

## CHAPTER 2

### Constructing knowledge: Engagement in the online community

#### 2.1 Introduction

In discussing the essence of computer mediated distance learning, Paloff and Pratt (1999, p. 163) quotes Don MacIntyre of the Fielding Institute who makes a very powerful statement in this regard:

In talking about distance learning, I keep stressing that our focus is on the learning process not the technology. Many institutions are jumping on the technology bandwagon so as to become a part of the information super-highway. In doing so their goal is to use the technology to transmit a tired and stale pedagogy over fiber optic cable – as if fiber optic cable will somehow transform the pedagogy.

The assumption that one can dump materials (texts) online, leave it to ferment and mature, and trust the technology itself to assure that learners will learn, is not acceptable.

Rather than critically assessing the points of view of theorists on the nature of online learning and technologies, this chapter will explore the suitability of Internet communication technologies, more specifically the online learning community (OLC), as the foundations for a delivery mode that would address today's learning needs from a distance education (DE) perspective. In order to avoid a 'tired and stale pedagogy', it is regarded essential that the OLC be founded upon a commitment to a sound learning philosophy in order to exploit the full potential of Internet communication technologies, and to meaningfully facilitate delivery. Research will be cited regarding the success with which the

OLC was employed by teaching practitioners, as well as the warnings for a very particular and unique institution like Unisa.

## **2.2 A history of convergence**

Computer supported collaborative distance learning has a very interesting history. Since the mid 1900's attempts to improve distance education, learning on computers, and the establishment of computer networks to facilitate communication and information exchange, converged to enable people located anywhere geographically to cooperate towards shared goals. Knowledge of this history is regarded as essential to understanding the use of new Internet communication technologies in distance education (DE).

### **The rise of distance education**

DE has its roots in the correspondence education that developed in the United States, France, Germany, and the United Kingdom during the mid-1800s (Horton 2000, p.4). By 1840, Sir Isaac Pitman was teaching his shorthand system by mail. At about the same time, Scottish educator, James Stewart of Cambridge University, began offering off campus lectures. In the US, Illinois Wesleyan University began a home-study program in the 1870s, and a 'Correspondence University' was founded in Ithaca, New York, in 1883. In the 1890s, the International Correspondence Schools (ICS) grew out of home-study courses in mine safety developed by Thomas J Foster the decade before. ICS eventually supplied home-study courses to workers at 150 different railroad companies (Horton 2000, p. 4).

Correspondence education made education and training available to those who lived in remote areas or were employed during school hours. It also opened the doors of education for women, who could not enrol at male-only institutions and to those whose physical handicaps prevented them from attending conventional institutions. The experimentation with new technologies to teach more effectively was a continuous effort.

### **Learning on computers**

The use of the computer in training occurred in the late 1950's when Stanford University teamed up with IBM to offer computer-aided instruction in elementary schools (Horton 2000, p. 4). Early forms of computer conveyed instruction took the form of computer assisted instruction (CAI) or computer based instruction (CBI). With the value of technology in conveying knowledge proven and accepted, early computer systems could more easily be accepted as educational tools.

The first real breakthrough occurred in the 1960's when the University of Illinois planned, and Control Data Corporation developed the PLATO system. PLATO stands for Programmed Logic for Automatic Teaching Operations, and it allowed the sophisticated branching necessary for teaching complex subjects. By 1985, over 100 PLATO systems were in service in the US, and learners had logged over 40 million hours of instruction (Horton 2000, p. 4). But these programs were in essence about human-computer interaction facilitating access to a specific content area – these were not collaborative learning experiences based on communication.

### **Networked communication and information sharing**

By the early 1960's communication over computer networks was established. People could send messages as a form of electronic mail on time-sharing computers. Attempts at networking and communication were continued and in 1969 ARPANET (Advanced Research Projects Agency Network) was developed by the US government (Harasim 1995, p. 6). The experiment attempted to link researchers with remote computer centers for sharing of hardware and software resources. Very soon researcher participants realised that they could use these links to send messages to each other regarding their success and progress with projects. In the early 1970's e-mail (messaging over networks) was established formally and very soon became an extremely

popular service. Besides researchers wanting to send one another progress reports, they realised that there was a need to communicate with a group of people at the same time and the early forms of newsgroups were established.

In the early years academics and educators did not have sufficient access to computer networks to establish facilities in order to conduct educational activities in a networked form. ARPANET was limited to military contract personnel and universities working on defense research (Rheingold nd.). USENET (user's network) was developed in the late 1970's initially to serve the growing need for networking in higher education. USENET sparked a communication revolution as hundreds of thousands of conversations a day about various subjects, were initiated (Rheingold nd.). BITNET (because it's time network) and CSNET (the computer science network) were launched in the early 1980's to provide nationwide networking to the academic and research communities in the United States (Harasim 1995, p. 6). These networks were not initially part of the Internet, but special connections were developed to enable the exchange of information and messaging between the various communities. This interconnection of networks was the beginning of the Internet. In 1986 the American NSFNet (National Science Foundation Network) was created to link researchers and subsequently academics across the United States with five supercomputer centres (Harasim 1995, p. 6). Britain saw a similar network for universities in JANET (Joint Academic Network) (Inglis, Joosten & Ling 1999, p. 5). NSFnet, the backbone of the Internet, a global network of networks, began to replace ARPANET, which was dismantled in 1990, and CSNET, which ceased operation in 1991.

In the early 1990's the World Wide Web (WWW) was developed at CERN, the particle accelerator facility in Switzerland (Horton 2000, p. 5). It was simply intended as a way researchers could share their academic papers over the Internet. The first browser, Mosaic, was developed by Marc Anderson at the National Supercomputer Laboratory and released in 1993 (Inglis, Ling & Joosten 1999, p. 2). The Web quickly became a graphical user interface for the

valuable but complex resources of the Internet. Education and training seemed willing to use this application. With the help of the Internet and the WWW, all major forms of interpersonal interaction such as e-mail, chats, threaded discussions, and conferencing were brought together and by the mid 1990's it had become easier to add multimedia (graphics, sound and video). The ability of the WWW to support classic forms of CAI/CBI such as drills or tutorials, had been experimented with on stand-alone facilities from the 1960's onwards.

### **Convergence**

It is quite clear that all these developments established CMC as a human communication medium with many-to-many capabilities. The idea of a computer conference came from the work Douglas Engelbart was doing in the 1950's, trying to build the first computer-based thinking tools. The capability of any group to think together over a period of time about a number of distinct, focused topics was the first of several applications of many-to-many communications to be used (Rheingold nd). The American Open University used computer conferencing in DE as a tool to supplement learner-tutor communication in 1983, and in 1989, the Open University UK implemented computer conferencing for another pioneering distance education application – as part of a mass distance education course (Harasim 1995, p. 10). By the beginning of the 1990's distance education delivery found itself severely challenged by these developments.

The use of computer mediated communication and the World Wide Web (WWW) to deliver courses, was not a unique effort but part of the drive towards enhancing communication with technology in order to eliminate distance. In reality these efforts saw a convergence of three social and technical developments: distance learning, computer conveyed education and Internet technologies (Horton 2000, p. 2). It draws on the technologies, traditions, and techniques of all three areas. The expertise gained from DE attempts since the 1840's and the results of computer conveyed education since the 1960's were

married with the establishment of the Internet in the 1990's. By 1999 online learning was well established and advancing rapidly (Horton 2000, p. 5).

### **2.3 Global change and learning needs**

South Africa, like other countries, has been forced to contend with unprecedented change driven by globalisation of business and education, the impact of information technologies and a communication revolution deriving from pressures to use new information communication technologies. At the same time there has been a rise of regionalism with a strong need to increase human capacity in the Southern African Development Community (SADEC). Such change demands different skills from workers and citizens. Global change and the new emerging learning needs are important considerations when attempting to implement a new delivery mode in a context based on hitherto unexplored technological frontiers.

#### **Factors of change and new skills**

The change mentioned above impacts on the activities of higher education institutions as they will have to reconsider their services and delivery mechanisms. With the competition faced from private institutions, there is no longer certainty of statutory existence for higher education institutions. Kovel-Jarboe (1996) and Inglis, Ling and Joosten (1999, p. 13) have provided some of the factors contributing to rapid change:

- Globalisation which is leading to increased emphasis on the internationalisation of curricula;
- Changing demographics deriving from longer lives, longer work days, larger urban areas, more diverse populations and more frequent moves
- Restructuring of employment, as future workers may have to contend with 6 or 7 different sequential careers;

- Accelerating technological change;
- Increasing demands for accountability at higher education institutions;
- Increasing sophistication of higher education consumers;
- Increasing interests for partnerships between business and education;
- Continuing growth of information and knowledge resources;
- New ideas about teaching and learning;
- Aging of university faculties;
- A growing interest in educational institutions as communities;
- Restructuring and new patterns of decision-making in higher education.

Learner needs have changed and certain skills and competencies will have to be part of the offerings. New skills for an age of regionalism, globalisation and continuing change are listed by Bates (2000, p. 11), Rowley, Lujan and Dolence (1998, pp. 10-11) and Greening (1998, p. 24) when they warn that higher education providers need to adapt in order to provide learners, or future workers, with:

- Good communication skills;
- Independent and lifelong learning;
- Social and teamwork skills;
- Critical thinking skills;
- Knowledge navigation skills;
- The ability to accommodating change;
- A responsible attitude;
- Problem-solving skills;
- Intercultural communication skills;
- Ethical judgement;
- Collaboration skills;
- Technology skills.

Whichever mode of education is adopted will demand a system able to facilitate knowledge construction and refinement of these needed skills in an environment that resembles the global village. The popular question is: Are universities keeping pace with the public demand for well-prepared, well-educated citizens responsive to today's needs? According to Siktberg and Dillard (1999, p. 128) in order to prepare graduates to meet society's needs, the focus in education must become learner-centred. It isn't acceptable anymore to broadcast knowledge to learners as passive recipients.

#### **2.4 Distance education requirements**

Investigating the nature of distance education is important when the implementation of new technologies is explored – its definition may guide the consideration of suitable technological options to attain the desired learning experience. The definers of DE point towards a few key characteristics:

- Separation of teacher and learners;
- Occasional face-to-face contact;
- Two-way communication;
- A host organisation;
- The use of technology and media;
- Industrialisation of delivery (Keegan, 1980, 2000; Peters 1989; Rumble 1989; Holmberg 1995).

Although the authors group these characteristics in different ways, elements of all of the above are found in their definitions of DE. Two important elements can be deduced: two-way communication facilitated by technology and a host organisation with industrialisation of delivery (the latter can become problematic in the form of instructional industrialism). Inglis, Ling and Joosten (1999, p. 32) point towards agreement amongst distance educators that the

most important component of teaching is the opportunities that are provided for learners to interact. They identify three dimensions:

- Interaction supporting personal construction of knowledge;
- Knowledge construction demanding a social context provided by interaction;
- Interaction challenging learners' understandings and enabling them to make conceptual shifts.

Lally and Barrett (1999, p. 148) use Moore's explanation of distance learning. For him 'distance' refers to more than a geographic separation of learners and teachers – it is also about the difference in understandings and perceptions that he calls transactional distance. Lessening this distance, which is much about acknowledging 'that learners have different needs, learning styles and motivations based on their cultural, economic and educational backgrounds' (Wah 2000, p. 126) is of paramount importance in effective distance learning. For such effective learning to take place proper preparation and planning have to occur. Moore categorises these planned learning experiences as dialogue and structure. Dialogue describes the interaction between the teacher and the learner, while structure refers to elements in the course design that determine how effectively an education programme can accommodate a learner's individual needs. These two sets of variables determine the extent of 'distance' in an educational programme.

With sufficient communication and support, learners should be able to construct knowledge in a horizontal structure with facilitators and fellow learners, as opposed to the lecture or the transmission approach is top-down. The DE learning experience has to be an open one and the 'learning package' should not be closed thus preventing dialogue from fulfilling a constructive role (Evans and Nation 1989a, p. 248, 1989b, p. 37; Simpson 2000, p. 8). Other terms describe such an open approach as mediated learning (Laurillard 1993, p.

29), and guided didactic conversation (Holmberg 1995, p. 47). The important realisation is that the learning experience is one of facilitated constructivist learning through dialogue, or an open-ended, non-dogmatic and emancipatory discourse (Harris 2000, p. 39).

## **2.5 The new learning experience**

The university can no longer claim to be the ultimate source of knowledge and continue with a content transmission approach. The learner should no longer receive information, but construct knowledge (Inglis, Ling & Hoosten 1999, p. 27). A multitude of information sources are available, and it is a tutor's responsibility is to facilitate the construction of knowledge relevant to learners' professional needs and contexts.

The constructivist learning experience is one 'in which the learner is building an internal representation of knowledge, a personal interpretation of experience. This representation is constantly open to change, its structure and linkages forming the foundation to which other knowledge structures are appended...' (Bednar et al. 1992, p. 21). Through this approach learners are constructing their own knowledge by reflective assimilation.

Savery and Duffy (1995, p 36-38) derive eight instructional principles from constructivism:

- Anchor all learning activities to a larger task or problem, moving beyond the simple 'It is assigned' rationale for assignments.
- Support the learner in developing ownership of the overall problem or task, rather than simply focusing on passing the test.
- Design authentic learning tasks, ones which reflect the kinds of cognitive challenges faced in similar real-world situations.

- Design the task and learning environment that learners must function in at the end of the learning. This is consistent with cognitive apprenticeship theory.
- Give learners ownership of the process used to develop a solution.
- Challenge learners' thinking, not dictate how they should think.
- Design the learning environment to support and challenge the learner's thinking.
- Encourage the testing of ideas against alternative views and alternative contexts. Since knowledge is socially negotiated, depth of understanding can only be accomplished in a social environment where individual views are measured against the ideas of others. This can be effectively done in the context of collaborative learning groups or learning communities
- Provide opportunities for learners to reflect on both content and the learning process.

Institutions that consider going online will have to consider the new learner needs, and the very demanding learning environment a priority. Mass-correspondence DE institutions like the University of South Africa will have to carefully consider its reasons and commitments for establishing online learning as a second delivery mode, especially in terms of current practice and systems.

## **2.6 Supporting a different learning philosophy**

Correspondence DE is known for its characteristics where learners can control, self-pace or self-direct their studies (Richey 1986, p.52-53). Learners are independent of classrooms and other lecturing infrastructures and contexts. It provides independence of time and place, and this contributes to the potential of self-pacing. Learners are supported by guidance from within the materials that is the result of the course development team trying to anticipate learner needs during the initial design and evaluation.

### **Active engagement**

But correspondence DE is often blamed for employing an objectivist epistemology and a behaviourist learning philosophy. This criticism sees learners as passive recipients waiting to be filled with expert content that is decided upon by specialists in isolation. Learners are put through rituals in this process without being able to supply input. Their own experiences and perspectives are not integrated into the process of generating knowledge. Evans and Nation (1989b, pp. 237-263) see the learner as alienated in this correspondence or independent study approach. Viewing learners as empty vessels and passive recipients of information tends to encourage inactivity rather than thinking (El and Amerlia 1998, p. 695). Passive learning limits learners and causes them to mirror the presented knowledge rather than allowing them to grow their own experience (Moller 1998, p. 115). Greening (1998, p. 24) and Herneckar (1999, p. 7) reject this 'traditional' development of the knowledge base of learners. They suggest that the pace inhibits reflection and experimentation, and the mechanisms of simplification tend to deny the development of associations between concepts, leaving the resulting knowledge as static. Learners' application of knowledge should be given preference, and meaningful thinking should arise out of a reflective thought process that actively engages the learner. From such a constructivist point of departure the learner should be involved in continual introspection as multiple perspectives challenge his or her views. According to Greening (1998, p. 24) constructivism wants learning to occur as an act of cognitive restructuring rather than transmission – the shift in emphasis to learner-centredness is evident.

### **Social constructivism**

But those who advocate the use of Internet technologies to enhance learning go a step further. For them continual introspection and critical reflection towards knowledge building is not necessarily sufficient for ideal learning. Naidu and

Oliver (1999, p. 330) want learners to add to their learning by sharing real life examples with one another. Their authentic experience becomes part of the course. Through collaboration they can articulate their thoughts in public and such a process of externalisation would enable further reflection that will lead to deeper understanding. Collaboration and discussion can therefore assist a deeper and more active engagement in the learning process. Dubravka and Webb (2000, pp. 73-85) use the critical theory of Jurgen Habermas in proposing a communicative model of collaborative learning. Habermas argues for an ideal speech situation that is translated into an ideal learning situation. The ideal learning situation should generate communicative practice free from any kind of distortion, or any form of coercion and ideology — it only includes the force of the better argument. Meaningful communication in a collaborative setting should lead to effective learning.

Social constructivism, as a learning philosophy, evolved from the work of Piaget and Vygotsky who were of the opinion that learning occurs more effectively through interpersonal interactions in a cooperative rather than a competitive individual context. In the Vygotskian view of cognitive development an individual's cognitive structures develop through a process of mediation and modelling of the cognitive structures of other people demonstrated during communication. However, the cognitive structures of other people must be within the individual's zone of proximal development for modelling to take place (Brandon and Hollingshead 1999, p. 111). Therefore, during interaction, learning occurs when learners are exposed to a slightly higher level of difficulty than what they have already achieved cognitively. In Piagetian cognitive development theory, cognitive structures develop through the resolution of cognitive conflicts that are generated during peer interaction. In this view, interaction supports learning in that it produces multiple perspectives that in turn generate cognitive conflict within the learners.

The key feature that distinguishes collaborative learning from individual and competitive learning is its social nature. In a group setting learners share their

ideas and solve problems cooperatively. Their learning takes place in a particular social milieu, and apart from developing their intellectual skills, involves developing their social skills and establishing interrelationships.

## **2.7 The potential of Internet communication technologies**

Guglielmo (1998, p. 36) identifies online education as a third generation of distance education when it complies with the above by employing Internet/CMC technologies. First and second generation DE systems, which were respectively about correspondence (texts) and multimedia (eg computer assiste learning), centered largely on the production of learning material and its delivery to the learning community. Two-way communication with the learners, and between learners is kept to the minimum. It is significant that these types of education do not treat learning as a social process in which priority is given to teacher-learner and learner-learner interaction. This principle has been the foundation for the development of third-generation distance education systems in the form of the online learning community. The aim is that learners should interact with one another within a learning community where isolation is overcome and relationships are formed in order to foster collective development.

### **A new literacy**

The effective use of new information communication technologies will influence the stakeholders in the learning experience. Whereas the teacher traditionally supplied information, he now has to step back as databases connected to the WWW can do this more effectively. With powerful search technologies the learner is placed in control of retrieving his or her own information whenever he needs it. As teachers move into a more horizontal structure in the learning experience, learners have to take more responsibility for their learning. El and Amerlia (1998, p. 694) and Anstendig et al. (1998, p. 78) stress that learners need to acquire a new literacy that is about being able to

communicate in a post-typographic world. Being literate now involves integrating reading and writing, navigating through information sources, discriminating between important and unimportant information, responding to e-mail, and/or engaging in electronic chat sessions.

### **Empowering the learner**

Teachers are challenged to duplicate with CMC the conditions that encourage productive interchanges such as those that occur when people meet in person (Warren & Rada 1998, p. 71). But in spite of this challenge by technological advances, much of current Internet delivery is about 'throwing learners at the Internet' and calling it sound pedagogy (Greening 1998, p. 30). The mere uploading of content on the Internet does not mean learning has taken place (Rosenlund et al. 1999, p. 195). Learners have to be engaged and the technology is not necessarily always employed to effectively empower the learner to develop his or her capacity in a group setting (Herrnecker 1999, p. 6). CMC can, therefore, reduce transactional distance by facilitating academic and social dialogue between learners and facilitators. Authors like Herrnecker (1999, p. 8) argue for an enhanced constructivist environment with the help of CMC. For them effective DE is established through instructional and technological collaboration, not through an obsession with technology. Web-based instruction provides for a non-linear construction of educational comprehension and significance, but then instructional design and delivery must create the opportunity for interactivity and improvised change. With all the potential that Internet technologies have, they can therefore become powerful tools for cognitive reflection stimulated from a variety of perspectives.

### **Benefits of Internet communication technologies**

In summary, the Internet forms the backbone for a number of asynchronous and synchronous communication tools such as e-mail, chat, conferencing, the

WWW resources, and file transfer. Learners have richer and more effective learning resources available, and communication is enhanced – a shortened list of benefits are:

Access to resources:

- A source of identification, verification, evaluation and incorporation of information sources.

Collaboration towards construction of knowledge and greater understanding:

- A medium of cooperation, discussion, conversation, communication and exchange of opinions;
- An international platform of artistic and cognitive expression, contributing and understanding;
- A medium of sharing and imagining experiences and of cognitive cooperation.

Addressing learner preferences:

- Independence of place;
- Greater choice of when to study;
- Increased self-reliance;
- Improved computer literacy;
- Social cues such as gender, race, rank, physical appearance and other public identity features are filtered out, participants gain greater anonymity;
- Relationships are more equal and participation is more evenly distributed (Ward 1998, p. 171; Mudge 1999, p. 11; Greening 1998, p. 27; Naidu & Oliver 1999, p. 331; Guglielmo 1998, p. 37; Cohen 1999, p. 219; El and Amerlia 1998, p. 696; Hacker and Sova 1998, p. 340).

But there is also the possibility of problems like narrow bandwidth, security, authoring in appropriate languages, (sufficient) access, timely updating, prior skills, information overload, copyright, inadequate technology and less contact with learners when appropriate pedagogical commitments were not part of the design of communication. The research done by Boshier, Wilson and Qayyum (1999, p. 275) proved that most sites originate from the United States and course architects are prone to include a large number of links back to US cultural ideas about what is good and what is bad. In a sense one should guard against ‘Americanising’ courses and take sufficient cognition of one’s own culture when one designs for Internet delivery.

## **2.8 Computer supported collaborative learning**

Instructors and instructional designers face a substantial challenge in developing educational activities for online groups, which involves reconciling technological, pedagogical and learner issues into an effective learning experience. Greening (1998, p. 27-28) states that hypermedia for use in constructivist learning environments are seriously threatened by instructional development approaches which have not recognised both opportunities afforded by the technology and the attributes that are valued by constructivism. The ‘prescriptive approach’ or objectivist approach, which does not provide a means by which the learner can be actively in control of the learning process, is prevalent. Brandon and Hollingshead (1999, p. 111) and Naidu and Oliver (1999, p. 33) define collaborative learning as the acquisition by individuals of knowledge, skills, or attributes through group interaction in which group members share work and develop shared meanings about a group task. The social creation of knowledge as a basis of learning is accepted, and meaning cannot be prepackaged and delivered to the learners for memorisation.

### **Changing one's technological frame**

As already indicated, interaction via computer conferencing systems provides opportunities for teachers and learners to manage and participate in the learning process that were unknown in traditional distance learning and conventional onsite situations (Guglielmo 1998, p. 37). In this regard Vick (1998, p. 10) is of the opinion that 'People have to change their "technological frames"... Since a prime feature of groupware is coordination of people and processes across time and space, users need to be able to perceive the technology as a collective rather than a personal tool.' Computer-supported collaborative learning is basically the educational use of online groups. Internet enabled CMC technologies that are free from time/place constraints and support many-to-many communication (such as text-based computer conferencing) provide new options on how education can be designed and delivered to learners (Brandon & Hollingshead 1999, p. 109). It would seem that pre-instructional orientation and commitment is necessary if teachers are to construct learning experiences where collective goals and rewards are the result of a social-constructivist point of departure. Group goals, commitment to those goals by group members, and individual accountability are the prerequisites of collaborative learning. Learner identification with the group is a source of the learner's motivation to learn (Brandon and Hollingshead, 1999, p. 113). Group members can help one another, exchange needed resources, provide appropriate feedback on performance, demonstrate trustworthiness and encourage effort toward achieving group goals. Positive interdependence is to be established as group members must appreciate the value in working together for collaborative learning to occur. It can be achieved by goal, reward, resource and role interdependence. Tsui (2001) suggests that CMC is an effective means of creating a critical community in which learners share ideas, confront their own and each other's existing beliefs and practices and come to a different conception of their work.

The development of asynchronous conferencing technologies that enable threaded discussions, assist a participant to focus on a particular topic and to potentially see input from many individuals directing comments on that topic (Goldenberg 1999, p. 18). More or less prominent roles can be assigned to the various participants (Guglielmo 1998, p. 38). In an asynchronous environment learners have time to consider their responses. The result may be better quality contributions than in synchronous conversation (Moller 1998, p. 117). The enormous potential of using CMC to bring about collaborative learning has generated numerous attempts to develop collaborative learning communities using CMC tools (Tsui 2001; Schnorr 1999, p. 116). Rosenlund et al (1999, p. 196), for example, adopted Internet based teaching for nurses in order to empower them. Nurse educators assumed the role of facilitators to help learners realise their potential through fostering independent thinking, problem solving and creativity. They considered it important that learners were recognised as essential to their own learning. This emphasises the researcher's belief that technology carries information but it is people who learn, and humans are social creatures who communicate and share amongst themselves. However, when tools and educational strategies are combined and constructed in ways that expand one's potential to learn, one has given meaning to that technology (Moller 1998, p 121).

### **Making CSCL successful**

Tsui (2001) points out that the online community requires attention to group organisation, group dynamics and educational leadership. The online network is a socio-technical system combining social and technical elements in a whole that is greater than the sum of its parts. Guglielmo (1998, p. 36) is also dissatisfied with the little attention that has been paid to the practical problems of organising and structuring mediated communication for learning purposes. He recommends that two issues be addressed when designing online courses: educational design and the architecture of the communication system necessary for the design's implementation. In the case of CMC this means focusing on

systems that invite and sustain message submissions (Warren and Rada 1998, p. 71). Any course must be examined in the light of the influences brought to bear by the communication technology. After initial definition of tasks and activities (learners, tutors, experts, etc) the focus shifts to the logical organisation of the communication. The more easily environments can be structured to meet communication needs, the more enjoyable and trouble-free participation in the online course will be. To assure successful productive online communication, course designers need to provide a procedure for discourse that users can understand and follow.

Asynchronous learning networks work best when they help to establish a feeling of group presence as early as possible. Hiltz and Wellman (1997, p. 47) successfully introduced getting acquainted activities at the start of their project. Brandon and Hollingshead (1999, p. 121) recommend that the technique of weaving encourages contributions to a conversational style. With this technique the instructor guides group discussion by summarising the state of the discussion in a group and by identifying unifying themes or points of disagreement apparent in the threads of the group discussion. El and Amerlia (1998, p. 90) and Oliver, Omari and Herrington (1998, p. 267) suggest that learners direct their own learning with the necessary scaffolding provided by the teacher. Scaffolding provides assistance at critical times in the form of skills, strategies and links learners themselves are unable to provide to complete the task. The support is gradually removed until the learners can cope on their own.

Online facilitators do, however, have to have certain important traits in order to attempt online teaching. They have to learn the characteristics of collaboration such as a willingness to share, demonstration of respect towards alternative views and dispositions, and an ability to listen carefully and attentively (Naidu & Oliver 1999, p. 334). Facilitators or teachers should be able to model these because they are essential characteristics for learners to adopt. On a more practical level to encourage collaboration in small group settings, teachers have

to create group goals for learning tasks which will promote collaboration and individual accountability as well as provide strategies and support to promote and aid interactions between learners (Oliver, Omari & Herrington 1998, p. 268).

## **2.9 The online learning community**

Learning communities can be defined as ‘small subgroups of learners... characterized by a common sense of purpose... that can be used to build a sense of group identity, cohesiveness, and uniqueness that encourage continuity and the integration of diverse curricular and co-curricular experiences’ (Kellogg 1999). In addition to similar ideas of shared purpose and cohesiveness, Lally and Barrett (1999, p. 150-151) identify four distinctive features of the online learning community: the role of socio-emotionality, the importance of cooperative approaches to learning, the democratisation of participation, and the equalisation of community members.

### **A caring environment**

According to Bulach, Brown and Potter (1998, p. 442) learners cannot be taught, nor can learning be fostered, until learners are convinced the teacher cares about them – learners have a human need to feel cared about. Galegher, Sproull and Kiesler (1998, p. 496) report that reactions to stressful life-events have shown that when people face uncertainty, stress and pain, they tend to seek and benefit from opportunities to share their feelings with others. From this perspective Bulach, Brown and Potter (1998, p. 442) give priority to the principle of caring. They analyse caring as having feelings for others, having relationships, and demonstrating values of kindness, respect and faithfulness, sincerity, attentiveness, being tolerant, explaining work, encouraging one another to improve, helping with personal problems, providing guidance and going the extra mile. They report from research that ‘caringness’ is identified by learners as the most important quality they look for in an instructor.

Learning can be enhanced in such a caring community environment. For Bulach, Brown and Potter some level of trust is required for learners to risk learning. For this reason teachers and administrators should be aware of behaviours and structures that create a caring learning community.

Moller (1998, p. 116) sees the functions of community as providing social membership or reinforcement that aims at satisfying the human need for self-esteem. Shared values, norms and preferences keep the community together. Another function is information exchange. Computer supported communication environments allow geographically separated learners to create and share knowledge. The exchange allows alternate information and perspectives to be considered.

### **Different levels of support**

From these functions of community Moller (1998, p. 117) identifies three types of community support: academic, intellectual and interpersonal support. Through academic facilitation learning occurs when learners establish connections between the presented content and individual prior knowledge and transfer it to new and relevant situations. The teacher evolves from an initiator and controller of instruction to a partner in an interactive communications pattern that relies on the learner as an active constructor of knowledge and encourages learner-generated investigation and discussion. Through intellectual support the learner has to be actively engaged in cognitive manipulation of the instructional content or information. Through conversation opportunity is created for ideas and knowledge to be shared. Individuals are influenced by others within the community who possess their own beliefs and values as a result of their unique experience. Because typical DE learners are likely to be integrating education and training with other aspects of their lives, they need interpersonal support and encouragement (Moller 1998, p. 118).

Effective learning therefore demands efficient communication and cooperation between teachers and learners. The best learning situations involve real community and consists of more than just the passing on of facts. Learning stakeholders need to show concern for one another, and a feeling of awareness and sensitivity should be supported between the teacher and all learners. In this environment learners are more likely to interact with peers, developing friendships and learning along with them.

The online learning community can provide opportunities for support necessary for real learning to take place. An adaptation from Lin et al. (1995) summarize the nature of efficient online learning communities as environments which provide learners with such opportunities:

- To plan and execute independent research towards problem solving and resource identification;
- To work collaboratively and take advantage of distributed expertise from the community;
- To use various technologies to build their own knowledge rather than using the technologies as ‘knowledge tellers’;
- To expose themselves to continuous feedback and criticism so that they can revise their own thoughts, assumptions, and arguments; and
- to improve responsibility, attitude and emotional intelligence in a group context.

### **Enhancing the conversation**

The pedagogical principles underlying the online learning community, and the potential of the technology to enable such principles, form a sound foundation from which to establish sufficient communication and support. This will enable learners to construct knowledge in a horizontal structure with facilitators and fellow learners as part of a learner-centred approach. The important realisation

is that the learning experience can be delivered in the form of a conversation between all stakeholders.

## **2.10 Research on the online learning community**

### **A general view**

Brandon and Hollingshead (1999, p. 110) state that a substantial body of research indicates that collaborative learning can be effective in generating positive academic and affective outcomes in traditional classroom settings. This is supported by successful experiments in the online environment (O'Donnell & O'Kelly 1994; Paloff & Pratt 1999; Harasim et al. 1995). When Horton (2000, p. 25) compared general online learning with traditional modes of delivery, he found a significant difference in learners' performance and results. In fact, he claims the two are equally effective.

Harasim (1995, p. 110) mentions research at the Open University of the United Kingdom, one of the world's mega universities, that indicates that learners were positive about the value of computer conferencing for distance education. Learners are generally reticent to use the telephone to contact tutors and find e-mail and computer conferencing better alternatives. The OUUK experience also found that computer networking had a considerable equalising effect on status and diminished hierarchies in the traditional communication structures. Another institution from a different part of the world, the University of Phoenix, that teaches accredited online degree programs, experiences similar results. White (2000, p. 57) states that recent research by the Institutional Research Office of the University of Phoenix indicates that online instruction is 'every bit as effective as regular classrooms in serving working adult learners in business and management programs.' They attribute this success to the highly interactive online learning model that encourages more regular communication with online instructors and other learners than usually experienced in onsite classrooms.

Research on collaborative learning has established that higher achievement and quality of learning can be enhanced with adequate technological support (Dubravka and Webb 2000, p. 73–85). By enabling social interactions via an electronic medium, unrestrained by time and place, Web technologies actually expand and transform the social interaction space of collaborative learning. Learners can work together, achieve shared understanding, and cooperatively solve problems in the online learning community. Chapman's (1998, p. 21) research indicates that learners in traditional college courses recognise CMC as being advantageous in terms of increased access to instructors and learning opportunities. This was balanced by learners' criticism related to access, time commitment, and unequal participation of fellow classmates. The research confirms that factors such as gender, educational status, and personality type do not have a major effect on learner participation and attitude. Lack of computer skills, computer experience, and self-confidence in traditional learning situations did emerge as pertinent factors in some situations.

Brandon and Hollingshead (1999, p. 119) warn that there may be resistance to CSCL based on learners' comfort with the use of CMC technology. Althaus (1997, p. 165) found that e-mail users are more likely to engage in voluntary computer-mediated discussions than non-users. This implies that if learners are positive towards the technology, they may be better users of CSCL. In the research done by Atamian and DeMerville (1998, p. 33) 87% of learners agreed that e-mail helped improve teacher-learner communication. The learner evaluations showed that learners preferred using the e-mail to visiting professors in their offices. In addition, CMC interaction that is timely can also result in learners perceiving the instructor as more accessible than in the traditional classroom.

### **Access and flexibility**

When Ward and Newlands (1998, p. 171) suspended face-to-face lectures and published materials on the Web, learners indicated that they exercised greater

choice of when to study. The experiment appears to have saved learners time and financial expenditure. Learner reaction to Siktberg and Dillard's (1999, p. 131) asynchronous collaborative delivery was that they liked the flexibility of studying in this way and that course environments were available 24 hours 7 days a week. Chapman's research (1998, p. 24) indicates that access to facilities and connectivity can, however, still be a problem. Some learners were able to work only at university computer laboratories.

### **Commitment and responsibility**

Numerous research projects have found that courses based on computer mediated communication improve the commitment and responsibility of the learners. Fowell and Levy's (1995, p. 205) research found that learners perceived themselves as more responsible in CMC mediated courses. One learner reported that such courses can be beneficial to learning because learners are encouraged to become personally involved because there was less of a teacher-pupil relationship. Learners appreciated the opportunity to take ownership and responsibility for their own learning when CMC was used to support group projects. In another study learners were observed assuming a high level of responsibility the more they became engaged in their online writing and learning especially as assignments were sufficiently open-ended to provide learners with some degree of choice (Anstendig, Meyer and Driver's (1998, p. 79). In Hiltz and Wellman's (1997, p. 47) experiments learners worked harder in courses taught in virtual classrooms. Surveys of learner responses found that 55% felt more motivated to be attentive and hardworking in their studies than they would be by merely reading their work.

### **Enhancing learning**

When community and collaboration is incorporated into an online course, there tends to be promise of higher educational achievement and personal fulfilment (Goldenberg 1999, p. 19). In a study conducted by Cronjé and Clarke (1999, p.

221) Masters learners in a cooperative learning environment generated contributions on a wider range of topics than the presenter had provided. Learners' messages contained ten additional topics to those posted. In addition, research by Naidu and Oliver (1999, p. 344) saw learners placing a higher value on the knowledge they gained and the ability to share it with other learners. Hacker and Sova (1998, p. 340) measured higher achievement gains when computer-mediated delivery strategies were employed as compared with traditional university delivery methods while Rosenlund et al. (1999, p. 198) obtained consistently higher test scores for Internet groups than for learners in the traditional classroom in the nursing courses they piloted.

When Naidu and Oliver (1999, p. 344) connected nursing practitioners to a collaborative learning environment with CMC, there was evidence that learners reflected on critical work-related incidents, described what happened and assessed their actions. This was aided by the fact that such evidence from other practitioners was also available online. Learners reflected deeper and were able to identify problems. In another online community consisting of nursing learners, Siktberg and Dillard (1999, p. 131) wanted to strengthen collaboration with other health care workers in order to share technical knowledge. According to the course survey most learners found the experience helpful and overall outcomes were positive. Learners engaged in work-related problem solving, and critical thinking skills were enhanced in these courses. In Anstendig et al.'s (1998, p. 72) experiments learners became active agents in the process of learning. Learners were supported to create their own multimedia projects, and in the process it seemed to evoke deeper learning than passive use of multimedia.

In their research Hewson and Hughes (1999, p. 113) obtained evidence that learners became very critical and reflected deeply before posting comments on course forums. This challenge was almost intimidating for learners as all other learners would be able to see what was posted online in writing. Learners valued the opportunity to consider and construct contributions to the online

discussions. The asynchronous nature of the communication allowed them to think properly and structure their responses carefully. They experienced better-constructed learner contributions than in a normal class.

Another method employed as a way for learners to practice their writing in a non-evaluative way and participate in conversational learning is the Web-based conferencing system (Anstendig et al 1998, p 72). In the study in question learners reported that they appreciated WebBoard because it made them think more deeply into the subject, and they were able to obtain many different angles and points of view. Pearson (1999, p. 232) is of the opinion that CMC is about writing, rather than communication. Learners in his course were fearful of criticism from others about what they had written. The research of Anstendig et al (1998, p. 70) provided similar results. Learners became motivated and engaged, writing more than in other similar courses, and willingly revised their work for online publication. In the process their writing improved.

Nursing practitioners involved in Naidu and Oliver's (1999, p. 344) online delivery produced evidence that learners integrated theory and practice. In a similar attempt Herbert (1999, p. 40) successfully developed a set of web-based courses that provided opportunities for teachers, wherever they might be, to work together on common problems. About 95% of participants agreed or strongly agreed that the program helped them bridge the gap between theory and practice. They were able to face classroom situations similar to those described in the cases in the online courses. The teachers on the course were able to significantly expand their knowledge and understanding.

### **Establishing community**

Lally and Barrett (1999, p. 150-151) aimed at satisfying four distinctive features of the online learning community: the role of socio-emotionality, the importance of cooperative approaches to learning, the democratisation of

participation, and the equalisation of community members. They successfully established a socio-emotional quality in their learning experiences. Learners did experience a sense of group identity and community, and they indicated that they did not feel isolated.

In the online learning community learners are able to draw support from one another. Naidu and Oliver (1999, p. 344) were able to identify many examples in their courses and learners also indicated that it was an opportunity that they were grateful for. Rosenlund et al. (1999, p. 198) were confident that they had succeeded in establishing the social interactive climate required for the program. They saw the number and content of e-mail alone as proof of this. In Ward and Newland's (1998, p. 179) study learners indicated that they did not miss the face-to-face contact with lecturers and other learners in the traditional environment. Further advantage in this regard is that learners may also form supportive relationships with one another outside of the public communication forums. Cronjé and Clarke (1999, p. 17) found evidence that learners did establish such relationships as most messages were sent directly from one learner to another, bypassing the listserv provided for the course. Trainee teachers in a school-based program conducted by Pearson (1999, p. 229), considered electronic communication useful for social contacts (95%), discussing education issues (81%), dealing with personal and professional problems (71%), and developing a sense of community amongst participants (81%).

### **Collaboration**

In the supposed isolation that learners studying online might experience, collaboration might be considered impossible to achieve. However, this is not necessarily the case. Naidu and Oliver (1999, p. 344) investigated learner attitudes toward collaborative learning. Their findings showed that learners found collaborative learning enjoyable and valuable and they appreciated that with help from others in the group they were able to persevere. For most

learners the use of CMC seemed to have started off as a frustrating experience that grew into a positive one as their attitudes changed towards the use of CSCL. In their attempt to provide structured access to interactive online facilities to learners, Wilson and Whitelock (1998, p. 91) report that learners felt less isolated, found the work easier, liked the groupwork and felt more at ease to ask for help. Learners indicated that they would make more use of such a system if they were to take more courses presented in such a collaborative environment. Treadwell et al. (1998, p. 503) also reports that participants on their courses, who formed a coalition with other learners, were more satisfied with the course than learners who did not make a successful association. However, learners take some time to get used to collaborative environments.

### **Workload**

Brandon and Hollingshead (1999, p. 120) warn that online groups may take a bit longer to complete a task than face-to-face groups. This is due to the asynchronous nature of the technology where learners have to work harder in order to produce a quality contribution for the public forum. Learners using computers to communicate (in their writing courses) worked harder and became more engaged writers and learners (Anstendig et al. 1998, p. 72). But such hard work and engagement may need more time from learners (Wilson and Whitelock 1998, p. 91).

### **The changing role of the teacher**

The pedagogical function in the OLC is mainly centred around educational facilitation on the learning level and not on traditional teaching from the podium. In the online learning community the role of the instructor changes to that of facilitator. He/she is not providing information anymore (Naidu & Oliver 1999, p. 333; Cohen 1999, p. 221; Brandon & Hollingshead 1999, p. 121). The shift is therefore from teaching to facilitating learning. A more learner-centred and outcomes focus is required. Faculty in this learning process

become partners with learners in an environment that is cooperative, collaborative and supportive. For this to occur, a flexible and empowering learning environment is required. This is a change in position that demands a different set of teaching skills. The teacher has to disseminate administrative information, do content clarification, and moderate learner interaction. With this changed role universities should not only be ‘purveyors of information but also purveyors of humanity, preparing learners to communicate and to think productively in society’ (Pepichello and Tice 2000, p. 55).

The Unisa lecturer is not highly involved with learners in general. His or her role has largely been reduced to that of marker of exam papers. Becoming a successful online facilitator demands involvement and compassion with learners. This research aims at describing the facilitator’s experience, the development of collaborative solutions to a change in teaching practice, and to communicate the results to the host institution.

## **2.11 Summary and conclusion**

The OLC promises a very engaged learning experience enabled by Internet communication technologies. Moore and Kearley is of the opinion that what makes any course good or poor is a consequence of how well it is designed, delivered, and conducted, not whether the learners are face-to-face or at a distance (Moore and Kearsley in Horton, 2000: 5). If an online learning community-based course is designed and delivered on the principles of good distance learning, and it makes proper use of interaction and collaboration to augment the social construction of knowledge, it can be as successful as any other form of delivery.

But the introduction of the OLC in a conservative correspondence DE environment may challenge the practices and systems underlying this primary delivery mode. For it to be successful, it demands a different level and quality of intervention, which has to be supported by infrastructure and systems. It is

expected that the Unisa system will not necessarily cope with such an introduction without changes in practice and organisation.

This chapter explored learning needs and the ability of the technology to realise these needs in the online learning community. The next chapter will present the attempt of the researcher to establish and sustain such a learning community in the Unisa context.