities programmes.

Student orientation

- c. What is the relationship between students' multiple intelligences, learning styles and their motivation to learn within a VoIP environment?*
- d. Does VoIP support all students' learning independent of their multiple intelligences, and/or learning styles?*

Students' motivations (determined qualitatively) did influence their perceptions of the learning environment. They were motivated by working together in productive groups and enjoyed developing and refining their professional skills. They were motivated by aspects of the course (including the VoIP) which they perceived to be directly relevant to their career development. Students who appeared to have high self-efficacy were more willing to engage with their learning, with other students, and the lecturer. They wanted more control over their studies and team work activities. Their motivation was deleteriously influenced by poor teaching practices and negative relationships with the lecturer.

Students demonstrated a distribution across all eight multiple intelligences. Similarly, there was a range of learning management styles found across the cohort. There was

no statistical correlation between the multiple intelligences and learning management styles and students' perceptions of the learning environment. However, there were some relationships found between the frequency of positive responses related to the VoIP and some of the learning management styles and to a lesser extent, to some multiple intelligences. There were relationships between the qualitative comments about VoIP and students' motivations. These relationships with the VoIP learning environment indicated that it was convenient and effective for all students regardless of their multiple intelligences and/or learning management styles, as the key factor was the quality of the learning experiences, instruction and relationship with their lecturer.

Institutional Quality and Reputation

The Quality of Australian University Degrees

Australian universities have become an essential economic export commodity in an increasingly competitive global market. Considering that this educational industry is worth in excess of \$9 billion to Australia, university administrators and their government counterparts are understandably interested and vigilant about enhancing institutional reputations to ensure the ongoing sustainability of this lucrative market. In addition to research outcomes, a key performance indicator of the quality of universities is students' satisfaction with their learning experiences. Student satisfaction relates to word-of-mouth marketing of programmes, therefore, it is important that they have a satisfying university educational experience. Business, industry and other employers make judgements about the institutional quality based upon their perceptions of graduates' knowledge and professional skills. Hence, graduate performance in the workplace can positively influence future enrolment, demand for graduates from particular institutions, and research funding opportunities. Institutional reputation largely rides on teaching and learning quality. This leads to the lessons learned about the role of university leaders.

The Need for Strong Educational Leadership in Australian Universities

Leaders in universities are charged with ensuring the quality of education and research as the two main outcomes of academics' work. Unfortunately, tensions exist between these two academic roles. Frequently, academics are presented with mixed

messages from administrators about prioritising teaching and learning developments when what they are rewarded for is predominantly research quality and magnitude of output. This means leaders in faculties must be clear about the realistic goals they are setting for their staff and actively support all to improve and enhance the teaching and learning priorities. With saying that, it has been recognised though that many Deans of faculty are poorly equipped in terms of pedagogical knowledge and expertise to be able to personally effectively lead their staff in teaching and learning matters. Even so, they can provide opportunities for professional development, support and recognise the efforts of engaged academics, overtly promote teaching and learning goals within the faculty, all with the view to nurturing a community of learners committed to enhancing institutional quality.

Importance of Sustained, Multi-modal Professional Development

Pathways to the academy are usually through research not teaching. Hence, many academics are ill prepared to teach well. Coupled with the complication that there are no uniform requirements in Australia for academics to have formal teaching qualifications, this places professional development into the category of vital importance to ensuring institutional quality. Unfortunately, much of what is offered to academics in the way of pedagogically-focused professional development is fragmented, non-contextually relevant, and with few incentives for academics to engage. Leaders need to address the professional development needs of their staff, what is offered, as well as the format, to ensure the most effective learning experiences for academics in exchange for the money allocated to these endeavours.

The complexity of teaching and learning in universities has been compounded since the 1990s due to technology. Technological innovations in university courses present a range of challenges to academics who have little pedagogical knowledge and limited expertise with a range of technologies that can support learning. Therefore, professional development is also needed about the technology and how to integrate this effectively in learning and teaching. This doctoral research proposes a model, *the Webs of Enhanced Practice*. This model, if implemented, would provide academics, leaders, students, technical experts, content experts and pedagogical experts with flexible, multi-modal delivery opportunities to support their learning about technology, pedagogy, their discipline, and to facilitate a social networking arena.

Rewarding Educational Quality

The academy responds to the reward structures in universities. Good teaching in some institutions is a component in the promotion criteria and academics are more likely to obtain tenure and promotion if their teaching and research portfolios are balanced with positive outcomes. As an intrinsic reinforcement, if academics are perceived to be receptive to innovations in technology, content, and pedagogies students are more likely to respond positively to them and the learning experiences designed by their lecturers. If lecturers are receiving positive feedback from students, this can influence their self-efficacy and empowerment over their teaching duties. Empowered academics lead to positive academic cultures which increases student satisfaction with educational quality and ultimately to enhancing institutional reputation. Therefore direct linkages can be identified from improving the quality of teaching and learning to enhancing institutional quality of Australian universities.

Implications for Further Research

As this research was investigating the effectiveness of the learning experiences being delivered through a VoIP medium, it would be useful to further explore students' perceptions in a post-trial experience. Students who have had multiple experiences within VoIP with multiple lecturers would yield a more expanded and generalised perspectives. It would also be interesting to see if face-to-face remained as the predominant preference of students with a highly skilled educational practitioner. As this group was an undergraduate cohort, it would be useful to explore a postgraduate masters or doctoral level cohort to investigate if there are any significant differences in perspectives related to the learning experience within the VoIP medium.

Although this research incorporated academics' and students' perspectives it would be useful to explore the implications and perspectives of technical support staff. These individuals' support was crucial to the success of implementation in this study and their unique perspectives would provide a more detailed insight into the training, technical support, and infrastructure requirements that are essential to successful programme implementation.

This results of this research has informed the development of two proposed models, first, the *Webs of Enhanced Practice* (WoEP) focused on establishing more effective

and flexible forms of professional development for academics. The second model, the *Webs of Enhanced Learning* (WoEL) identifies the potential impact of the professional development through facilitating positive student outcomes. Future research could be centred on exploring the effectiveness of the models in promoting learning for academics, experts, leaders and students, and producing changes in university classroom practice.

Concluding Summary

This research was initiated to explore university students' and academics' perceptions of the effectiveness of learning experiences delivered by a Voice-over-Internet-Protocol (VoIP) medium. It was also important to consider the academics' rationale for implementing this new technology into university coursework, and what teaching considerations were necessary for this to be successful. With the amount of research on learning styles and multiple intelligences this researcher was also interested in investigating if these psychological and behavioural characteristics influenced students' motivations to engage with VoIP-mediated learning experiences.

Even though the majority of the Singaporean cohort reported being satisfied with the quality of the learning experience (63%), a significant finding indicated that students' first preference remained with face-to-face learning environments. When this was not part of the online learning coursework, students took control of their own activities and established face-to-face team work meetings out of class time. They did not report an aversion to VoIP at all, rather they advocated for the convenience it represented in attending classes and interacting with students in different locales. They recognised the value VoIP represented for educational purposes, if students were studying in distant sites. They appreciated the opportunity to expand their technological expertise through using the VoIP, linking this to relevance to the current technologically-advanced workplace. One of the frustrations that students' reported with meeting online was their desire to have greater control over the booking of meetings within the VoIP environment at times convenient to the team members and not the lecturer.

This study validated Chickering and Gamson's (1991) seven principles of good teaching in undergraduate education and Ramsden's (2003) important properties of good teaching as relevant to current students. It also emphasised the importance of academics' developing a constructivist orientation to their beliefs about learning and teaching as these inform their pedagogical approaches (Prosser et al., 2003; Prosser & Trigwell, 1999a&b; Trigwell, & Prosser, 2003). Lecturers in this study were still working within transmissive orientations which created dissonance between the instructional design and course materials and the implementation through the teaching.

From the students' perspective they too prized good teaching regardless of the mode of delivery. They were articulate related to what teaching activities and strategies supported their learning, such as cooperative learning and reflective opportunities and were highly critical of lecturers who were poor practitioners. They were not overtly critical about all lecturers however, and presented balanced feedback regarding the aspects of the teaching that was effective for them, and about the challenges of the coursework and assessments.

An unexpected finding was that neither students' learning management style nor their multiple intelligence strengths significantly influenced their preference for VoIP learning environments. There was no statistical correlation found to exist between learning management style, multiple intelligence strengths and students' motivations to engage with the VoIP activities. There were qualitative relationships found between the students' perceptions of the learning environment and their learning management style. As may have been expected individuals who were 'people-oriented'; 'energised' and 'enterprising'; and/or 'managers of change' with an enthusiasm for things 'experimental', displayed more affinity for the VoIP learning experiences. Similarly, those individuals who were people-, interpersonally-, and verbally-oriented in terms of their multiple intelligences were also more receptive to this synchronous environment within VoIP. Cautions must be made though in drawing definitive conclusions or broad generalisations as the numbers of individuals having these characteristics were small. There was no relationship between learning management styles and multiple intelligences. This indicated that these two

constructs were not interrelated and were accessing different dimensions of personality and behaviour.

In the qualitative data all students were generally favourable about the VoIP learning environment. There was a qualitative relationship found between students' motivation, and the VoIP learning environment and course activities. As employed adult learners, they were motivated by convenience and accommodations VoIP presented in their frenetic study-work lives. VoIP provided flexibility to their studies which they appreciated. Students' motivation was positively influenced by challenging and supportive team interactions; positive outcomes emerging from successful decisions made in the simulation; and their development and refinement of professional skills. There was a relationship between students' motivations to engage in the VoIP environment and the teaching activities being undertaken in this medium. Students preferred to have the lecturing conducted through VoIP and engaged with the text chat facilities. Students' negative perceptions did not relate to the VoIP learning environment, rather it was focused on their relationship with the lecturer and their desire for greater guidance and feedback. This study revealed that the lecturer had not been successful in establishing a community of learners within the VoIP environment. However, the students themselves had successfully created a learning community within and across their teams, even with the friendly rivalry which existed as a result of the parameters of the simulated business market.

As teaching and learning was crucial in shaping positive student perceptions and in motivating students to engage with learning activities, academics must focus their energies on refining and expanding their pedagogies. In order for academics to be able to teach and assess well, they must have appropriate support and training. Therefore for good teaching there must be good academic professional development.

Two models emerged from this research. The first, the *Webs of Enhanced Practice* (WoEP) focus on establishing sound professional development through a blended networking approach involving academics, experts, technicians, leaders, and students. The anticipated outcomes of this model include the enhancement of content and pedagogical knowledge, and technological expertise. The second model, the *Webs of Enhanced Learning* (WoEL) articulates the impact of the learning made

possible through the *Webs of Enhanced Practice* into the microcosm of the university classroom, with anticipated outcomes that directly relate to the way effective teaching is performed and how students' learn best. Other associated outcomes are posited as greater empowerment of participants, more collaborative and positive departmental cultures, and increased engagement with professional development due to peer accountability.

It is anticipated that these two models working in concert will result in a more pedagogically and technologically-eficacious academy; more satisfied and successful graduates; more informed, involved, and trusted leaders; greater sustainability for programs; and enhancement of institutional reputation.

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Appendices

Appendix 1 – Participant Information Form

My name is Donald Scott. I am currently completing research for my PhD.

Purpose of Research

The purpose of this research is to investigate students' perceptions of their learning experiences that are mediated via Voice-over-Internet-Protocol (VoIP) within the higher education context. This study explores relationships between students' learning motivation, multiple intelligences/learning styles, and their perceptions of their VoIP-facilitated learning experiences. Students have diverse backgrounds with varied expectations, beliefs, and motivations to engage in learning. Gardner conceptualised students have multiple intelligences so approaches to learning are varied. A person can learn through interacting with, taking in, and processing stimuli and/or information and developing skills. These different modes of learning are referred to as learning styles. Therefore does VoIP support all students' learning independent of their multiple intelligences/learning styles and cultural background?

Participation will include any or all of the following data collection processes:

- 1) A 45 minute interview at a suitable and comfortable place. I would like to understand:
 - Your motivation to engage in the learning process.
 - Your perceptions of the VoIP facilitated learning experience.
 - Your preferred learning style.

The interview will be taped and then transcribed to help with later analysis.

- 2) You will be invited to complete a multiple intelligences and learning management style inventory which will be analysed and the results sent back to you for your own information and use in your reflective journaling.
- 3) You are invited to send a copy of your reflective assignment to me at the same time you send it through to your lecturer for marking. My collection of your assignments will in no way influence your marks and the lecturer will not be aware of who has participated.

Consent to Participate

Your involvement in the research is entirely voluntary. You have the right to withdraw at any stage without it affecting your rights or my responsibilities. When you have signed the consent form I will assume that you have agreed to participate and allow me to use your data in this research.

Confidentiality

The information you provide will be kept separate from your personal details, and I will only have access to this. The interview transcript will not have your name or any other identifying information on it and in adherence to university policy, the interview tapes will be deleted immediately after transcription and transcribed information will be kept in a locked cabinet for five years, before it is destroyed.

Further Information

If you would like further information about the study, please feel free to contact me by email xxxxx. Alternatively, you can contact my supervisor xxxxxxxx .

Thank-you very much for your involvement in this research, your participation is greatly appreciated.

This study has been approved by the University Human Research Ethics Committee. If needed verification of approval can be obtained either by writing to the University Human Research Ethics Committee ...

Appendix 2 – Consent Form

Project Title:

Effective learning experiences facilitated through Voice-over-Internet-Protocol (VoIP): Investigating the relationships between adult learning motivation, multiple intelligences, and learning management styles.

I (the participant) have read the information about this study and any questions I have asked have been answered to my satisfaction.

I agree to participate in these activities, realising I may withdraw at any time without penalty.

I agree that the research data gathered for this study may be published provided I am not identifiable.

I understand that I will be interviewed and the interview will be audio recorded. I also understand that the recording will be erased once the interview is transcribed.

Participant Name: _____ Date: _____

Participant Signature: _____

Witness Signature _____ Date: _____

Appendix 3 – Multiple Intelligences Checklist for Adults (MICA)

	<i>Circle your response (one only) to the following statements</i>	<i>Very True of Me</i>	<i>Somewhat True of Me</i>	<i>Not True of Me</i>
1.	I am well coordinated and feel confident that I can make my body do what I want it to do	3	2	1
2.	I write well and I can usually find the right words to say what I mean and communicate my ideas	3	2	1
3.	I have a good ‘ear’ for music and can usually tell when a note is off-key or someone is singing or playing incorrectly	3	2	1
4.	I like to spend time in bushland and I see details in insects, plants and trees that others miss	3	2	1
5.	I am good at analysing personalities, motivations and strengths and seeing how each person is different	3	2	1
6.	A job I would be good at is one with quite a lot of reading and writing to do	3	2	1
7.	I can successfully read maps and use them to find my way around. I have a good sense of direction and rarely get lost	3	2	1
8.	I find it relatively easy to do practical maths in my head (e.g. calculating costs/change and amounts)	3	2	1
9.	I am good at finding the logical flaws and inconsistencies in arguments and ideas	3	2	1
10.	Music is an important part of my leisure time. I listen to it a lot and go to musical concerts when I can	3	2	1
11.	I am able to differentiate between many different insects, birds or animals because I observe them a lot	3	2	1
12.	People often come to me to talk about their problems and for personal advice	3	2	1
13.	I know a lot about myself and I understand my own behaviour and feelings pretty well most of the time	3	2	1
14.	I am good at miming and playing charades	3	2	1
15.	I often notice small visual details that other people don’t see and I remember visual details well	3	2	1

16.	After something has upset me I try to understand my reactions and find ways to calm down and deal with it	3	2	1
17.	I am good at imagining how something will look before I make it (e.g. renovations, designs, models, clothing)	3	2	1
18.	I can recognise and name many trees and plants	3	2	1
19.	I am good at working out how I am both similar to and different from other people I know and meet	3	2	1
20.	English and languages were among my favourite subjects at school and I did well in them	3	2	1
21.	I am very sensitive to other people's feelings. I can usually 'read' how they are feeling and help where needed	3	2	1
22.	Maths and Science were among my favourite subjects at school and I did well in them	3	2	1
23.	A job I would be good at is one that involves using my body or hands	3	2	1
24.	I am good at deciding on a goal, working out how to do it, then persisting till I achieve it	3	2	1
25.	I could learn most new sporting, exercise or dance skills pretty easily if I chose to	3	2	1
26.	I like and am good at word puzzles and word games	3	2	1
27.	I take part in art, design or craft activities or lessons in my leisure time and I am quite good at them	3	2	1
28.	When I was younger I had a very strong interest in nature and collected specimens or raised animals or birds	3	2	1
29.	I have a very strong interest in music and I have always been good at learning new songs and tunes	3	2	1
30.	I am good at brainteasers, maths puzzles and playing strategic games like chess and Mastermind	3	2	1
31.	I am skilled at using grammatically correct sentences and I have an extensive general vocabulary	3	2	1
32.	I am good at working out which elements, when combined, form different styles of music (e.g. country, classical, rock)	3	2	1
33.	I am good at working with my hands to make things (e.g. carpentry, sewing, model building, origami)	3	2	1

34.	I am a good speller and I take pride in spelling words correctly	3	2	1
35.	Animals usually respond well to me because I have a natural affinity with them and care about them	3	2	1
36.	I tend to take on the role of organiser when I am around others. I do it pretty efficiently and others respond well to me	3	2	1
37.	I am a very keen reader in my leisure time and I read quickly and fluently	3	2	1
38.	A job I would do well is one that involves either handling maths/numbers or doing scientific analysis or research	3	2	1
39.	I know how to play a musical instrument and I have shown some talent at it	3	2	1
40.	I can successfully adjust my behaviour so that I can get along well with a wide variety of people	3	2	1
41.	I can quickly recognise familiar songs even when they are differently orchestrated or without words	3	2	1
42.	I am good at logical thinking and argument of the kind used in debates	3	2	1
43.	A job I would be good at is one that involves working with nature in some way, e.g. a forest ranger, vet, marine biologist	3	2	1
44.	I have spent a lot of my leisure time doing sport or other forms of physical activity and I am reasonably good at it	3	2	1
45.	I am good at acting in plays and I can effectively communicate a character to an audience	3	2	1
46.	I can accurately identify my strengths and weaknesses and predict how good I will be at something	3	2	1
47.	I have a good sense of design and can work out which things look better and why, and which things go well together	3	2	1
48.	I am good at showing and teaching others how to do things and I would do well in a job where I had to do a lot of that	3	2	1
49.	Art or graphics or technical drawing was a favourite subject at school and I did well in it	3	2	1
50.	I am motivated to find out about myself and I do quizzes or read books to improve my self-knowledge	3	2	1

51.	I can 'see' a situation more readily if I can measure, count, categorise or analyse the material	3	2	1
52.	I can usually work with small parts to fix things because I have good control over my hands and fingers	3	2	1
53.	I am skilled at growing things — in general they thrive	3	2	1
54.	I can see clear visual images in my head of the things I am thinking about or remembering	3	2	1
55.	I sing reasonably well and I can 'carry a tune' and sing harmoniously with others	3	2	1
56.	I like to write down my experiences and my reactions to them so that I can reflect and learn from them	3	2	1

Pearson Education Australia 2005. This inventory is based on *Eight Ways At Once Book I*.

Appendix 4 – Spectral Management Type Inventory (SMTI)

Instructions:

For each **Question** rank the set of statements **a-g** with the numbers **1-7** in the **‘Rank’** column

Question 1.

Rank

a	I am a hands-on-learner	
b	The projects that really grab me are the unique ones, particularly those that transform people or things	
c	The sort of mentor I respect will inevitably be a deep person	
d	I respect a boss who is authoritative	
e	I am most likely to learn from relevant concepts, experiences, or techniques	
f	I usually seek out someone I can bounce my ideas off	
g	I learn best through other people I like	

Question 2.

Rank

a	I respect other people for their actions rather than their words	
b	The sort of boss I value is the one who can draw out my individuality	
c	I learn the most when I am working with people who encourage me to reflect my ideas and experiences	
d	Any project I undertake I will take rigorously, step by step	
e	I relish those learning experiences, which are personally challenging and commercially risky	
f	The sorts of projects that excite me are thought-provoking ones	
g	Learning should be enjoyable, at least as far as I am concerned	

Question 3.

Rank

a	The management books I prefer are those business biographies that tell things as they really are	
b	I have the greatest respect for such business creators as Steve Jobs or the original Olivetti, who had compelling imaginations	
c	The sorts of managers I learn the most from are profound people	
d	I learn about a subject methodically	
e	I love to be challenged	
f	I prefer the sorts of management games or videos that are interactive	
g	Projects that suit me are geared around people who are nice	

Question 4.**Rank**

a	Of all the training programmes on the market the outward bound courses, and adventure training, make most sense to me	
b	If I read a book on management it will be written by a visionary such as Henry Ford or Robert Owen	
c	I learn the most from meaningful managerial and organisational experiences that draw out the whole of me	
d	I am very partial to case studies	
e	The sort of mentor who is worth his or her salt is the one who is influential in his or her right	
f	If I were to have someone to guide me, I would want such a person to be intellectually stimulating	
g	Teaching materials that work for me have to be grounded in concrete experiences	

Question 5.**Rank**

a	My favourite managers have been those who 'manage by wandering about'; that is, always being on the go, making things happen	
b	I expose myself to the real originators in the field of management	
c	I can learn the most when I have the time and space to reflect on any insights I have come up with	
d	When investigating a subject I ask probing questions, testing the underlying assumptions	
e	I favour the sorts of learning materials, preferably on audiotape or video that demonstrates business mastery	
f	I relish a multi-media approach to education	
g	The sorts of management books that appeal to me are the popular easily readable ones such as The One Minute Manager	

Question 6.**Rank**

a	The sort of manager I most respect, as a boss, is the one who sets me immediate and tough challenges	
b	I learn the most through my own creative actions	
c	I seek out a wide range of learning situations, preferably each of a fair degree of intensity, from within and without management.	
d	I am keen on self-study packages which I can work through systematically and thoroughly	
e	Dramatic learning situations, in which there is plenty of room for manoeuvre, are just for me.	
f	I learn most from new experiences, problems or opportunities	
g	The sort of boss I respect will be a people person	

Question 7.**Rank**

a	Projects that really get me going are all about action	
b	I learn the most when I am totally immersed in what I'm doing	
c	When I really am learning I have to be able to feel as well as think about the situation or material	
d	If I am to have a mentor, he or she needs to be someone of authority within my organisation	
e	I learn best through a role-play or simulation that is dramatic	
f	I seek out brief and varied learning situations such as role-plays, business games, and group exercises	
g	I like to work for someone who is prepared to put out, from time to time, 'help me' signals	

Question 8.**Rank**

a	I hate being tied down to sitting in a classroom for too long	
b	The only real function of a lecturer, as far as I am concerned is to inspire me	
c	When I tackle a project I always try to get to the heart of the matter	
d	A good trainer, for my purpose, is a clear and objective communicator	
e	I learn best from my own successes and failures	
f	Learning is what work is all about to me	
g	Within a study group, I hate to stand out in case someone rejects me	

(Learning Styles Inventory from Lessem 1991, pp. 92-97)

Appendix 5 – Student Feedback Questionnaire

<i>Please indicate the extent of your agreement/disagreement with the following statements as descriptions of this unit</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
	Local Offshore Lecturer							Australian Lecturer					
The staff member motivated me to do my best work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The staff member made a real effort to understand difficulties I might be having with my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The staff member was extremely good at explaining things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The staff member worked hard to make this unit interesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The staff member gave me feedback on how I was going	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The staff member's comments helped me to achieve	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Please indicate the extent of your agreement/disagreement with the following statements as descriptions of this unit</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
It was always easy to know the standard of work expected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was able to explore academic interests with other people more effectively because of Elluminate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In this unit I developed my problem-solving skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This online environment has stimulated my interest in other related topics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The workload in this unit was too heavy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The unit sharpened my analytical skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually had a clear idea of where I was going and what	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Please indicate the extent of your agreement/disagreement with the following statements as descriptions of this unit</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
was expected of me in this unit					
I found my studies in this unit intellectually stimulating because we had used web conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To do well in this unit all you needed was a good memory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In this unit I developed my ability to work as a team member	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
As a result of this unit, I feel confident about tackling unfamiliar problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In this unit I developed my written communication skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The staff member seemed more interested in testing what I had memorised than what I had understood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Elluminate assisted me to feel part of a group who were committed to learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It was often hard to discover what was expected of me in this unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students' ideas and suggestions were used during the Elluminate discussions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was generally given enough time to understand the things I had to learn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a better understanding of the unit topics from doing the assessments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I found that Elluminate motivated me to engage with others in this unit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I learned to explore ideas confidently with other people more easily with Elluminate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too many assessments were just about facts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There was a lot of pressure on me as a student in this unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The unit helped me to develop my ability to plan my own work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The amount of work in this unit was manageable, which meant I could thoroughly understand it all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall, my online experience in this unit was worthwhile	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I used information from various sources successfully for my unit's assessments (eg. paraphrased & referenced information from Internet, journals and texts)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The staff member made it clear right from the start what was expected of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<i>Please indicate the extent of your agreement/disagreement with the following statements as descriptions of this unit</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I felt I belonged to the Business School learning community as a result of the synchronous interaction in Elluminate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The estimated time required to complete the course was accurate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This unit has increased my awareness of international perspectives in business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My appreciation of other cultures has increased as a result of this unit (eg. respecting diversity in culture, language, & opinions)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In this unit I developed my ability to make decisions (eg. Selecting & judging information that is relevant)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In this unit I developed my verbal communication skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In this unit I developed my ability to use appropriate technology (eg. computers, Internet, library databases)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall, I am satisfied with the quality of the unit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following questions may use a drop down response box. In these cases select the appropriate response.

- Are you a **part time** or **fulltime** student?

Full-time	<input type="checkbox"/>
Part-time	<input type="checkbox"/>

- Have you ever used synchronous software tools before?

Answer	Yes
--------	-----

3. What tools have you used?

MSN Messenger	Yes
AOL Instant Messenger	Yes
Yahoo! Chat	Yes
Blackboard Chat	Yes
WebCT Chat	Yes
Horizon Wimba	Yes
Other	Yes

4. Do you think that your use of “*Illuminate Live!*” enhanced your learning opportunities?

Answer	Yes
--------	-----

5. How **long did it take** before you became comfortable enough with “*Illuminate Live!*” that you no longer **consciously considered** it in your interactions?

Answer	One hour
--------	----------

6. What **features** of “*Illuminate Live!*” was the **most useful** in your studies in this unit?

Choose as many options that are appropriate

The Voice and Audio feature of talking	<input type="checkbox"/>
Text Chat	<input type="checkbox"/>
Whiteboard	<input type="checkbox"/>
Group Browsing	<input type="checkbox"/>
Application Sharing (sharing the same PC window with others)	<input type="checkbox"/>
Recording of the sessions	<input type="checkbox"/>

7. What is your preferred communication mode with your fellow students?
Choose as many options as are appropriate

Elluminate (synchronous environment)	<input type="checkbox"/>
Face-to-face	<input type="checkbox"/>
Telephone	<input type="checkbox"/>
Email	<input type="checkbox"/>
Discussion Board (asynchronous environment)	<input type="checkbox"/>
Video-conferencing	<input type="checkbox"/>

8. What is your preferred communication mode with your lecturer?
Choose as many options as are appropriate

Elluminate (synchronous environment)	<input type="checkbox"/>
Face-to-face	<input type="checkbox"/>
Telephone	<input type="checkbox"/>
Email	<input type="checkbox"/>
Discussion Board (asynchronous environment)	<input type="checkbox"/>
Video-conferencing	<input type="checkbox"/>

9. Do you think that meeting online (at the same time) is preferable to travelling to classes?

Answer	Yes
--------	-----

10. Did you experience any technical problems?
Choose as many options as are appropriate

Software setup	<input type="checkbox"/>
Microphone and Speakers	<input type="checkbox"/>
Use of the software	<input type="checkbox"/>
Other	<input type="checkbox"/>

11. Which feature(s) would have liked to be used more?

Voice Chat	<input type="checkbox"/>
Text Chat	<input type="checkbox"/>
Application Sharing	<input type="checkbox"/>
White-boarding	<input type="checkbox"/>
Video	<input type="checkbox"/>
Recordings	<input type="checkbox"/>

12. Would you like to see this type of software used for more at the University?
If so what for?

Student meetings and study groups	<input type="checkbox"/>
Revision of content	<input type="checkbox"/>
Live broadcast of seminars/lecturers	<input type="checkbox"/>
Recorded broadcast of seminars/lecturers	<input type="checkbox"/>
Student consultation with lecturers	<input type="checkbox"/>
I thought that what we used the software for in this unit was sufficient	<input type="checkbox"/>

What were the best aspects of the unit?

What aspects of the unit are most in need of improvement?
(please write any suggestions you may have)

Further comments:

Do you wish to participate in the interviews which explore your opinions about your learning experiences?

Answer	Yes
--------	-----

Appendix 6 – Student Interview Schedule

Lead statement:

The purpose of this research is to gain an insight into your perceptions of the Voice Over Internet Protocol learning environment which was *Elluminate Live!* in this unit. This interview provides you with the opportunity to talk about what happened in the *Elluminate* sessions and how these experiences impacted on you and your learning.

All your responses are completely confidential and you will have total anonymity. There will be no way to track your individual response back to you and there will not be any impact on your results from your participation in this interview.

To make our conversation less wordy, when I am referring to the VoIP learning environment I will use the term “*Elluminate*” as this was the tool that you experienced in this unit.

Section A

1. Please describe the activities you experienced via VoIP/*Elluminate* throughout the trimester as part of your studies in Business Capstone 301 unit?

(Note: List the different activities so that you can refer back to these or probe for more information)

2. From the list of activities you have just mentioned which of these motivated you to learn the most and which did not?

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____
- 7 _____

Section B

For each cited activity, question students about how they perceived the effectiveness (motivational factors) in terms of facilitating their learning in the unit ...

1. Activity _____

On a scale of 1-10 with
effective

1 2 3 4 5 6 7 8 9 10
Ineffective Highly

How effective was _____ in assisting your learning?

Please explain your reason for rating this activity in this way.

2. Activity _____

On a scale of 1-10 with
effective

1 2 3 4 5 6 7 8 9 10
Ineffective Highly

How effective was _____ in assisting your learning?

Please explain your reason for rating this activity in this way.

3. Activity _____

On a scale of 1-10 with
effective

1 2 3 4 5 6 7 8 9 10
Ineffective Highly

How effective was _____ in assisting your learning?

Please explain your reason for rating this activity in this way.

4. Activity _____

On a scale of 1-10 with
effective

1 2 3 4 5 6 7 8 9 10
Ineffective Highly

How effective was _____ in assisting your learning?

Please explain your reason for rating this activity in this way.

5. Activity _____

On a scale of 1-10 with

1 2 3 4 5 6 7 8 9 10
Ineffective Highly effective

How effective was _____ in assisting your learning?

Please explain your reason for rating this activity in this way.

6. Activity _____

On a scale of 1-10 with

1 2 3 4 5 6 7 8 9 10
Ineffective Highly effective

How effective was _____ in assisting your learning?

Please explain your reason for rating this activity in this way.

Section C

Group work

What types of interaction did you engage in within the Capstone's VoIP/Elluminate environment?

- Listening to lecturer
- Responding to lecturer
- Class (voice chat)
- Text chat
- Group Chat (voice chat)
- Whiteboard
- Application Sharing
- Other

Which forms of interaction did you like the most? Why? *(focus on voice options)*

Which forms of interaction did you like the least? Why not? *(focus on voice options)*

Which helped you to complete your unit tasks the most? Why?

Relevance to the real-world

In your opinion, have these online interaction experiences prepared you for a future work environment? If so, how?

Section D

3. Remembering back to your Learning Style information, did you agree with the assessment of your personality and abilities?

Student reaction about their learning style is recorded below...

Yes No mixed response Y/N Unsure

4. Remembering back to your Multiple Intelligence information, did you agree with the assessment of your personality and abilities?

Student reaction about their MI is recorded below...

Yes No mixed response Y/N Unsure

5. Considering your learning style was assessed as _____ and your MI was predominantly _____ how well did the interaction functions, such as voice and text chat, in the VoIP/*Elluminate* support your learning?

6. How has knowing what your learning style and MI strengths were, actually assisted you with your learning in this unit?

If yes, how and why?

If no, how and why?

If respondents have no recollection or engagement with their learning style then skip this question and go to final Q.

7. What are your suggestions to make VoIP/*Elluminate* a more effective learning tool for you considering your learning style?

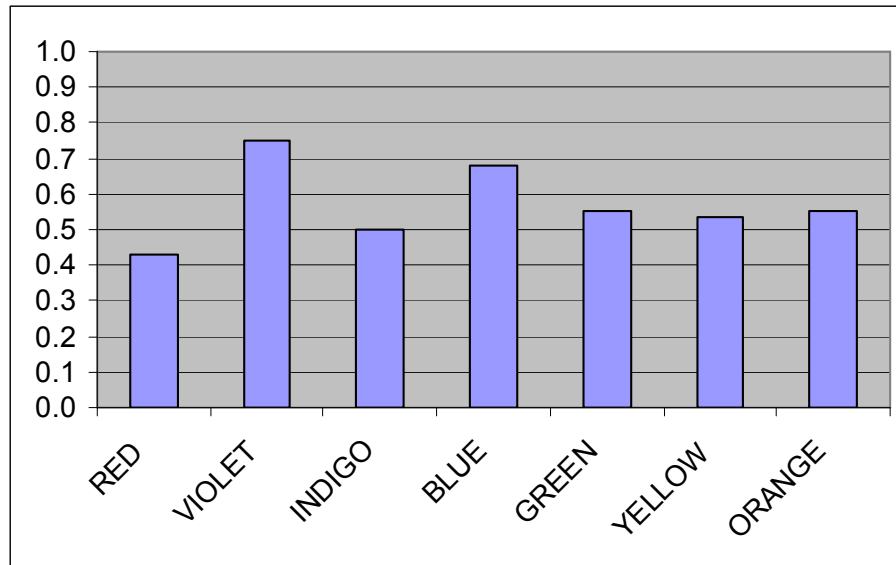
8. How could knowledge of your learning style affect you in your future work situation?

How and why?

Well that is the conclusion of the questions in this interview. I would like to take this opportunity for your cooperation with this study in particular sending

Appendix 7 – Sample MI and LMS Student Explanation Document

Learning Management Style



Remembering that 1 = high and 7 = low priority to you, your Learning and Management Style (L & MS) is determined by the lowest value on the graph. Hence your L and MS is ...**RED**

Check out the explanations below.

Colour	Learning Style	Management Style
Red	Reactive (Reactor)	Action
Orange	Responsive (Responder)	People
Yellow	Experimental (Experimenter)	Change
Green	Energised (Energiser)	Enterprise
Blue	Deliberative (Deliberator)	Analysis
Indigo	Harmonic (Harmoniser)	Development
Violet	Inspired (Inspirer)	Innovation

Learning Style

Style	Features				
	Project focus	Coaching abilities	Learning material	Learning medium	Learning mode
Reactor	Action-centred	Energetic, practical	Practical tips	Adventure Training	Action learning
Responder	People-centred	Sociable, skilled	Popular writing	Group learning	Apprenticeships
Deliberator	Organisation-centred	Respected, respectable	Business texts	Integral learning packages	Formal course
Energiser	Business-centred	Dynamic, challenging	'Success' books	Dramatisations and role plays	Challenge and response
Experimenter	Project-centred	Enthusiastic, bright	Leading-edge thinkers	Menu of learning resources	Problem-solving
Harmoniser	Environment-centred	Sensitive, insightful	Profound thinkers	Multi-media experience	Discovery learning
Inspirer	Vision-centred	Imaginative, creative	Business originators	Master classes	Creative action

Management Style

Action manager (red)

Action management is at a premium in very fast moving industries, where the expression "work hard, play hard" has become commonplace. In a production or distribution context where an action speaks louder than words such a "red" management orientation is often called for. The ability to act fast, and to enact situations, can be at a premium.

He or she learns best, and fastest, in crisis. Characteristically such learners need to react to external stimuli, in order to learn, and find that any form of management education that is divorced from action is meaningless. Such a person values deeds far above words. For that reason, he or she tends to be reactive rather than proactive, thriving on crises, where external stimuli provoke him or her to action. In fact, the compulsive action man or woman can wreak havoc by doing things at the wrong time and in the wrong place, not to mention a propensity to do battle, come hell or high water. Therefore, in a group context, the action manager might try getting on with the job rather than thinking about it.

People manager (orange)

People managers, unlike the more detached "personnel manager", are naturally gregarious, sociable and warm. They characteristically emerge from the salesforce or

from the shop floor, rather than through the graduate management ranks, though in Japan the situation is different. Such a "people orientation" in Japan is a prerequisite for advancement across all management ranks.

As a learner, the people manager finds it difficult to acquire knowledge outside of concrete situations, in association with either people or things. He or she may be the one to remember, and to celebrate, birthdays both of individuals and of critical events in the history of the group or even the company. If his or her strength is overdone, he or she may spend all their time being nice to others rather than getting on with things, or else become caught up in "us versus them" situations.

Manager of change (yellow)

Such a manager of change is characteristically intellectual rather than primarily emotional or practical. Such managers need to work in a mentally stimulating environment, and will seek professional advancement rather than promotion, necessarily, within a particular organisation. As a result they can be prone to job hopping, for the sake of professional stimulus rather than, at least primarily, money or status.

They will learn through trial and error, applying their minds to particular tasks and then learning from the consequences. As a team person then, this kind of manager enjoys working with a wide variety of people. He or she finds group problem-solving stimulating and such a "networker" will use every opportunity available to involve people from outside the group with them. In that context, such a person will seek to generate and share ideas with as wide a circle of contacts as possible; work, then, must be fun. "Networking", in both the technical and social meaning of the word, is therefore much to his or her liking. Should his or her strengths be ignored or overdone he or she may become argumentative and stubbornly resistant to authority, thereby preferring varied consultancy based activity to ongoing, functionally based work.

Enterprising manager (green)

Enterprising managers exploit new markets, recognize and grasp new business opportunities, and generally enjoy the rough and tumble of business life. If not jungle fighters, they are certainly gamesmen and women who love a good scrap, and respond immediately to a challenge, especially if it involves some personal and financial risk. They are at home in the sales force, in charge of a profit centre or heading up a new venture. They can be ruthless and unscrupulous but also fun loving, larger than life characters.

Such entrepreneurial characters learn from emotionally laden experiences, and through the examples of other wheeler-dealers they admire, rather than through dry and depersonalised texts. Unlike "organisers" who thoughtfully allocate responsibility, the enterprising managers take most of the responsibility on themselves. Such a person is typically proactive, seizing every possible opportunity to steer the group in his or her desired direction. He or she is emotionally influential and commercially realistic. Should his or her strength become overdone or go unnoticed such a person may sabotage group proceedings to retain influence.

Analytical manager (blue)

The analytical manager is the archetypal executive. He or she fits comfortably into "role" or functionally based organisations where bureaucracy, in either its negative or positive sense, prevails. Impersonal, objective, and honest in their dealings, such managers prefer certainty to uncertainty and well laid plans to devious manoeuvres.

They are a force of law and order in their organisations and progress through the managerial hierarchy along conventional promotional lines. As a team member, the analytical manager would best be the conventional chairperson or team leader. They welcome authority and responsibility, and want roles, rules, and routes to be closely prescribed. Such team members are practically thoughtful, and are good organisers in the conventional sense of the word. Co-ordination, rather than competition or co-operation, is their watchword.

Developmental (indigo)

Developmental managers play a balancing role, more akin to that of enabler rather than fixer, that is essentially developmental in nature. For the truly developmental manager is able to recognise and harness the forces of diversity – in people or products, in markets or environments – where others might either suppress or counteract them. Co-operation and interdependence is to these managers what co-ordination and dependability is to the analytical manager.

They learn through depth of insight and breadth of exposure rather than through focused instruction or personal challenge. As team members, then, harmonisers are essentially constructive where others are provocative or even destructive.

The innovator (violet)

Truly innovative managers are total originals, able to create something out of seemingly nothing. They are propelled forward by an inner compulsion, which is projected onto others by a powerful and visually expressive imagination. Such individuals will be creative learners and while in a group will emerge as inspired team members. The innovator is probably the rarest of all managers, though he or she is probably more likely to be found in Silicon Valley than anywhere else.

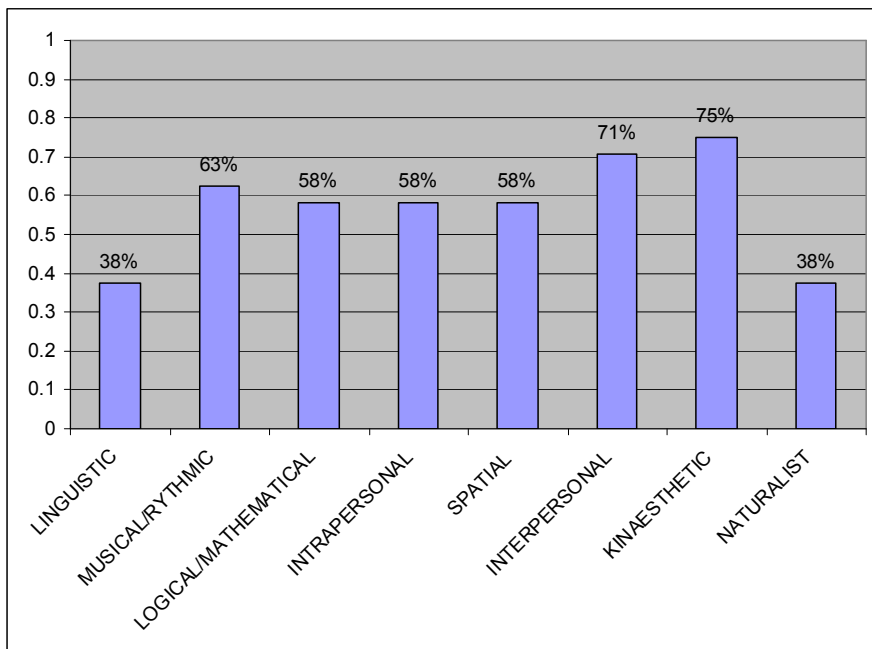
They are the inventors and visionaries, pointing a group, in the most picturesque language, towards a promised land. Team members can become dogmatic, intolerant, and intolerable, if their strengths go unrecognised or are overdone. In fact often they consider themselves as idiosyncratic loners, incapable of being integrated into a team, and may need the patience and insight of a harmoniser to form a bridge between themselves and more conventional others.

(Except taken from *Colour your managerial style, colour your organisation*,
Lessem, R. & Baruch, Y.

Multiple Intelligence Theory

Gardner's View of Intelligence

Howard Gardner of Harvard University defines intelligence as "the capacity to solve problems or to fashion products that are valued in one or more cultural settings" (Gardner, 1983). His pluralistic view of intelligence suggests that all people possess at least eight different intelligences which operate in varying degrees depending upon each person's individual profile of intelligences. The eight intelligences now identified by Gardner include linguistic intelligence, logical-mathematical intelligence, spatial intelligence, bodily-kinaesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence and naturalistic. The general characteristics associated with each of these intelligences are described below.



The graph shows your Multiple Intelligences and the relative strengths of each (the higher the value the more predominant the strength). Use the descriptions below to understand your strengths.

Verbal/Linguistic

Description

Verbal/linguistic intelligence relates to words and language. We use this intelligence in listening, speaking, reading and writing. It deals with words and language, both written and spoken. A person who displays this intelligence can think in words and to use language to express and understand complex meanings. This person is sensitive

to the meaning of words as well as the order of words, their sounds, rhythms, and inflections.

- Linguistic Sensitivity: skill in the use of words for expressive and practical purposes
- Reading: skill in reading
- Writing: ability and interest in writing projects such as poems, stories, books or letters
- Speaking: skill in oral communication for persuasion, memorisation and description

Characteristics include:

- Analyzing own use of language
- Remembering
- Using humour
- Explaining, teaching, learning
- Understanding syntax and meaning of words
- Convincing someone to do something

Interpersonal

Description

Interpersonal intelligence is used in person-to-person relationships. It includes the ability to communicate with others and to have empathy for their feelings and beliefs. This intelligence enables a person to think about and understand another person. This person has empathy and recognises distinctions among people and to appreciate their perspectives with a sensitivity to their motives, moods and intentions. It involves interacting effectively with one or more people among family, friends or working relationships.

- Understanding People: sensitivity to and understanding of other people's moods, feelings and point of view
- Getting along with Others: able to maintain good relationships with other people especially friends and siblings
- Leadership: to take a leadership role among people through problem-solving and influence

Characteristics include:

- Creating and maintaining synergy
- Seeing things from others' perspectives
- Cooperating within a group
- Noticing and making distinctions among others
- Communicating verbally and nonverbally

Bodily/Kinaesthetic

Description

Bodily/kinaesthetic intelligence is related to physical movement and the knowledge of the body and how it functions. It includes the ability to use the body to express emotion(s), to play a game, and to interpret and invoke effective "body" language; uses brain's motor cortex, which controls bodily motion. A person with this intelligence tends to think in movements and to use the body in skilled and complicated ways for expressive as well as goal-directed activities. It involves a sense of timing and coordination for whole body movement and the use of hands for manipulating objects.

- Physical Skill: ability to move the whole body for physical activities such as balancing, coordination and sports
- Dancing, Acting: to use the body in expressive, rhythmic and imitative ways
- Working with Hands: to use the hands with dexterity and skill for detailed activities and small work

Characteristics include:

- Connecting mind and body
- Using mimetic abilities
- Improving body functions
- Controlling movements previously learned
- Controlling voluntary movements
- Expanding whole body's awareness

Musical/Rhythmic

Description

Musical/Rhythmic intelligence includes the ability to recognise tonal patterns, rhythm and beat. It includes sensitivity to environmental sounds, the human voice and musical instruments. It involves active listening and there is a strong connection between music and emotions.

- Musical Ability: awareness of and sensitivity to music, rhythms, tunes and melody
- Instrument: skill and experience in playing a musical instrument
- Vocal: a good voice for singing in tune and along with other people
- Appreciation: actively enjoys listening to music

Other characteristics include

- Sensing tonal qualities
- Creating melodies and rhythms
- Being sensitive to sounds
- Using "schemas" to hear music
- Understanding the structure of music

Visual/Spatial

Description

Visual/spatial intelligence includes being able to visualise an object and to create mental images. It deals with visual arts, navigation, architecture and certain games such as chess. Relies on sense of sight and ability to visualise; includes ability to create mental images. This intelligence allows the person to think in pictures and to perceive the visual world accurately. This intelligence allows a person to think in three-dimensions and to transform one's perceptions and re-create aspects of one's visual experience via imagination as well as the ability to work with objects.

- Imagery: use of mental imagery for observation, artistic, creative, and other visual activities
- Artistic Design: to create artistic designs, drawings, painting or other crafts
- Construction: to be able to make, build or assemble things

Characteristics include

Perceiving objects accurately
Recognising relationships between objects
Representing something graphically
Manipulating images
Finding one's way in space
Forming mental pictures
Imagining

Logical/Mathematical

Description

Logical/mathematical intelligence deals with inductive and deductive reasoning, numbers and relationships. It involves the ability to recognise patterns, to work with geometric shapes and to make connections between pieces of information. It also deals abstract patterns and is sometimes called scientific thinking. A person with this intelligence can think of cause and effect connections and to understand relationships among actions, objects or ideas. To be able to calculate, quantify, consider propositions and perform complex mathematical or logical operations. It involves inductive and deductive reasoning skills as well as critical and creative problem-solving.

- Problem-solving: skill in organisation, problem-solving and logical reasoning; curiosity and investigation
- Calculations: ability to work with numbers for mathematical operations such as addition and division

Intrapersonal

Description

Intrapersonal intelligence is based on knowledge of the "self". It includes metacognition (thinking about thinking), emotional responses, self reflection and an awareness of metaphysical concepts.

To think about and understand one's self. A person with this intelligence is aware of their strengths and weaknesses and to plans effectively to achieve personal goals. It involves reflecting on and monitoring one's thoughts and feelings and regulating them effectively. They also have the ability to monitor themselves in interpersonal relationships and act with personal efficacy.

- Knowing Myself: awareness of one's own ideas, abilities; personal decision-making skill
- Goal Awareness: awareness of goals and self correction and monitoring in light of a goal
- Managing Feelings: ability to regulate one's feelings, moods and emotional responses
- Managing Behaviour: ability to regulate one's mental activities and behaviour

Characteristics include

- Concentrating
- Being mindful
- Evaluating one's own thinking
- Being aware of and expressing various feelings
- Thinking and reasoning on higher levels
- Understanding self in relationship to others

Naturalistic

(this is a very recent MI and as yet is not widely published)

Description

Naturalistic relates to being in tune with nature and the natural world including plants, animals and scientific studies. To understand the natural world. This is a talent often found in many aboriginal or native peoples and is observed through their unique knowledge of natural medicines, plants and animals used for specific healing purposes, ways of doing things that are in harmony with the environment, and an ability to read and interpret the world around them.

- Animal Care: skill for understanding animal behaviour, needs, characteristics
- Plant Care: ability to work with plants, (i.e., gardening, farming and horticulture)
- Science: knowledge of natural living energy forces including cooking, weather and physics

Where to from here?

Each of us uses seven (or more) 'intelligences'.

- All 'intelligences' need to be equally valued.
- Everyone learns in different ways at different rates for different reasons.
- All 'intelligences' can be taught, nurtured and strengthened.
- Stronger 'intelligences' may be used to awaken and strengthen weaker ones.
- Strength with an 'intelligence' may manifest itself in diverse ways.
- Assessment becomes "How are you smart?" not "How smart are you?"

When applying for a job highlight your 'intelligence' strengths. Use the terminology described in each 'intelligence' to promote yourself.

Good Luck

**Appendix 8 – Student Feedback Instrument
(Australian Campus Version)**

Good Teaching	The staff member motivated me to do my best work
	The staff member put a lot of time into commenting on my work
	The staff member made a real effort to understand difficulties I might be having with my work
	The staff member normally gave me feedback on how I was going
	The staff member was extremely good at explaining things
	The staff member worked hard to make this unit interesting
Clear Goals & Standards	It was always easy to know the standard of work expected
	I usually had a clear idea of where I was going and what was expected of me in this unit
	It was often hard to discover what was expected of me in this unit
	The staff member made it clear right from the start what was expected of students
	The content of this unit clearly related to the unit outline
	The topics in this unit were presented in a logical sequence
Appropriate Assessment	The unit materials provided were relevant and concise
	To do well in this unit all you needed was a good memory
	The staff member seemed more interested in testing what I had memorized rather than what I had understood
	Too many questions asked were just about facts
Appropriate Workload	The assessment methods employed in this unit required an in-depth understanding of the unit content
	The workload was too heavy
	I was generally given enough time to understand the things I had to learn
	There was a lot of pressure on me as a student in this unit
Generic Skills	The sheer volume of work to be got through in this unit meant that it could not all be thoroughly comprehended
	The unit developed my problem-solving skills
	The unit sharpened my analytical skills
	The unit helped me to develop my ability to work as a team member
Overall Satisfaction	As a result of this unit I feel confident about tackling unfamiliar problems
	The unit improved my skills in written communication
Overall Satisfaction	Overall, I was satisfied with the quality of this unit

Appendix 9 –Questions for Exploratory Interview - Administrator

1. What were the reasons for introducing the Capstone unit into the Bachelor of Commerce degree programme?
2. Who was involved and what processes were followed in the development of the Capstone unit?
3. Please discuss the advantages and disadvantages in this process.
4. Why did you introduce Elluminate Live! to this Business School?
5. Please discuss the professional development implications.
6. Please describe any other implications for the organisation that has arisen as a result of the processes you have followed in introducing VoIP.

Appendix 10 – Questions for Interview - Lecturer

1. What are your impressions of the Capstone unit design?
2. Why did you choose to teach this unit?
3. Why did you choose to teach using the VoIP?
4. What teaching considerations have you had to make in rolling out this unit into the offshore situation using the VoIP software?