Andragogy & Online Learning:
Towards a Systematic Instruction Framework

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Doctor of Philosophy

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by
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ABSTRACT

This dissertation study investigated the impact of the Internet-Based Adult Instruction (Net.AI) framework with regard to instructional development, learning interaction, and institutional engagement in the context of adult education. Net.AI was developed over a three-year span. It is meant to offer a systematic framework or guide to the development of Internet-based adult instruction and/or training.

A participatory action research approach was used to uncover relevant teaching approaches, learning strategies and technical considerations involved in Internet-Based instruction. In depth interviews were held to understand the ways in which instructors manipulate the available features of Instructional Management System (IMS) in conjunction with the Net.AI model to create, review, synthesize, communicate and assess course-related contents.

Results indicate that there is a strong need for a viable framework that will serve as a guide to instructors, facilitators, and instructional designers in the development and roll-out of Internet-Based adult instruction. In addition, the Net.AI model developed and evaluated through this dissertation study offers normative, extendable and repeatable approaches for use in the online learning space.

Keywords: Web-based Instruction, Andragogy, Adult Education, Online Learning

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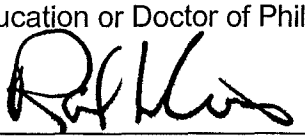
APPROVAL OF THE DISSERTATION

This dissertation, Andragogy & Online Learning: Towards a Systematic Instruction Framework has been approved by the Graduate Faculty of the Curry School of Education in partial fulfillment of the requirements for the degree of Doctor of Education or Doctor of Philosophy.



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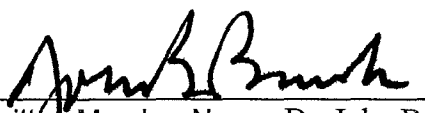
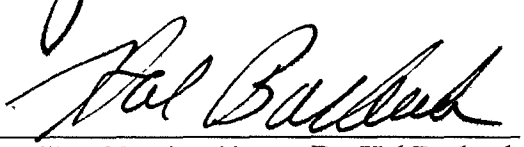


Committee Member Name, Dr. John Bunch



Committee Member Name, Dr. Hal Burbach

Committee Member Name, Dr. Yitna Firdyiwek

03/28/07 Date

DEDICATION

To My Three CG's:

First,

My dear wife,

Christa Guilbaud,

Who was there with me, through thick and thin, and
Despite giving up so much for me to complete this work;

And, second,

My two lovely children,

Chris and Cathy Guilbaud,

Who provided pearls of wisdom (way beyond their years);
When dad was faced with some significant "head winds"…

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KEY TERMS & ACRONYMS

Term	Definition/Meaning
ADDIE	Analysis, Design, Development, Implementation, and Evaluation
Adult	An adult is a person age 25 or older for the purpose of this study
Andragogy	Adult Learning Theory as interpreted by Malcolm Knowles
Blog	Short for weblog. A weblog is an online journal
CBI	Computer Based Instruction
CBT	Computer Based Teaching
CDT	Component Display Theory
CMS	Course Management Systems
FAQ	Frequently Asked Questions
HCT	Human Capital Theory
HRSA	Health Resources Services Administration
HTML	Hypertext Mark-up Language
IDEAL	Improving Distance Education for Adult Learners
IMS	Instruction Management System
InfoBase	A text data analysis tool for Qualitative studies
ITV	Instructional Television
MUD	Multi-users Domains/Dungeons
Multimedia	Text data with images, voice or motion video
MUSE	Multi-users Simulated Environment
NCT/I	Internet-Based Teaching and Instruction
OMP	Online Master Program at the School of Nursing of Virginia
Pedagogy	Prevailing Learning Theory, understood to be adaptable to either Youth or Youth and Adult Learning contexts

Podcast	Technologies that allow capture and distribution of an audio event
Wiki	"Open-editing" system with a focus on collaboration
SGML	Standard Generalized Markup Language
Tele-Mediation	Human interactions mediated by some forms of technology (TV, Phone, Two-way radio, computers etc.)
TTSP	Teaching Technology Support Partner
Virtual World	Computer-simulated environment
XML	Extensible Mark-up Language

CHAPTER I

INTRODUCTION

Research has shown that there is an accelerated pace towards adaptive, boundary-less and pervasive learning. This orientation has thus created the need for greater use and mastery of Internet-based or Internet-Based instructional systems (O'Brien, 2001; Clark and Mayer, 2002; Conrad & Donaldson, 2004). In addition, the literature on Internet-Based education suggests that the use of an online Instructional Management Systems (IMS) often leads to local adaptation of instructional materials, increased orientation towards experimentation and the creation of online learning communities (Brown et al 1989; Wilson, 1997; Young, 2004).

A key benefit of Internet-Based instruction is the unique opportunity offered to adult learners to pursue their studies and their training at their own pace (Eastmond, 1998; Gibbons & Wentworth, 2001). As Internet-Based education is based online or virtually, learners thus have the convenience to study in their home, workplaces, and community centers. Therefore, whether learners are looking to gain a basic education, advance a professional career or master job-related skills, Internet-Based offers a flexible means to achieve the desired educational aim.

While it is anticipated that Internet-Based instruction will become more common in the not-too distant future, the impacts of these changes in educational orientation and instructional delivery methods are not yet fully understood (Schrum, 1998; Truman-Davis et al. 2000; Dexter, 2002). Moreover, it is unclear how practitioners in the field of instructional design are adapting to Internet-Based learning and the teaching environment.

Online Learning, the Internet & Internet-Based Instruction

Internet-Based Instruction and learning has roots in the more established field of Distance Education. For example, television, radio, phones and a whole host of other "distance technologies" have been used as instructional support tools in the US for quite sometime. Saettler (1990) and Levenson (1945) noted that a series of evaluation studies focusing on Distance Education were being held by Ohio State University and The University of Wisconsin, as early as 1931.

Demand Aspects

The rise of the Internet as a viable learning platform combined with the wide availability of broadband technologies, in recent years, has led to the advancement of the concept of Internet-Based teaching and learning. Unlike in the case of the generic off-site teaching model, in which the focus is placed on broadcasting educational contents to learners with limited degree of feedback, distance education and Internet-Based teaching/instruction place focus on maximal possible interaction.

Supply Aspects

In Internet-Based teaching and instruction (NCT/I) most specifically, learners are encouraged to fully participate in all aspects of educational activities. Another major feature of NCT/I, is that it offers a systematic method, mediated by technology, to engage in learning interactions and hands-on activities from a variety of perspectives. Thus, instruction related activities such as lectures, discussions, workshops, assignments, projects, socialization and assessments, are all presented in an open fashion, allowing learners, teachers and other stakeholders to interact in ways that would not have been possible without such an approach (Milone, 1995; Elbow & Belanoff, 1991; Niguidula, 1997).

Moreover since NCT/I routinely takes advantage of multimedia computing systems, activities can be designed allowing content- rich interactions between learners and instructors as well as among learners. Thus opportunities for horizontal/peer learning are also offered through NCT/I. These novel-types of interactions and communications can therefore lead to greater motivation and thus strongly support the orientation towards involvement in a community of learning.

Problem Statement

A major in-service training challenge is instructors' use and facility with technology (Burge, 1997; Cahoon, 1998; Eastmond, 1998). At the same time, there is a great need both regionally and nationally to offer basic instruction and continuing education to widely dispersed learner populations (Rogers, 1995; Januszewski, 2001). Cross (1981) has argued that because society is rapidly

changing towards growth in learning and innovation. As a result of the changing technological landscape, job realignments, and the overall dynamism in the demographics of the US population, it is clear that greater emphasis will need to be placed on adult education and training.

At present there are varying ideas and perspectives concerning how to offer in-service distance-learning opportunities leveraging the available instructional technologies and most specifically the Internet, to reach adult learners. Moreover, given limited or total unavailability of face-to-face interactions in non-traditional learning settings such as the home and community centers, the need for increased opportunities for online interactions is quite evident. However, it is quite unclear what instructional approach (or approaches) might work best for a given learning environment (Ginsburg 1998, Merriam and Brockett 1997).

Objective of the Study

The disciplines of human leaning, specifically behaviorism, cognitivism and constructivism, instruction, and adult education and instruction have generated significant thoughts, methods, which are directly applicable to the topic of Adult Instruction & Online Learning. Further, online education, much like traditional instruction, has both stable and emerging characteristics. These can present a number of challenges (Pittinsky, 2003; Zemsky and Massy 2004; Goodwill 2004; Allamis 2004).

The major items often cited to work against the development of online programs are:

- Lack of pedagogical/andragogical adaptation
- Lack of training and development of users
- Lack of technical support
- Overdevelopment and inappropriate use of services and products based on an orientation of using a tool for the sake of itself

Conversely, studies by authors such as Owen and Aworuwa (2003) have shown that technology-based distance education (or "distributed" education) stacks up fairly well against the traditional classroom. The major findings presented by these authors from their studies are:

- "Remote delivery" offers value and quality in education
- Instruction designed to be interactive by providing instant feedback to students, through technology-based instruction, is as effective as traditional classroom education, with respect to student outcomes.

Various studies and reports have shown that technology can be used as leverage to help learners tap higher-level skills. For example skills, such as analysis, evaluation and synthesis, through simulation projects, according to Grabe and Grabe (2001) which are at a higher level on Bloom's Taxonomy of learning or educational objectives can be strengthened and reinforced by greater use of technology.

It thus offered that technology offers learners the opportunity to use higher order skills. Alanis (2004) notes:

> "Traditional instruction has long been criticized for tapping into only the lower levels of Bloom's Taxonomy of the cognitive domain and therefore, with the coming of technology, educators are now able to explore how to

teach so that students can achieve at the upper end of the hierarchy" (p 15).

Research Questions

This dissertation aimed to address the following four research questions:

1. What are the barriers, enhancers and the instructional issues that are involved in Internet-Based adult instruction?
2. In what ways does the Net.AI framework facilitate the planning, creation, use, modification and dissemination of instructional contents?
3. What are the salient implications and reactions to the routine use of online features such as e-mail communications, electronic assignment submissions, discussion forums, postings, assessments, and course management?
4. What characteristics or processes related to Internet-Based instruction and use of the Net.AI framework are supportive of the development of an online learning community?

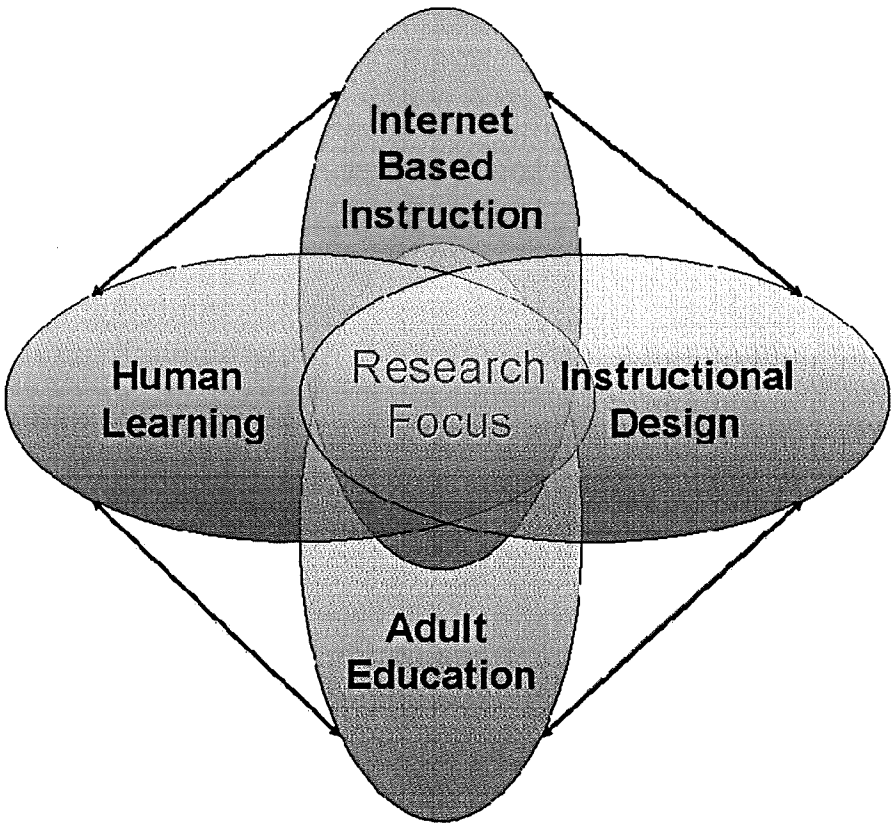
Theoretical and Research Boundaries

Boundaries within a theoretical approach provide limits to constructs to be evaluated (Bacharach,1989; Torraco, 1997; Lewis & Grimes,1999). The boundaries for this research study are:

1) Human Learning
2) Internet-Based Instruction
3) Adult education, and
4) Instructional Design

Graphically, the boundaries for the study are as follows:

Figure 1 Boundaries of the Adult Instruction & Online Learning study



Significance & Relevance of the Topic

Partly as a result of the orientation to reach learners who are widely dispersed geographically, Internet-Based instruction has become more widespread. Further, studies have shown that reliable approaches to assist in the design of Internet-Based are hard to find (Cowles, 1999; Johnson, 2003; Anderson & Dexter, 2005).

Therefore, it is clear that the mastery of a modern and extensible approach to designing Internet-Based instruction, combined with applicable technological systems, stands to help increase motivation and self-reliance. This, as noted by Weller (2002), Kozma (2003), and Driscoll (2005) also creates a

higher degree of professional satisfaction on the part of both instructors and learners.

CHAPTER I SUMMARY

Thorndike (1928) wrote that "Age in itself, is a minor factor in either success or failure. Capacity, interest, energy and time are the essentials; [that] adult education suffers no mystical handicap because of the age of the student" (p. 124).

These words are very inspiring. Moreover, they deepen the conviction that the possibility exists for tremendous learning growth during the adult phase of life. Thus the central aim of the study is offer a roadmap that can assist in the orientation to augment or enhance learning opportunities for adults.

CHAPTER II

REVIEW OF LITERATURE

This chapter presents the literature review for the study. The four main theoretical threads that are examined are: Human Learning, Instruction, Adult Education, and Internet-Based Instruction, which is a branch of distance education. Sub-areas and sub-topics for each of those four main areas will also be looked at, as noted in table 1 below.

Table 1 – Lit Review Conceptual Framework

Primary	Sub-Areas
Human Leaning	1. Behaviorism 2. Cognitivism 3. Constructivism
Instruction	4. Design & Planning 5. Systematic Design 6. Constructivism & Learner-Centered
Adult Education	7. Self-Direction 8. Motivation 9. Andragogy
Internet-Based Instruction	10. Communications 11. Media & Andragogical Methods 12. Online Learning Community/Lifelong Learning

The first two aspects of the literature review, Human Learning and Instruction are looked at mainly to develop the theoretical basis for a framework, titled Internet-Based Adult Instruction (hereon referred to simply as Net.AI), which was developed through the study. The Adult Education and Internet-Based Instruction areas are checked to further develop the Net.AI framework.

In addition, these two threads of the literature review are used to present the central issue being considered in this research, which is: How to best improve Internet-based adult instruction and training. The literature review served as the theoretical foundation for the research questions for the study as well as the interview questions, which were asked of the participants. These allowed a strong connection to be made between both the theory and the practice of adult-oriented online education.

Finally, a lens using the terms of *extrinsic-push*[1] (from the teacher/instruction and towards the learner), *intrinsic-pull* (from the learner towards the instructor/instruction), and *in-ex push-pull* is highlighted in the literature review. *Extrinsic-push* correlates to the term teacher-centric and is used to denote emphasis placed on learning events and situations that are external to the learner. On the other hand *Intrinsic-pull,* compares to the expression learner-centric and is focused on the needs and wants of the learner. As shown later in this section, an orientation towards the engagement of the learner represents a major shift in thinking in the area of instruction strategy. The last term *in-ex push-pull* is used to denote items, perspective, etc., which are employed to connect learners with instruction.

Human Learning

Human learning has traditionally been presented and explained in many ways (Thordinke, 1928; Houle, 1961; Bruner, 1966; Bandura, 1969; Piaget, 1969; Glaser, 1990; Lave & Wenger, 1991;Dunn, 2000; Ormrod, 2004). Merriam Webster lists the following three key definitions for learning:

> "[1] To gain knowledge or understanding of or skill in by study, instruction, or experience; [2] To come to be able, and [3] To come to realize

From Wikipedia, an online open-source encyclopedia, learning is defined in the following manner:

> "...the process of gaining understanding that leads to the modification of attitudes and behaviors through the acquisition of knowledge, skills and values, through study and experience. Learning causes a change of behavior that is persistent, measurable, and specified or allows an individual to formulate a new mental construct or revise a prior mental construct (conceptual knowledge such as attitudes or values). It is a process that depends on experience and leads to long-term changes in behavior potential. Behavior potential describes the possible behavior of an individual (not actual behavior) in a given situation in order to achieve a goal. But potential is not enough; if individual learning is not periodically reinforced, it becomes shallower and shallower, and eventually will be lost in that individual."

Education oriented theorists, philosophers, scholars and researchers most particularly from the field of human psychology have long debated about a concise and comprehensive definition for the term learning since it involves behavioral, mental, environmental, and even attitudinal elements (Rogers, 1994; Riding 1998).

While there is a wide range of perspectives concerning which aspects of human learning should be emphasized, a consensus has emerged that learning involves some sort of a change. Moreover there is considerable agreement that the change that's related to learning should be experiential and not the result of physical growth. As a result, a scholarly definition for learning that has wide appeal is the following one: "a relatively permanent change in behavior resulting from experience" (Mathis 1970, quoted in Stiles 1974, p.32).

The many manifestations of learning have led to various attempts at classifying the theories, which have been put forth to explain the phenomenon (Piaget & Inhelder, 1969;Gage, 1972; Gagné, 1984; Cross, 1981; Knowles, 1990; Pallof & Pratt, 2005). While a few changes have been made over years with regards to the exact emphasis of a particular learning theory, the three major categories, which are generally accepted as unique perspectives on the subject are: Behaviorism, Cognitivism and Constructivism. Each of these orientations focuses on a specific outcome concerning the learning process, and they will be discussed in greater details in the following sections.

Behaviorism. The term, behaviorism, has a long tradition in the field of human learning (Stiles, 1974; Gagné, 1985; Knowles, 1990). Those who subscribe to the behaviorism perspective posit that a change in manifest behavior is a central attribute of learning. Behaviorists also offer that stimuli (S) and responses (R) to those stimuli form the central tenets of learning activity or behavior (Bruner, 1966; Bandura, 1969;Gagné, 1985). At its most simplistic form, behaviorism looks at a learning situation from the perspective of an external event, or a stimulus, leading to a learner's reaction or a response.

Behaviorism is often referred to simply as the S→R model. Given its focus on the external or stimulus engagement of learners, behaviorism can be thought of as an *extrinsic-push* approach.

There are three main variations or prototypes to the basic S→R model. Gagné (1985) identifies that behaviorism appears in the forms of Pavlovian classical conditioning, Skinnerian operant conditioning and Guthrie's chaining

condition. These learned behaviors, according to Gagné (1985) can simply be looked upon as associative learning and a basic learning process.

> "Responding to signals and executing simple motor responses are no more than a small portion of the capabilities that human beings can do and learn. Perhaps the phenomena they exhibit and the conditions of their learning can help us understand associative learning as a basic process." (Ibid p. 33).

Cognitivism. The term, cognitivism is associated with learning activities that involve the use of mental ability or cognition. According to the cognitivism approach, learners are very engaged in the learning process (Bruner, 1966; Vygotsky, 1978; Lave, 1998; Norman 1988; Rabinowitz, 2004). Moreover, unlike the approach presented by behaviorism, which describes learning as a passive activity, in Cognitivism learning is seen as a very active process. Also, according to cognitivism, learners are to be directly engaged in changing their mental capacity, or their cognitive abilities (Rumelhart & Norman, 1978).

Gagné (1985) distinguishes basic learning or associations from "complex forms of human performance" (Ibid, p 46), which he then identifies as learning capabilities. These, according to Gagné are: *Intellectual Skills, Verbal Information, Cognitive Strategies, Motor Skills,* and *Attitudes.* Other proponents of cognitivism offer that learning may or may not be demonstrable via a particular behavior, as the emphasis is placed on mental as opposed to behavioral changes.

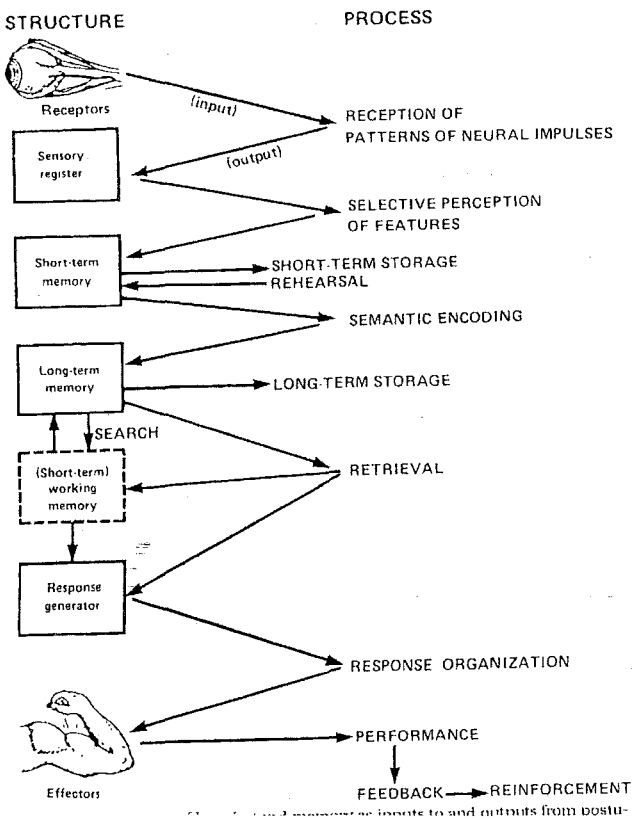
Cognitivism can thus be presented as having both *extrinsic-push* and *intrinsic-pull* qualities. For example, the information-processing model, which was advanced by Gagné and other leading cognitivism-leaning theorists, provides a

framework using the analogy of the inner workings of a home computer to present the perspective that both external and internal processes allow learning to take place. While it is noted that Gagné began his career as a behaviorist, work such as the information processing model (IPM) and other cognitive oriented publications, which place the learner as the main entity in the learning endeavor, clearly follow the cognitivist persuasion (Glaser, 1990).

The IPM is described by Gagné in the following way:

> "The model tells us that an act of learning, however brief or extended, is composed of several phases. Learning begins with the intake of simulation from receptors and ends with the feedback that follows the learning performance. Between these events are several stages of internal *processing*." (Gagné, 1985, p. 86; emphasis in original.)

Figure 2 – Gagné's Information Processing Model



Constructivism. The term, constructivism, means that knowledge is "constructed" by the learner, instead of obtained from the instructor.

Constructivism also presents that there is full participation and engagement on the part of the learner in the learning process (Gardner 1993; McNeil, 1996, Huitt, 2001). In regards in this study constructivism is therefore much more oriented towards the *intrinsic-pull* dimension of the framework.

The orientation of constructivism is that the whole individual including all of the physical, mental, emotional, as well as moral proclivities is directly engaged in learning activities. Constructivism says that humans are quite different than animals, given that human beings possess intellect, emotions, body impulse (or desire), intuition and imagination which are unique to the species.

Human beings, according to the constructivism approach, seek self-actualization, self-fulfillment and self-discovery. Goal-setting and goal-orientation then serve as motivators for many learning oriented activities for human beings (Kurtz, 2000). Freire (1970) in rejecting the "banking" concept of education, in which the student was viewed as an empty account to be filled by the teacher, presents that all humans have the potential, capacity or inclination for *conscientização*, which is translated as "consciousness raising" through the active participation of the learner (pp. 60-61).

Kolb (1984) pushed the idea of human-centered instruction further by advocating a posture towards experience-based approaches to teaching and learning. In addition, Kolb argued that individuals' learning style plays a significant role in the orientation and predisposition towards learning. Kolb's work, notes Clark (2000), is based on John Dewey's emphasis on the need for learning to be grounded in experience. It makes use of Kurt Lewin's work, which

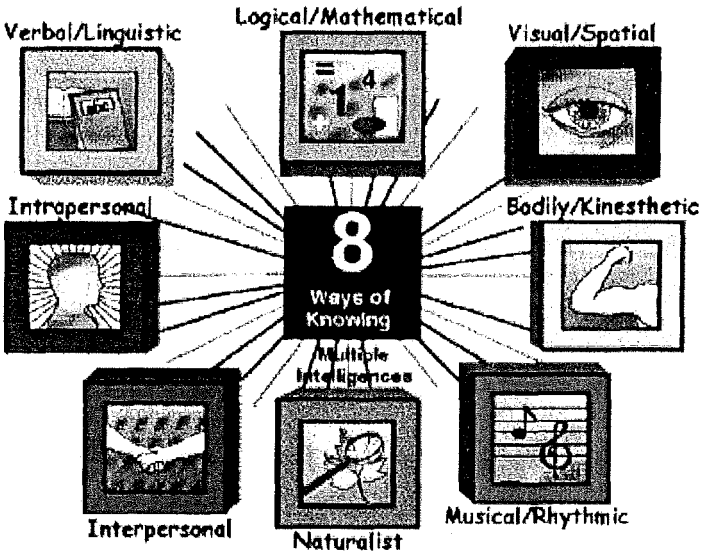
stressed the importance of a person's being active in learning as well as Jean Piaget's theory, which presented that intelligence is the result of the interaction of the person and the environment. Kolb's model has four stages and two dimensions. The first dimension of the model is based on task, both performing and observing. The second dimension is based upon thought and emotional processes, responsive and controlled feelings.

Gardner (1993a) extended the perspective of individuality in learning with the seminal work on multiple intelligences. The theory presents that there are multiple intelligences. For the most part individuals learn towards one or two of those as the most dominant for learning.

These are:

1) Verbal Linguistic,
2) Logical-Mathematical,
3) Musical,
4) Spatial,
5) Bodily Kinesthetic,
6) Interpersonal,
7) Intrapersonal, and
8) Naturalist.

Figure 3 Gardener's eight ways of knowing



Graphic Source http://www.multi-intell.com/MI_chart.html

According to Gardner (1993b), each kind of intelligence is equally important from a knowledge and learning acquisition standpoint. However, Gardner noted that the current focus of the most educational systems in the US is teaching, testing, reinforcing and rewarding primarily two kinds of intelligence: verbal/linguistic and logical/mathematical.

Constructivism offers that individuals' own internally-driven goals should be at the center of learning and instruction. Therefore, since it is ultimately purpose or motivation, which guides human actions and endeavors, the orientation to learn within the constructivism perspective is thus primarily and *intrinsic-pull* effort.

Section Conclusion

Learning is clearly a complex endeavor. The different learning traditions and theories while providing unique perspectives, all take into account, via very distinct means and orientations, the most salient aspects of education pertaining

to instructors, learners, facilitators, learning events, and teaching contexts. While Behaviorism and to a lesser degree Cognitivism, tend to emphasize the mechanics (the procedural "how") of learning, the humanistic orientation is most interested in the interaction (the engagement "with" others) involved in learning activities.

The lens used to examine the orientations of the theories, also reveals that factors both outside and within the individual learner clearly influence the learning process. Thus questions pertaining to Human Leaning were developed to offer participants the chance to examine and reflect on their stance towards the different theories advanced, as well as on their personal dispositions vis-à-vis learners' inherent attitudes towards instruction.

Instruction

In general, approaches and models used in instruction have tended to follow the prevailing learning theories of the day. During the period of time in which behaviorism was the dominant theoretical foundation for learning, the sense was that, since reinforcement was the primary principle to be applied in achieving outcomes, there was no need for a theoretical basis for instruction (Bruner, 1966; Snelbecker, 1974; Gagné, 1985; Reigeluth, 1983).

Design & Planning. Bruner (1966) is placed among the early advocates for a distinct thread of inquiry in education matters and perhaps the first educational theorist to have placed instruction instead of learning as a prime focus and orientation. Utilizing what he called "a few simple theorems about the nature of instruction" (p. 39) Bruner presents that a theory of instruction needs to be

"*prescriptive*" and "*normative.* Bruner says that the prescriptive aspects of instructional theory should provide measures or "a yardstick for criticizing or evaluating any particular way of teaching or learning" (*Ibid*). The normative orientation of the theory, declares Bruner, needs to:

> "... (set) the criteria and the appropriate conditions for meeting them. The criteria must have a high degree of generalizability: for example a theory of instruction should not specify in *ad hoc* fashion the conditions for efficient learning of third-grade arithmetic; such conditions should be derivable from a more general view of mathematics learning" (Ibid).

Bruner identified four major features for the theory of instruction that he proposed. These are: 1) Predisposition to learn, 2) Structure of knowledge, 3) Effective sequencing, and 4) Form and pacing of reinforcement. These ideas advanced by Bruner in the form of a theory, laid the groundwork for the understanding that instruction could be approached as a science and not simply as an appendage to learning or in *ad hoc* fashion as noted.

Moreover, a stronger focus on instruction as a separate field, made it clear that the field of instructional design was in need of tenets, processes, activities and approaches to serve as a guide or model for practitioners in the field. These would lead to instructional actions that are repeatable and thus will offer greater consistency in teaching and learning situations.

The push for a more predictable approach, model, or framework for instruction gained ground during World War II and as result of the development of very complex man-made machines such as airplanes (Banathy, 1968). Moreover, the need to train large numbers of soldiers quickly and efficiently forced planners and trainers to look for a more efficient way to design instruction.

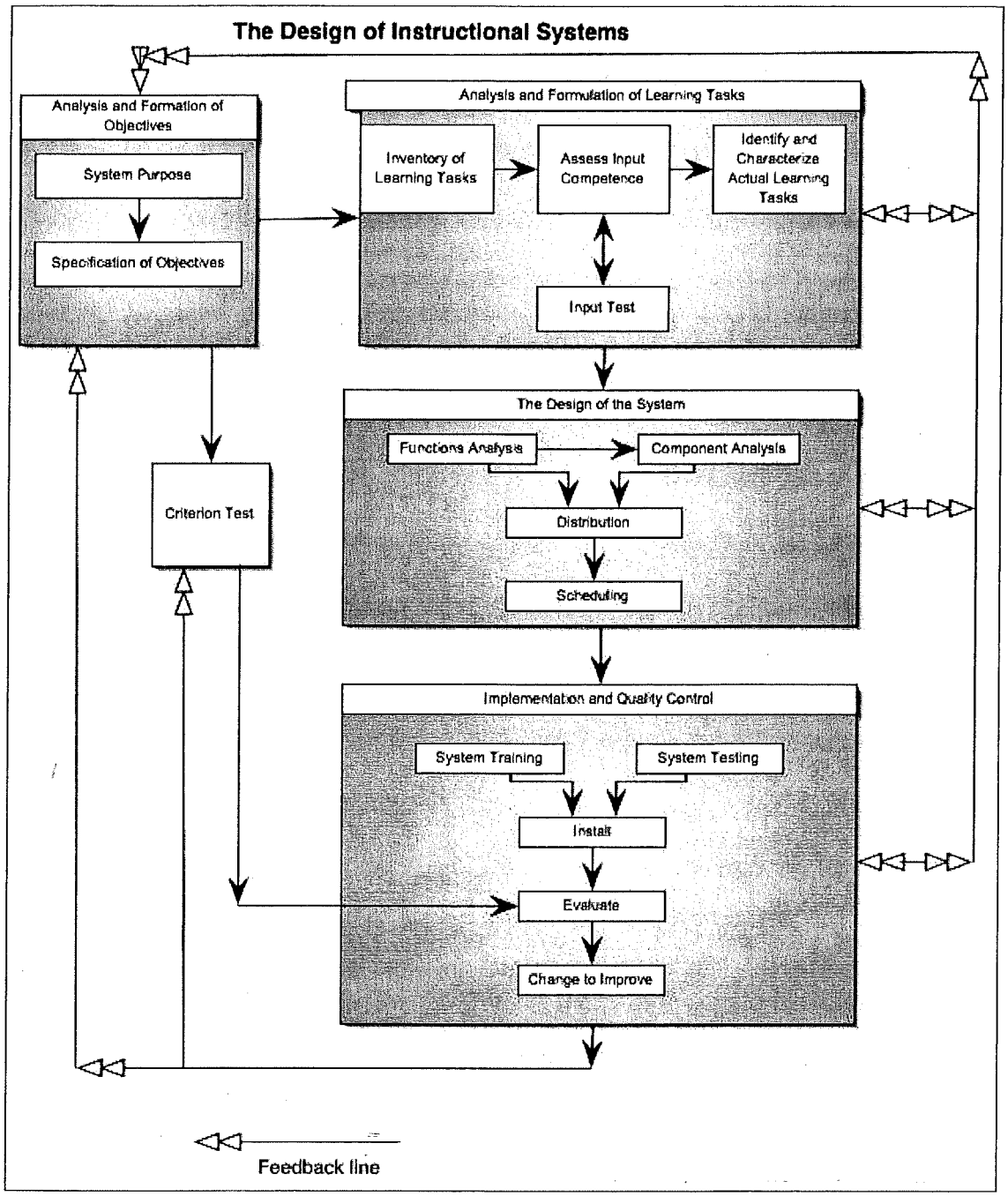
The general orientation to approaching large-scale physical design problems such as the building of airplanes in a systematic way, according to Banathy, led to significant changes in the way, instruction was both conceived and implemented in schools. Banathy noted that:

> "Realizing the systems nature of education and the unique potential that the systems approach can bring to the treatment of complex problems and the design of educational programs, it is no wonder that many educators have turned to the systems approach. As a result, the systems approach is already in use in numerous educational endeavors." (Ibid. p.17)

Banathy argued that the systems approach was logical as it provides an orderly set of strategies for making curriculum decisions. Banathy presented a framework or a model based on systems principles for the purpose of developing instructional systems that have both a goal-oriented and design-oriented procedures.

The goal-oriented procedure of the framework is made up of three sub-components, which are: 1) System Objectives, 2) System Design, and 3) Implement, Test and Change to Improve sub-systems. The design procedure in contrast is made of six components which are: 1) Formulate Objectives, 2) Develop Test, 3) Analyze Learning Task, 4) Design System, 5) Implement & Test Output, and 6) Change to Improve. Feedback lines were incorporated in the model as noted in figure 2.3, thus allowing corrective actions to be taken during implementation and operation of the system.

Figure 4 Banathy's Systematic Design View

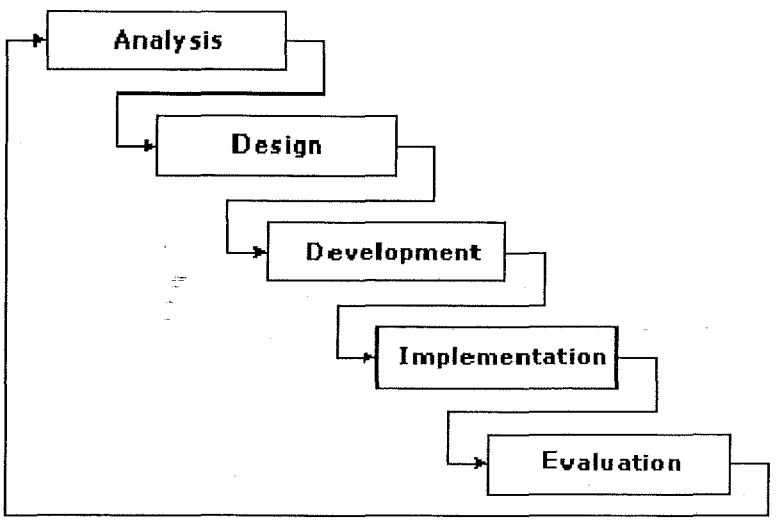


Graphics Source: http://www.nwlink.com/~donclark/history_isd/banathy.html

Systematic Design. A simplified set of instructional design process, which came to be known by its acronym ADDIE, picked up on the approach advanced by Banathy and gradually gained acceptance because it took into account the systematic approach in designing instruction. While it is unclear who the first person to have proposed ADDIE was, and considerable debates exist concerning whether it actually should be called a method, process, tool or a model, nevertheless, the simplicity offered by ADDIE has allowed for its widespread utilization and use (Molenda, 2003, Strickland, 2006).

ADDIE is an acronym of the first letter of the five key phases or procedures for the instructional approach. They are: 1) **A**nalysis, 2) **D**esign, 3) **D**evelopment, 4) **I**mplementation, and 5) **E**valuation. In addition, with ADDIE, each instructional phase has an outcome that feeds into the subsequent phase. ADDIE's main contribution to ID is that it offers a step-by-step approach to follow in the development of instruction.

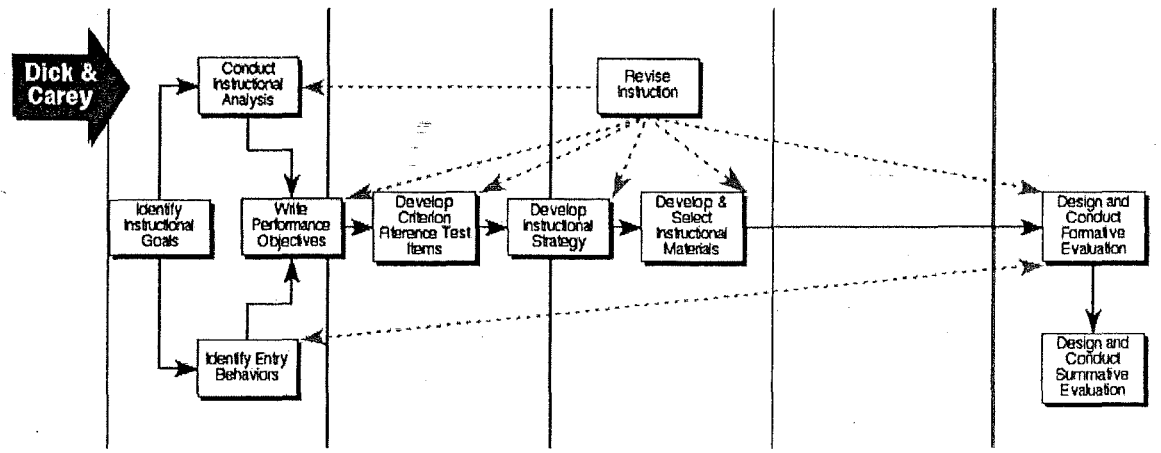
Figure 5 A Basic ADDIE Model



The instructional framework proposed by Rath & McAuliffe (1974) also took advantage of the prevailing orientation and wide acceptance of systems principles in education. The authors offered that because systems allowed problems to be evaluated using different scenarios and allowed the possibility of looking at alternatives, that approach would yield more predictable results in designing instruction. In addition, it is noted that a system's framework would allow designers to consider both internal and external forces, such as "goals, motivations, feelings about media...books, audiovisual equipment, classrooms, library" (p. 165) that may impact instruction.

In 1990, Dick & Carey introduced a novel instructional design approach, which used system principles and techniques. That approach, which is simply known as the Dick & Carey model has become one of the most widely accepted tools to use for the purpose of instructional design. The Dick & Carey model provides a detailed and comprehensive process to designing instruction. As shown below, the model involves ten steps, starting with the identifications of instructional goals and ending with a summative evaluation of the instruction.

Figure 6 – The Dick and Carey Instruction Design Model



Graphics Source: http://www.personal.psu.edu/images/Dick&Carey.jpg

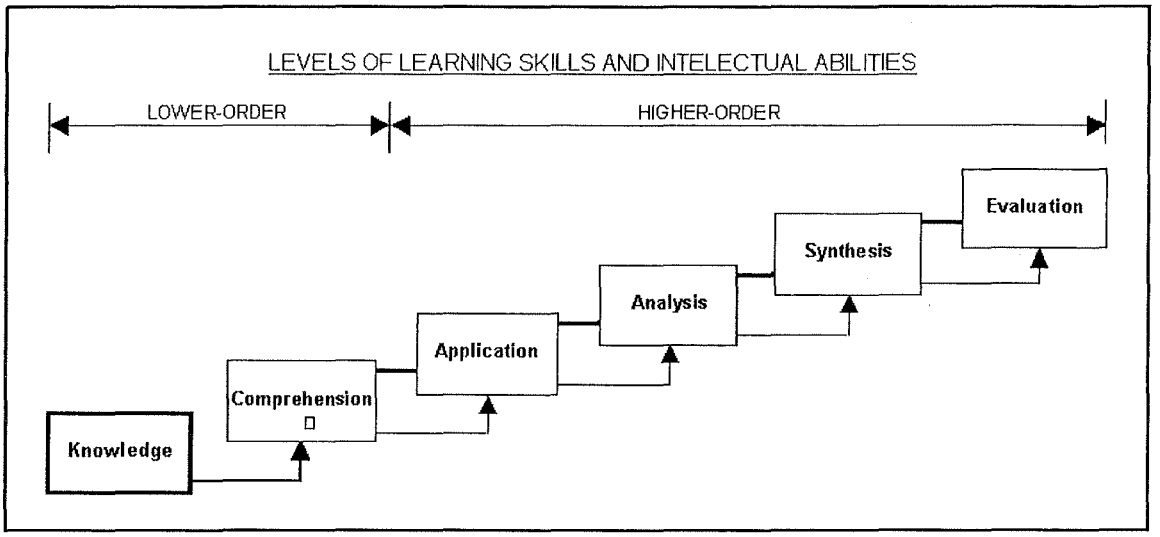
However key criticisms of the Dick and Carey model are its rigidity and cumbersomeness. In addition it is argued that the model is process focused and places a high priority on predictability in outcomes. To some, the appearance that the Dick and Carey model seeks to develop a reliable link between instructional materials (a stimulus) and learner via learning material (a response) is akin to behaviorism or quite similar to programmed instruction (Kearsley, 2000; Omrod, 2004).

Constructivism & Learner Centered Approaches. Bloom's (1955) Taxonomy, the seminal work which provided classifications and levels of learning, served as a key backdrop for those who maintained a learner oriented perspective towards instructional design. The Taxonomy model is laid out in three parts, or 'overlapping domains,' Psychomotor, Affective and Cognitive. These domains are ordered in degree of difficulty, therefore the categories within each domain, which represent levels of learning development, must be mastered before moving on to the next. From an instructional design standpoint Bloom's work meant that different approaches needed to be taken depending upon the learning domain that's in focus.

Much like Bloom, Bruner (1961) placed primary emphases on learners' actions, orientations and activities during learning events. Bruner argued that learners "construct" new ideas or concepts based upon their current/past knowledge and construct meaning that extends past the information that was originally given. Bruner, whose studies focused on how children learn

mathematics presented that learners create or construct their own knowledge by "re-arranging or transforming evidence in such a way that one is enabled to go beyond the evidence so assembled to additional new insights" (p. 22).

Figure 7 Bloom's Taxonomy



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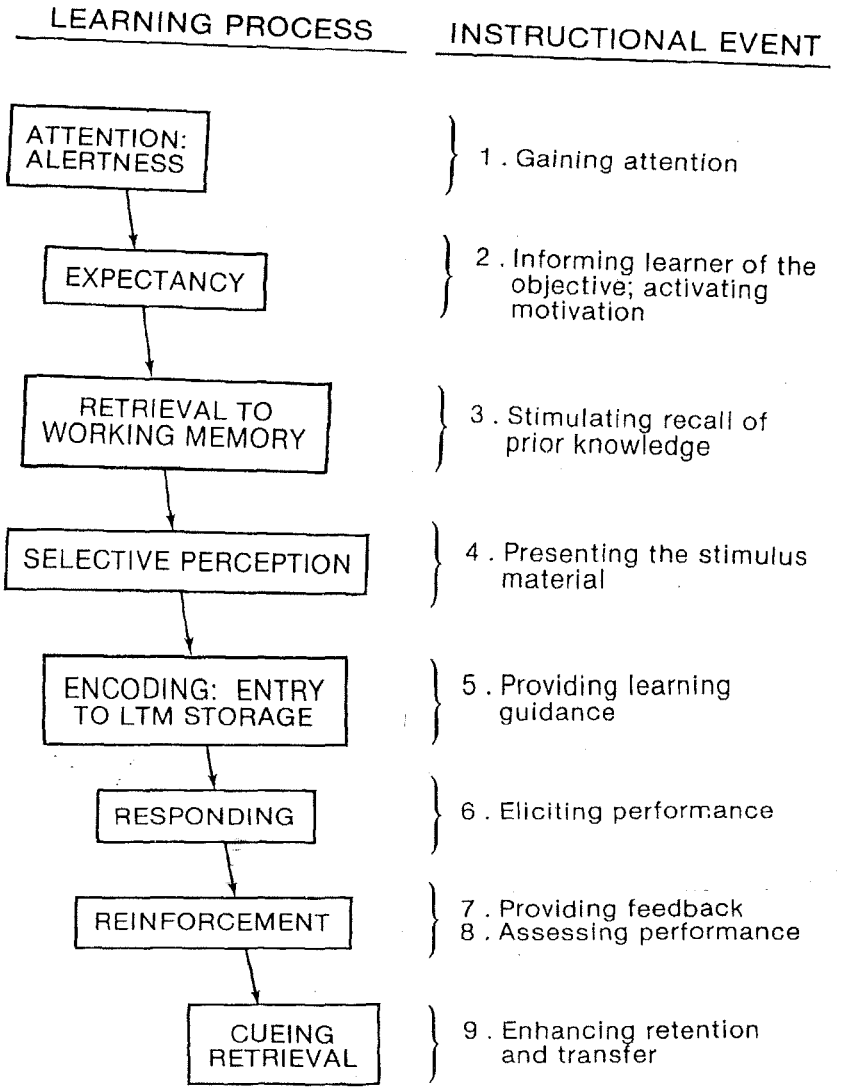
Frameworks or models such as ADDIE, Barnathy's, Rath & McAuliffe's, and Dick & Carey's use systematic approaches to instructional design by following linear or step-by-step methods. Many of the models that use the linear approach to designing instructions, while not specifically stated, tended to have a strong bias or at the very least showed greater alignment with either behaviorist or cognitivist learning philosophies (Strickland, 2006). Therefore, by and large the information processing or system models did not go far enough in placing focus on the learners needs, wants, and cognitive abilities, as was being advocated by the proponents of constructivism approaches.

Gagné (1985) presented that there was a need for a differentiation in instruction to achieve different learning outcomes. As a result, Gagné developed

an instructional design model, which is considered by many to be one of the most influential publications in the field, based on achieving different types of learning outcomes. The model is structured such that it can be adapted for each of the learning capabilities identified by Gagné. Moreover, the model involves both learning/internal processes (eight) and corresponding instruction/external events (Gagné & Driscoll, 1988;Gagné et al, 1992).

Figure 8 Gagné's Conditions of Learning



Key criticisms of Gagné's model are a lack of accounting for items such as: time to learn, motivation, and individual differences concerning prior knowledge or comprehension. Gagné (1986) acknowledged these shortcomings in the model and noted that steps can be taken at the micro or curriculum level of instructional design to make greater use of the model, given its focus on instructional situations "defined in the narrow sense" (p. 256).

David Merrill and Charles Reigeluth are two of the top contemporaries who have devoted significant time and energies towards the development of sound and rigorous instructional theories. Reigeluth was a student of Merrill and as a result there is quite a bit of similarities in their work. The works of both authors reflect the evolution of approaches, theories and models in the field of Instructional Technology ranging from behaviorism to Constructivism & Learner-Centered.

Merrill's (1983) principal work is Component Display Theory (CDT) and it involves eight key components.

These are:

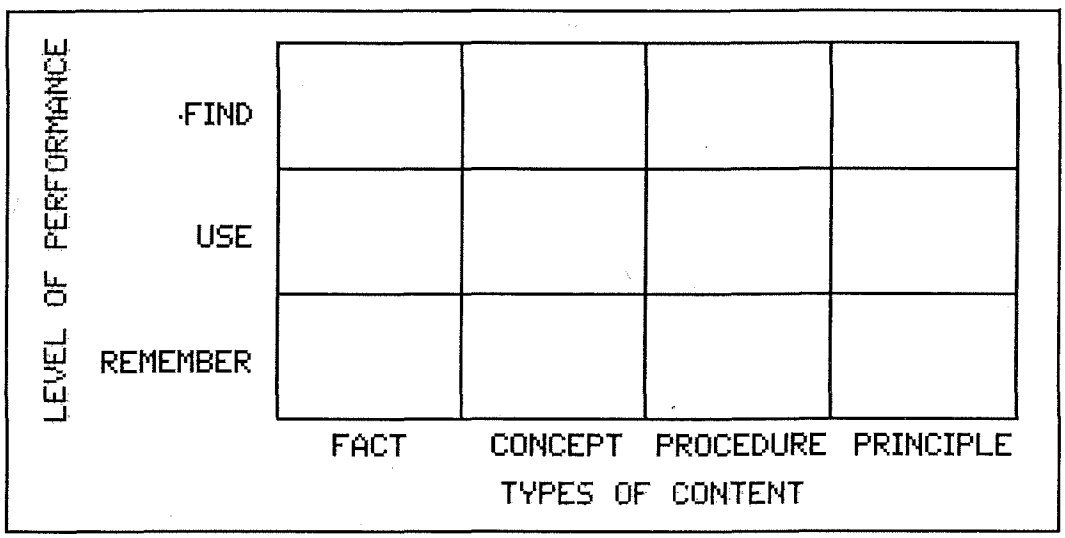
- Objective – Memorization
- Generality – Attributes and Relationships
- Instance – Examples
- Generality Practice – Main Definition
- Instance Practice – Classification
- Feedback – Correct generality or instances
- Elaborations – Prerequisites

Via CDT, Merrill offered that there were two dimensions involved in learning: Content and Performance and four primary presentation forms: Rules, Examples, Recall, and Practice. Secondary forms of presentation are prerequisites, objective, helps, mnemonics and feedback. In CDT, learner control is assumed. Thus facilitators should develop strategy that support learning participation.

Merrill notes:

> "Learner control subsumes a range of variables. Learner control of *content* includes curriculum selection, lesson or objective selection, and segment or module selection. Learner control of *strategy* ... and selection of conscious cognitive processing" (Ibid, p. 328).

Figure 9 Merrill's CDT Model



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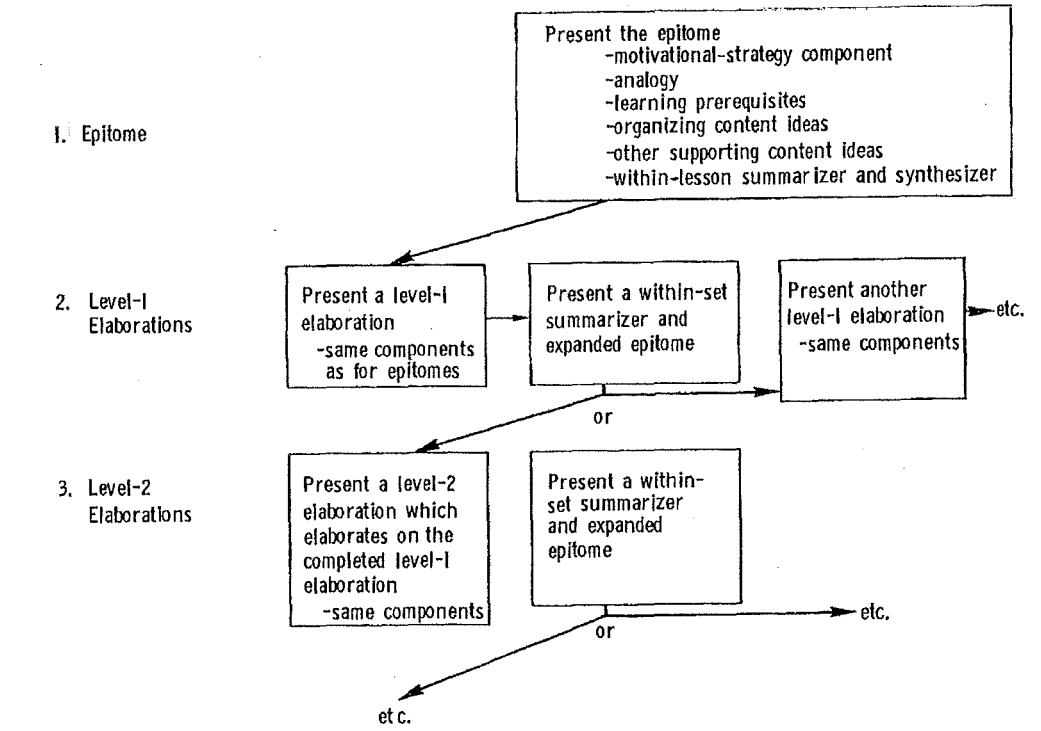
Reigeluth (1983) picked-up on elaboration, one of the components of CDT, to present an overall instructional approach, which he called: Elaboration Theory. As shown in figure 9, Reigeluth's Elaboration Theory offers that instruction needed to be organized around increasing levels of complexity.

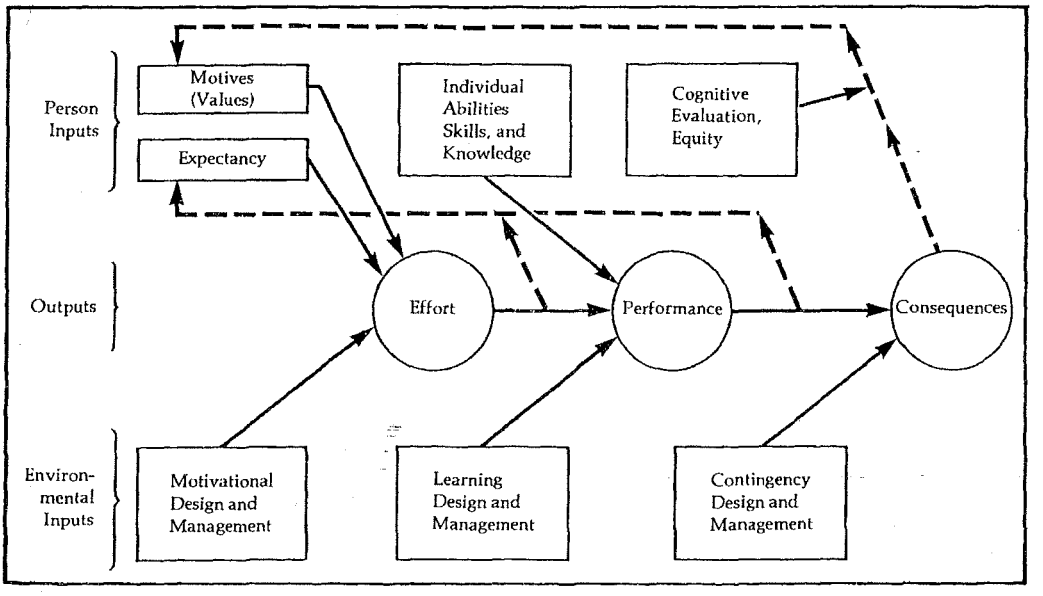
Reigeluth presents that such an approach is to allow mastery of a less complex aspect of learning, before allowing the learner to proceed onto the next level.

Elaboration Theory proposes seven strategy components or approaches in instructional design. These are:

1. Elaborative sequence – "a special type of simple-to-complex sequence (for the main structure of the course" (Ibid p. 342)
2. Learning prerequisite sequences – "based on a *learning structure* or hierarchy" (Ibid p. 342, emphasis in original)
3. Summarizers – "systematic review of what has been learned" (Ibid p. 358)
4. Synthesizers – "[To] periodically interrelate and integrate the individual ideas that have been taught" (*Ibid.*)
5. Analogies – Relate what has been learned to "familiar ideas" (*Ibid.*, p. 360)
6. Cognitive strategies activators – "Cognitive strategies can and should be activated during instruction" (*Ibid.*, p. 361)
7. Learner control – "Opportunities should be made for the informed learner ... to activate strategies in accordance with ... metacognition model" (*Ibid.*, p. 363)

Figure 10 Reigeluth's Elaboration Model





The works of both Gagné and Gardner are quite evident in the theories and scholarly work presented by both David Merrill and Charles Reigeluth. The instructional implications of both CDT and Elaboration theories are that for each learner and a particular set of objectives, there is an optimal form of presentation that will result in the most effective learning experience or outcome. Therefore, instructional designers need to individualize to the extent possible and look for ways to match learners with a most harmonizing instructional approach available.

Section Conclusion

The instructional models whether behavioristic, systematic or learner-focused, present approaches involving either *teacher-push* or *learner-pull,* to facilitate learning. These models and frameworks all have strong and weak points. The main take-away therefore is to avoid using a particular model as the proverbial hammer, as instructional design does involve at times, behavioral, cognitive and humanistic considerations.

As in the case of Human Learning, instructional approaches can be based on behavioral, cognitive, humanistic orientations. Thus, probing questions taking a specific instruction focus and at other times a multi-instructional combination, were developed and presented to participants in the study. This allowed the opportunity to examine and gain insight in regards to the inherent tensions involved in instructional design, in general or geared for the Internet environment.

Adult Education

The general learning theories have made it a point to de-emphasize growth or human development as a significant aspect of the learning process.

Yet, as early as the turn of the century, investigations were being made to more precisely understand adult learning ability and as a corollary "Adult Education" (Thorndike, 1928). Knowles (1990) writes that analytical and investigative works published by both Eduard Lindeman, in 1926 and Edward L. Thorndike in 1928, serve as significant breakthroughs in the orientation to gain greater understanding of adult learning and education.

> "Adult education presents a challenge to static concepts of intelligence, to the standardized limitations of conventional education and to the theory which restricts educational facilities to an intellectual class. Apologists for the status quo in education frequently assert that the great majority of adults are not interested in learning, are not motivated in the direction of continuing education; if they possessed these incentives, they would naturally, take advantage of the numerous free educational opportunities provided by public agencies. This argument begs the question and misconceives the problem. We shall never know how many adults desire intelligence regarding themselves and the world in which they live until education once more escapes the patterns of conformity. Adult education is an attempt to discover a new method and create a new incentive for learning; its implications are qualitative, not quantitative. Adult learners are precisely those who have intellectual aspirations are least likely to be aroused by the rigid, uncompromising requirements of authoritative conventionalized institutions of learning." (Lindeman, 1926, quoted in Knowles, pp. 29-30)

> "The time at which people learn things depends in large part upon when they wish to learn them, or when they are urged to learn them, or when they have the opportunity to learn them... There is evidence also that the difficulty expected in learning at late ages is in part due to a sensitiveness to ridicule, adverse comment and undesired attention" (Thorndike, 1928, p. 124).

Constructivism 's orientation to look at learning from the perspective of the individual coincided well with the interest to gain a better understanding of the ways in which adults approach – or can best benefit from— learning activities (Cross, 1981). Thus, gradually a perspective began to develop that the general learning theories, which put a major emphasis on youth learning in the form of

teacher-pupil relationships, was insufficient for education activities which focused primarily on adults.

The Notion of Adult. There are many differentiating aspects and orientations in defining the notion of adult. In some cultures, such as the United States or Canada focus tends to be placed on the legal definition of the term e.g., the year markers of 18, 19, and 21 are often used respectively for voting, marriage, and /or drinking for persons who are deemed not to have mental developmental difficulties. Some societies, however, focus on socio-cultural traditions for the purpose of determining who is and is not an adult. Thus, people who perform activities commonly associated with adults are accepted as full-fledged adults irrespective of age markers.

For the purpose of this study, the term adult is meant to specifically be understood within an education context. Thus focus is placed on instruction-related activities that are geared for learners who are typically over the age of 25 years, whether they are oriented towards basic education, job improvement, skills development, or personal growth.

Self-Directedness. A major differentiating aspect for adults is the fact that they possess an advanced understanding of the notion of self-concept. Thus, unlike youth or adolescents who see themselves primarily in relation to others, such as their parents, adult family members, teachers, government authorities etc., adults think and behave as totally independent human beings (Houle, 1961; Knowles, 1975; Cross, 1976;Brookefield, 1986).

Recent studies in the area of adult education, professional training and

human resources development have also revealed that adults were more likely to see themselves as independent and self-directed organisms (Houle, 1982; Brookfield, 1986; Brockett & Hiemstra, 1991; Guilbaud & D'Emilia, 2005). This perspective is presented as follows:

> "Self-direction in adulthood has often been described as a learning process, with specific phases, in which the learner assumes primary control." (Brockett & Hiemstra, 1991, p. 20)

Pioneering works in the field of adult instruction have revealed that adults were particularly looking to satisfy their want, needs and desires. The longing for anticipated benefits, says Tough (1971, 1979) leads adults to engage in "very deliberate learning episodes" (p. 7). Tough states that:

> "...episodes (are those) in which more than half of the person's intention is to gain and retain certain definite knowledge and skill. Such episodes can include reading, listening, or watching. They can take place in a library, classroom, store, living room, den, kitchen, hotel meeting room, or train. The person can learn with an instructor, in a group or alone. The desired knowledge and skill can be simple or complex, deeply personal or almost trivial. The person can use the knowledge and skill for solving a problem, obtaining academic credit, or reflecting on the future of mankind." (Tough 1979, pp 8-9)

Tough was intrigued to discover that self-taught learners followed the same steps that existed in established curriculum models. Those steps included 1) the identification of a goal, 2) the acquisition of proper resources, 3) selection of a method, and 4) evaluation of progress.

Knowles (1975) placed "self-directed learning" totally in respect to the individual. He described it in the following manner:

> "(A process) in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes." (p.18)

Brookfield (1986) distinguished between learning in an individual mode versus in a group. He argued that since adults are mainly self-directed, emphasis needed to be placed on learning styles, and the types of behaviors that allow a more facilitative posture. Facilitators and other teaches of adults thus should see themselves not as "didactic instructors" (p. 62) who have all of the answers. Rather, they should support the development of "creative, adaptive and autonomous persons" (p. 63).

Moreover, noted Brookefield, teachers or facilitators should be aware and sensitive to the learners' self-concepts. Past experiences of adults need to be recognized as "learning materials" (Ibid) and teachers need to be willing to share their own experiences with learners. Such an approach says Brookfield reduces learners' anxiety and develop an atmosphere of trust and general openness.

Houle (1980) also supports the view that adult education needed to be flexible, student-centered, experienced-based and more oriented towards supporting or facilitating learning, given the orientation towards self-direction. He also argued that there are three main categories of continuing education for adults. These are:

1. Goal-orientated - those who use education as a means of accomplishing fairly clear cut objectives.
2. Activity-orientated - those who take part in such activities because of an attraction in the circumstances of learning rather than in the content or announced purpose.

3. Learning-orientated - those that seem to seek knowledge for its own sake (Houle 1961, pp. 15-16).

Motivation. Wilkinson (1973) noted that within adults there is a much wider range of "interests, attitudes, motivations and skills" (p. 34) and that adults tended to be motivated by immediate problems. Interest is a key component of the motivation and drive found in adult learners (Lave & Wenger, 1991; Wlodkowski 1999; Rogers, 2001). This predisposition, notes Wilkinson, is based both on intrinsic and extrinsic factors. Thus very often the two coincide to create a "'teachable moment' in which the adult is highly motivated and willing to learn." (p. 39)

The available research data on adult education, says Cross (1981), support the work of Miller (1967) who developed a social class theory. This work, says Cross, is largely based on Maslow's hierarchy of human needs and Lewin's force-field analysis which laid out a model to explain the reasons adults choose to participate or refrain from participating in learning activities.

Maslow's needs hierarchy states that:

> "People cannot be concerned about higher human needs for recognition (status), achievement, and self-realization – until the lower fundamental needs –survival, safety, and belonging have been met" (Maslow 1954, as quoted in Cross, 1981, p. 112).

Lewin's concept of positive and negative forces, says Cross, is important because it provides an illustration that attempts to provide a firm explanation about adults' motivation. These are as listed in the table below.

Table 2: A Force Field

Positive Forces	***Negative Forces***
Survival needs	Action-excitement orientation of male culture
Changing technology	Hostility to education and to middle-class object orientation
Safety Needs of Female Culture	Relative absence of spececifc, immediate job opportunities at end of trainin
Governmental Attempts to change opportunity structure	Limited access through organizational ties
	Weak family structure

(Lewin 1947, as quoted in Cross, 1981, p. 113)

Cross (1981) supported the points advanced by Tough with regards to anticipated benefits and thus offered that the learners' perspectives on the resulting reward, via participation in adult education programs, will serve as the main motivation forces. A key model for motivation, as presented by Cross, typically involves the following main steps:

- Engaging in a learning activity
- Retaining the knowledge and skills
- Applying the knowledge
- Gaining a materials reward, such as a job promotion
- Gaining a symbolic reward, as in credits and degrees

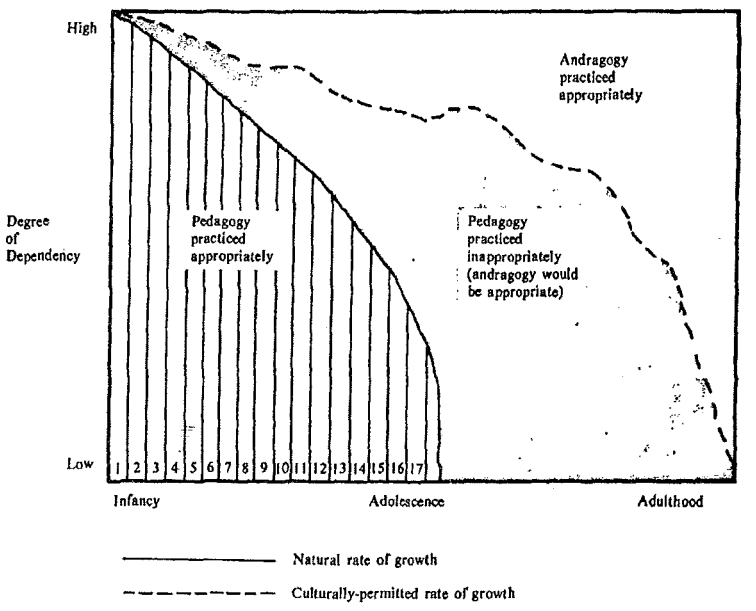
Pedagogy, Andragogy & Adult Instruction. Lave and Wenger (1991) have argued against the assumption of "internalization" or "transmission" (p.47) of

learning, offered by the pedagogical approach. They noted that such a perspective does not reflect the participation and negotiation which occur frequently in real world learning events.

> "In contrast with learning as internalization, learning as increasing participation in communities of practice concerns the whole person acting in the world. Conceiving of learning in terms of participation focuses attention on ways in which it is evolving, continuously renewed set of relations; this, of course, is consistent with a relational view, of persons, their actions, and the world, typical of a theory of social practice." (Ibid, pp. 49-50.)

Knowles is widely known or wholly credited as the father, at least in the US, of the field of Adult education, or Andragogy (Dickinson, 1973; Brookfield, 1986; Tight 2002). Knowles (1970) defines andragogy as "the art and science of helping adults learn" (p.38) and contrasts it against pedagogy or the teaching of children.

Figure 11 Knowles Pedagogy vs. Andragogy



Andragogy, declared Knowles, has a rich and somewhat forgotten tradition, which actually preceded the pedagogical model. Knowles noted:

> "... all of the great teachers of ancient times – Confucius and Lao Tse of China; The Hebrew prophets and Jesus in Biblical times; Aristotle, Socrates and Plato in ancient Greece; Cicero, Evelid and Quintillian in ancient Rome—were all teachers of adults, not of children, They perceived learning to be a process of active inquiry, not passive reception of transmitted content. Accordingly they invented techniques for actively engaging learners in inquiry." (Knowles, 1990, p. 27).

Pedagogy, according to Knowles (1990), is based on an old model of teaching, which dates back from seventh and twelfth centuries "monastic and cathedral schools of Europe out of their experiences in teaching basic skills to young boys" (p.54). Pedagogy, according to Knowles, assumes that: 1) Learner must know what the teacher teaches in order to get promoted and 2) The teacher views the learner as a dependent personality, hence the teacher-pupil relationship. Knowles further offered that pedagogy in its present form is approached more like an "ideology" (p. 64) about human development and maturity, than as a set of instruction-based teaching assumptions.

According to Knowles, while the notion and understanding that adults have unique characteristics as learners is widely accepted, the pedagogical teaching model which forms the basis of organization of the entire educational system in the US and much of Europe, has been frozen and "as a result, adults have by and large been taught as if they were children until fairly recently" (p. 54).

Andragogy as presented by Knowles (1990) is an adult instructional approach which is based on certain key assumptions that are quite different than those which are used for the pedagogical model. Andragogy says Knowles is based on the fundamental tenet that adult learners are different than children and adolescent learners.

The andragogical assumptions are:

1) Need to know *"why"* they learn something before they spend time and energy engaging in the subject. Thus the facilitator's task is to 1) "help the learners become aware of the 'the need to know' (p.58) or, 2) take their perspective of seeking to help learners improve the effectiveness in whatever matter that they are trying to learn.

2) Because adults' self-concept is advanced, they see themselves being capable of self-direction. Adults will "resent and resist situations in which others are imposing their wills on them" (*Ibid.*)

3) Unlike youths, adults have considerable experience.

   "The implication (of the fact that adults have experience) for adult education is that in any situation in which adults' experience is ignored or devalued, they perceive this as not rejecting not just their experience, but rejecting them as persons' (Ibid, p. 60)

4) Adults come ready to learn as they are interested in a particular topic that they choose typically in order to deal effectively with their "real real-life situations" (Ibid).

5) Adults have an orientation to learning.

   "In contrast to children's and youth's subject orientation to learning (at least in school) adults are life-centered (or task-centered or problem-centered) in their orientation to learning (Ibid, p. 61)

6) Adults have motivation primarily intrinsically to learn.

   "While adults are responsive to some external motivators (better jobs, promotions, higher salaries, and the like), the most potent motivators are internal pressures (the desire for increased job satisfaction, self-esteem, quality of life, and the like) (Ibid, p. 63)

Knowles thus proposed a new instructional model, or Andragogy, which is based on the set assumptions laid for adult education/learning. The table below lists some of the key tenets and aspects of the andragogical model.

Table3– Knowles' Andragogical Model

Assumptions		**Design Element**	
Self-concept →	Increasingly self-directedness	Climate →	Mutuality Respectful Collaborative Informal
Experience →	Learners are a rich source for learning	Planning →	Mechanism for mutual planning
Readiness →	Development Tasks of Social Roles	Needs →	Mutual self-diagnosis
Time-View →	Immediate application	Objectives →	Mutual negotiation
Orientation →	Problem-Centered	Design →	Sequenced in terms of readiness – Problem Units
Motivation →	Intrinsic	Activities →	Experiential techniques (inquiry)
		Evaluation →	Mutual re-diagnosis of needs – Mutual Measurement Program

Source Knowles (1990) pp 118-140

Alternative Views Concerning Andragogy. Andragogy and the Andragogical approach instruction have been getting closer scrutiny as both the term and the instructional model have gained increased acceptance. While Andragogy has helped in focusing on the unique aspects of teaching self-directed learners who for the most part tend to be adults, some theorists have argued that the term Andragogy should not be elevated to the status of an instructional model (Elias, 1979; Cross 1981). Davenport & Davenport (1985)

offered that a large part of the excitement and gravitation towards the Andragogy may be related to the "catchiness" of the term itself and which thus "simply begs for a second look."

Holmes & Abington-Cooper (2000) argue that two key issues presented with Andragogy are ambiguity in its definition and confusion in its use. The ambiguity involves a lack of clarity with regards to whether Andragogy is being presented as an Instruction or Learning approach. In addition, it is argued by the authors that there is an inherent conflict with the claim that the approach is both comprehensive for all learning contexts while at the same time focused on the adult learner.

Hartree (1984) and Mohring (1989) offered a middle ground by advancing that the Andragogical approach can be seen as a set of principles which can serve to assist in the design of adult instruction. Andragogy according to this perspective should be viewed as a complement to the Pedagogical approach and not as substitute for it.

Adult Instruction – A Compromise. The instructional approach advanced by Knowles (1980) and other adult learning theorists such as McKenzie (1979) and Smith (1996) provided a clear cut means of integrating adult characteristics and inclinations as part of instruction. In addition, the most striking aspect of Andragogy, particularly when contrasted with the more widely known Pedagogy, presents a different set of methods and tools to engage in adult education.

Thus, even though the term Andragogy may be hotly contested by researchers and theorists, adult instruction seems to bring a different set of

issues than youth-oriented teaching. The prudent instructor will of course continue to evaluate approaches or methods which are suitable for their leaning contexts, no matter what they are referred to in the theoretical realm.

Section Conclusion

As a result of the movement to allow greater self-direction in learning as well as Knowles' work in laying the foundation for an adult oriented approach to teaching adults, designers have many tools available to allow learners to participate more fully in achieving educational goals. This in turn should lead to a greater sense of motivation and purpose on the part of learners involved in adult education.

With an increased ability from the part of the learner to make use of what was learned, and the much greater chance of knowledge retention via the use of an active mode of learning through the andragogical model, the ultimate goal of imbuing learners with a sense of independence will thus be made possible.

Internet-Based Instructional Design

The three major learning stances, behaviorism, cognitivism, and constructivism have for the most part served as the backdrop in regards to the use of technology in instructional design and planning. Earlier uses of technology in instruction and learning have been shown to follow a content/teacher-centric or *design-push,* approach (Cuban 1986; Januszewski, 2000).

Tools and methods such as computer based teaching (CBT) and computer based instruction (CBI), which were introduced to take advantage of

early computing technology, served mainly as reinforcement to teaching materials provided in the regular classrooms. CBT was based on mainframe and client-server computing technologies, and often were presented as substitutes to teachers. These tools were seen also as being able to perform instructional tasks.

Advances in both technology and instructional practices led to a focus to process-centric or *design-push/pull,* categories. Technologies such as radio, telephone, television etc., were thus used in the US to instruct learners who were not able to be present at the location of the instruction. The broadcasting of instruction coupled with the use of some other forms of return correspondence i.e., regular post-office mail eventually gave birth to the field that's known as distance education or distance learning.

Distance education is commonly defined as any form of instruction, teaching or learning situation in which learner and instructor are separated during the majority of instruction (Collison et al, 2000;Weller, 2002; Johnson, 2003). A more formal definition of distance education has been presented by the US Congressional Office of Technology Assessment as: "[Distance education] is the linking of a teacher and students in several geographic locations via technology that allows for interaction" (Daniel, 1997, p.15).

Greater personal computing uses led to a shift away from CBT and a movement towards individualized training. As a result, Computer Based Instruction, which supported adaptive based on learners inputs became a prime focus. In addition, the move towards greater utilization of the personal computer

in education settings afforded instructional designers the opportunity to tailor instructional contents to diverse groups and many types of learners – whether in a traditional setting or via distance education – as learning units could be designed in a more targeted fashion with the new technology.

The concept of learner-centric or *design-pull,* instruction is tied more closely to constructivism teaching philosophies. Leveraging the power of the PC and the web, learner-centric instruction offers the opportunity to provide quality distance-based education programs using two-way live or simulated live format at any place and from anywhere.

Moreover, it is argued that the Internet offers a much different and more pervasive means to instruct learners in new and different ways. According to literature, the Internet has some distinct and unique characteristics, which will make it a major force in instruction for quite a long time (Harmon, & Jones, 1999; Kearsley 2000; Johnson, 2003; Roffe, 2004). The most important features or characteristics of the Internet noted which make it a different tool than other educational technologies are:

1. *Social acceptance* – Weller (2002) describes that in contrast to education oriented tools such as Compact Disks or CD's, which require the learner to constantly memorize new features and new ways to access educational information, the Internet is now widely accepted as a communications tool akin to a telephone.
2. *Educator proximity* - The sense is that via the Internet the instructor is not far off and can be accessed if needed.

3. *Generic interface* – The Internet offers a generic means to interact with Internet contents, which is also quite familiar to most users.
4. *Interactivity and personalization* – The ability provided to use the Internet in a personal way makes it a flexible tool with which to both teach and learn.
5. *Sustaining and Disruptive technology* – Education-oriented technology is often disruptive, in the sense that it offers a new way to instruct the learner. However, because these types of technologies tend to not be widely used or accepted, they get put on the back burner. For example, two-way audio interactive television (ITV) is a classic disruptive and non-sustaining type of educational technology. ITV was widely used in the early 1970's. Nowadays ITV is not widely used except in very specialized cases. The Internet, however, says Weller (2002) will be around for quite some time, since given its widespread acceptance, it is both a sustaining and disruptive technology.

Communications. A major aspect of Internet-Based teaching is communications. Given the inability to interact with learners via face-to-face means, electronic communications has become almost akin to a necessary condition for distance based instruction (Garrison, 1990; Kearsley 2000; Roffe, 2004). In addition, research online teaching programs show that learners need to have a means for formal and social-type of informal communications, akin to the hall-way types of conversation.

It is suggested that a variety of modes and means of communications

need to be offered in distance learning efforts and most particularly in Internet-Based instruction to allow the evolution of more natural and engaging socialization behaviors amongst learners. The most important ones to have in place in addition to a basic e-mail system, according to Weller (2002) are:

- Student conference group
- Notice/Bulletin board
- Resources and FAQ
- Synchronous chat
- Support conference
- Discussion forum
- [Online/Internet] Café

Media and Adult Instruction Methods. Internet-Based instruction offers the opportunity to present materials in very unique ways. Moreover, the capability to use rich contents can enliven instruction and allow instruction to be adjusted for any given learning style or particular proclivities of learners. The different media available via the Internet-Based instruction include:

- *Text and images* – Use of digital images offers learners the chance to see in a more vivid fashion, a demonstration or model. Text, augmented by images or in some instances such as digital visual story where images are liberally used, provides unique approaches to both instruct and learn.
- *Video and audio* – Streaming audio and audio often referred to as multi-media allow the possibility to present rich content

asynchronously and synchronously. With a click of a link on a browser, the Internet has in effect lowered the barriers to routine use of those tools. Therefore instructional materials can be presented in those formats without the worry concerning use or accessibility.

- *Intelligent Tutoring Systems* – These tools offer the capability to create lessons and instruction, with a particular focus. However, because of the interactivity and personalized learning capability offered by the Internet, it is possible to design instruction in a manner that's more flexible and adaptable and more tailored than what was possible with CBT or CBI.
- *Basic Web Development* – Mark-up languages such as HTML, XML, and SGML can be used with a modest effort to create instructional content for the web. Further, various kinds of application software which have been created specifically for web development such as HTML, images, audio, video editors or manipulators can be used also for the development of rich instructional content to be used online.
- *Web-based LMS* – These tools offer proprietary development platforms with which to design, roll-out and manage both instructional materials and courses, via the internet. Blackboard, WebCT, Moodle and Centra or Yahoo Groups are examples of these types of tools.
- *Virtual Worlds* – More advanced uses of multimedia include simulated worlds in which users assume other personalities or avatars to construct simulated realities and "what if" types of

scenarios. Multiple User Domains/Dungeons, MUD and MUSE are examples of Virtual World applications.

- Wiki/Wikipedia – Web tools where the emphasis is on the authoring and collaboration of documents rather than the simple browsing or viewing of them. The name "wiki" is based on the Hawaiian term "wiki wiki", meaning "quick" or "super-fast".

Online Learning Community. According to research, the implementation of technology artifacts has always involved some type of change (Cuban, 1986; Harasim, 1995; Gorard & Rees, 2002; Driscoll & Carliner, 2005). Therefore the introduction of a technology-supported innovation will involve some sort of adjustments or alterations in the way an organization or a community group functions. For example, to integrate a particular technology into the operations of an organization, there may need to be a change in policy, procedures, or both procedure and policy. Such change will mean that members of a particular organization will have to do things differently or alter some routine or some practices that they are accustomed to performing.

The literature presents that an open instructional practice and orientation where all stakeholders in a given institution or community (e.g., users, facilitators, instructors, leaders and technologists) have a voice, stands a much better chance of success than less inclusive approaches (Kearsley, 2000; Gorard & Rees, 2002; Weller 2002; Norman, 2003). Moreover a top down leadership approach that is manifest in many traditional educational organizations very often

leads to acquiescence and not true participatory community-oriented engagement.

Often, implementation decisions of technologies and applications in educational programs are made without the involvement of teachers, students or staff. Cuban (1998) offers that teachers face "situationally constrained choice [or choices]" (p.70) and thus often ignore tools they don't believe are beneficial to them in the classroom.

Therefore, notes Cuban, it is not a big surprise to see people who were not engaged with the decision making process behaving as if they don't have a stake with much of what goes on within their "community." This is because they were alienated from the technological decisions and then are being asked to participate as active members in the prescribed "learning community."

Implementation suggestions note that technology should be leveraged to the fullest extent to close gaps in both teaching and learning (Wenger et al, 2002; Whale, 2003). However, it is often unclear what levels of thought and types of analysis are made to arrive at the conclusion that technology should be used or even considered in a particular context. Kozma (2003) describes that information communications and technologies, when implemented correctly, can be an effective way to bring real world issues in the classroom as well as to enhance learning.

Change, as noted is often resisted within any organization. This is often due to the fact that an eventual outcome is uncertain or unpredictable. An online learning community however, is one within which learning, or change occurs

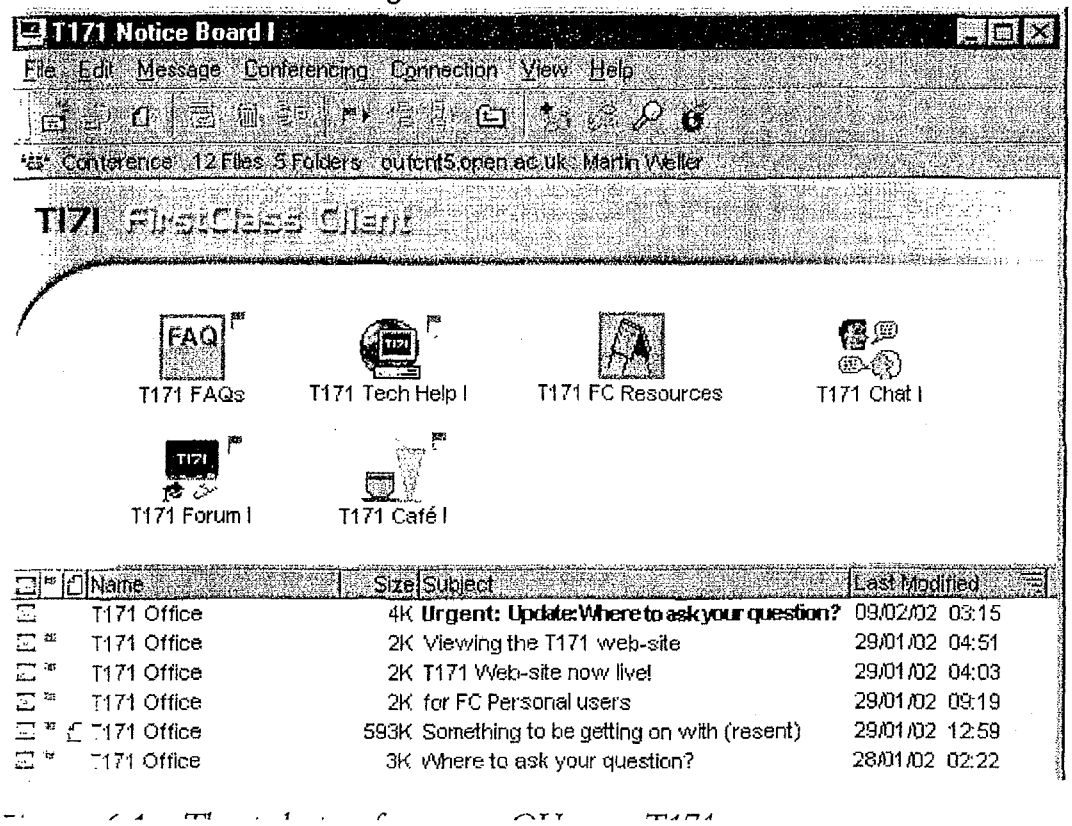
routinely, or one where it is anticipated that change will occur. Because of the fluidity in the online space, it is important that steps be taken to ensure some level of stability so that a viable online learning community can take hold. Coulter et al (2000) for example, presented that members need to be encouraged to actively participate in online discussions and that efforts need to be exerted such that that there is sufficient input and adequate participation from most of the members of the online learning community.

Given the diversity of knowledge and capability with regards to the use of the Internet, facilitation will be required to allow the formation of online learning communities (Preece, 2000;Weller, 2002; Driscoll, 2005). Weller (2002) identified that there are five stages for effective moderation of online communications, which are:

1. Access and motivation
2. Online Socialization
3. Information exchange
4. Knowledge construction
5. Development

The main reason for facilitation in online learning communities is because learners who are new to the Internet or are infrequent users of the Web need to be given time to adapt to the virtual environment (Seaman & Fellenz, 1989; Pallof & Pratt, 2003). Nonetheless, instructional principles need to be offered such that learners will gain comfort with using the medium and interact with the virtual instruction space as if it were a physical environment.

Figure 12 Weller's Online Learning Platform



For many thinkers and practitioners working in fields such as organizational behavior, knowledge management or human development, the notion of a learning community, whether traditional or online, may seem like an ideal or a destination that is very difficult to attain (Ludwig-Hardman & Dunlap, 2004)

Yet, according to Senge (1994), "Learning organizations are possible because, deep down, we are all learners. . . . not only is it our nature to learn but we love to learn (p.4). Thus, it seems that if people are provided with a valid approach or method to do what they are already inclined to do, that is to learn, then life-long learning can be achieved.

Senge (2000) offers such a method. According to Senge there are five key aspects or disciplines to achieving life-long learning. The five disciples are: Personal Mastery, Mental Models, Shared Vision, Team Learning, and Systems Thinking. All of the disciplines just listed are needed to building a viable and learning community. This is because each discipline supports a vital dimension that will help an organization to continually improve and achieve its highest aspiration.

Personal Mastery is relevant because there is a need to continually clarify and deepen our personal vision, focus our energies, develop patience, and see reality objectively. Without the discipline of PM, those involved in organization will stand to stagnate and thus will be incapable to keep up with organizational priorities.

Closely related to PM is Mental Models. We need to understand the interplay of MM and the actions we take because of the assumptions, generalizations, or even mental pictures we hold. We are influenced by our MM's says Senge and they dictate the types of action we take. Thus with a lack of awareness of MM's, we will lose perspective on what's truly important to achieve goals and objectives.

Shared Vision is the practice of orienting a group or an organization toward shared understanding or a common view of the future. Many organizations, however, struggle to relinquish control and thus they are unable to foster an environment where there is true participation, commitment and involvement by all of the organization's members.

Organizations with an orientation to encourage SV will tend to succeed more often than those that do not practice SV. This is because members who have a stake in the success of a particular organization will be more proactive in supporting efforts that they help to create. This stands in contrast to members who feel that they have to comply with the plans, efforts and visions of somebody else.

Team Learning is clearly related to SV & MM. It is almost impossible to achieve TL without open "dialogue," allowing team members to suspend assumptions and enter into a genuine "thinking together." With TL there must be openness concerning what is working and what falls short. Therefore TL helps members to visualize growth opportunities for the team as whole.

Supporting all the previous four disciplines is Systems Thinking. Most people come into a particular situation or organization with a linear perspective seeing either the forest or the tree. This perception's gap leads often to tensions such as miscommunications and misunderstandings. As a result, a lack of appreciation of the perspectives of the other parties takes root. The discipline of ST offers a framework to help us see both the forest and trees, thus allowing change to be made constructively and effectively.

Life-Long Learning. The proliferation, wide-acceptance and use of rich media on the Internet offers the opportunity to consider instructional approaches or models which would have been considered unmanageable or impractical in

non Internet-Based environments. It is noted that designers should take advantage of, and even experiment with Internet-Based instruction since the Internet allows the use of a wide variety of "pedagogies" or instructional approaches such as Constructivism, Problem-based Learning, Narrative-based Teaching, Resource-based Instruction, and Experiential Learning.

Moreover, Cross presented that as a result of a social change that's quite predictable there needs to be "increased attention to lifelong learning" (p. 9) .

It has traditionally been argued that adults engage in education primarily based on economic motivations and market forces (Gorard and Rees, 2002). This view is based on Human Capital Theory or HCT, and according to Becker (1975), the economic benefits, which are to be derived from education and training are at the roots of lifelong learning decisions. HCT thus supports the perspective that government needs to ensure that '[barriers] that prevent people from participating in education and training" (p. 15) are removed. This is due to the fact that those who engage in lifelong learning based on the HCT model will "make themselves more productive workers" (p. 16)

Advocates for a lifelong-learning posture in society have offered a different model, which is based on social theory. The focus of that model is education access or "the constraints within which individual actors operate" (p.19). State policies, patterns of educational attainment, differentiations in educational attainments across social structure i.e., race, gender, ethnic backgrounds etc., serves as the main motivation for the push for life-long learning. Additionally, it is argued that because of ongoing global changes

affecting political, economical, cultural, social, and technological structures of society and given that people are now living longer, there is a need to engage in learning continually (Longworth 2002).

Section Conclusion

The three major forces noted have been strongly identified with a particular period in educational development. But, as shown, there has been significant overlap between and amongst them. While at present a perspective on learner-centric instructional method is clearly the dominant instructional approach, nevertheless the other educational forces are still prevalent in the field.

Internet-Based education, whether via the use of *learner-pull, teacher-push* or a *combined pull-push* approach, offers the opportunity to look at education in a much different way. The possibility of mixing rich media, augmented realities, asynchronous communications, synchronous interactions, and complex live interactions which are not available in traditional education programs, is truly exciting.

Even when properly applied, a Pedagogical/Andragogical instructional stance combined with Internet-Based education will present both challenges and opportunities. Nevertheless, facilitators, administrators, and instructional designers who are interested in experimenting with methods and approaches for the purpose of teaching adults will find the Andragogy framework quite flexible and adaptable to a wide variety of learning pursuits.

CHAPTER II CONCLUSION

This literature review aimed to tease out the primary constructs, themes and approaches which are involved in teaching and learning overall, but most specifically in Internet-Based instruction oriented towards adults. Publications and theories which have been use to advance understanding the areas of human learning, adult education, instructional development, computer assisted instruction, distributed learning and virtual communities were examined. The end result of this review is the presentation of a rationale for the theoretical framework and field-study approach for the study.

As noted, given the diverse personal attributes of adult learners, a variety of strategies can be leveraged in the design and development of adult instruction. In addition, it was shown that Internet-Based instruction supports the perspective that adults are self-directed and solution-focused. As a result, instructions which are focused on the adult population need to be flexible, student-centered, experienced-based, and more oriented toward supporting or facilitating learning.

Questions posed to participants in the study were aimed to capture the ways in which the unique instructional capabilities that are available via the use of the Internet. The themes of online learning community and lifelong learning from the literature review formed the basis to gauge how educational programs which target working professionals offer opportunities for interaction and greater engagement.

CHAPTER III

METHODOLOGY

This chapter presents the methodology used for the Andragogy and Online Learning study. It is divided into four main sections. The first section covers the theoretical framework for the study. The second section presents the actions taken to delineate both the research and the approach to be taken for it. This section also presents some pre-study activities.

The third section lists the in-field activities for the study. This section highlights the approach taken to select and train the participants in the study. The fourth and last section presents all post field-study activities, including a list of the steps taken to ensure trustworthiness.

Chapter III Section 1 – Theoretical Framework

Participatory Action Research

A Participatory Action Research (PAR) approach was taken for the study. As a qualitative research approach, PAR stands in stark contrast to traditional research. In the latter case, which is also termed logical positivism, the researcher is required to maintain objectivity by keeping a proper distance with the phenomena being examined (Lincoln and Guba, 1985; Smith, 1996, 2001; Patton, 2002).

However, with PAR, noted McTaggart (1991) the researcher needs to be engaged or in an *active way* to accomplish the desired end of the effort being examined. PAR, thus, looks for the researcher to be a contributing member who

makes a direct investment of time and effort to ensure successful completion of the work that's under study.

Action Research

PAR is an expansion of the Action Research (AR) paradigm. AR originated from the work of Kurt Lewin, who is considered to be the founding father of the movement (Dickens and Watkins 1999). AR is presented as an approach where one learns by doing and not merely by observing.

This action-orientation in the method is highlighted by the quote below:

> "Action research...aims to contribute both to the practical concerns of people in an immediate problematic situation and to further the goals of social science simultaneously. Thus, there is a dual commitment in action research to study a system and concurrently to collaborate with members of the system in changing it in what is together regarded as a desirable direction. Accomplishing this twin goal requires the active collaboration of researcher and client, and thus it stresses the importance of co-learning as a primary aspect of the research process." (ABL Group, 1997)

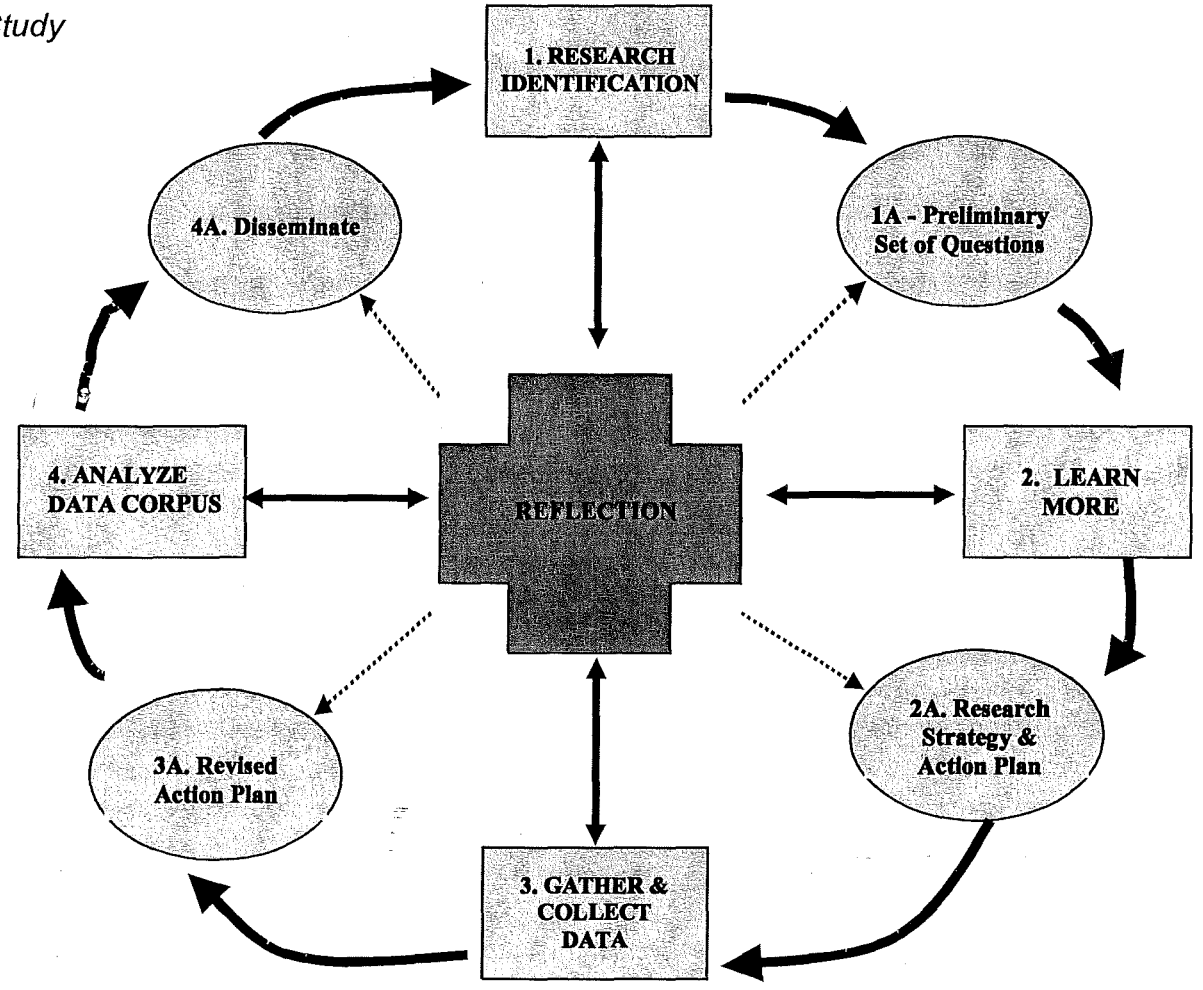
The PAR paradigm, according to McTaggart (1991) presses the point of participation, while emphasizing the action orientation of the approach. Additionally, the literature notes that PAR needs to proceed in an iterative fashion. This to allow for adjustments to be made as new data are discovered and new insights are gained during the course of performing and engaging in the study.

Another key aspect of PAR is reflection. McTaggart (1991) noted that reflection is critical in PAR because it provides an opportunity for the researcher to surface personal insights. The need for reflection is also to allow some level of un-biased processing of the understanding gained through involvement in a given research effort.

> Action research is a form of collective self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of those practices and the situations in which the practices are carried out... The approach is only action research when it is collaborative, though it is important to realize that action research of the group is achieved through the critically examined action of individual group members. (Kemmis and McTaggart 1988: 5-6)

As I began the study, I developed a methodological framework to serve as guide for the study. This was done to lay out an overall orientation for the study.

Figure 13 – Methodological framework for the Andragogy and Online Learning Study



As shown by the figure above, the approach taken for the study is iterative. In addition, the methodological orientation involved a reflection, personal engagement, or participation from the part of the researcher throughout the diverse stages of the study, in the phenomena being studied.

Chapter III Section 2 – Study Approach / Delineation

Pre- Study Activities

The pre-study activities for the Andragogy and Online Learning research effort involved a pilot test endeavor. During the pilot test period, I had the opportunity to gather data from a preliminary group of participants who were involved in evaluating an online course. My involvement in the pilot test effort allowed me to make a few preliminary assertions about Internet-based instruction. The methodological approach suggested by Ericsson (1986) was followed during the pilot test effort.

The assertions made were:

1. Online Instruction empowers people to be both active and constructive learners.
2. Online Instruction allows the formation of new forms of socialization.
3. Online Instruction removes traditional barriers and alter faculty/student roles.

As I gained more details about different learning contexts I was able to refine my thinking about Internet-Based instruction. Moreover, my exposure to more advanced instruction design models as well hands-on involvement with various Instruction Management Systems, i.e., Blackboard, Moodle, Centra, or

Yahoo Groups provided insights regarding the ways in which Internet-Based can best be approached.

Full Study

I began the full study period by developing a plan for the entire effort. During that period, I also developed the Internet-Based Andragogy framework. This later became Internet-Based Adult Instruction or Net.AI as a result of feedback from participants and other suggestions received to help in solidifying the eventual approach taken for the study. The research questions, the IRB as well as a plan for participant selection for the study were also developed during this period.

Study Plan

The table below presents the plan that was developed to complete the Andragogy and Online Learning study.

Table 4 – Plan and Timeline for the Andragogy and Online Learning Study

Phase/Activity		**Timeline**
1.	*Initiation, Pilot Research and Pre-Study*	August 2004 → August 2005
2.	*Framework, Questions, & Hypothesis Development*	October 2005 → April 2006
3.	*Actual Study & Taking Action on the Field*	January 2006 → February 2007
4.	*Interpretation of Findings, Reflection and Taking Action*	December 2006 → March 2007
5.	*Write-up and Dissemination of Findings*	February 2007 → Open

The plan that's listed in the above table was revised and adjusted on a few occasions as a result of discoveries made during the different engagement periods of the study. However, the time duration that it took to complete the study, for the most part, remained fairly consistent.

Internet-Based (Andragogical) Adult Instruction Framework

As noted, I began my foray into examining online learning and Net-based instruction with a pilot study on Internet-Based instruction (Guilbaud & D'emelia, 2005). That study revealed that there were three principal factors involved in online oriented adult education. These were: Learner-Pull (Intrinsic), Facilitator-Push (Extrinsic), and Process (Intrinsic-Extrinsic).

That work formed the preliminary basis for the framework. After I reviewed literature on Learning, Instruction and Adult Education and tested a number of Internet-Based applications myself, it became clear to me that there was an interesting interaction within learner, facilitator, and process in Internet-Based.

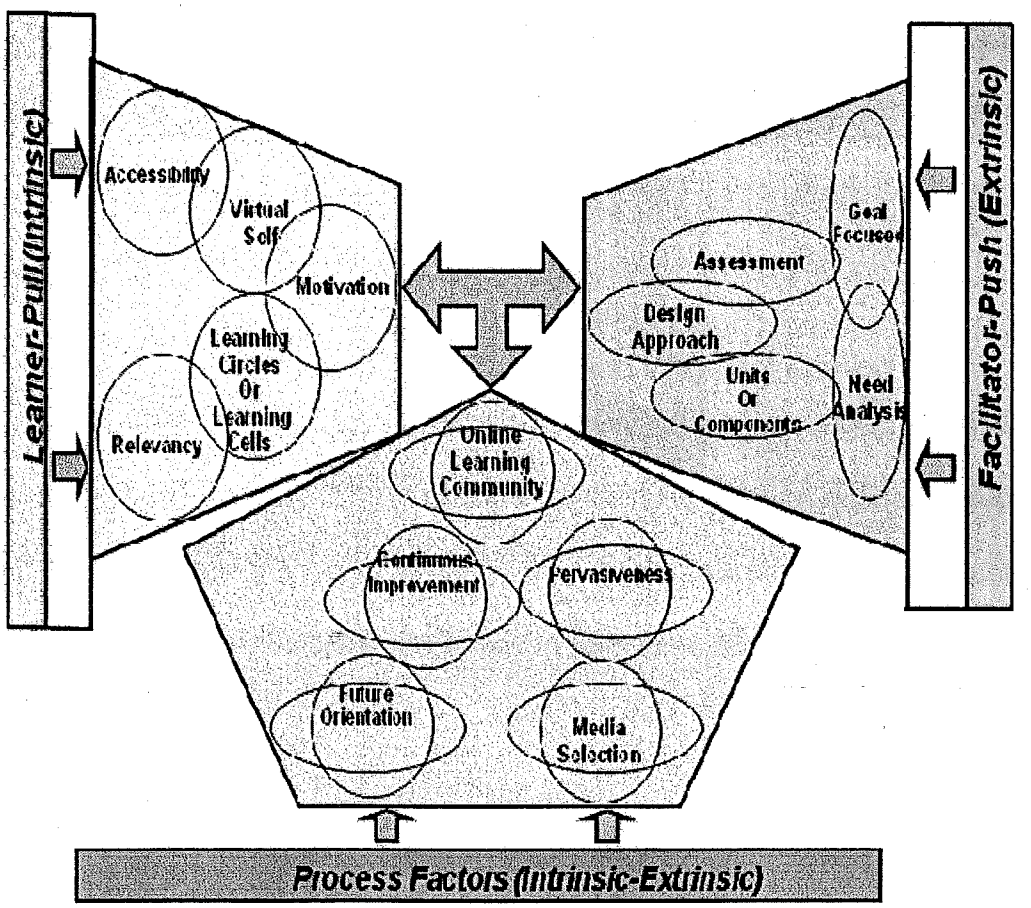
This understanding allowed me to present the Net.AI framework, as a triad, and to denote that there were key interactions and linkages amongst the learner, facilitator, and process aspects of Internet-Based instruction. In addition, it became clear that the terms intrinsic and extrinsic, which were presented in the instruction section of the literature, provided an additional dimension to the framework.

I thus coined the following terms Intrinsic, Learning-Pull; Extrinsic, Design-Push; and Intrinsic-Extrinsic, Process-Push & Pull to explicitly denote in the Net.AI framework that there is the tug between the key forces or themes that are

involved in Net-centric Instruction. The Net.AI framework also highlights the fact that a triad of forces is at play and that each component needs to be fully examined in the course of the development of adult-oriented online courses or programs. The tri-focus, finally, denotes that Net-based instruction requires both a micro (course view) as well as a macro (program view), given the necessity to have proper technological systems to engage the learner in a virtual space.

The figure below presents the graphical view of the framework developed for the study.

Figure 14 - Internet-Based (Andragogical) Adult Instruction Framework



The figure in the previous section, thus offers the salient factors and forces that are affecting Internet-Based instruction. These, as noted by the intersecting arrow are: Motivation, Design Approach, and Online Learning Community. The perspectives depicted by the by the Internet-Based Adult Instruction figure also supported by the literature that I reviewed pertaining to adult education, human learning, and online instruction.

Connecting the Net.AI Framework with Prior Research

The seminal work of Chickering and Gamson (1987) offered seven key instruction principles for the development of successful undergraduate education.

These are:

1. Encourage Student-Faculty Contact
2. Encourage Cooperation Among Students
3. Encourages Active Learning
4. Give Prompt Feedback
5. Emphasize Time on Task
6. Communicates High Expectations
7. Respects Diverse Talents and Ways of Learning

These principles were later extended by Graham, et al (2000), Ritter & Lemke (2000), and Buckley (2003) to show applicability with an online instruction context. The table below shows the connection made between the 15 instruction tenets of the Net.AI framework and the seven principles advanced by Chickering and Gamson.

Table 5: Net.AI versus the 7 Learning Principles

Learning Principle	Net.AI Instruction Tenet(s)
1. Encourage Student-Faculty Contact	Relevancy Motivation
2. Encourage Cooperation	Online Learning Community

Learning Principle	Net.AI Instruction Tenet(s)
Among Students	Distributed Teaching Design Approach
3. Encourages Active Learning	Learning Circles or Learning Cells Media-selection
4. Give Prompt Feedback	Accessibility Assessment Units
5. Emphasize Time on Task	Pervasiveness Virtual Self
6. Communicates High Expectations	Goal Focused Need Analysis
7. Respects Diverse Talents and Ways of Learning	Future Orientation Continuous Improvement

Thus, as highlighted in the cross-reference table above, the 15 instruction tenets of the Net.AI framework match very closely with the 7 forces of Checkering and Gamson. Two key differences between Net.AI and the 7 forces model, however, are its focus and orientation. First, the focus of Checkering and Gamson's model is undergraduate students, while Net.AI is oriented towards the adult learner. Second, the approach advanced by Checkering and Gamson is to strengthen learning, whereas the focus of Net.AI is on instruction design.

Nonetheless, Net.AI was developed to be used in conjunction with other learning models and approaches. Thus, it is very likely that the use or knowledge of both models or guidelines can prove to be useful for those who are involved in the design of any type of online instruction.

Research Questions

The literature review offered some basic conceptions about adult education, instruction design and online learning. These were used to form preliminary questions and issues that are related to online learning and Internet-

Based instruction. Relevant themes such as social interactions, effective uses, and adoption stance vis-à-vis the Instruction Management System being used in the context of online instruction proved to be key sources of challenges. These also became target opportunities for examination.

As a result, the following questions were developed:

1. What are the barriers, enhancers and the instructional issues that are involved in Internet-Based adult instruction?
2. In what ways does the Net.AI framework facilitate the planning, creation, use, modification and dissemination of instructional contents?
3. What are the salient implications and reactions to the routine use of online features such as e-mail communications, electronic assignment submissions, discussion forums, postings, assessments, and course management?
4. What characteristics or processes related to Internet-Based instruction and use of the Net.AI framework are supportive to the development of an online learning community?

I should also note that a key driving thought behind the questions developed for the study was that there were significant challenges involved in the use of Internet-Based instruction system. This was understood to involve learners, instructors, support personnel and administrative faculty who are part of a learning community.

Chapter III Section 3 – In-Field Activities

Actual Andragogy & Online Study

The actual study that was done involved ten principal steps, which are delineated below. While those items are listed sequentially, some of the activities occurred in parallel. I should note that the last three steps noted below will be presented in the chapters that follow this one. Moreover, the last two steps for this study were performed throughout the duration of the study and are on-going.

The relevant steps for the study were:

1. Identification of potential participants for the study
2. Development of instruments, including IRB protocols
3. Use of pre-test (pre-treatment) questionnaire to determine entry-behavior
4. Training of participants based on assessed capabilities
5. Support of participants' field activities
6. Completion of a post-test questionnaire
7. Completion of open-ended interviews with a focus on the use of the Net.AI, framework in conjunction with the IMS that was available
8. Data analysis & Interpretation
9. Researcher's Reflection, and finally
10. Conclusion and Dissemination

Participants Identification Selection

The two themes that guided the selection of participants for the study

were: "Critical Case Sampling" and "Theory-based Construct Sampling" (Patton, 2002). As a result, the sampling strategy for the study used was purposeful. Patton (2002), noted that a sampling strategy, which is focused on interesting cases offers the opportunity to examine relevant field-level issues at a great depth.

The approach that was taken in regards to participation selection was look for rich cases that offer the chance to zero in on constructs that are of prime interest. Therefore, I contacted about 15 potential participants with diverse backgrounds and involvements with adult education and online learning. Out of the potential pool ten participants responded positively.

Depth rather than breadth remained the prime focus in the Andragogy and Online Learning study. Thus, five participants were ultimately selected for the study. These participants were actually engaged in some aspects of Internet-Based Adult Instruction activities. These were able to elucidate both the key themes for the study as well as the instructional Net.AI framework that was developed for the study.

Instruments

Three instruments, which are listed in the appendix section of this document, were developed for the study. These are: a Pre-test Questionnaire, a Post-test Questionnaire, and an Open-ended Questionnaire.

The Pre-test questionnaire was mainly used to gather demographics information. It was also used to determine entry behaviors. This is due to the fact that participants involved in the study did not for the most part have exposure to

adult instruction principles concomitantly with online learning. Thus the Pre-test questionnaire allowed the opportunity to individually tailor both the training provided as well as the depth of focus with regards to the key tenets of the Net.AI framework.

The Post-test questionnaire, which is listed in the appendix section of the document, was developed primarily to gain a specific understanding on the impact Net.AI framework on the context of use that was involved for the participants. The questionnaire asked participants to share their reactions to the framework, based upon the triad of learner-intrinsic, facilitator-extrinsic, and process-in/ex.

The participants were asked their reactions to a set of constructs, which could be used as a proxy to gauge the impact of the NetcC.AI framework within each aspect of the triad. From this exercise, two constructs were selected for use in the Post-test Questionnaire. These constructs, which are listed in the table below helped to guide input and feedback provided by the participants in regards to the real and potential impact of each part of the Net.AI triad.

Table 3.2 – Plan and Timeline for the Andragogy and Online Learning Study

Aspect of the Net.AI Triad	**Constructs**
Learner-Intrinsic	1. Communications Patterns 2. Learning Groups / Cells
Facilitator-Extrinsic	3. Collaborative Behaviors 4. Message / Content Design
Process-In-Ex	5. Individual System Use

	6. Technical / Administrative Support

IRB Approval

IRB approval from was obtained from the Institutional Review Board for Health Sciences Research (IRB-HSR) of the University of Virginia, for the Andragogy and Online Learning study. The full protocol for the study is included in the appendix section.

Participant's Training

The participants were trained based upon the entry behaviors that were determined from the answers provided in the Pre-Questionnaire form, which was developed for the study, as noted in the participants' selection. An Informal Needs Assessment, which is highlighted in the data collection, was done for the purpose of determining entry behaviors of the participants. While the actual training was tailored for a given participant, in general, the four topics listed below were covered during each training sessions.

Topics covered were:

- Learning & Instruction
  - Instruction Design Model (ISD) and most specifically, ADDIE, Dick & Carey's & Gagne's 9 events of instruction
  - Learner-Centric instruction approaches such as Problem-based Learning, Problem-based Learning, and Knowles' Andragogy model
  - Perspectives vis-à-vis the Andragogy and Pedagogy
- Instruction Management System (IMS)

- Asynchronous i.e., Blackboard/Moodle
- Live-synchronous i.e., Horizon Wimba/Centra
- Instant messaging-Chat Window Messenger/Yahoo Groups/Tapped-In

o The Internet-Based Adult Instruction framework
- Learner Intrinsic
- Facilitaor Extrinsic
- Process – In/Ex

o Online Learning Community & Life-long Learning

Support of Participants' Field Activities

As noted in the previous section, participants were trained in the key tenets of the Net.AI framework, and in the use of the specific aspects of the IMS (Blackboard, Moodle, Centra or Yahoo Groups) which are suitable for their learning context. This was done to provide a baseline of skills and understanding for the study.

I worked very closely and to varying degrees with the participants on many aspects of their study. Some participants had technical questions and issues, which I handled. Others showed more interest towards the theoretical aspect of the study. Therefore more time was spent in explaining the Net.AI framework in greater details to these participants.

The details of these interactions will be presented in the Data Analysis section of this document. One item that can be highlighted is that I got to test a program called Skype, which allows voice conference to be made using a computer. I tested the aspect of the software with the participant, which permits recording of streaming audio and video directly from the Internet. This test

proved to be useful both for the participant and myself. This is because the participant used the finding of the test in her course involved. I was able to use the virtual recording feature of the software that was discovered to do an online verbal interview, as part of study.

Data Collection

Data collection for the study consisted of five main sources. These were: 1) Informal Needs Assessment, 2) Questionnaires, 3) Open-ended Interviews, 4) Reflective Journal, and 5) Archival Documents.

Detailed activities performed in regard to these five sources of data were:

1. *Informal Needs Assessment.* An informal needs assessment was conducted for the study. This involved a one on one session, which was done via either one of the following four ways: face to face, online chat, regular, phone call, or Internet voice conference. The informal needs assessment provided the general and contextual information involved for the participant on the study.

   The informal needs assessment also provided an opportunity to gain archival related information about the instruction context, such as strategic direction of the online course, module, or program involved in the study.

   The informal needs assessment was done as a precursor to the technical training sessions for the study. Finally, given that the research approach for the study was participatory action research, discoveries emanating from the informal needs assessment were

used for the purpose of modifying or adjusting the training approach for the participants.

2. *Questionnaires.* A Pre-Study Questionnaire was developed and used to gain basic demographic data about participant competency with Instruction Design, in general and Internet-Based Instruction Design, in particular. The Pre-Study Questionnaire, which is included in the appendix section of this document, was done as a follow-up to the informal needs assessment.

   The Pre-Study Questionnaire was also used to more precisely determine operational efforts, interaction and training needs of learners/participants in the study.

   A Post-Study Questionnaire, which is included in the appendix section, was developed for the study. This instrument was used to ascertain operational approaches deployed or consideration involved in regards to the use of the Net.AI in teaching context that involved the use of an IMS.

   The Post-Study Questionnaire was developed also to specifically gauge the salient issues related to the impact of the Net.AI framework in conjunction with the existing IMS for the course or module involved in the study.

3. *In-depth Interviews.* In-depth interviews served as the primary method of data collection. The interview sessions were semi-structured to allow the participants to talk about their individual

experiences and insights. I used the interview protocol, completed for the IRB of the study. This consisted of open-ended questions about the participant's stance in regards to Internet-Based adult instruction as well as reactions to the Net.AI framework.

In-depth interviews were also conducted to learn about participants' orientation and stance with regards to use or non-use of the IMS. Additionally, participants were prompted to share perspectives concerning social interactions achieved through the use of the particular IMS.

The in-dept interviews were audio-taped and then transcribed. Once the interviews were done the data collected were first typed into MS-Word for more detailed analysis. The next steps involved code generation, to obtain preliminary findings for the study. An open-ended form, followed by e-mail communications was also used as an alternative to an audio-taped interview.

4. *Archival Documents.* Many archival documents were used in the study. These text documents, brochures, notes, file folders, e-mail communications, log files which captured online communications, and interactions. These data were reviewed to gain insights about the study as well to get a better sense of the kinds and types of interactions which occurred during the study period.

Thus archival documents provided an opportunity to evaluate learner-learner, instructor-instructor and learner-instructor communications and online activities related to the study.

5. *Reflections.* A major aspect of the Participation Action Research methodology is reflection. This allows the researcher to note key observations, decisions, or alterations that came as a result of active engagement in the study. Therefore a personal journal was kept. In addition, I made notes concerning items that impacted my thinking during this field-work phase as they relate to the overall methodology and the framework developed for the study. I have made a note of these items and reflected on the impact they had on my field-level activities and my perspectives in regards to the study.

Chapter III Section 4 – Post Field-study

Data Analysis

Actual data analysis involved four steps: 1) Review/Transcribe, 2) Load into MS-Word, 3) Code, and 4) Summarize. These are outlined below to provide greater details of the analysis that was performed for all of the data collected for the study.

1) *Review/Transcribe.* In the case of the audio-taped interview, the data gathered were first reviewed for soundness and then transcribed. This step provided an opportunity to gain greater familiarity with the data, and provided a means to de-contextualize the data prior to analysis.

2) *Load into MS-Word.* During this step, the data collected were typed into a MS-Word file to allow more in-depth analysis and evaluation. The data were later coded and summarized so that they can be easily interpreted and summarized. Notes from the meetings, communication, interviews, and personal reflections were also entered in MS-Word for follow-on processing. .

3) *Code.* The approach taken in regards to coding the data was 1) Read for a general understanding of the data and then 2) Code the actual text. Phrases or words describing the content of the data were developed on the transcripts. These provided preliminary sub-themes and emerging themes. In addition, some a priori coding categories pertaining to Adult Education, Internet-Based Learning, and Instructional Technology, were

developed. A listing of all of the codes developed for the study is listed in the appendix section of the document.

4) *Summarize.* Once the codes for the study and the code table were developed, the data collected for the study were organized using MS-Word. As I iterated through the data, broader themes that emerged were noted. These themes allowed for further reduction of the data and were used to develop graphical figures.

The results of the summarization activities are presented in chapters 4, 5, 6, and 7. These are the Case Studies, Summary of the Case Studies, Research Reflections, and the Findings derived from the study.

Trustworthiness

The methods that are employed in logical positivism or quantitative research aim to ensure validity in testing hypothesis. Qualitative endeavors on the other hand place focus on trustworthiness of the study being undertaken.

Credibility, dependability, transferability and confirmability are the relevant themes to establish trustworthiness in the qualitative paradigm (Lincoln & Guba, 1985; Miles & Huberman, 1994).

Moreover according to Patton (2002), triangulation is a very useful and important methodological tool in qualitative inquiry to establish rigor.

> "One important way to strengthen a study design is through triangulation or the combination of methodologies in the study of the same phenomena or programs. This can mean using several kinds of methods or data... Triangulation is ideal. Certainly, one important strategy ... is to employ multiple methods, measures, researchers, and perspectives, --but to do so reasonably and practically" (*Ibid*, p. 187)

Triangulation

Both open-ended questions and detailed questionnaires were used in the study. This approach was taken because it allowed the opportunity to get a good mix of data from multiple sources. Triangulation was thus achieved naturally and an un-biased appreciation of the concepts and construct being examined through the study was realized.

The combination of the post-test questionnaire and the interviews also provided a means to look course specific constructs. These were at the micro, course level, as well as the macro or institution level. This approach this allows for a bottoms-up and top-down look at the relevant issues which had impact on online instruction for the context examined, and thus provided another type of Triangulation. A third level of Triangulation occurred via the use of inter and intra-stakeholders considerations which are all taken into consideration in the Net.AI framework. All of these provided a means to look at the data from alternative angles, resulting in many types and levels of Triangulation.

Credibility

Prolonged engagement

This study has gone through three pilot tests. In addition, I have been involved in the field of adult training and distance education for well over seven years. During that time, I have been exposed to various Internet-Based tools and applications as a learner, instructor, consultant, and member of a technical support team.

More specifically, through my work a Teaching Technology Support Partner, $TTSP^2$ for the past four years at the School of Nursing and elsewhere at

UVA' I became aware of education programs and in-service training for working professionals and adult learners. The experience gained through working as a TTSP provided me with a first-hand look at programs such as the Global Academic Village which for quite some time ago has been offered by the School of Professional & Continuing Education at UVA.

Peer Debriefing

> "A process of exposing oneself to a disinterested peer in a manner paralleling an analytic session and for the purpose of exploring aspects of the inquiry that might otherwise remain only implicit within the inquirer's mind." (Lincoln and Guba, 1985, p. 308)

Peer debriefing was used to ensure neutrality of the data gathered for the study. Specifically, this involved holding both formal and informal discussions with colleagues who are working in the general area of the fields of adult education and online learning. This allows double-check the coding strategies used and overall approach utilized.

Member Checks

Two participants in the study were selected for to do member check with the data gathered for the study, as well for the results derived from the ensuing analysis. The participants selected for the member check looked at a sub-set of the case studies written and then provided feedback in regards to the soundness and "realism" of the information provided to them.

Transferability

Although the sample for the study was small, the range and depth of expertise represented by the participants provided great feedback. The data analysis, summary and findings sections of this document present the salient

themes and insights that emerged from the data obtained through the study. These present real-world implications and opportunities for additional research, both of which add breadth and depth to the discoveries made through this research.

Thick Description

The study focused on engaging real-world implementations of Internet-Based Adult Instruction efforts. Therefore, the participants were actively engaged in the instruction of with adult learners in a Internet-Based context. The case studies, which are presented in Chapter IV, describe the challenges and opportunities encountered by each participant in regards to their involvement with Internet-Based Adult Instruction.

Each case study also notes the participants' perspectives concerning the future of: Adult Instruction, Online Learning, and the overall orientation pertaining to the Use of Technology in the context of teaching adults.

The cases for the study thus present rich accounts concerning the context and the use of the Net.AI framework. The other data collected offers perspectives on the social interactions. Finally, the researcher's personal reflections present perspectives gained through participation in the study. These accounts, which are presented in the next there chapters will allow the reader to gain both a bird's eye view and an "on-the-terrain" perspective of the main themes and constructs examined through the study.

Dependability & Confirmabilty

According to Patton (1990), Dependability and Confirmabilty refer to rigor

in qualitative research design. Therefore, maintaining an audit trail of activities conducted is critical. Approaches taken with regards to the coding procedures employed and categories developed as noted previously have been deliberately documented to ensure dependability of the results. Member check and peer debriefing, provided additional opportunities to ensure Dependability and Confirmabilty of the findings derived from the study.

In addition, a reflexive journal was kept for the duration of the Andragogy and Online Learning study. This ensured that *in vivo* deliberations, thoughts, considerations and contemplations concerning the analytical steps examined as part of the study were properly captured.

Researcher as an Instrument

Since the analytical method used for this research was qualitative, my thoughts, interests, biases and my own self were akin to filters with which I used to gather and manipulate the data for the study. As outlined elsewhere in this paper, the Internet-Based framework presented for this study comes from my years working in many facets of Adult education and online teaching.

As noted, I became interested in Distance Learning and Adult Education through my involvement as a Teaching Technology Support Partner, or $TTSP^2$, at UVA. This is a program which uses graduate students to help, assist, and train UVA faculty in the use of classroom or research oriented technologies.

Through my involvement as a TTSP both at the School of Nursing (SON) and the Asian & Middle Eastern Language & Culture (AMELC) department of the College of Arts & Sciences at UVA, I have received a high level of exposure to

the field of online learning. In addition, various programs at SON provided opportunities to examine live two-way video based programs, which target doctors, nurses and other health specialists who are in the field.

These exposures led to the examination of educational programs and activities that are focused on upgrading the skills and abilities professionals. Finally, through my research work, I became aware of education programs or in-service training for professionals and adult learners through programs such as the Global Academic Village offered by the School of Professional & Continuing Medical Education (CME) at UVA.

Online Learning and Internet-Based Instruction are evolving. Thus my direct exposure to the many sides of those two fields has allowed me to see and understand the many tensions and perspectives that are present in them. As a result, my research in the field has reflected the excitement as well as the opportunities that currently exist to examine both fields from a theoretical and practical standpoint.

CHAPTER III CONCLUSION

This section provided the master plan that was used to conduct the research described in Chapter I. The most relevant research and concepts noted in Chapter II was presented in the context of the conceptual and theoretical models developed for this dissertation.

Two phases comprised the research design. Phase I began with qualitative research that identified dimensions of adult education which are relevant for Internet-Based instruction. This led to the development construct

and approaches related to the development, implementation and roll-out of Internet-Based instruction.

This second phase of the study or Phase II involved performing a field-analysis concerning the ways in which to present adult education to meet stated goals and objectives. Working in conjunction with field office personnel and other partners, the effort aimed to uncover successes, failures, breakthroughs, improvements, challenges and lessons learned in the implementation of instruction, guided in part by the Net.AI framework.

This study took the view that Participatory Action research is meant to provide useful analytical models, methodologies, decision aids and frameworks, while being directly engaged in research. Therefore, the examination done through the Andragogy and Online Learning study is to supplant present efforts that are currently being undertaken by the administration, technical support, instruction designers, and personnel within the educational organizations. This research is also meant to be useful to practitioners who are interested or involved in continuous improvement of online learning programs and adult education.

CHAPTER IV

DATA ANALYSIS

Overview

This chapter presents the data analysis for the Andragogy and Online Learning study. The chapter begins with this overview and then lists the five cases done for the study. The results of the post-test questionnaires done for the study are also denoted for each participant.

Each of the case studies begins with the "Background" of the participant. This section also lists actions taken by the researcher to assist the participant in the study. The "Background" section is followed by the participant's learning context in the study. Next is a "Uses & Perceptions" section, which presents the participant's feedback as it relates to the constructs of Adult Instruction, Distance Learning, Internet-Based Instruction, and Andragogy. Since the methodology used for the study was Participation Action Research, any relevant interaction between the researcher and the participants will be noted in the "Uses & Perceptions" section.

The two sections that follow for each case study are "Benefits & Gains" and "Challenges & Opportunities." These sections list the specific reactions of each participant to the Net.AI framework, as well as perspectives concerning the viability of Net.AI. Those two sections present the participants' reactions to the use of the Net.AI framework within their specific learning context.

The section "Future Outlook" lists the participant's long-term stance with regards to online learning and Internet-Based instruction within the context of his/her own organization. Each case study ends with a "Conclusion" section. This describes the researcher's overall point of view and any salient observation(s) made concerning a given case study. It should be noted that the names that are listed for the participants as well the institutional affiliations used for the cases are fictional. This action was done in order to maintain confidentiality.

Case Study 1– Betsy

1. Background & Researcher's Participation

Betsy has been involved in various aspects of Distance Education, both as a student and as a faculty. Betsy teaches in a professional Distance Learning Masters Program oriented program (DLMP) at a nationally-renowned Mid-Atlantic university. She also fills the role of Distance Learning Coordinator (DLC) for the program.

Betsy has been at the university for over 5 years and has seen quite a few changes in the program in her tenure as the DLC. Through previous work with Betsy, the researcher became aware of her intention to take an objective look at the DLMP and thus her participation in the study was of mutual interest.

I met face to face once with Betsy regarding the study. The rest of the interactions with her occurred either virtually or by phone. Betsy was already quite familiar with many aspects of online instruction. She asked that an

emphasis on the researcher participation be placed on assisting with the evaluation of instructional tools that she intended for actual use in her courses.

The face to face meeting with Betsy lasted about two hours and came around the mid-point of the study. Prior to the face to face meeting Betsy and I exchanged e-mails, had computer-based voice conferences, and used online chat sessions to discuss the Net.AI framework. These sessions provided opportunities to test the tools that Betsy had begun evaluating and anticipated using in her courses.

Two of the major instructional tools tested for and with Betsy were Horizon Wimba and Skype. Horizon Wimba is an Instruction Management System that is designed for live presentation of instruction or training materials. A useful aspect of the Horizon Wimba tool is that it allows live annotation of presentation materials, which were done via PowerPoint. Thus is a useful tool for online demonstration.

Skype is digital communications tool. It allows computer-to-computer voice communications to occur via the use of Internet. Skype works a little differently than voice conference tools like Yahoo Messenger and MSN Messenger, which are more focused on text chats rather than voice conferences.

Skype allows easy file sharing and multiple-user conferences. Thus, with Skype, one or many learners can communicate live with an instructor who is leading an online course without having to use a landline or a cell phone. Betsy was appreciative of this discovery made through the test of Skype for her

upcoming course. Betsy and I used the Skype system to conduct the open-end interview for the study.

Given the many interactions with Betsy, the interview yielded interesting results. Betsy's background in Adult Education and her proclivity towards innovative use of instruction technology for the online environment yielded a blend of perspective and feedback in regards to the study, that provided great depth to the Andragogy and Online Learning study, in general and the Net.AI framework in particular.

2. The Distance Learning Context

Betsy currently resides in a different state from her school. She teaches strictly online. Betsy was also specifically brought in to assist in the implementation of the new DLMP in Public Administration at the school. Betsy is an experienced faculty member who herself used the online medium to complete her own graduate work.

The need for a DLC at the school came up as the school began to increase its online presence and started to receive greater demand for instructional support on the part of students and faculty. At present, the DLC serves as the key leader for the program as well as an advocate for increased technical support for users.

The Distance Learning Masters Program (DLMP)

Funded through a major grant, the DLMP is a strategic effort on the part of the school to reach underserved communities in the state where it is located. The DLMP is part of numerous nationwide initiatives that came about in the last few

years to increase the available pool of masters' prepared professionals who reside and work in rural communities.

The school has recently received a grant awarded specifically to offer new course programming designed to reach the poor and isolated rural areas of the state. The additional funding is expected to enhance technological capability within the school and place emphasis on synchronous methodology. This is so that the students from the rural areas of the state will not be required to spend any time on campus. The school also plans to offer additional courses to extend both the depth and the focus of courses that are delivered online.

Learner

In an era when the number of public servants and qualified Public Administration faculty is well below national need, online programs represent a key effort to extend opportunities in the field. The DLMP effort at this school thus strives to provide advanced technical, administrative, and managerial skills to professionals who are not in position to leave their jobs to pursue graduate level training.

The typical learner for the DLMP is a professional civil servant who has been working in that capacity for at least five years. Learners' skills and experience with the online medium range from novice to advanced. Learners are given a technical assessment prior to entry into the program. In some cases, remedial work in basic computing is recommended to ensure that all students meet a minimum level of competency with technology.

The DLMP thus represents an innovative means for the school to reach out to the ever-increasing group of adult learners residing in rural or other hard to reach places within the state. The commitment made by the school to hire and maintain a DLC for its DLMP was seen as a strategic move, which would yield benefits in the areas of overall user satisfaction and the ability of the school to respond to technological innovations in the field of Internet-Based Distance Education.

Instruction Approach

According to the information listed on the school website, the instruction approach for the DLMP is self-directed instruction and student-focused learning. Moreover, it is noted that faculty members in the program aim to ensure that students are able to work at their own pace.

With regards to the technical requirements for the DLMP, unlike other online programs which require students to take a one credit course in computer use, the school chose instead to include this technology competency as an ongoing part of their technical training. Students can revisit this area as they need support throughout the program, rather than passively receiving this information at entrance to the program.

The roll out of online computer competency assessments with remediation began in 2006, and so it is too soon to determine if this is the best way to offer these necessary skills. However, given the limited face to face contact built into this program, it was noted that a significant push will be made to provide the required competencies to the learners in the DLMP.

The hands-on oriented approach with regards to technical competencies is used across the board. This encourages an orientation towards experimentation, and such a posture will tend to bode well for a field such as Internet-Based education which is presently quite fluid and dynamic.

Internet-Based Instructional Tools

Betsy was involved in the decision made early on by the school to go with BlackBoard, as the Course Management System for the DLMP. In addition to Blackboard, the school is looking to use Horizon Wimba as its live IMS. Unlike Blackboard which is focused more on course administration and asynchronous instruction, Horizon Wimba offers the capability for live presentation of materials and online interactions.

According to archival information obtained by the researcher, a proprietary IMS that was developed by the school is another tool that is accessible to students and faculty. The school has been considering replacing that tool with another centrally managed IMS, which more closely matches the needs of all of the stakeholders of the school. However, that decision has not been made.

Given the potential decision to change the IMS, the IT department at the school, the program technical staff, and Betsy have been meeting regularly to determine what will work best in the long run for the DLMP initiative. Moreover, Betsy, said that she is looking to see what features are desired by users, administrators and other stakeholders of the school to better advise on the decision.

3. Uses & Perceptions

Learner Skills

Betsy has experienced some challenges in teaching adults online. For Internet-Based courses to succeed or remain a viable alternative to face-to-face instruction, Betsy sees that emphasis should be placed on the development of technical skills on the part of learners.

> *"Some students just have trouble participating and they lack motivation. As much as I try to contact or connect with them, they barely do enough of the course information and that's a major problem...It appears that some do not care that they are hurting their grades by not participating enough. I tried a few times to get them to do more online by using synchronous tools. But it's like pushing them over the edge as the thought of [communicating live online] terrifies them. I am now taking the approach of asking to use Excel and to [upload] PowerPoint presentations. Down the road, I would definitely want them to make presentations by going online and gathering relevant information."*

Instruction Design

Betsy stressed that good instructional design is important in the development of Internet-Based instruction and that instructors should be investing the time and the effort necessary to plan their courses. At present, Betsy sees that improvement can be made in the area of Internet-Based ID.

> *"A lot of instructors think that they can just take their whole class, throw it online and open it to students and pretty much just let the students learn by themselves and they will accomplish the objectives of the course. I think number one this [approach] does not work; number two the students cannot learn by themselves and will not be happy; number three they won't form the connection with the instructor, the materials, and the other students...*
>
> *All too often when [faculty members] sign up to teach online, they are trained on the IMS platform and given a tour of what buttons to push. They never get to take the next step which is proper design of their courses, unless they are extremely motivated.*
> *That's why I think that there is a need to use ID models or appropriate tools."*

Tools & Technical Strategy

Another key issue encountered by Betsy that is deemed to be relevant for Internet-Based instruction is tech support. Given that most courses in the program require efficient use of computers for research, paper preparation, and communication with faculty and peers, the IT support package offered to distance learners is a key issue.

Features such as online BlackBoard tutorials, instructor support, a link to library resources and a student discussion site to support socialization stand to help somewhat. Enhancements for the near future include the development of a library of digitized lectures and content material that can be incorporated in future classes or used by students to suit their own interests. But there is difficulty with regards to the proper integration of the Instruction Tools that are currently deployed for use by faculty and students.

> *"I am having problems getting students to learn how to use the system. I want to use Horizon Wimba [more frequently] but there are lots of problems getting all of my students to logon and test it. I don't have good tech support. If students have a problem logging on then it is a major issue... Another problem that I have from a tools standpoint is that our Blackboard platform does not link directly with Horizon Wimba. So my students have to go [separately] to Horizon Wimba by themselves. [This process] is not as easy as I would like it to be [at the moment]...*
>
> *If I could get Blackboard to link directly with Horizon Wimba, I don't believe that I would get as much resistance from the part of the students. But right now a number of students are having problems with the set-up wizard. Then we get them to try our helpdesk, which is so-so or the Horizon helpdesk, which is not great either.*
> *So, the problem with tools that we use is that the tools are not properly integrated and this creates major headaches for us regarding getting students to go online to participate in synchronous discussions.*

Andragogy

Betsy appreciates increased interest and focus on adult-specific tools and approaches. There seems however to be less willingness on the part of many faculty members to engage adults students as peers or learning resources who have valid experience and expertise, from which others can benefit.

> *"I think for the most part I follow Knowles' Andragogical approach for my courses. I try to give the learners plenty of room to be self-directed. In addition, I try to get them to move at their own pace. I also make a strong push to get them to bring [the issues] that they are dealing with at work or outside the classroom into our discussions. So if they have a problem at work, say in a leadership sense, I say let's talk about that problem and let's evaluate how we can help improve the situation. So I give a lot of rooms to be self-directed. In this way, I am learning from them as much as they are learning from me. I also take a problem-centered approach... The main thing is that I am not just feeding them information. For example, when I try introduce a new topic, number one, I try to make it relevant to what they are doing at work; number two, I try to show them how the topic will help them in the future as a way to broaden their thinking. I do this also to help them see the theoretical framework which is to help them understand that I am using a higher level of assessment. I want them to prove to me and to themselves that they can analyze and then synthesize the materials in a way that's useful for application into real life circumstances."*

Net.AI Framework

Betsy sees that the Net.AI framework can be quite useful and her exposure to the framework has allowed her to gain a sound theoretical basis for some of the steps that she had already taken to catalyze learning engagement via the Internet medium. Betsy shared that her colleagues can greatly benefit from learning about the framework and agrees that efforts should be made to expand use of the Net.AI framework.

> *"Unfortunately we instructors, tend to develop new ways to do things without thinking about long term implications. So there is a major need in Education right now to focus on a systematic way to develop online or*

Internet-Based instruction as you say. We really should make an effort to get more people to use these types of models and learn the right way to develop online instruction. I definitely see that the Net.AI framework will help people improve the way they teach online."

Online Learning Community & Lifelong Learning

Betsy sees that there is strong connection between involvement in an Online Learning Community and the orientation towards lifelong learning. Adult learners, in particular, need to be encouraged to fully participate in learning activities that take them beyond their surroundings. A framework such as Net.AI, which specifically encourages planning for the external community in the design and roll-out of instruction, said Betsy, is very helpful towards that end.

"One of the things that still amazes me as I continue to teach online is that students don't use the Internet appropriately. Students don't do a lot of searching and know about the major databases so they come to class with a lot of opinions that are based on no real [scientific] proofs. So I ask them: where is the evidence for what they are saying? ...
I am having them now to use the Internet to search for evidence. I am forcing them to log onto the Federal legislation databases that are relevant to their lives now as well as their professional careers. I explain to them that this not something that they are doing for me or just to get a grade. But it is something that they should do routinely as part an orientation towards lifelong learning and the need to participate in an online learning community.
Now by the year 2015 there are going to be a lot of students who will be coming back to school online to get advanced degrees and so we have to be prepared for the changing online education landscape.
So, yes, I tend to agree that the use of the Net.AI framework, which clearly helps faculty think beyond the contents of their courses, helps both with building online learning community and lifelong learning."

4. Benefits & Gains

The major benefit gained in her exposure to the Net.AI framework, said Betsy, is a better understanding of the theoretical underpinnings for some key items that she had already been experimenting with in her courses. Betsy also

appreciates that the framework deals in comprehensive ways with many issues pertaining to Net-based instruction, with which she was struggling. Betsy sees that the framework provides a good way to deal with Net-based instruction that's targeted for adults.

> *"One of the key strengths that I see with Net.AI is the guidance provided to practitioners in the field who have to deal with organizational, technical issues, and instructional issues. I believe as people integrate the concepts that are presented via the Net.AI and make a serious effort to engage other faculty members in their institution to use the principles that are embedded in the framework, I see that such a move will be a net positive for an adult education program.*
> *I would definitely suggest that you make a strong effort to have more people sign up, and work with them so they can learn how to how to properly set-up Internet-Based programs for the adult learner. The framework is very good too for that purpose. So I would recommend that you publish it and thus help improve the way people teach online."*

5. Challenges & Opportunities

The DLC at school works very closely with the two senior faculty members who prepared the initial grant that funded the development of the online program. While these faculty members are not involved in the day-to-day implementation of the online program, they serve as champions for the technical innovations that are used to meet the goals and objectives of the program.

However, the inability for students to learn from each other presents significant challenges in the development of a viable learning community. The administrators and staff of the DLMP sees that portal technologies, which allow simultaneous access to multiple online tools and applications, present significant opportunities for the future. These also can assist with regards to augmenting the community aspect of the online experience for the learner.

"One key issue which I would like to see brought out a bit more by the Net.AI framework is organizational readiness, particularly from a technical standpoint. For example, there four programs at the school which offer online or Internet-Based instruction and use Blackboard...Each school has its own separate deal with Blackboard, which is better than the one that we have. Now the school as a whole could take the lead and streamline these diverse approaches.
The school is currently looking into acquiring [a new application] as a replacement for [our current IMS] but it is inferior to Blackboard. I cannot develop the same type of learning units with [the new tool] that I can do with Blackboard... [Our school] is decentralized so that allows a bit of experimentation. For example I am currently evaluating Moodle with another faculty from a different program.
So the organizational aspects of Internet-Based instruction are quite relevant and so I would encourage presenting them very explicitly in the Net.AI framework."

6. Future Outlook

Through an orientation towards continuous improvement at the school, much has improved in regards to the technical as well as the administrative challenges that the DLMP faced when it began. Concerted efforts have also been made to leverage the instructional capabilities of Blackboard as well as other tools that are used in the program. The school, according to Betsy, is starting to fully understand that more will need to be done to take the program to the next level.

"When we began the DLMP, we were asking a very traditional environment and very traditional people to adopt a relatively new and innovative way to reach potential students. There was nastiness and fear because people thought that they would lose their jobs. It was quite negative. It has taken a long time to get people to accept the program.
A large part of the acceptance is due to the large grant that we got to support the online program. The other aspect of it is that now we enroll about 1/3 of the Masters' students. We also have very accomplished graduates who came out of the program.
We are now starting a new program and I have been asked to see if we can offer it online. However a number of faculty members at the school were very reluctant to even discuss the idea. However, the decision came suddenly to have it online. We are looking at an approach where we meet

for one week at the beginning and a week at the end, so people can get to know each other. For the rest of the session we will be online and that will be great. The reason people have accepted the online option is because there are a number of faculty members who need to take some of the classes that will be offered through the doctorate program and they don't want to be inconvenienced by sitting in class. So they are finally getting the picture.
I am therefore very optimistic about future, especially given the [supply] pressures. The well-known shortage will continue and therefore we must utilize the Internet and other Distance Learning approaches to reach our students. I, for one, am looking forward to use the Net.AI framework to plan and develop future courses for either the DLMP or doctoral program."

7. Conclusion

The DLMP that's offered by Betsy's school is rigorous and demanding. The program draws its strength from having a keen focus on learning as well as on instruction. By all measures, faculty, administrators and staff who are involved with the DLMP have done an incredible job integrating Blackboard and other Internet-Based tools into the program, thus allowing students to attain the competence required to succeed in the program.

Significant strides have been made to offer an increasingly richer education experience to online students. Through such an orientation, the school looks to help students achieve the same educational attainments as their counterparts who attend classes on campus.

As the Distance Learning Coordinator for the DLMP, Betsy is on the forefront of the thrust that is being made to ensure that all its students maintain technological competencies. Betsy also shared that students in the program need to gain the educational skills required of their field so that they can be leaders in their future professional careers, and in the personal orientation to excel in all aspects their lives.

According to Betsy, the time is ripe for more and focused research in the combined field of Net Learning and Adult Education. Betsy stressed also that both the study on Internet-Based Learning, given the focus on Adult Education and the proposed Net.AI framework are timely and useful.

> *"We, the DLMP faculty, need to take all conceivable steps that are necessary to make sure that the way we teach online is allowing our students to get the most out of the learning that we are trying to give them. We definitely want make sure that they have learned something after they get their degrees. Moreover, we need to make sure that we are consistent in the manner that we develop and present learning contents. Therefore we need to learn about best practices in regards to the teaching adult online. The Net.AI framework is a great example of that."*

IMPACT OF THE NET.AI FRAMEWORK

Questionnaire Responses

The table below presents Betsy's responses to the post-test questionnaire of the study.

Table 6 Betsy's Responses re. The Potential Impact of the Net.AI Framework

Evaluation Criteria	**SCORE[1]**		
	LOW	**MID**	**HIGH**
Communications Patterns – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	
Learning Groups / Cells – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	
Collaborative Behaviors – – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆
Message / Content Design – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	
Individual System Use – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆
Technical Support Structure – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	

[1]Five diamonds represent the maximum score for each scoring range of: Low, Mid, and High.
[2] In-Ex is an abbreviation for Intrinsic and Extrinsic.

As listed in the above table, Betsy's responses show that Net.AI was most helpful in regards to the process (in-ex) aspect of Internet-Based Instruction.

Betsy's answers show also that the learner (intrinsic), facilitator (extrinsic) sides of the framework were also useful. The data overall showed that the Net.AI provided strong support in the three main areas or forces identified by the framework: learners, facilitators, and process.

Case Study II – Heather

1. Background & Researcher's Participation

Heather considers herself a trailblazer in regards to Online Learning & Distance Education. Heather works as the full time coordinator of the English as a Second Language (ESL) program at the Adult Learning Center (ALC) of a medium size college town in North Carolina. Heather is also the volunteer coordinator for the program.

I met Heather through a technical training effort at the center. Heather and I subsequently talked about the Andragogy and Online Learning study, given her involvement in a distance learning initiative at the center. Heather works with learners who are unable to come to the center via an innovative program: ESL.Net. Through the ESL.Net program, Heather is able to assist learners who wish to study English with the aid of a conversational program called the Crossroads Café.

Heather has been teaching online for a number of years and has been involved in various aspects of Distance Education as an ESL faculty. Heather has focused on teaching ESL to adult learners for several years and is comfortable with many approaches pertaining to adult instruction.

I met with Heather about 8 times face to face. During those interactions, I introduced her to the study and trained her in the basics of the Net.AI framework. I also helped Heather to resolve any technical issue that came up during the period of the study. Heather and I also experimented with a few tools and applications, which she thought would help her students to master English pronunciation. One such tool allows the users to leave voice messages online for the instructor. Heather noted that the voice messaging tool is wonderful for the learner since it allows additional speaking practice opportunities. Moreover, since the voice system is not restrictive in any way, learners are able to tailor the use of the tool to suit their learning contexts.

2. The Distance Learning Context

The Adult Learning Center

ALC has been involved in Adult Education for a number of years. Currently, through an initiative termed ESL.Net, adult learners are provided the opportunity to master English skills via distance learning. Instructors for ESL.Net include: paid teaching staff, volunteers and advanced students (those who are comfortable with both language and technology).

Learner

The learners for the ESL.Net program have very diverse educational, cultural, and technical backgrounds. Some of the learners are foreign professors, post-doctorates, graduate students, and other visitors who come to the area for a short (less than a year) or medium term (5 years) appointment. Other learners

are immigrants to the US who have decided to move permanently to the town where the school is located.

Given the diversity in the backgrounds of the learners for the ESL.NET program this presents numerous instructional challenges as well as a wide range of learning opportunities in regards to Internet-Based instruction. The main challenges stem from lack of mastery of the English language on the part of the learners in the ESL program. However, some of the participants in the program have strong technical education and thus have some level of comfort with the technology that's used as part of the instruction.

Instruction Approach

The instructional approach for the ESL is blended learning, which involves face-to-face as well as online instruction. The lessons are presented and taught face-to-face and then followed by online instruction for reinforcement. In this way, the online approach serves to augment and reinforce the lessons that are taught face to face.

Moreover, given that each learner has varying degrees of competencies with the English language, self-directed learning and student-focused learning are emphasized in the program. Moreover, it is noted that faculty members in the program aim to ensure that students are able to work at their own pace.

Internet-Based Instructional Tools

The primary Internet-Based that was used for the ESL.Net program is Moodle. Heather noted that because of budgetary constraints at the Adult Learning center she had to purchase the use of the Moodle service herself to

keep the program going. Heather said that she continues to place emphasis on the use of Internet-Based Instruction Tools which are either free or relatively inexpensive, which is the reason she noted why she first became interested in Moodle. Heather said that she was impressed with Moodle, because it is designed from a Constructivist standpoint and thus the tool allows the learner to engage in the creation and development of the instruction activities.

3. Uses & Perceptions

Learner Skills

The typical ESL.Net learner, said Heather, has experience with the Internet and/or computer. However, few of the students who take the course have ever had the opportunity to use Instruction Tools and do not have proficiency with Moodle. Some of the students, however, have strong technical skills and thus are able to engage in peer-teaching with regards to the use of Moodle.

> *"It can be somewhat frustrating for students when they have to deal with technical glitches that come up or when they have to deal with a technology related obstacle. Because my course first of all is about Basic English, technical problems tend to be a big deal. But I do have some students who like using computers and have a very high level of comfort with technology and so they end-up teaching me and other students how to navigate around the glitches that come up."*

Instruction Design

Heather sees that a hybrid approach involving both face-to-face as well as online learning interactions is the most appropriate instructional for the ESL learning context. Heather accepts that careful planning and thoughtful design are

key factors with regards to ensuring instructional goals and objectives for the ESL.Net program.

> *"From a course design standpoint, I see that a hybrid approach is most ideal [for the ESL learning context] rather than going completely online... [Also] intense planning is very important. Teaching online is, I guess, an evolving process, which means that instructors who want to teach online must look at both the short term and the long term...There is also a need to look at learner's goals, funding, and physical environment that are available for the technology since there can be a huge learning curve.*
>
> *I am very concerned about making sure that we use sound theory for our online adult course. I take a collaborative approach with our class, constantly analyzing and comparing what I am offering. My learners are encouraged to question what we are working on and test the materials to see how things fit with their employment, TOEFL [Test of English as a Foreign Language], or their job situation at the University.*
> *I try also to look past these immediate tests or concerns and tried to take a didactic approach with everything. To me, that's the best way I can help the learner in the long run and while at the same time provide a means of enriching the ESL curriculum."*

Tools & Technical Strategy

Heather finds herself dealing with a number of technical issues, which at times can be overwhelming. Because of the lack of instructional support for the program she noted that she finds herself quite often having to take on the roles of an instructor and that of a tech support for the ESL.Net program. Heather noted that she is the main cheerleader for the program and often has to explain to her peers and colleagues about the benefits of offering the ESL program online.

> *"I am the Distance Learning department and do not have a lot of colleague or peer support when something challenging comes up. Colleagues and coworkers see me as the [tech] guru and that's not necessarily a smart move of their part. But I must admit that it is fun to facilitate and teach my peers about something other than material contents of the ESL course...*
>
> *I like Moodle a lot because of its constructivist design. It has some glitches and some issues that come up. But for me the main point is to maintain a*

hybrid strategy that allows face to face quality time. For instance students want to practice their English and there is not always enough structured time to do so online. Also students want more face to face time but their lives won't allow them to have more of it. So there is a lot that I am wrestling with as I try to implement the hybrid approach.
In addition, people must be willing to look at what others have done to see what they can learn from and what has been tried before. There must be a willingness also to find a team of people who are on the same journey and determine what can be learned from another. So there are a lot of baby steps involved in introducing and implementing Internet-Based instruction."

Andragogy

Heather sees adult education through the prism of Constructivism. Heather accepts that adults are self-directed and thus should be dealt with more on a peer level than a traditional teacher-student relationship. Heather feels that her students bring a lot to the table, despite their inability to speak English fluently and thus goes out of her way to create non-course related opportunities for the ESL students. Use of advanced Internet-Based tools is one example of that.

"I definitely see that with adult learners there is a lot more self-directedness. My hope and my stance are to expect more from my students rather than teach more. I just start at level that's practical for their situations whether the job, school, or the family context and then allow them to decide what's best for them.
I know that my students are perfectly capable of making their own choices so I try to be a guide for them in that regard. I also structure the curriculum in such way so that each learner can create avenues and opportunities that fit his or her area."

Net.AI Framework

Heather sees that the Net.AI presents a good and sound approach to design courses for online instruction. Heather believes that the framework can

help to guide both those who are new to the field of online education and those who are experienced instructors.

Heather said that she likes systematic approaches in general because they offer a glimpse to best practices. She noted that the Net.AI thus assists in getting the most out of the online medium in relation to the ESL.Net program. Heather added that the orientation to look at both intrinsic and extrinsic factors in Internet-Based instruction, as presented in the framework factors, resonates well with her.

> *"Determining what's important and acting on that in a timely fashion is very critical in a Internet-Based environment. The Net.AI framework shows clearly that there is a need to focus on balancing multiple needs and concerns. It also shows that flexibility during a virtual experience are keys to success in the online environment and I have experienced these things as I get assistance from various constituencies and community participants to make the ESL.Net work.*
> *Pervasiveness and Virtual Self in particular resonate well with me as technology is always evolving. An orientation towards Continuous Improvement is also important, as we can expect to do the same thing over and over without making changes, especially since the technological landscape changes so frequently.*
> *Also the learner, facilitator and administrator involvements all change. So I clearly see the need to see how everything work and fit together. The framework does show this perspective quite well."*

Online Learning Community & Lifelong Learning

ESL students readily see the needs and advantages for both Online Learning Community and Lifelong Learning, noted Heather. Thus the major issue on these fronts said Heather is ensuring that the average learner in her course has ample opportunity to participate in online discussions. Heather noted that she tries to do everything that is possible from an instruction design standpoint to

allow online interactions despite some of the language difficulties that she is experiencing.

> *"I am having student view a video series and then have an interactive dialogue on the Moodle site. I am attempting to make use of audio and establish long distance exchanges with people as far away as Senegal. But in reality with Internet distance does not matter that much as when people are online communications is instantaneous.*
> *My students also have the opportunity to add to the curriculum. We use class time; we use wiki and other tools where they can work collaboratively. I might correct grammar here and there but the work is done collaboratively*
> *I use a lot of volunteers and thus try hard o establish connections to create a sense of community. But this brings a lot of other issues as many of our volunteers do not have strong computer skills. As a result, I spent a fair amount of time providing support to the volunteers and assisting them so they can join in on online discussions...*
> *Now to be a lifelong learner I see that it takes a willingness to challenge the status quo and take some risks and to push the envelope a little as the upward potential is wonderful. Those that participate in online learning communities certainly get out of their day to day routines... Therefore, a focus on establish community or as you say looking at the extrinsic factors to Internet-Based learning is very important for a program like ours."*

4. Benefits & Gains

Heather noted that the Net.AI framework in general helps instructors who use it to see the big picture with regards to Internet-Based learning and online instruction. Another major benefit to using the framework, noted Heather, is that it provides theoretical support for important factors, which matters in the online environment but are often ignored by people who are not familiar with the medium.

The use of the Net.AI approach is helpful overall, said Heather, because the framework will provide both a common language and a clear design structure that she can use with her peers and colleagues. Heather stated since many

people are not familiar with online instruction a common approach will be of tremendous help to her and the program.

> *"I find the Net.AI framework very useful. It makes me take a look at other connections and the work that I am doing on the field. The Net.AI also helps to validate and for me to re-realize the need to see all sides in Internet-Based instruction or Online Learning...*
> *I am always looking for new and better approaches to engage my learners as motivation fluctuates a lot throughout the course. Also my network of support is not strong. So then it goes back to what the model or framework that one is using for the online instruction.*
> *There is of course a learning curve in using a new method or approach. But it seems to me that a framework that helps people see how the pieces fit together will lead to a better end product."*

5. Challenges & Opportunities

Heather noted that keeping students in the ALC-ESL program is a key issue. Heather said that she understands why the turnover is high for her courses, given that many of the people who are in the ESL program are in transition. Heather believes that online instruction can assist with the drop-out issue in the ESL program as well. However, she said that retention has not been a major focus of the program.

> *"Retention is a key issue for me and is always at the forefront of my thinking. This I also because I share the strong belief that unless motivation is part of the learning endeavor then instructional challenges are bound to occur. So I try very hard to make the hybrid approach work for my course.*
> *As a Distance Learning instructor, one of things that struggle with is finding space and appropriate scheduled time to my class. People don't think we need space and the like so I get relegated to non-classrooms. But I could really use for the face-to-face aspect of my class as the distance learning orientation and use of the Internet appeal to learners who cannot come to a regularly scheduled course. So the organizational aspects of Internet-Based instruction are quite relevant and so I would encourage presenting them very explicitly in the Net.AI framework."*

6. Future Outlook

A federal push for greater use of the online medium represents a key potential future development for the Adult Learning Center and as a corollary to the ESL.Net program. The US Department of Education, Office of Vocational and Adult Education, Division of Adult Education and Literacy in partnership with a group of states have started on a major initiative project, which is called Improving Distance Education for Adult Learners (IDEAL). As stated on the organization's website, the main goal of Project IDEAL initiative is "to develop effective distance education programs for adult learners".

The major focus of programs such as IDEAL is to have instructional impacts on many items. These include: 1) professional development of teachers, 2) valid teaching or instructional methods for the online medium, 3) learner characteristics which may lead to success in distance learning as well as training, and 4) support strategies to support distance education.

Heather shared that a move to closely link ESL activities with those of the General Educational Development Test (GED) programs may provide more administrative recognition for the ESL.Net initiative and perhaps even greater financial support for the ESL.Net effort. Heather, however, said that she remains somewhat pessimistic in regards to greater utilization of the online medium and Internet-Based approaches to reach more ESL adult learners. Heather said it's unfortunate that there is not a lot of commitment from the education department of her state for the ESL.Net effort.

> *"I am optimistic in the sense that online learning will continue to grow in society. In general when I think about online learning I see it everywhere; it is in the grocery stores and business education everywhere takes advantage of the medium. I am pessimistic, however, as online learning*

relates to ESL and to me. I hope to be proven wrong as the online learning is ever increasing.
In regards to the outlook of the ESL.Net itself, either I failed or perhaps I could not show enough validity for our program. I say this because I am anticipating that I am going to be told to just shut down the online aspect of the ESL program and to take it to a non-online context. I say this because I see that the rest of the organization is not ready for online learning or Internet-Based instruction."

7. Conclusion

The ESL.Net program has been reaching out to the adult learners who live in the service area of the ALC who wish to develop greater competency and fluency in English. The program has faced a number of formidable odds and yet still remains quite viable. Heather has been the main cheerleader of the ESL.Net program and has gone through extraordinary lengths to keep it going.

Despite some of the setbacks that the ESL.Net program has encountered, Heather sees that the future of Internet-Based learning overall is quite bright. Thus Heather said that she is quite happy to be an advocate for Internet-Based instruction. Participation in a research such as the Internet-Based Adult Instruction and use of the Net.AI framework are important, noted Heather because of the opportunity to help practitioners in the field like herself get the maximum benefit from the new online instruction medium.

My interview with Heather thus touched on a number of themes that are related to the Internet-Based Learning and Adult Education. Heather sees many benefits in the use of frameworks in the design, development, and deployment of Internet or Internet-Based instruction for adults. Heather offered that the Andragogy and Online Learning study and the Net.AI framework are quite

relevant from both a strategic and day-to-day sense in regards to her teaching activities.

> *"I have always been somewhat impulsive and thus have had to acknowledge the need to take coordinated steps over and over as online learning is not as easily implemented as may first appear.*
> *For me, I think to succeed online there needs to be a strong foundation and an orientation to collaborative learning. Instructors and facilitators need to know that there are others involved and that there is a connection with the big picture to have long term results. Success online is awesome for it opens so many doors for the learner and so many opportunities for all. I have some difficulties to get others to share my enthusiasm since I have had some negative experiences and since there are some many other factors that help to make an online program a success."*

IMPACT OF THE NET.AI FRAMEWORK

Questionnaire Responses

Table 7 Heather's Responses re. The Potential Impact of the Net.AI Framework

Evaluation Criteria	**SCORE[1]**		
	LOW	**MID**	**HIGH**
Communications Patterns – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	
Learning Groups / Cells – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	
Collaborative Behaviors – – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆
Message / Content Design – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆
Individual System Use – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	
Technical Support Structure – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	

[1] *Five diamonds represent the maximum score for each scoring range of: Low, Mid, and High.*
[2] *In-Ex is an abbreviation for Intrinsic and Extrinsic.*

Heather's responses as show in table 4.2 show that the Net.AI framework was most helpful in regards to the extrinsic aspect of Internet-Based Instruction. The emphasis on online participation may have contributed to this perspective. Heather's answers also show also evenness in regards to her reaction to the two

other aspects of the Net.AI or, the learner (intrinsic), facilitator (extrinsic) part of the triad presented by the framework.

Case Study III – Joshua

1. Background & Researcher's Participation

Joshua is a professor at small Mid-Atlantic liberal Arts college. Joshua has been involved in Adult Education and Online Learning for well over twenty years. Joshua currently teaches and advises students who are in an adult degree program offered by the college. Joshua is a senior professor at the school.

Recently Joshua has been involved in efforts seeking to determine the best way to train current as well as future students in the school's adult degree program. Joshua and I first corresponded by e-mail in regards to the orientation and focus of the study. Joshua shared that he has been looking to get involved in such a study and said that the timing, was appropriate, as there was interest at his school to examine best practices for adult-oriented online instruction.

I met with Joshua a four times face to face regarding the research study. We first met to learn the basics of the Net.AI framework and to review instructional approaches that are relevant for online education. Joshua and I met two more times for the purpose of reviewing the Net.AI framework and determining specific online Instruction Tools to use for virtual discussion.

Joshua and I connected again at the end of a key module for a course that he is teaching for the spring 2007. Joshua provided his reactions to the instruction items being examined through the study. He provided candid feedback in regards to the study and the overall direction of Net-based Adult Education.

2. The Distance Learning Context

The Adult Learning Program (ALP) at the college has been in operation for about thirty years, a mere six years before Joshua joined the school. Students are enrolled full time or in just one class a semester. The online classes for the ALP are structured in a way to allow students to use the college Web site to view materials and assignments, and to communicate with the instructors.

The school has a week-long, concentrated summer session at the main campus, which is focused on strengthening connections with students. In addition, the school offers independent tutorials using the options of working one-on-one with an instructor, staying in touch by phone, e-mail or by both methods.

Learner

According to an informational brochure from the school, the ALP is focused on working adults and the classes offered are geared towards students who are between the ages of 21 and 65. The range of expertise with computing technology on the part of the learners in the ALC is quite broad.

Instruction Approach

The ALP uses a mix of both face to face and online courses and uses a blend of theory and practice. Moreover, noted Joshua, the working context of the learner is taken into account for all courses. Thus the ALP strives to ensure that the learning that takes place in the classroom will be readily applicable to the actual working environment of the learner.

Internet-Based Instructional Tools

Blackboard is the main instructional platform for online courses offered as part of the ALP. At present, the ALP does not offer live or synchronous online

courses. However, some instructors who are part of the ALP have begun experimenting with a wide variety of tools and applications that can be used for either live (synchronous) or time-delayed (asynchronous) communications. Chat tools such as Tapped-in, Instant Messaging systems and e-mails are used at the ALP for the purpose of online communications and interactions.

3. Uses & Perceptions

Learner Skills

Learner skills in regards to technology are developing, said Joshua. Archival data acquired for the study, shows that the school has been investing a lot of money in technology and that many aspects of the technology utilized are integrated in the curriculum of the ALP. Thus, as Joshua pointed out, learners in the program will eventually gain proficiency with most of the widely-used instruction-related technology tools and applications, such as MS-OFFICE, Blackboard, etc.

> *"On the basis of my experience as an instructor attempting to incorporate new technology into my courses, I would speculate that the use of computer-based instructional resources in and out of the classroom may polarize the learning experience of students. For those who understand the information as formatted, everything is obvious; for the students who "see it", the speed and possibility of electronic publication afforded by computer mediated instruction is a delight. However, for those who do not "get it", the very same process is a source of mounting frustration; computer-mediated instruction only compounds their problem - comments written on the course evaluations by these students clearly indicated a high level of intolerance to time spent in class on computer-related technology.*
> *Therefore, we see great potential to aiding students with enhanced use of the technology that we have in place. We provide either synchronous or asynchronous programs we provide flexible start and end times. This is done to encourage more engaging participation of various downlink locations. Since students are not constrained by a particular schedule, I*

do see more opportunities for students to participate in on-going learning activities."

Instruction Design

Instruction design must mesh well with the learning orientation and focus of a particular program, said Joshua. With the ALP, it is clear that there is strong motivation in the part of the learner as most of the people in the program work full time, noted Joshua. The approach taken, said Joshua is that on-line instruction must add value to the lives of the students.

> *"If you're planning on bringing this level of technology into a classroom, it is very important to remember that are many outstanding issues with using distance learning. An instructor cannot simply take a course that he or she has been teaching for a number of years and offered that same course online without adjustments. Students who are not comfortable with the medium will need guidance so they are not feeling isolated from peers. Other students who are comfortable with the technology will do well. Instructors need to be aware of the different sub-cultures and sub-groups that the medium is bound to create. These sub-groupings are quite often vastly different that thee type of teacher-identified study groups and the likes. So these are key challenges that will need to be addressed if the online format is to have a lasting impact in teaching. The jury is still out as far as I can tell.*
>
> *From an Instructional design standpoint, this means that the teacher has to prepare more carefully and stay involved more faithfully than is necessary in a classroom setting and the machines have to work and technical assistance has to be ever-ready."*

Instruction Tools

Joshua concedes that the use of Internet-Based applications for the purpose of instruction will continue to increase, given the demand from the part of the students whom the ALP is targeting for more flexible course offerings. Joshua, however, sees that there are both benefits and perils with greater use

and reliance on online courses, since they sometimes fail at the most inopportune times.

> *"As a teacher who has used on-line instruction, I have experienced several of the benefits...and the liabilities...of the technology. I have been able to expose my students to documents and resources which would not have been available to students involved in pure independent study. There have been frustrations and obstacles: teachable moments are lost when someone's connection goes down. Sometimes the College's technology fails us at crucial times. Sometimes what we really need is not computer contact, but a face to face meeting. This obviously leaves a bad taste in people mouths regarding the reliability of the Instruction Tools that use for our online courses...*
> *Work load issues also must be addressed as I have already mentioned. There must be a serious, seamless investment in technology and tech support in order to make it all work for the students. "*

Andragogy

As someone who has been involved in Adult Education for number years, Joshua articulates the benefits of using appropriate techniques to reach the learner. Joshua said that he is in agreement with many of the tenets of the Andragogical approach.

> *"I have been teaching adults for quite some time and thus I have the chance to experiment with a number of useful theoretical approaches. Andragogy, as defined by Knowles, has done a lot to help shape many the thinking of many people in the field in regards to adult education. Knowles has helped think things differently as well...*
> *Learner-centered instruction has quite a bit of resonance for me as well. For me as someone who is involved in adult instruction, one of the main things that I try to do is help in facilitating students' interactions with one another. This latter experience has been especially positive."*

Net.C A Framework

The aspects of the Net.AI framework that appeal to Joshua the most are the communication interactions, which he noted, engage learners at the most elementary level of instruction. Joshua noted that some instructors focus on the

big items when it comes to Internet-Based instruction and thus fail to execute on the little things, like e-mail, which may be the prime focus to learners.

> *"It is certainly the case that the Net.AI framework, as applied to on-line instructional environments, captures the potential vitality available in an adult learning context. The intentionality of the flow of information to learners, from learners, and between learners is a key feature of effective adult learning efforts...*
> *It seems like a small thing, but the whole framework has the potential of strengthening students' writing...by entering class discussions by typing responses rather than by speaking, students become more careful about their expression. This, alone, would be a worthy result."*

Online Learning Community & Lifelong Learning

Given the varied schedules of students who are in the ADP, Joshua said that he makes a special effort to ensure that students connect with one another virtually. The interactions, said Joshua, are also very important to the students that are in the ALP because they help them connect in a semi-tangible manner with the school, their peers, and the faculty.

> *"Our programs involved 100 or so students taking different a wide variety of courses. Our challenge will be to incorporate these people in the academic community that we are trying to foster with our distance education programs. We firm believe that creating a learning community atmosphere as part of our mission and philosophy.*
> *Thus we strive very hard to give our students some return from this school for the effort and money that they provide. We can never keep them in our program just for the money. So we have to make a very strong effort to let them see that they are people and a community that are a part of their educational experience...*
> *To help in the development of an online learning community, I use a "journal and response format which has worked well. Students have to launch a brief journal entry, to which other students must respond. Sometimes they debate, sometimes they agree. But it can be as worthwhile as a good class discussion."*

4. Benefits & Gains

Joshua said that the Net.AI framework can be helpful with regards to assisting programs like the ALP, since there is a focus on helping students connect online. The framework's main strengths, noted Joshua, is that it offers a means to see the key interactions in online learning and Internet-Based instruction. Joshua said that given that it takes a lot of effort to put together a viable online program, a tool that lets all stakeholders see the big picture is quite helpful.

> *"The framework dissects the complex interactions involved in distance learning. Just as it is helpful to understand more deeply the transactional elements involved in classroom teaching and learning, it will be valuable to focus on the details of distance and on-line instruction. In evaluating the approach that we are taking for the ALP via the lens offered by the Net.AI, I do see some opportunities and will take steps to help move things forward."*

5. Challenges & Opportunities

Joshua said that the Net.AI framework is quite rich in its theoretical foundation and saw a benefit in greater use of it. Joshua suggested that efforts should be made to use it more widely so that the key issues, which are found to be problematic can properly addressed by the Internet-Based instructor.

> *"Over time, you may be able to survey adult students and teachers and measure the degree to which they were aware of the elements involved in the learning transaction. The results might show the way toward further refinements in the model."*

6. Future Outlook

The school has recently embarked on an effort to extend connections with a number of community colleges in its region. The school has decided to partner with the two-year institutions. This partnership, according to an informational brochure that was provided, is to enhance the educational opportunities for the

graduates of the community colleges to turn their two-year degrees into four-year degrees.

The partnership, said Joshua, is thus seen as an opening for enhanced participation in the school's ALP program as well as for increased opportunities for more Net-based instruction offerings. Joshua, however, shared some reservations with regards to greater use of Internet-Based instruction in the ADP.

> *"My experiences have been mixed. I have to confess that I am not yet a true believer. I have experienced the benefits of on-line instruction, but always at the cost of huge investments of time and effort.*
> *I think that work load is a major issue. On-line instruction is clearly not a work-saving technology. Although it enriches the learning experience, it also adds to the workload of the instructor. Our employment structures will probably learn to take this into account someday. But right now, not so much.*
> *There is a pretty steep learning curve involved in organizing the site, posting articles, creating a grade book, etc. When one of the students seems not to be participating, it is hard to know what the reasons are."*

7. Conclusion

The school where Joshua has been teaching these past 25 years has been engaged in providing learning opportunities to adult learners, via the ALP and other innovative outreach efforts. With the increased opportunity of using Internet-Based tools and applications to reach busy learners who are scattered throughout its region of operation, the school will have important decisions to make in the future, as it strives to expand the ALP.

One key challenge for the ALP is that many learners in the target population group of the school are not often very well-prepared or comfortable with computing technologies. Joshua shared that the school will thus need to look at both the micro and the macro factors that are impacting online instruction

efforts before a decision can be made concerning how to best serve a potentially wider group of learners envisioned for an expanded ALP.

Joshua mentioned that the school will need to take a "go slow" approach as it continues to evaluate best practices and engage in continuous improvement activities. These are necessary and critical steps, noted Joshua, for the ALP so that the school can stay ahead of the curve while adapting to the realities of the field of online learning and Internet-based education. Joshua said that he appreciated the efforts being taken through the Andragogy and Online Learning study and that he looks forward to fully leverage the capabilities of the Net.AI framework.

> *"Many teachers see themselves as the only salient element in the teaching or the learning process...certainly they are one of the key elements. I am appreciative of the Net.AI framework because it reminds us that there is much more going on than the simple provision of information."*

IMPACT OF THE NET.AI FRAMEWORK

Questionnaire Responses

The table below presents Joshua's responses to the post-test questionnaire.

Table 8 Joshua's Responses

Evaluation Criteria	SCORE[1]		
	LOW	MID	HIGH
Communications Patterns – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆
Learning Groups / Cells – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆
Message / Content Design – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆
Collaborative Behaviors – – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	
Individual System Use – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆	

Evaluation Criteria	SCORE[1]		
	LOW	MID	HIGH
Technical Support Structure – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	

[1]Five diamonds represent the maximum score for each scoring range of: Low, Mid, and High.
[2] In-Ex is an abbreviation for Intrinsic and Extrinsic.

The responses provided by Joshua, as listed in the above table, show that Net.AI was most helpful on the learner (intrinsic), facilitator (extrinsic) sides of the framework. The data also show that the Net.AI provided robust support in the technological area as well.

Case Study IV – Jacqueline

1. Background Researcher's Participation

Jacqueline is a post-doctorate researcher at a top tier US university with a focus on international development. Jacqueline is a new instructor and has recently begun to teach online. Jacqueline is currently teaching an online seminar on an informal basis. Recently, Jacqueline has been focused on planning and designing the instructional units of the seminar for wider application. Jacqueline became interested in participating in the Internet-Based Adult Instruction research upon learning from another colleague about its aims and orientation.

Jacqueline and I met twice about the study face to face. The rest of the time, we communicated by phone and e-mail because we are geographically separated by at least 7 hours driving time. The first face to face meeting with Jacqueline was focused on teaching her instruction design methods that are applicable to online learning. During the second meeting Jacqueline was trained

in the key aspects of the Net.AI framework as well as the key features of Moodle, a widely used Instruction Management System.

I used a combination of phone discussions, chat rooms, and e-mail communications to answer questions that Jacqueline had about all aspects of the study. Moreover, Jacqueline and I both agreed to do key aspects of the interview to ensure greater hands-on practice opportunities as well as to pilot-test some activities planned for her seminar. In addition, Jacqueline used an open-ended questionnaire to provide detailed input in regard to the Andragogy and Online Learning study and the Net.AI framework.

2. The Distance Learning Context

Jacqueline is not currently involved with a specific educational institution with regards to her Distance Learning online endeavors. As mentioned, Jacqueline embarked on an effort to assist a group of learners who are interested in gaining more knowledge in the area of Entrepreneurship/Agro-Business. The Internet-Based or online instruction is being used by Jacqueline, because such an approach offers the means to teach/instruct as well as to provide feedback to the learners.

Entrepreneurship/Agro-Business Online Seminar

The Entrepreneurship/Agro-Business Online (E/Ag-B) seminar, said Jacqueline is being aimed to assist in the formation of a business venture. The focus of the seminar is on building capacity. Jacqueline said that she is aiming to assist learners in the seminar with market analysis and on the need to do the business analysis in a logical manner. According to Jacqueline, those students

who are involved in the E/Ag-B seminar have not been fully immersed on approaches and methodologies related to independent research and analysis.

Jacqueline said that, as a result she is spending a fair amount of time teaching the students who are participating in the E/Ag-B seminar some of the basics of critical analysis. She noted that she is teaching assessment tools and evaluation techniques that will enable the students to make sound decisions.

Learner

The learners who will participate in the E/Ag-B online seminar have had limited opportunities to learn about business development/formation. Thus, shares Jacqueline, they do not feel very comfortable with doing critical evaluations or analyses for the purpose of decision making. The seminar is being conducted in English. However, noted Jacqueline, the learners for the E/Ag-B online seminar are not native English speakers nor have they much experience communicating freely in English.

Instruction Approach

Jacqueline noted that the instruction approach for the E/Ag-B online seminar is informal and self-directed learning. The learner, said Jacqueline, is being offered a broad means rather than a step-by-step/small scale approach to finding focused solutions to the problems and questions that are involved in business development and starting up a new venture.

Internet-Based Instructional Tools

At present, email is being used as the primary way to connect with learners. Jacqueline has also been experimenting with the online messaging tool

called Tapped-in. I taught Jacqueline the basic features of Tapped-in during one of online sessions and she has integrated the use of the tool in the seminar.

Jacqueline said the plan to use Moodle as this will help in facilitating information sharing. Jacqueline explained that time is getting wasted at the moment because of the inability to get online and provide immediate feedback to learners' questions. Jacqueline hopes that the use of Moodle will fix the issue of delay.

3. Uses & Perceptions

Learner Skills

Jacqueline noted that the learners for the E/Ag-B online seminar are very comfortable with technology, computers, and online learning. Jacqueline said that she is evaluating the possibility of integrating live video-stream or chat-room into the seminar. This idea, Jacqueline shared, came at the suggestion of one of the learners in the seminar and that the orientation to use the synchronous or "live" communications will help in mitigating correspondence difficulties.

> *"I use, to the best of my ability, appropriate definitions and context, and email the information to minimize miscommunication. Thankfully, learners are quite intelligent enough to formulate and make sense of most of my feedback. This helps in generating next-action steps for the seminar."*

Instruction Design

Jacqueline is a novice in the field of distance education and online instruction. As a result, Jacqueline and I got to interact quite frequently and discussed a number of key instruction items related to her online seminar course. Jacqueline said that she had some ideas concerning the best way to present the contents for the seminar, but participation in the study provided her with hands-

on experience with instructional approaches, with which she was minimally familiar. Jacqueline remarked that her expanded understanding of instruction design will allow the possibility of creating modules that engage the learner.

> *"I believe that wider access to well-structured information provides a breath of understanding and this is an important step, which needs to occur before depth in understanding can take place. The learners for the seminar have some access to Agro-business but given their interests and objectives, I have been trying to provide guidance to help structure their learning somewhat.*
>
> *I also take the view that the learners needs to be on-track and goal-oriented. Finally continuous assessment by the facilitator is also very important, in my view, for fruitful teaching to take place.*
>
> *Models or frameworks that assist or emphasize the importance of assessment, instructional design, and system evaluation are, therefore, very useful to me as an instructor."*

Instructional Tools

Jacqueline said that she wrestles with the lack of adequate access to Instruction Tools and processes. This is because, said Jacqueline, most of the learners who are participating in the E/Ag-B online seminar either do not have easy access to online databases or are unable to learn online because of language difficulties. Jacqueline said she is exploring the possibility of incorporating non-English materials in the seminar but this is somewhat a challenge for her. This is because she is not very familiar with non-English teaching styles.

> *"Some of the learners in the seminar have a Computer Science background and thus have different needs than those of Political Science. Therefore, the transition to using Moodle will help tremendously in providing a consistent means to engage all of the learners in the seminar. This will also facilitate follow-up on both ends of the instruction.*
> *I see that the Moodle platform will provide a method of recording responses provided by the students. Such orderliness and systematic*

approach will certainly help me as an instructor to determine and assess whether critical learning is taking place. "

Andragogy

Jacqueline is becoming more familiar and more comfortable with the theoretical aspects of instruction design. Jacqueline said she has been spending a significant amount of time reviewing tools, techniques, and methods, which are the most appropriate to Adult Education and online learning, within a multi-national or global context.

"I am most interested in giving learners the tools and skills to be more confident. Thus, the approach that I take in structuring the contents for the seminar is to be more a guide and facilitator. I am definitely hands-on when it comes to engaging my learners and helping them to see the end result, even at the early stages.
For example, I have been working closely with a participant in the seminar in helping him with defining a project and taking it off the ground.
I believe that as a facilitator, I am becoming more aware that I need to step aside at times so that the learners can experiment with the course materials on their own."

Net.C A Framework

The Net.AI framework has been quite helpful, said Jacqueline, with regards to assisting with the design of the seminar and has helped her connect the dots for her online seminar. Jacqueline said that she most specifically liked the fact that the Net.AI framework appears to give fairly equal weight to learners, facilitators and processes since all three items need to be given consideration in an online context.

"The Net.AI framework covers the key aspects of content delivery, course management, and technical support. The tri- approach seems to cover just about any course. My seminar represents in the most basic sense an

example of an actual use of the Net.AI framework that I can think of and yet it is robust enough to help people like me who are visual learners. At the same time the Net.AI framework offers more details and logical factors for others who have a stronger preference to read things in a more detail fashion. So I see that the framework is able to assist pretty much in all online instruction contexts and settings.

Online Learning Community & Lifelong Learning

Jacqueline has expressed great openness in regards to using instructional approaches and methods which will allow her to succeed in her Net-based teaching endeavors. Jacqueline said that she sees that an online learning community is very critical for her seminar, given the geographic separation between her students and other experts who might be able to assist with a E/Ag-B venture.

"Certainly there's a sense of great empowerment to use this Framework for lifelong learning. Learning for many stops beyond college years; a platform for learning from your home/Net-café, removes the 'stress' of a 'classroom' setting, especially for people who don't think they are equipped to go back to school after a certain age. It can help to dismiss some myths in that regard."
Building an online community is powerful, because it allows access to just about anyone to contribute in life learning; we all can learn something from someone anywhere in this world. Now in the future, an auto-translation system can help make communication more effective, and remove the language barrier so that we can solve problems at the heart of human needs."

4. Benefits & Gains

Jacqueline shared that she has had the opportunity to look at instructional approaches to assist her in designing her online seminar but did not find too many tools that spoke to the issue in a comprehensive way. The Net.AI framework is very useful, noted Jacqueline, because it offers a means to both

see the big picture in online learning and to take actions that will enhance learning.

> *"I am trained as an engineer and thus generally speaking I see that better results can be achieved and so in my case learning can take place more effectively when a specific model or approach is used.*
> *The Net.AI framework seems to be quite robust to me. It has been very helpful in helping me see the big picture in online learning and what it will take to roll-out and deploy Internet-Based instruction in the correct way.*
> *I like the fact also that Net.AI de-emphasizes on short-term memorization just for exams. Overall, I think it's a great tool to use; let's see how well my learners and I can fully leverage its capabilities. Nonetheless, I see that when both learners and facilitators use it correctly can get a lot out of it."*

5. Challenges & Opportunities

Jacqueline shared that most of her challenges are due to language and cultural barriers with some of her students. For example, said Jacqueline, while the use of analytical techniques is perhaps 'second nature' to many professionals who are trained in the US or other more technology advanced societies, the learners for the Agro-business seminar -- although they are college-educated-- have had scant opportunities to participate in decision-oriented projects. So, there is a need, noted Jacqueline, to constantly evaluate where the students are to ensure that they are keeping up with the contents being provided via the seminar.

> *"I am having my learners reiterate the feedback for confirmation. This takes more time than I had originally anticipated. I am also dealing with communications issues as some of the learners are not very fluent in English. The approach that I am using is to look carefully at the responses provided to see how well they understood my response.*
> *The fact that we use the online medium rather than meeting face, I believe lessens the language difficulties that are inherent in the course, given the cross-cultural aspect of it. As a result, I try to put enough flexibility in terms of the way I design the instruction materials for the seminar so that each learner can move at his/her own pace. "*

6. Future Outlook

Jacqueline is very optimistic about her online seminar and anticipates expanding upon it in the not-too-distant future. Jacqueline shared that there is a lot for her to learn so she can feel 'at home' with Internet-Based. Nonetheless, Jacqueline sees that the Internet and Internet-Based learning tools are wonderful for her online instruction efforts and sees that the upside for her target learning group is quite high.

> *"I think that it is very exciting that I will be able to use a tool like Moodle to engage others in faraway places and to help a group of learners implement business ideas. I have to admit that it is actually a dream come true for me share what I know using the Internet."*

7. Conclusion

The Entrepreneurship/Agro-Business Online seminar that is being offered by Jacqueline to distance learners in the Caribbean began as a personal project. There has been quite a bit of interest in the part of learners who see the value of learning from interacting with a well-trained researcher like Jacqueline.

Jacqueline said that she will continue developing the seminar to allow more students to participate in it. Jacqueline said that her decision to do the online seminar allowed her to become more familiar with Instruction Design. Jacqueline sees that the use of Moodle along with more appropriate instruction design methods such as the Net.AI will allow her to reach the broader audience envisioned for the seminar.

> *"One of the key aspects of the Internet to me that makes it special is the ability offered to exchange ideas and to learn from those who are more*

experienced. I also like the opportunity to be of assistance to solve problems that may arise as my students try to implement their business ideas. I am looking forward to making good use of both Moodle and the Net.AI framework."

IMPACT OF THE NET.AI FRAMEWORK

Questionnaire Responses

The table below presents Jacqueline responses to post-test questionnaire.

Table 9 Jacqueline Responses

Evaluation Criteria	**SCORE[1]**		
	LOW	**MID**	**HIGH**
Communications Patterns – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆	
Learning Groups / Cells – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆
Collaborative Behaviors – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆
Message / Content Design – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆	
Individual System Use – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	
Technical Support Structure – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	

[1]Five diamonds represent the maximum score for each scoring range of: Low, Mid, and High.
[2] In-Ex is an abbreviation for Intrinsic and Extrinsic.

As shown in the above table, Jacqueline's responses revealed that the Net.AI framework was helpful in all of the areas: learners, facilitators, and process. The data also shows that Jacqueline saw that the framework had the most impact on the process (in-ex) aspects of online instruction.

Case Study V – Leonardo

1. Overview & Researcher's Participation

Leonardo serves as the Technology Director and Distance Learning Coordinator at an English speaking international university in Africa. Leonardo has been in that role for about three years. Leonardo has also been assisting faculty members who are involved with online teaching at the university.

While Leonardo's role is mostly technical, he interacts quite a bit with instructors and thus has taken an expanded view with regards to the online program at the university. Leonardo offers that Internet-Based instruction must be based on three key ingredients. These, according to Leonardo are: 1) an adequate technological platform to perform the delivery of instruction, 2) understanding of learner goals and needs, and 3) a curriculum that ensures high quality instruction and delivery.

I connected with Leonardo through personal efforts related to online instruction. Moreover, given Leonardo's role at the university and his own activities in regards to training and instruction, participation in the study provided an opportunity to test certain facets of the online program at the university.

I met face to face with Leonardo once during the course the study. During the study period, I assisted Leonardo with various online programs slated for rolling out at the university. Leonardo has also been evaluating the use of Moodle as the main IMS for the university, which will allow either synchronous or asynchronous instruction.

The IMS tools that we evaluated during the time of the study were Centra and Moodle. Like Horizon Wimba, Centra allows annotations during online presentation. This feature, noted Leonardo, could be very useful in the university context of use, given that learners tend to have problems grasping certain concepts live because of language difficulties.

Leonardo and I agreed that Moodle, the other tool that we tested, will be most useful for course management, giving limitations with the virtual presentation aspect of the tool. Leonardo and I used e-mail and the instant message applications, Tapped-in and Yahoo Messenger to address instruction design and technical issues that came up during the study.

2. The Distance Learning Context

Distance Learning at the University

Since August 2005, the university has been experimenting with distance learning activities. The thrust of the distance efforts at the university is to offer alternative means for international based volunteers to assist the school via teaching online. Leonardo shares that the university has made significant strides since the launch of this particular initiative and is now looking to move beyond the experimental orientation of its distance program while at the same time to expand its slate of offerings.

The university has started to evaluate an alternative course delivery approach in which live synchronous online interactions are minimized and time-delayed interactions (asynchronous) are emphasized. The school has recently enrolled students in online Computer Sciences and Project Management.

Learner

Distance learning at the university is geared first and foremost towards the students of the school. Faculty members of the school which include expatriate volunteers, locally trained instructors as well as online volunteers utilize the distance learning platform of the school to stay abreast of a variety of learning opportunities that are available through the university.

Instruction Approach

Leonardo shared that he does not subscribe to a particular tool or method for teaching online but thinks that a coordinated approach tends to work best. The university, however, said Leonardo uses a traditional instruction approach for its face to face courses as the cultural context is oriented towards a lecture-based method of instruction. The students of the school have however been pushing for greater experimentation with regards to course delivery and the general way in which they are taught.

As a result of the push by students for more innovation and greater diversity in the online population for the university, a mixed approach stance is taken for the school's online program. The main view, however, is that instruction must be student-centric and efforts need to be exerted to engage the learner and push them more toward critical thinking skills versus regurgitation of facts.

Internet-Based Instructional Tools

Moodle, Centra, Microsoft Network Messenger (MSN Messenger) and Yahoo Groups are the main tools provided for the delivery of Internet-Based

instruction at the university. Centra was used for some online live presentation of courses and Moodle is being considered as the tool for course management at the university. Leonardo said that due to challenges with regards to the speed of which the Internet is received at the university, MSN and Yahoo Groups are used as back up tools for online presentation and course management, respectively.

Other ancillary tools that are used by the university for the purpose of online instruction include: Tapped-in, Wikipedia for collaboration and Google. Leonardo stressed that the university is always on the look-out for free or relatively free tools to use in their distance learning program as the school has extremely limited resources.

3. Uses & Perceptions

Learner Skills

The learners who participate in the university's Distance Learning program are very comfortable with technology. It is thus assumed that learners can handle pretty much all user-related issues that they encounter through participating in any type of online instruction at the university. Focus has been placed therefore on ensuring that tools such as Centra and Moodle work as anticipated.

> *"Students become frustrated and disheartened when the technology doesn't fulfill its purpose...The flow of instruction is interrupted when communication systems break down between the instructor and the students. So then it becomes quite difficult to reinforce learning in that environment, as students feel that they are wandering aimlessly and not achieving their goals."*

Instruction Design

The university does not subscribe to a single approach with regards to online instruction, said Leonardo. Leonardo noted that there is a wide variety of courses that are offered online, ranging from Computer Programming, Project Management and basic science. As a result, said Leonardo, instructors in the online program are offered wide latitude with regards to a particular instruction approach to use.

> *"First let me say that my experience with Instruction Design frameworks is limited. However, most frameworks that I have seen are not very useful to me or the university because they are based upon on the teacher-directed model; and I guess to some degree all systems are. Now, I have heard that Blackboard may allow for more freedom of instructional design and input but I have yet to experience it.*

Tools & Technical Strategy

As the Distance Learning Coordinator and Technical Director of the university, Leonardo makes a concerted effort to ensure that the tools that are offered fit with the overall instructional strategy and orientation of the school. However because the school relies a lot on grant and philanthropy, Leonardo said that he finds himself trying to make do with the tools that are available but he would have preferred using a synchronous instruction management system, like Centra.

> *"I have used Centra, MSN and Yahoo Groups. I really liked Centra because it left me with the feeling that the classroom element was not lost. All of the tools that an instructor needed for conducting a lesson were present. Their presentation systems were excellent and the voice and video systems seemed to be more than adequate. The only problem that I found with Centra was the cost. It's unaffordable for small schools. MSN and Yahoo provided adequate voice services but they lacked Instruction Tools like a presentation board, etc. ... Personally, I found it difficult using MSN or Yahoo with Voice for instructional purposes because of the lack of presentation tools, particularly the lack of ability to integrate PowerPoint presentations or other documents. It was very annoying to*

have to switch back and forth between applications. So far as I know, none of the systems that I have used so far have had any ability to do assessment incorporated in them. This would be a nice feature.
Now, to increase the success of students in our online courses, I made the recommendation that at least initially we develop a hybrid delivery system whereby the online course content is supplemented by face-to-face interactions in a classroom. I also propose that each course have a content expert who is abroad and a local facilitator to handle administration, oversee discussion, ensure that work is being completed, assist in evaluation, etc."

Andragogy

Leonardo does not share a strong view with regards to Andragogy or the Andragogical propositions concerning adult education. Leonardo is more comfortable with the notion of student-centered teaching and thus is encouraged by efforts to bring the learner more into the planning and the delivery of instruction.

"My desire is to move more towards a more student-centered instruction model. By this I mean the use of approaches, methods or tools where learners are allowed the opportunity to make discoveries on their own and the opportunity to share those discoveries with others.
Second, I would like to develop and participate in more avant-garde approaches concerning assessment. The current tools and frameworks that I have been using are not as realistic as I would like and they are too appropriate for learner-centered experiences.

Net.AI Framework

According to Leonardo, the Net.AI balances the two aspects of online instruction that he strongly advocates. These are the orientation towards learner-centered instruction, instructional development and use of appropriate technical tools in the delivery of Internet-based instruction. The guidance provided towards ensuring a strong technical underpinning for Internet-Based instruction is

very useful to instructors, administrators, and technical support personnel according to Leonardo.

> *"Student-centered model, in my mind, is more useful from an instructional point of view. The more engaged that students become in the learning process, the more ownership the students will feel towards the learning process. In theory, the Net.AI framework clearly provides more opportunity for independent learning (student-centered learning) and personal development. As is always true, implementation will be different across organizations and groups.*
> *The goal in my mind is to make virtual reality as real as possible and the more either of these systems can achieve this goal is the determining factor for me. If I understand things correctly, the Net.AI framework can provide a more media-rich environment through asynchronous delivery. This would be my choice especially if it's supported by a strong online community."*

Online Learning Community & Lifelong Learning

Online Learning Community and Lifelong Learning are very important to the university, shares Leonardo. Most of our faculty members are not co-located with their learners and staff of the school and thus, said Leonardo, there are communications difficulties that come up from time to time.

Leonardo said that ensuring that the university distance learning program remains viable in the long term is very important to him. Leonardo said that he is very focused on making tools available to the students and faculty of the university that will allow online community building. Leonardo said that an approach like the Net.AI that specifically forces him to look at the factors that influence and strengthen the community aspect of the distance learning program is very useful to him.

> *"I believe that probably the greatest benefit of the Net.AI framework is in developing communities around specific projects and allowing students to manage their own learning and teach one another. This is the true test of*

a life-long learning community, whether or not it can continue to replenish and revitalize itself."

4. Benefits & Gains

Key benefits according to Leonardo, to using the Net.AI framework is the focus on community building. The framework, said Leonardo, provides a wider view to better examine the strengths and weaknesses of the distance learning offering, available at the university. Moreover, noted Leonardo the exposure that he has gained to the theoretical aspect of Instruction Design and Internet-Based learning, by participating in the study, has been an eye-opening experience.

> *"Creating online learning communities, breaking down classroom walls, letting students explore their interests and desires are great forms of education. I believe that this framework offers the greatest opportunity for individual and corporate involvement in the learning process.*
> *I personally happened to relish the idea of synchronous learning because it provides a personal touch and intimate interface with other classmates in a simultaneous experience. This is something that a book cannot communicate and it counts for a lot in terms of the kind of experience that students have in terms of learning experiences"*

5. Challenges & Opportunities

A key challenge said Leonardo, is securing adequate instructional systems that will support all of the many constituencies of the university's Distance Learning program. Lack of fluency in English presents difficulties, as well, said Leonardo as students and faculty members at the university are for the most part not at the fluency level to be totally independent when taking online courses.

> *"People in our program are willing to try alternative modes and methods of delivering online instruction. Personally I prefer live and asynchronous learning management systems because they allow greater engagement from the part of the course participants. But technological failures keep the enthusiasm down quite a bit for me. Now, one must remember that the*

technology is part of the classroom experience and when it breaks down, the instructional experience breaks down. So there is a need to have support people in place to resolve problems quickly and painlessly. However in an environment such as ours, where money is a key issue, our system often will from time to time breakdown and even malfunction. When that occurs, there is breakdown in communication between our instructors and our students. This leads to a point where students feel that they are wandering aimlessly and not achieving their goals."

6. Future Outlook

Leonardo is very interested in expanding the Distance Learning at the university and sees that such a move is a key strategic effort for the program. The school is currently evaluating a couple of possible partnership opportunities with schools in the US and there is the likelihood that one of these two schools will agree to work with the university as a full-fledged collaborating partner.

"One of key problems is lack of resources in terms of money, staff, educational materials or what have you. So collaborating with a US-based school would be a big boost in many ways. I don't know what our chances are in securing the partner but we are getting ourselves ready in case this would come true. I can see our program double and even triple in size if we get outside assistance as everyone is ready for more Internet-based learning opportunities. In place like Africa which is often in the news for the wrong reasons, Distance Learning represents a key means for providing good learning opportunities to our students.
So I am very optimistic in regards to the future of the Distance Learning program at the university. This plan to work more directly with the Net.AI framework and similar tools clearly can get us prepared for more Internet-Based instruction."

7. Conclusion

The university where Leonardo is working presently operates programs in Computer Science and Information Technology, and Continuing Education. The university is multicultural, multi-racial, and multi-disciplinary in orientation. The university has been working hard to maintain international ties.

Leonardo said that the university can and should leverage the strengths that it has for the purpose of online instruction. Leonardo noted that the university has a lot to offer to US or Canadian schools that are looking for international connections. Leonardo noted that before such a step can actually happen the university would need to upgrade its technical infrastructure. Thus, a steering group at the university has been evaluating the possibility of acquiring DirecWay satellite equipment and services, and a new telephone system.

The university hopes the boost in its technical infrastructure will help in providing more stability and capacity in its delivery of online instruction. As the Distance Learning Coordinator and Technical Director at the university, Leonardo wears a number of hats but is quite excited about the opportunities ahead for the Distance Learning program. Leonardo believes that the Net.AI framework can assist both himself and the school in reaching the goals and objectives that have been laid out for the program and welcomes the chance to work more directly with it as an instructor.

Leonardo's background and personal focus in online instruction has provided insights to the Andragogy and Online Learning study. Moreover, Leonardo's technical knowledge helps bring to light the support issues which tend to be extremely relevant in an Online and Internet-Based instruction context.

> *"The instructional approach that makes the most sense for a particular school or organization may just depend on the particular needs and objectives of the organization or group that is using them. Now, in our case here at the university, there is quite a bit of coordination which needs to take place so that we fulfill the goals and objectives of the Distance Learning program. But the tools we use are a part of the way we convey learning to students so we must make sure that they work as needed. We also place a huge value in instruction at the university. And*

given that more involved in the technical aspect of the Distance Learning, I try to keep in mind that the tools and applications that we use in the program are not the instruction.
So where we go from here depends a lot on whether we can continue to improve upon what we have been doing. I believe that a key aspect to improving our efforts is to look at best practices and what other people who are successful with the online medium are doing.
I like the Net.AI framework because of its relevancy. By this, I mean that it incorporates the key issues that part of real life experiences that we in the field are dealing. So I am very interested in incorporating some of the approaches suggested in our program here at the university."

IMPACT OF THE NET.AI FRAMEWORK

Questionnaire Responses

The table below presents Leonardo's responses to post-test questionnaire.

Table 10 Leonardo's Responses re. The Potential Impact of the Net.AI Framework

	SCORE[1]		
Evaluation Criteria	**LOW**	**MID**	**HIGH**
Communications Patterns – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	
Learning Groups / Cells – Intrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	
Collaborative Behaviors – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆
Message / Content Design – Extrinsic	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆
Individual System Use – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆	
Technical Support Structure – In-Ex[2]	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆ ◆ ◆	◆ ◆ ◆

[1]Five diamonds represent the maximum score for each scoring range of: Low, Mid, and High.
[2] In-Ex is an abbreviation for Intrinsic and Extrinsic.

As noted by Leonardo, language barriers remain in regards to non-English speakers who wish to take full advantage of online instruction. Nonetheless, the data from the above table show that the Net.AI framework had the most relevant salient impact in regards to the facilitators (extrinsic) and the process (in-ex) aspects of Leonardo's efforts in adult-focused online instruction.

CHAPTER V

Case Study Summaries

Overview

This chapter presents the key findings of the Andragogy and Online Learning study. It begins by presenting a brief summary of demographic information for each of the five participants in the study. The next item presented is a summary of the study data collected to allow for quick comparisons. The chapter ends with a concluding section, which offers preliminary reactions from the part of the researcher in regards to the data gathered for the study.

Participant's Demographic Information

The table below presents demographic summaries of the participants.

Table 11 Demographic Summary of Participants

Item	**Betsy**	**Heather**	**Joshua**	**Jacqueline**	**Leonardo**
Years Involved in Teaching	10+	20+	25+	2	5+
Years Online Instruction	6	4	15	2	3
Organization Affiliation	Large US University	Adult Center	Small Liberal Arts College	None	Foreign University
Adult Instructor	Yes	Yes	Yes	Yes	Yes
Proficiency with Computing Tech	Medium	Low to Medium	Low to Medium	Expert	Expert
Proficiency with available IMS tool	High	Low	Medium	Low	High

As noted in the previous table, participants' skills with regards to computing technology, software applications, adult education, and online instruction methods were not uniform. One participant had significant experience with Andragogy methods and principles. Another participant had very little exposure with Andragogy as an instruction approach. Participants also had different learning and environmental contexts for their particular implementations of Internet-Based Adult Instruction.

The comfort level for the participants in regards to their specific online learning instructional tools ranges from beginner to expert. Some participants came from traditional universities and colleges. Two participants did not have a university or college setting. However, these two participants were involved directly in adult education. One of those two participants was self-managed. The other was connected with a community-based educational center.

Summarized View of the Data Collected

This section lists the salient aspects of the case studies and a summarized view of the results from the open-ended interviews and the post-test questionnaires completed. The information that was gathered is listed along the three key thematic dimensions of the study. These are: intrinsic (learners), extrinsic (facilitators), and process/technical (intrinsic-extrinsic or In/Ex).

The results obtained from the post-test questionnaires are included in this section. As noted, in the methodology section, the post-test questionnaire was developed to gauge participant's reaction to the Net.AI within the context of use

of evaluation of the primary IMS and other instructional tools that are available for the participants.

Intrinsic, Extrinsic & In-Ex Data Summarization

Intrinsic Items

The table below lists key highlights from the answers provided by participants that are related to the *intrinsic-learner* perspective, as advanced by the Net.AI framework.

Table 12 Summary of Thematic Responses – Intrinsic

Theme	**Betsy**	**Heather**	**Joshua**	**Jacqueline**	**Leonardo**
The Adult Learner	ISD needed as learner is busy and focused on problem solving	Emphasizes the need to provide guidance to achieve goals & objectives	In agreement with the fact that focus on motivational factors are present	Focus on the orientation of the learner and practical uses	Can assist all those interested in learner-centered instruction
Online Learning (OL)	Helps with big picture aspect	Common language & vocabulary	Helps show the relevant connections	Shows importance of OL as a means to maintain ties and connection	Presents needs that OL is to be part of online curriculum as much as possible

Intrinsic criteria were used to gain analytical insights from each of the participants in the study, via the post-questionnaire. A summarized view of the data obtained from this effort is listed in the figure below.

Figure 15 Summary of Evaluative Responses – Intrinsic

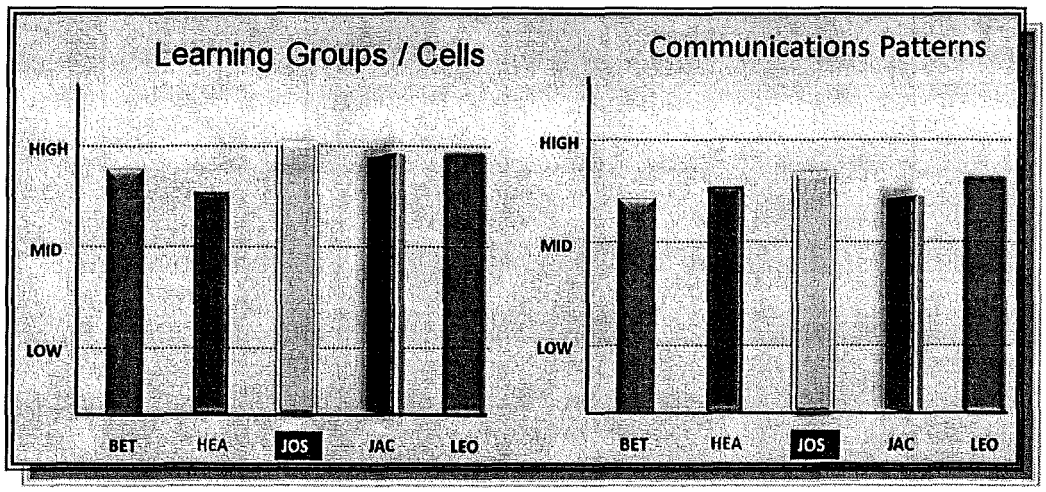


Table 5.2 and Figure 5.1 above, showed that as a group, the participants in the study connected well with the intrinsic concept. The terms learning groups/cells that were used as barometers for intrinsic engagement showed great promise as well. Overall, the results from the open-ended interviews and the post-test questionnaire showed that the intrinsic factors of the Net.AI framework were held at the level of mid to high by the participants in the study.

Extrinsic Items

The table below lists key highlights from the answers that were provided by the participants. These relate specifically to the *extrinsic-facilitator* perspective as advanced by the Net.AI framework.

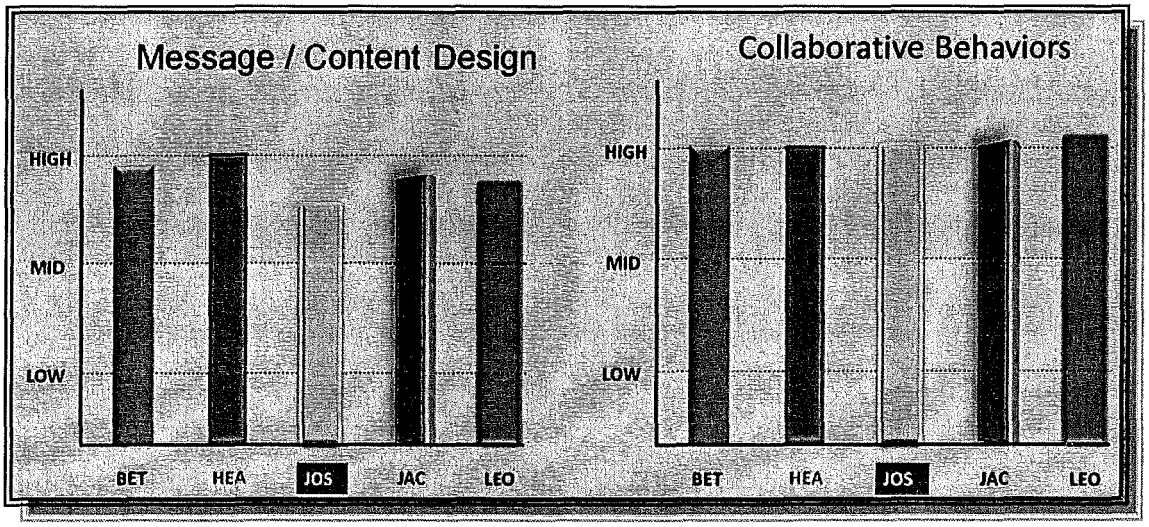
Table 13 Summary of Thematic Responses – Extrinsic

Theme	**Betsy**	**Heather**	**Leonardo**	**Jacqueline**	**Joshua**
Distance Education	Outreach to unreached learners, particularly professionals	Offers great flexibility for both learners and instructors, most notably self-pacing	Should be looked as a way to assist less-fortunate	Extremely important and relevant in a global sense	Great way to reach others and to share all sort of knowledge

Theme	Betsy	Heather	Leonardo	Jacqueline	Joshua
Instruction Paradigm As Related To Adult Instruction	Andragogy & Self-pacing of learning materials	Learner-centered instruction	Learner-centered instruction	Learner-centered instruction	Focus on learner engagement

Extrinsic criteria were used to gain analytical insights from each of the participant in the study, via the post-questionnaire. A summarized view of the data obtained from this effort is listed in the figure below.

Figure 16 Summary of Evaluative Responses – Extrinsic



The preceding table and figure showed that as a group, the participants connected well with the main thrust of the extrinsic view of the Net.AI. The results also reveal that the participants saw the Net.AI framework had a high level of potential impact on the key extrinsic factors, such as instruction design, goals and objectives, which were evaluated in the study.

In-Ex Items

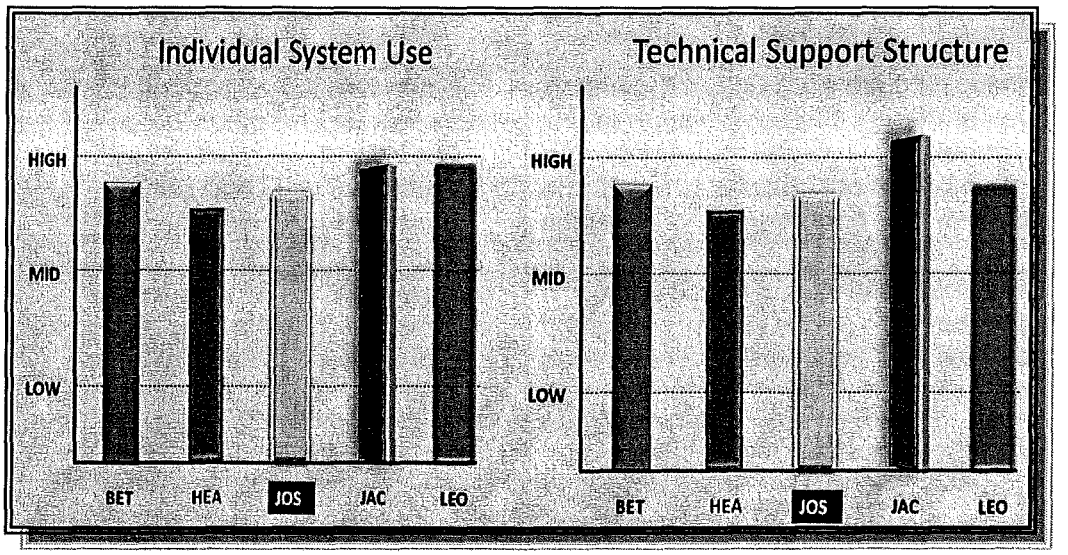
The table below lists key highlights from the answers provided by participants that relate the *intrinsic-extrinsic-process* perspective as advanced by the Net.AI framework.

Table 14 Summary of Thematic Responses – Intrinsic-Extrinsic

Theme	**Betsy**	**Heather**	**Joshua**	**Jacqueline**	**Leonardo**
Lifelong Learning	Nice idea but needs motivation on the part of the learner	Focus is appropriate as tools and technologies are always changing	Good to see long term aspect taken into consideration	Supportive of orientation to lifelong learning	Relevant for instructors rather than learners in the program
Online Learning	Support to very busy or on- the-field professionals critical	The terms Virtual self and pervasive make the point quite clear	Provide flexibility to both learners and facilitator	Focus on tools and applications is very useful	A key way of reaching learners in the third-world countries.

In-Ex criteria were used to gain analytical insights from each of the participants in the study, via the post-questionnaire. A summarized view of the data obtained from this effort is listed in the figure below.

Figure 17 Summary of Evaluative Responses – Intrinsic-Extrinsic



In-Ex or process factors include the tools, process, technical and administrative items that are used to support online instruction. As listed in table 5.4 and figure 5.3 above, participants saw that the Net.AI framework offers the opportunity to aid in many aspects. The process factors that are involved in their particular online instruction context had the greatest resonance with the participants.

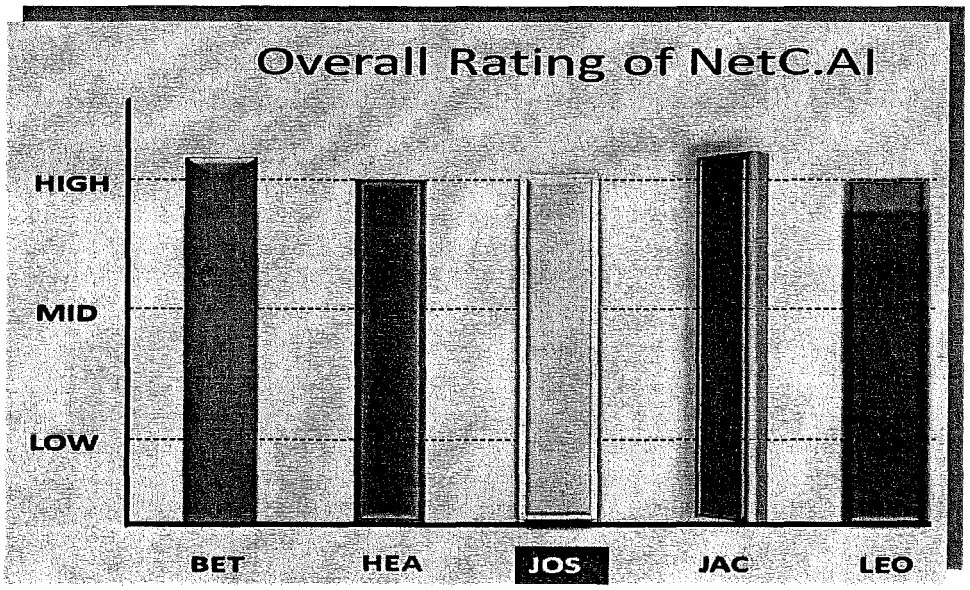
Overall Summary of Use & Impact of Net.AI

The table and figure that follow list the overall summary points offered by participants in regards to the benefits and opportunities offered by the Net.AI framework. The table lists the strengths as well as opportunities that were identified by the participants through their interactions with the framework, while the figure presents the overall ranking provided for Net.AI.

Table 15 Summary of Thematic Responses – Overall Net.AI

Theme	Betsy	Heather	Joshua	Jacqueline	Leonardo
Net.AI Plusses	Balanced, comprehensive and relevant to on the field experiences	Learner-focused and balanced; provides common vocabulary	Relevant to just about any course or training context	Covers the content delivery using the tri-approach	Touches on the key tenets of online instruction
Net.AI Minuses	Explicit note with regards to Admin factors related to online instruction	A little more emphasis on need to go slow and take baby steps	Not yet a complete believer in pure online instruction	Less jargon to allow wider use	Integration with existing technical context

Figure 18 Overall Ranking of the Net.AI Framework by Participants



As noted from the preceding table and figure, participants offered that the Net.AI framework was very useful and informative to their endeavors. They noted that, the tri-focus aspect of the framework offers a balanced perspective. This, they said, has proved to be extremely useful, given the criticality involved in getting all of the parts of an online learning environment to work together as one.

CHAPTER V CONCLUSION

The participants in the study served in the capacity of instructor, learner, and technical support in regards to adult-oriented distance education. Some of the participants fulfill multiple instruction roles in their Distance Learning programs, such as instructor/learner, technical support/administrator, learner/technical support.

One participant was actually involved in all of the three key roles in online instruction, which are: instructor, learner, and technical support. Thus the feedback, reactions, and comments ascertained related to the central themes of the study were based on a wide variety of perspectives. These items will be further explored and evaluated in Chapter 7 of the dissertation, Findings & Conclusion.

CHAPTER VI

RESEARCHER'S REFLECTIONS

Overview

This chapter presents five key reflections I made through active participation in the Andragogy and Online Learning study.

These are:

1. Andragogy vs. Pedagogy,
2. Learner's Motivation,
3. Synchronous (Live) Vs. Asynchronous (Time-Delayed) Instruction,
4. The Usability or Un-usability of Instructional Tools, and
5. Online Collaborations.

As noted in the methodology section, a major aspect of the Participation Action Research methodology is reflection. This allows the opportunity for the researcher to interact in a reflective way to observations, decisions, or alterations that came as a result of active engagement in the study.

As I went through the study, certain items had a major impact on my thinking. Thus I made mental notes and personal reactions on the impact that field-level activities had on my overall perspectives of the central items being investigated through the study. The reflections made in regards to the five items noted are provided in the following sections of this chapter.

Andragogy vs. Pedagogy

When I began the Internet-Based Andragogy study, I was quite intrigued with the notion of Andragogy. Perhaps it was the term itself that appealed to me. The first pass that I took at the literature review for the study, reinforced my appreciation for Andragogy as an instruction approach. The principles that are advocated by Malcolm Knowles (1980) concerning adult instruction resonated with me and therefore served as a backdrop for me as I evaluated the field a little deeper.

Knowles, of course, is not the first author or researcher to argue the point that from an instructional standpoint adult learners had different needs and orientations than younger learners. This fact then made it necessary for the development or use of alternative instruction methods and approaches to reach adult learners. As noted in the literature review section, Thorndike and others had made similar arguments back in the 1920's and 1930's.

More recent viewpoints on the matter of adult instruction have focused instead on leaner centered frameworks rather than a perspective like Knowles' that is based on human developmental attributes. However, it appears that Knowles has brought into the limelight issues that were of prime concern to all those who are involved in the field of instruction.

As I looked deeper into the literature and delved into the etymology of both the terms Andragogy and Pedagogy, I became a little less certain about what Andragogy stood for in academic circles. This is due to the fact that there has been --and still exists-- a vigorous debate about the use of the term

amongst theorists and researchers. Many in the field have stated strongly that the basis for acceptance of Andragogy as an instruction system or approach is not clear.

Some leaders in the theory aspect of the instruction field have declared support for Knowles' approach and presented that Andragogy should be given proper consideration. This view also offered that Andragogy should be accepted as a full-fledged model with equal parity to Pedagogy. Others have argued that Andragogy should be looked at mainly as a set of instruction principles, which are useful in some cases when teaching adults. A third group did not like the term or the use of the word Andragogy. This group offered that because there was confusion with regards to its meaning, since the term Andragogy can be traced to multiple Latin roots, the term should not be used at all.

In addition to the issue of imprecision with the term Andragogy, the literature reviewed did not offer a precise definition of the term adult. This is due to the fact that legal, social, cultural, and even ethical bases or arguments have been used to properly connect the use of the term in a given community setting.

Thus, I went into the field research aspect of the study with some level of consternation concerning how to best articulate and present the central themes of my study. One idea that came to me then was to drop the term Andragogy from the study altogether.

However, I resisted doing this as removing all appearances of the term Andragogy from the study would have destroyed the link with the original impetus for the work. I decided therefore to wait until I received feedback from field

participants to get a better sense whether the use of the term Andragogy was inappropriate in the study.

The participants in the study, all of whom were US citizens, did not seem to have any issues with the term adult. This perhaps was due to the fact that they were all working in some aspects of Adult Education. Thus it appears that the participants had formed an informal definition in their minds concerning what the term adult meant, which in their minds need not be made explicit. Nonetheless, the target learner groups for the participants in the study were all considered adults, whether the criterion used was, legal, social, or cultural.

As anticipated, there was some confusion in the field in regards to the use of the term Andragogy. One participant, however, was very familiar with Malcolm Knowles and Andragogical principles. Another participant had some reservation with regards to both the use of the term and its implication. The other participants were not familiar with the term Andragogy and asked me a number of times to define it for them. Two participants had difficulty pronouncing the term Andragogy and thus totally refrained from using it, even when I asked a specific question about it.

As a result of the controversies found in the literature regarding the term Andragogy and the discoveries made in the field research of the study, I made the decision to use the phrase Adult Instruction in the title of the framework. I tested the phrase Internet-Based Adult Instruction with most of the participants and there was wide support and resonance with the revisions made for the title of the framework.

I also decided to keep the title of the study as Andragogy and Online Learning. I did this to maintain a link with the original motivation for the study and as to show my theoretical leaning or bias, as I fall into the support camp for both the use of the term Andragogy and its acceptance as a viable method for teaching adults.

Nonetheless, given the orientation to be inclusive in regard to the use of the framework, it seems to make greater sense to use Adult Instruction instead of the more hotly-contested term of Andragogy. Thus I renamed the framework Internet-Based Adult Instruction or Net.AI.

Learner's Motivation

I became somewhat intrigued by the term motivation because it was mentioned very often in my conversations with both potential and actual participants in the study. Those who eventually agreed to participate in the study were all instructors, formally or informally. To my surprise, they all spoke of motivation only in regard to learners' motivation. They also shared in great detail what they are doing to help their learners stay motivated through the duration of their studies.

This field discovery, concerning motivation, was not what I was expecting. This is because one of the key aspects noted in the literature and shown in previous studies that differentiates Adult Education is motivation, initiative, or self-directedness on the part of the learner.

Previous research has offered or concluded that adult learners unlike the typical K-12 (or K-16) students are voluntary participants in their education. It is

noted that since the learner has taken the voluntary step to enhance his or her knowledge/skills by enrolling in an adult education program, this action therefore shows that there is *a priori* motivation.

Upon reflection, it came to me that the issue that was being expressed by the participants in regards to learners' motivation was a little different than what I was interpreting. Thus rather than dealing with *a priori* motivation, the point being made was more closely related to maintaining or keeping up the motivation that the learners come with when they begin participating in the online instruction.

It was also clear to me that the participants in the study, all of whom are instructors, were dealing with a very complex set of challenges, given the Distance Learning aspect of their instructional program. More specifically, they have the delicate task of trying to maintain learners' interest, attention, focus, momentum etc., despite geographic isolation.

The lack of proximity with the learners can also be very problematic when personal issues arise where learners need to communicate private or delicate matters with their instructors. For example, perhaps it might be a little harder for the adult learner to communicate personal or private issues online and via the regular non face-to-face means such as e-mail, phone conversations, etc.

In thinking about the issue of motivation in a Internet-Based instruction context, I see that technologies may assist there as well. For example, an alternative means or approach of communicating with the instructor for a given course that is less impersonal can perhaps be considered. For example, a video call system or voice messaging set-up may offer the personal touch and privacy

that students may need during a period of personal difficulty to communicate with their instructors or the administrative staff of their distance learning program.

Students can also be provided a way to communicate with instructors for emergencies that is different than the normal approach used for instruction related matters. This alternative communications method can thus help students see that a method that is akin to walking to an instructor's office is offered as a way to assist them in the event of personal emergencies or crises.

Helping learners stay motivated is, of course, a key aspect of all teaching programs or contexts. However, in an Adult-oriented online instructional setting, there appears to be a number of issues at play that may affect motivation on the part of the learner. So, while Internet-Based instructors must take the necessary steps to plan, develop, and roll-out their courses in a manner that will keep up with learner engagement, administrators and even technical support personnel can and should be prepared to assist on this effort as well.

It seems then that all of the key players for an online program need to work together to lay out plans that help students deal with personal crises and emergencies, which are very likely to crop up during the time an online course is in session. Therefore, plans should be in place *a priori* to assist students when they face personal challenges so they won't have to drop out of their online studies.

Synchronous Vs. Asynchronous Instructional Tools

Terms that one often hears in an online learning context are Synchronous and Asynchronous instruction tools. These two terms are actually used to denote

the communicative capability of tools used in instruction as well as the manner a particular instructional content is planned and designed.

Synchronous. The term synchronous means two-way live communications as in the case of phone conversations. From a learning and instructional standpoint, the term synchronous is associated with learner engagement. Tools that offer the capability to communicate "two ways & live" i.e., both sender and receiver can communicate with each other directly are said to be synchronous. A key advantage to synchronous tools/instructions is that they offer the possibility for interactions such as, chat discussions and "live" interactions.

Asynchronous. The term asynchronous is used to describe applications, tools, and communications that occur independently from and non-concurrently with input from its intended audience. Radio or television broadcasts are typical examples of asynchronous communications. From the online learning standpoint, the term asynchronous is used in situations where the learner or facilitator cannot communicate directly with each other.

For instance, an asynchronous instruction activity might be a simple posting to which other learners cannot and need not make a reply. From a tool standpoint, asynchronous means that a learner can view or hear a presentation without the capability to respond to the post in a concurrent or "live" fashion.

Asynchronous Two-Way

While asynchronous communications is often associated as a one-way non interactive broadcast only method, this does not have to be the case. Two-Way asynchronous is also possible thus allowing for some level of interaction

and interactivity. For example, while e-mail is an asynchronous communications tool, it is an interactive tool for the most part and thus is Asynchronous Two-way. This is because both parties in a particular e-mail communications can communicate with each other, although in a "non-synchronized" way as the exchange does not often occur "live". Alternatively, a voice broadcast to which listeners can reply via text messages would also be considered to be Asynchronous Two-Way, since interactivity and exchanges are possible.

An instructor who is engaged in voice conference or a chat session with a learner is said to be engaged in a synchronous communications. This is because both parties can communicate with each other instantaneously. However, a group e-mail to which the receiver cannot reply would not be considered synchronous. Blogs (Short for Web logs), Podcasts, Wikis, and multimedia (MM) items such as Audio/video streams, are other examples of Internet-Based asynchronous communications that have instructional capabilities.

A few perspectives came up during the course of the study in regards to the synchronous or asynchronous aspects of online learning and Internet-Based instruction. However, I must admit that I did not give too much thought to the issues as I went into the study. This perhaps is due the fact that I am personally comfortable with either delivery approach.

In my interactions with the participants in the study, I have come to see that there are several interesting aspects to the issue Asynchronous or Synchronous in an online instruction context.

These are:

1. The strongest aspect of Asynchronous Two-Way online use for the purpose of instruction is the posting. Of the many uses of the Internet-Based instructional applications, asynchronous communications, where a learner can both post and offer feedback or comments to other postings (including their own) is by far the most used. Perhaps this is due to the fact that in asynchronous posting, the need for one time and location is avoided, as participants can log on when they choose. Asynchronous posting also offers the learner the opportunity to think about a discussion, and therefore to prepare a proper response. One, however, must be aware of the problem of information overload and prepare your material and students accordingly. The asynchronous posting approach is a necessary active learning environment – but it is not for everyone, and it can be a challenge to learners and facilitators.
2. Synchronous "Live" chats i.e., Instant Messaging, can have unintended effects. This is due to the fact that what happens sometimes in live synchronous chats is that participation degenerates into one-line contributions, as there is little time to think about a response before replying to someone else's post. In addition, those who are the fastest typists may become the dominant "voices" in synchronous chats. Contributions may end up out of synch thus making the discussion difficult to follow. The issue of finding a good time and location for everyone in the

class is also crucial. Thus time and care should be used in regards to synchronous chats.

3. A Basic IMS i.e., no synchronous MM capabilities offers great flexibility. While audio or video streaming or conferencing offer interesting capabilities, they can be problematic. The main reason for this is that there is a requirement on the student's part to have added video or audio communications to transmit back to the instructor and for playback. Some online distance learning programs have tried to handle this by grouping the students into central locations, like a community college or centers, and that already has the capability for synchronous communications. This approach, it seems, goes against the whole orientation on online learning, since it does not offer much flexibility to the learner in regards to his or her scheduling. Moreover, if some students are away and most are in class, unless an effort is made to include those students they will not be as active and participatory as those in the classroom.

Moreover, as the previous discussion showed there is not a single approach that works in all cases in regards to whether a synchronous or asynchronous approach is best. Thus, I found out that the use of a basic IMS that can work both synchronously and asynchronously tends to be very useful in a Internet-Based instruction context.

Usability or Un-usability of Instructional Tools

One of the most interesting aspects about engaging in my Andragogy and Online Learning research was the exposure that I had with the myriad of tools and applications that are available to assist with online instruction. Therefore, through my involvement with the study, I was able to use a number of instruction technology tools. These came by a variety of categories and names.

The main category of tools that I got the chance to use is called Instruction Management System or IMS. However within IMS there are many other tools which are called by various acronyms. From the perspective of this research the other groupings are simply sub-categories of IMS, the broader term used in the study.

The other terms often used to describe instructional tools are Course Management System, CMS; Learning Management System, LMS; Communications Tools, CT; and Knowledge Management Systems, KMS. The applications that I used during all of the phases of the study fell across the board regarding the diverse sub-categories noted for IMS.

These were:

1. **CMS/LMS:** Blackboard, Moodle, WebCT, Instructional Toolkit, Sakai, and Mallard
2. **LMS:** Horizon Wimba, Centra
3. **KMS:** Meridian Anywhere, Lotus, Eloquent, and Oracle ILearning
4. **CT:** Tapped-In, Yahoo-groups, Windows Messenger, E-Mail, and Skype

The tools and applications that I used during the study and research period were marketed as being synchronous, or asynchronous. However, and as it is often noted, *caveat emptor!* This warning is offered because the term synchronous is used to denote full multimedia i.e., audio, video, presentation as well as the more mundane text interaction that is often associated with Instant Messaging and online chat.

While each particular technology promises a myriad of breakthroughs and capabilities, what became clear to me as I used the different tools mentioned, is that on the whole, all of the tools identified are not too different. Moreover, users have voiced the same types of complaints in regards to all of the tools noted. The common cry is that the tools are very hard to use. Thus it is clear that more needs to be done so that usability of a given Internet-Based Instruction tool is not an afterthought.

Another complaint that was widely heard from participants in the study was that there is very little technical support available for the instructional tools that they are using. The participants also noted that whatever help they could find was very confusing. As a result, the participants said that they refrained from using many of the available features of the tools, which were heavily marketed to them in the first place.

Those who are involved in all facets of the online instruction field should remember that users have long memories in regards to technology. For example, Apple still rides the wave of being a user-friendly manufacturer of personal computers. Microsoft on the other hand tends to be viewed as totally

insensitive about user issues. Both sets of reputations are maintained, despite the fact many if not most applications that are currently offered by Microsoft are comparable to those provided by Apple.

The message is clear: Internet-Based IT tools need to be designed in a user-friendly way. The manufacturers, consultants, and other providers involved in the marketing of tools to online programs need to ensure that users, learners, facilitators, tech support staff & administrative personnel have positive reactions to their offerings.

This deficiency in regards to the usability of instruction oriented Internet-Based tools should be looked upon as a matter of survival. I say this because I feel quite certain that the great gains that were made in the past 12 years to bring online learning and Internet-Based instruction to the average adult will eventually come to a screeching halt --if the learning platforms continue to frustrate users. For, it is clear that busy adults do not have the time or the inclination to deal with complex tools and systems to acquire the competence that they are seeking to fulfill a particular endeavor.

Online Learning & Collaborations

There are many aspects to the study, which turned out to be very revealing for me as a researcher and a learner. I have actually been most impressed by the understanding gained with regards to collaboration opportunities that are offered by engaging in online learning.

This view became quite clear to me as I began investigating online learning tools for the participants in the study. This effort led me to delve into the

whole orientation of the Open Source movement, which in theory advocates the free or at least inexpensive use of software applications. I must admit that I was somewhat on the fence and perhaps even a skeptic of the movement. This is due to the fact that I worried about its sustainability.

However, one cannot argue with the results, for the Open Source movement has brought into the mainstream, an application such as Moodle which all can admit is a robust and extremely stable IMS tool. Moodle has also received rave reviews from many quarters. Other major offerings by the movement include applications like, HTML, PHP, MySQL, and JavaScript.

Given the great success of Moodle as an IMS, it has become clear to me that an instruction approach that engages the learner in collaborative way can be extremely fruitful in an Internet-Based environment. While this reflection may not be a breakthrough discovery, my thinking has been altered somewhat. Thus it is my belief now that online learning communications can be leveraged to allow students to learn in non-traditional ways. The advantages of increasing participation in synchronous communications would appear to outweigh the disadvantages.

The future needs of society appear to demand people who have strong communications, thinking, and collaborative skills. Reformers talk about changing the paradigm from school-centered, resource-limited classrooms to a rich educational environment that draws on resources from beyond the school. While technology alone will not bring about these changes, it can be a key lever in

shifting paradigms because of what it offers in terms of expanded educational opportunities, particularly in the case of Internet-Based Instruction and Learning.

IMS technologies can therefore help in preparing both learners and instructors for what is to come. While clearly none of this is automatic, and, as they say, the devil is in the details, I do think that next decade will be an incredibly exciting time to be involved in Internet-Based instruction.

From my vantage point as a researcher, instructor, and learner in the field of Internet-Based instruction, I see that collaborating and sharing in the online environment will help bridge many barriers. In addition, what is being learned through the Open Source movement can help in moving forward in the education field and re-energize a relatively static orientation in instructional methods and approaches.

As it is often said, "The Times They Are A-Changin". Indeed, some amazing things are happening out there regarding Internet-Based instruction. Therefore those who are involved in any aspect of instruction would want to keep an eye out for what is yet to come.

CHAPTER VII

FINDINGS & CONCLUSION

Overview

This chapter presents the findings and conclusion for the Andragogy and Online Learning study. It is composed of seven sections. The first one is this Overview. Next is the Purpose section, which provides the background, objective, motivation as well as the key orientations for the study. This is followed by the Findings section. The last four sections of the document are: Refinement, Implications, Limitations, and Final Remarks, which answer the 'so-what' question for the study.

Purpose

Background & Objective

This study sought to address salient factors that are involved in online-based adult instruction. A framework, Internet-Based Adult Instruction (Net.AI) was developed as part of the study. Net.AI is meant to provide a structure and a systematic guide by which online courses, seminars etc., that are targeted for adults can be developed. Net.AI was also developed to offer a method and approach by which online courses, training or distance learning programs can be examined for enhancement opportunities.

Motivation

As noted in the first chapter of the study, I became interested in the field of Internet-Based instruction through my experience working as a Technology Training Support Partner (TTSP) at the University of Virginia. Moreover, my personal experience teaching Internet-based courses has helped me to understand some of the instruction challenges and opportunities that are related to online instruction. Through these on-the-field endeavors, I was able to gain a ground-level view of some of the many stress points and other issues, which were found to be impeding the orientation to fully utilize the online realm as a major instruction medium.

Cuban (1986) and Daniel (1997), as noted in the literature review of this study, argued that instructors in general have some discomfort with technology. This discomfort, noted the authors, may have quite a bit to do with the many issues encountered in the field with regards to the regular use of technology in instruction. Kearsley (2000), Weller (2002), and Roofe (2004), in taking the issue of instructors' challenges with online education, offered that it is very difficult for an average instructor to succeed online since there are so many uncontrollable factors involved.

Even so, a key challenge that became quite poignant to me as I investigated the field of online instruction was the paucity of relevant instruction design approaches and tools for instructors to use. There was also no systematic guideline available, which could be used for the development of Net-based instruction targeted for adults.

The Net.AI Framework

As discussed in chapter 3 of this document, the basic Net.AI framework, which was developed to provide a toolkit or a prism to guide in adult-oriented online instruction, had two iterations prior to the Andragogy and Online Learning study. Net.AI offers that there is a triad of spheres and these denote the major forces or perspectives of online-based instruction. Moreover within each sphere, there are five instruction tenets or orientations that are to be used for the purpose of instruction design or evaluation of Internet-Based instruction. In addition, Net.AI utilizes the terms Design-Push, Learning-Pull, and Process-Push & Pull to explicitly denote the tug amongst the triad of forces and themes that are involved in Net-centric Instruction.

Findings

The approach taken via the study was to elucidate the key themes and points involved with the examination of the impact of the Net.AI in an adult instruction context, both at the micro, course level and the macro, program/institution level. This twin perspective was done to highlight that online courses do not exist in a vacuum.

Four central questions were thus developed to serve as guides for the study.

These were:

1. What are the barriers, enhancers and the instructional issues that are involved in Internet-Based adult instruction?

2. In what ways does the Net.AI framework facilitate the planning, creation, use, modification and dissemination of instructional contents?
3. What are the salient implications and reactions to the routine use of online features such as e-mail communications, electronic assignment submissions, discussion forums, postings, assessments, and course management?
4. What characteristics or processes related to Internet-Based instruction and use of the Net.AI framework are supportive to the development of an online learning community?

Given the wide variety of backgrounds and contexts of use, participants made reflections regarding the study that showed many viewpoints. All participants were very comfortable with the strategic orientation of the programs with which they were affiliated.

In addition, the participants used a diversity of IMS platforms. Some had access to IMS that that's geared mainly towards course management, such as Moodle. Others had access to an IMS like Horizon Wimba that offered the capability for live presentations. One participant had access to the majority of the Internet-Based tools discussed in this document.

Common Themes

All participants subscribe to a learner-centered stance and thus connected strongly with that aspect of the Net.AI framework. Participants shared that training in the proper use of a given IMS was very important in Internet-Based

instruction. This view, noted the participants, was due to the fact that the online medium requires some degree of technical proficiency and a fair amount of pre-planning in order to carry out useful instruction.

Salient Findings from The Cases & Other Data Gathered

Chapters 4, 5, and 6 presented the cases analyzed for the study. Chapter 5 presented a summarized and comparative view of the case studies. Chapter 6 offered the key reflections made by this researcher during the course of the study. All of the data gathered were meant to gauge the reactions of participants on the use/impact of the Net.AI framework within the context of an online learning effort.

The Andragogy, Pedagogy and Adult Instruction

One participant strongly supported the Andragogical approach offered by Knowles (1980) in regards to adult education. Another participant did not share the enthusiasm that's behind the Andragogy as a method and felt that Constructivism, as it relates to instruction, was more appropriate.

Terms such as self-directedness, learner-centered instruction, and constructivism resonated much better with the participants' pool as a whole than Andragogy or Andragogical principles. This seems to be because there was more familiarity with the use of those terms as well as general unfamiliarity with Andragogy as an instruction approach.

This finding regarding Andragogy correlates with the varied perspectives found in the literature concerning the ambiguity involved with the term Andragogy (Holmes & Abington-Cooper, 2000). As a result of the controversies found in the

literature regarding the term Andragogy and the discoveries made in the field research of the study, I decided to use Adult Instruction in the title of the framework being advanced via the study.

Research Questions

The next sections will take a direct look at the findings that came up in regards to the four central questions raised for the study.

Q1. What are the barriers, enhancers and the instructional issues that are involved in Internet-Based adult instruction?

While most participants were optimistic overall in regards to the online learning, all of them felt that a few instructional aspects of the online program of their institution could be improved. A key complaint that was widely heard very often from participants in the study was that there is very little technical support available for the instructional tools that they are using.

The participants noted also whatever help they could find was very confusing. As a result, the participants said that they refrained from using many of the features of the tools, which were heavily marketed to them in the first place. Unfortunately, the manufacturers of most of the tools noted were not of great help. They often take the position that it is the user lack of technical competence or the poor training they were provided at their institutions, which are causing the perception that their tools are hard to navigate.

While the truth might be somewhere in the middle of these two perspectives provided by the users and manufacturers of Internet-Based tools, the fact remains that many of those tools are under-utilized. Thus, learners are

getting short-changed in the instance where instructors do not have adequate tools with which to teach.

One participant shared:

"There are tremendous opportunities for non-traditional types of dialogues, sub-groupings that are possible through Net-Centric Instruction. I see students arrange their project in groups such as time, interests, work-style etc. to collaborate.

It's all a positive happening. However, technical support remains a big issue. I am having a lot of problems also getting colleagues and administrators to see the big picture, and how everything fits together."

Another participant said:

"There is a necessary and significant start-up time commitment for faculty to learn any new technology as well as to repurpose courses for distance learning. Faculty workload is an issue. There is evidence that redesigning course materials for web-based use can as much as double a faculty's workload...

Students, likewise, are varied in their understanding and use of technology, and some do not own the computer hardware necessary to interface with on-line courses, particularly if these courses add synchronous web-based methodologies. There is concern that current helpdesk assistance would be quickly overloaded and faculty would be in positions of helping "fix" student computer or connection problems."

Lack of technical support and scant administrative backing for online programs were consistently noted. This finding was not a major surprise as the literature reviewed noted that the implementation technology in an instructional environment requires guidance and commitment from top level management or administration to succeed.

Anderson & Dexter (2000), showed that strong leadership, in particular, is essential in order to effectively integrate technology in instruction. Davidson (2003) noted that strong leadership is often needed to smooth out cultural issues

and resource allocation problems which are bound to come up due to the adjustments that are necessary with the introduction of technology.

Thus careful planning needs to be made regarding the ways in which technology is introduced and integrated for online programs and courses. This will help in minimizing the challenges noted and provide the backing necessary for continued experimentation with new systems that help with the delivery of course contents.

Q2. In what ways does the Net.AI framework facilitate the planning, creation, use, modification and dissemination of instructional contents?

Participants strongly supported the idea of using the Net.AI framework as a springboard, and a common point of view at their respective programs. It was also noted that the framework offers a balanced perspective as well as a common language for those who are engaged in Internet-Based Adult Instruction, which they can use with colleagues and peers.

The tri-focus offered by the Net.AI framework also resonated with the participants. Moreover, the participants confirmed that the use of a systematic approach in the design of online courses or programs, as provided by Net.AI, will help tremendously in creating consistency with their efforts.

One participant stated:

> *"Net.AI shows a clear view how everything fits and connect together. Also, the orientation to engage learners in multiple ways is very valid. My students are not constrained by a particular schedule. So, the framework has allowed me to see multiple ways to allow students to participate in on-going learning activities.*

Another participant offered:

"One advantage of the web-delivery format is self-pacing and self-monitoring to a certain extent. However, students who are not aggressive and even self-motivated tend to have a harder time than other students who do not need social support.

The framework correctly shows that there is not one unique way to teach online. Instructors, as noted in the Net.AI, can find alternative ways to communicate the contents for a given course, such as posting, e-mails, instant messaging, and blogging."

A third participant shared:

"Sub-groupings are quite often underutilized in online instruction. I appreciate perspective offered by the framework to show that both formal and informal communications between learner-facilitators and learner-learner communications should be encouraged. I definitely plan to look further at the suggestion of online café and student-initiated study groups for my courses."

Q3. What are the salient implications and reactions to the routine use of online features such as e-mail communications, electronic assignment submissions, discussion forums, postings, assessments, and course management?

Participants noted that e-mail and other communications modes are very critical for their programs. Data from the study also suggests that the informal and anonymous aspect of e-mail allows students the opportunity to be more open and to readily provide feedback on classroom related activities.

One participant said:

"E-mail offers a nice way of linking learners with instructors and experts in universities such as noted scientists, historians, or authors. What is particularly powerful is that learners can connect with each other in a collegial and collaborative way by e-mail."

Another one said:

"With e-mail usage you have an informal style of communications, which somehow has helped in lowering communications barriers between student and faculty. This is a new phenomenon, which perhaps needs to be examined in greater detail."

A third participant said:

"When e-mail is down, and other modes of communications for the program are not working, this is akin to going a course and finding that the building is locked and there is no one to let the students and teacher in their classroom. So we want to ensure that rarely happens, if ever..."

As shown, the spread of Internet-Based communications tools can be of great assistance to faculty and students, who are trying to develop new learning or social opportunities. Moreover, e-mail and chat rooms in particular are cited as the tools which are helping usher in the new roles and the different lines of social ties.

This finding supports the view that e-mail is critical. As noted in the literature review, both Kearsley (2000) and Roffe (2004) said that without a proper e-mail infrastructure Internet-Based instruction is not possible. Therefore, focus, as noted in the Net.AI should be placed on setting up a robust e-mail and other communications systems. This is to allow free communications exchanges between and amongst learners, facilitators, and other relevant entities who are involved in a given online learning course.

Q4. What characteristics or processes related to Internet-Based instruction and use of the Net.AI framework are supportive towards the development of an online learning community?

The participants in the study confirmed that the focus on the online learning community as offered by the framework was appropriate. The data also shows that informal roles between faculty and students tend to occur through the use of the modes of communications made available to students.

One participant shared:

"Online discussions help students realize they are not alone in their educational experience - they become part of an educational cyber-community of learners...I make it a requirement for most of my classes for students to regularly post or reply to post by their classmates. I see also that the students often post beyond the level that I require for the course and often take some of the class discussions in new directions. I usually don't step in unless they get way off-course."

Another participant noted:

"Technology can link teachers to experts in universities such as noted scientists, historians, or authors. What is particularly powerful is teachers connecting with other teachers in affinity groups from anywhere in the world, sharing their problems and their successes."

A third participant said:

"I have now been exposed to the site called "tapped-in" through the study. I see that the site allows students to create connect the manner that we are discussing. I will encourage my students to use these types of classroom extensions for self-learning and instructors can do less lecturing and more research studies."

This finding supports the works of Grabe & Grabe (2001), McInnerney & Roberts (2004), and Roffe (2004) who presented that online communications should be viewed as a critical success factor in an online instruction context. This is because learners tend to lose interest and thus lose motivation, if there is a perception that their input is not being valued by either the instructor or their peers.

A key understanding gained from the effort E/Ag-B online seminar has shown to both Jacqueline and me that one of the ways to engage in life-long learning is to actively seek out new education subjects and different fields of study. In Jacqueline's case her decision to teach Agro-business online allowed her to become more familiar with Instruction Design. In my case, I have learned, some of the important aspects of Agro-business through working with Jacqueline.

Refinement Made to the Net.AI framework

The analysis of the context of use helped to provide more aspects of the Net.AI since this offers important clues concerning what methods will be most effective to use with a given IMS. Internet-Based environments can differ widely as was demonstrated by the many contexts of use of the study. Nonetheless the situated and contextual analysis that was done for the Net.AI provided a view concerning orientations, which can have the greatest benefits in an online instructional environment that's geared for adults. The theoretical approach for the study as noted presented a triad of spheres referred to as Intrinsic, Learning-Pull; Extrinsic, Design-Push; and Intrinsic-Extrinsic, Process-Push & Pull which have influenced the planning as well as the design of Internet-Based Instruction. These again are: Learner, Facilitator, and Process.

As noted, the findings from the study show that both the spheres and instruction tenets have great resonance with practitioners. It was also discovered that the Net.AI framework is useful for a wide variety of learning contexts.

Further consideration of the data from the study as well as the researcher's own reflections revealed that the use of two additional dimensions

will permit a useful extension of the Net.AI framework. These two dimensions, which are detailed the table that follows, are: Theme and Learning Event, both of which are associated with a particular combination of sphere and instruction tenet.

The table below shows the addition of the dimensions of "Theme" and "Learning Event" to the Net.AI framework. Under the "Theme" dimension for example an item such as "so-what" has the corresponding "linkages with jobs" for the Learner Sphere. Likewise the "time online" Theme has "Blogs, Wikis etc. as noted.

The 15 themes listed in the table are to provide additional guidance concerning matters, and orientations which were found to be of prime importance during the study. Thus, the 15 action events that are noted under 'Learning Event' offer suggestions and recommendations for the corresponding items listed under "Theme".

Table 16 –Updated Internet-Based Adult Learning Framework

Sphere	***Instruction Step***	**Theme**	**Orientation of Learning Event**
Learner (Intrinsic)	*A. Relevancy*	The "so what"	Opportunities and linkages with vocational and/or Professional endeavors
	B. Accessibility	Access, support and maintenance of Internet-Based learning platform	Determining whether students are properly equipped or have expected entry behaviors

Sphere	*Instruction Step*	Theme	Orientation of Learning Event
	C. Learning Circles or Learning Cells	Collaborative & hands-on practice	Activities to enable networking, building personal rapport, and possibility for students to critique each other's work - Allow weaker students to learn from stronger ones.
	D. Virtual Self	Time online	Blogs, wikis, podcasting, video-streaming, audio-streaming, electronic appearances, electronic mentoring to assist learners in co-construction and co-creation of new knowledge
	E. Motivation	Self-Direction and self-Fulfillment	Assist and support learning projects leading to desired skills/knowledge
Facilitator (Extrinsic)	*Goal Focused*	The "why" of Internet-Based instruction	Educational standards and the way in which selected instructional approach will help to achieve goals
	Need Analysis	The "what" for Internet-Based instruction	Strategic orientation and the raison d'être for introducing the Internet-Based instructional contents
	Assessment	Outcomes analysis showing appropriateness	Individualized feedback as part of assessment helps to show whether critical learning is taking place. Assessment to focus on the actual learning goals previously defined and documented.
	Units	Instructional Components	Flexible and adaptable learning nuggets tailored for learner, group and context
	Distributed Teaching Design Approach	The "how" for the Internet-Based instruction	Select one or more approaches e.g., Subject Focus, Content/Subject Integration, Context-Based, General Computing Literacy

Sphere	*Instruction Step*	Theme	Orientation of Learning Event
Process (In-Ex)	*A. Media-selection*	Teaching & Learning Toolkit	Selection of Presentation and Delivery methods involve decisions such as: Rich media or Text-based, Asynchronous vs. synchronous communications, broadband vs. narrow-band etc.
	B. Future Orientation	MetaLearning	Future orientation whether professional or vocational via external focus will help students to connect learning with the real world.
	C. Continuous Improvement	Evaluation and benchmarking	Determine gaps between desired level of use of the technology and actual use
	D. Online Learning Community	Scaffolding to encourage learners to think beyond their own environment	Global communities, micro-worlds, electronic field trips, simulation etc. help students broaden their horizons and their thinking.
	E. Pervasiveness	Needs versus wants	Examination of all of the choices available for the learning context of the technology to be employed

All of the participants stressed that busy adult learners need to have the "so-what" questions for instance clearly answered in their minds. This is due to the fact that busy adults tend to lose motivation, as discussed in chapter 6, or Researcher's Reflections section, tends to become a problem during the course of online studies.

Thus to avoid the issue of drop-out, as was raised in the study, the corresponding dimension of Learning Event is meant to offer suggestions and ideas to specifically address the "so what" theme. For example, connections with professional or personal opportunities can be stressed or integrated in the design

of the instruction endeavor to help keep with learners' motivation. Correspondingly, the suggested Learning Event of Blogs and Wikis can be used for the purpose of fulfilling the Time Online (Time on Task) Theme.

The astute facilitator can thus use the items listed on the Learning Event dimension of the Net.AI as guidelines to use when dealing with a particular theme. Local adaptation concerning both the Theme and Learning Event dimensions are also possible. For example, the language issues discovered during the study can be placed as an additional item under the 'Theme' dimension with a corresponding action under the "Learning Event" dimension of the Learner sphere. In this way, a particular localized approach can be used for the issue that was identified.

Implications

The move towards greater utilization of the Internet medium for instructional purposes will continue to apply pressures on organizational systems, procedures and policies that relate to Distance or Internet-Based instruction. Thus, a practical implication of this study is to highlight the needs for thorough reassessment and perhaps a re-calibration of organizational resources. Alternatively, a review of an online program may lead to additional focus, given the realities of a modern instructional landscape that has been permanently altered by a global, open-sourced, inter-connected, and innovation-laden learning environment.

The orientation of the study was to deepen understanding concerning the way in which to instruct adults in an Internet-Based environment. The results

have revealed that there is wide interest in the field of adult education and training. Thus, it is anticipated that future studies will evaluate the conceptual foundation and the Net.AI framework developed via this study. Moreover, an approach that builds upon the discoveries made via this study is likely to be widely received by practitioners.

Limitations Recommendations for Further Research

Integration of Technology

A major aspect of integrating and implementing technology into teaching and learning is determining the added value of technology. Moreover the issue of how to best provide support to the users of technology is a key aspect in introducing technology which will be used as a platform to instruct learners.

In a recent study, which examined the issue of quality technology support, (Dexter, S., Anderson, R. E. & Ronnkvist A., 2002) it was found that "Progressive use of technology is positively correlated with the availability of quality technology support." Therefore there are some key questions that need to be asked concerning the best way to integrate technology in existing contexts.

Cost-Benefits and Strategic Considerations

The debate concerning how to best allocate resources for the purpose of online instruction is a valid one. There are many needs and competing priorities at most educational institutions. These include, for instance: keeping a top-notch teaching faculty, maintaining the school's infrastructure, funding for research, and supporting the staff. Thus, hard choices will always have to be made, concerning the best way to invest scarce educational moneys.

A thorough trade-off analysis can assist in that regard. In examining the financial impacts and social implications of technological decision, via an examination of alternatives, a true sense of the net overall impacts can thus be ascertained. The net results may perhaps be that unproven instructional learning delivery methods, may not be the best approach to take for a given learning

context. There may also be more reliable and relatively inexpensive means to extend education opportunities to unreached populations. Such an examination will help to allay the concern that was noted by one of the participants in the study.

This study, however, did not intend to focus on cost-benefit and strategic intent of Internet-Based instruction. A more expansive effort that takes into consideration all of the factors that are influencing Internet-Based instruction may thus assist with the broader view of online instruction. Moreover, additional insights may be gained from an alternative focus, and additional iteration through the data corpus for the study. Nevertheless, it is clear that the whole area of Internet-Based Adult Instruction represents a fertile area for investigation and research.

A Special Note Concerning Organization Change

As discussed in the literature review section, the introduction of technology in any context often involves some type of change. Therefore the introduction of a technology-supported innovation will involve some sort of adjustments or alterations in the way an organization functions.

For example, a participant in the study stated that the administrative aspects at the school involved are not up to the challenge of doing online instruction. The point emphasized to the researcher was that there needs to be a change in policy, procedures or both procedure and policy at the institution to carry out the online instruction program.

However, Senge (1990, 2000 & 2004) noted that change is often resisted within an organization as this means people will have to do things differently or alter some practices that they are accustomed to performing. This, says Senge, is due to the fact that members of an organization fear any outcome that is unknown.

A learning organization, noted Senge, is one within which learning or change occurs routinely or one where it is anticipated that change will occur. However, in a traditional organization the change often comes from a top down, hierarchical structure thus offering little chance for input from the members of the organization.

A learning organization as advanced by Senge in contrast will assure that there is sufficient input such that members will have a stake in the integration and implementation of technology-supported innovation. The learning organization declared Senge (1990) will solicit participation from members so that there is both a top-down and bottom-up approach orientation for the implementation of the innovation.

While the tendencies of the organizations represented in the study leaned towards a learning organization, there are still a few struggle areas for the school. For example, a participant said that colleagues are not supportive and that others are unwilling to engage in any kind of collaboration activity.

As Anderson & Dexter (2000) have argued, education leaders are often very busy and thus are unable to help in creating a shared vision that is required

to move the organization forward. A gap in perception ensued, where opportunities to arrive at positive results are missed.

Educational organizations must be aware that perception gaps often lead to tension. Tensions can result in miscommunications and even mistrust. However, members in a learning organization, said Senge, (2004) must trust each other to allow a true shared vision to be able to take root. Leaders at the school must therefore be proactive in taking the steps necessary to help in achieving the goal of a learning organization.

According to Senge (2000) a hallmark of a learning organization is an orientation towards continued growth and development. Such an approach necessarily means a re-evaluation and rethinking of current activities so that adjustment and repositioning can be made. In contrast a regular organization often takes the position that change is not necessary or even welcomed. Such an organization will often stagnate and wither because of a failure to adapt to changing circumstances.

Findings from the study show that organization mistrusts or misalignments are formidable for those who are involved in Internet-Based instruction. However, as the literature shows, strong leadership and an orientation towards a learning organization are important to endeavor changes in any people-centric institution and can help smooth out the transition to a new organizational regime.

As one participant noted, the success achieved by the online program is leading other faculty members of the same institution who initially opposed the move to an online program to look at the medium and the efforts differently.

Therefore, those who are involved in Internet-Based instruction should continue to work within their structures to effect change at the organizational level, while working to show the clear benefits for Internet-Based instruction.

Final Thoughts

It has been wonderful for me, as a researcher and thus a learner, to participate in the many instructional contexts examined. In addition to my exposure to a great body of literature, I am now very focused on helping advance the field of Internet-Based Adult Instruction in whatever ways that I can.

Lifelong learning has also become a very real concept to me. While it was a delight to work with all of the participants in the study, my exposure to Jacqueline's Entrepreneurship/Agro-Business online seminar was a tremendous eye-opener. This is because the effort shows a lot of promise and vision.

In addition, my involvement with the seminar has helped me to truly understand the promise and opportunities that are ahead in regards to lifelong learning. This is because through the study, Jacqueline, who is an expert researcher in her field, has had the opportunity to gain an additional skill: Instruction Design. Likewise, this researcher became a little bit more familiar with the intricacies of Agro-business.

Having taken a major first step in Internet-Based Instruction and lifelong learning, I now look forward to building upon the knowledge and skills gained through the study. Thus the promise of the online learning community, as noted by many of the participants, may be more real and closer that even this researcher had realized.

End Notes

[1] I coined the terms **Design-Push**, **Learning-Pull**, and **Process-Push & Pull** to explicitly denote the tug between the key forces and themes that are involved in Net-centric Instruction. In addition, the framework is meant to meld both intrinsic (learner-focused) and extrinsic (facilitator-focused) considerations to underpin the salient factors affecting motivation in adult instruction and training.

[2] The TTSP program is a University wide effort where graduate students are utilized to help, support and train UVA faculty in the use of classroom or research oriented technologies.

[3] This program aims to deliver courses a distance via the World Wide Web and video conferencing. The link http://www.scps.virginia.edu/webcourses/global.php provides more information on the Global Academic Village.

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APPENDIXES

Appendix A – Participant Training Session

Learning Objectives for the Training Sessions

A. Explore tools, features and processes are involved in the use of an IMS (Blackboard, Moodle , Centra or Yahoo Groups) for the purpose of education and training;
B. Examine computing technology, infrastructure, applications necessary to support successful utilization of the IMS as a support tool for a course unit or learning modules;
C. Provide practical and hands-on experience in selecting and then utilizing credible examples regarding the use of the IMS in an Adult Education context.

Participant Training & Delivery Approach & Format

Session 1

Theme: Intro to Andragogy & Online Learning

Focus

- Andragogical principles
- Internet-Based Andragogical Model
- Facilitators-push Extrinsic instructional factors
- Learner-pull Intrinsic educational factors
- Process-push-pull learning management factors

Delivery Format: One-on-One Tutorial

Location: TBD

Group / Individual: Individual

Facilitators & Contributors: Patrick Guilbaud

Session 2

Theme: Managing Content in an IMS

Focus

- System/Navigation/Look & Feel
- Communications/Users set-up/
- Content Management

Delivery Format: Demonstration & Hands on Activities

Location(s): TBD

Facilitators & Contributors: Patrick Guilbaud

Appendix B - Hands-on Activity Plan

Online Task	Detailed Focus	Learner Actions / Involvement
I. Navigation	➢ Menus / File types	1. Browsing the main features of the tool.
II. Communications	➢ Secure E-mail ➢ Threaded Discussion ➢ Postings	2. Create a discussion thread 3. add comments to an existing posting
III. Course	➢ File Upload ➢ File Download ➢ Forum ➢ Survey	4. Download 2 files 5. Make changes to downloaded file 6. Upload the modified file
IV. Roster	➢ User ➢ Teams ➢ Groups ➢ Identification (Pictures)	7. Add a user 8. Create user groups 9. Add 2 users to 2 different groups 10. Upload a picture
V. Look & Feel	➢ Configuration ➢ Logo	11. Browse the configuration menu 12. Change Logo
VI. System	➢ Weblinking ➢ HTML ➢ Archiving	13. Add links 14. Simple use of HInternet-Based Adult Instruction 15. Understand Archive Structure
VII. Content Management	➢ Activity ➢ Multimedia Features ➢ E-Learning Concept	16. Browse Video Capabilities 17. Understand media support 18. Understand make public feature

Appendix C - Research Training and Interview Plan

Item	Theme	Duration (Hour)	Detailed Focus / Activities
Questionnaire 1 (Pre- Entry)	Needs Assessment	20mins	Gain an understanding of participants skills' and comfort levels with the key online learning tools and computing apps available for use through the study
Training I	Intro to Andragogy and IMS	40 – 100 minutes	Intro to the Internet-Based Adult Instruction ➢ Andragogy vs. Pedagogy ➢ Online Instruction ➢ Internet-Based Adult Instruction Framework o Learner Intrinsic o Facilitaor Extrinsic o Process – In/Ex ➢ Life-long Learning
Training II	Contents Creation & Management	40 – 100 minutes	Managing Content ➢ System & Navigation ➢ Communications ➢ Internet-Based Media ➢ Content Management
Interview 1 (In Study)	Issues & Progress	1	Determine and resolve any issues encountered through use of the online learning tools and computing apps
Questionnaire 1 (Post-study)	Outcome Evaluation	20mins	Gain an understanding of participants reactions and perspectives to the proposed Internet-Based Adult Instruction framework
Interview 2 (Post-Study)	Study Debrief	1	Get participants' perspectives and reflections regarding the use or non-use of the collaborative online tools

Total Time Commitment: Approximately three (3) to three (5) hours

Appendix D - Pre-Test (Entry Behaviors) Questionnaire

INTERNET-BASED LEARNING STUDY
(1 of 3)
Pre-Treatment Questionnaire

Name:		**Date:**	
Organization :		**Title:**	
Professional Role:		**Focus:**	
Address Line 1 :			
City:		**State**	
Zip Code			
Telephone:		**Fax:**	
Cell:		**E-mail:**	
Web Address:			

Instructional Methods, Strategies & Media

What instructional approaches/methods[1] do you think might best facilitate learning in an Adult Education context? (Check all that apply.)

__Active Learning	__Alternative Assessments	__Anchored Instruction
__Application Teaching	__Audio-visuals	__Computer-Assisted Instruction (CAI)
__Case Studies	__Cognitive Apprenticeship	__Collaborative Learning
__Cooperative Learning Model	__Direct Instruction	__Direct-Interactive Teaching Model
__Experiments	__Games	__Group Investigation
__Holistic Instruction	__Interactive Video	__Lecture
__Microteaching	__Multimedia	__Observational Learning
__Problem-Based Learning (PBL)	__Situated Learning	__Storytelling
__ Staff Exchanges	__*Other (Please specify)*	

Do you currently use or plan to use the following Instructional tools in adult education training or delivery? *If you have used the given item, Please note your proficiency level.* (Check all that apply.)

Instructional Technology Item	Yes	No	Proficiency Level High		Mid		Low
1. PC/Mac	___	___	___	___	___	___	___
2. Word, Excel, PowerPoint etc...	___	___	___	___	___	___	___
3. E-mail	___	___	___	___	___	___	___
4. Internet/Web	___	___	___	___	___	___	___
5. Digital Camera	___	___	___	___	___	___	___
6. Laptop	___	___	___	___	___	___	___
7. Tablet PC	___	___	___	___	___	___	___
8. Scanner	___	___	___	___	___	___	___
9. CD-ROM	___	___	___	___	___	___	___
10. PDA	___	___	___	___	___	___	___
11. Video Streaming	___	___	___	___	___	___	___
12. Teleconferencing	___	___	___	___	___	___	___
13. Web-Chat/IM	___	___	___	___	___	___	___
14. Blog	___	___	___	___	___	___	___
15. Discussion Board	___	___	___	___	___	___	___
16. Pod-Casting	___	___	___	___	___	___	___
17. Video Conferencing	___	___	___	___	___	___	___
18. Blackboard	___	___	___	___	___	___	___
19. Moodle	___	___	___	___	___	___	___
20. Webct	___	___	___	___	___	___	___

Of the following uses of the Internet, which one(s) do you think might be a good fit for learning in an Adult Education context? (Check all that apply.)

___ Access E-Mail	___ Participate In Web Forums
___ Websites	___ Access Journals & Newsletters
___ Join Discussion Groups	___ Download Full Text or PDF Documents
___ Search Databases	___ Enroll In for Credits Distance Learning Courses
___ Other (Please specify)	___ Participate In Continuing Ed Programs

Which of the following Instructional Media do you think can aid you or teachers/instructors in the delivery of Adult Education? (Check all that apply.)

___ Audio Cassettes	___ Books	___ Newsletters
___ Educational TV	___ PC	___ CD-ROMS
___ E-Mail	___ Static Website	___ DVD
___ Chat/Instant Messages	___ List-Serve	___ Databases
___	___ Streaming Video	___ PDAs/IPods
___ Interactive Whiteboard	___ Asynchronous Video	___ Synchronous Videos
___ Learning / Course Management Systems	___ Other *(Please specify)*	

Thank you for your time and for completing the questionnaire!

Appendix E - Post-Test Evaluative Questionnaire

INTERNET-BASED LEARNING STUDY

Post-Test Questionnaire (1 of 2)

		5	4	3	2	1
		Useful in Instruction → → → Not Too Useful				
Construct[1]	*Observational Item*					
G S	*i. User Categories*					
	ii. Course Monitor					
	iii. Team Assignments					
	iv. E-mail Contact					
	v. Forums					
M D	*i. Learning Cases*					
	ii. Multimedia					
	iii. Group Projects					
	iv. Choices					
	v. Assessment					
T A S	*i. Accessibility*					
	ii. Online Help					
	iii. External Use					
	iv. Configuration					
	v. Archiving					
	DT - SUMMARY					

Note[1]
Instructional Perspective

Distributed Teaching Design Approach (DTDA)

Constructs
GS → Group Structure
MD → Message Design
TSS → Technical Support Structure

Internet-Based IMS OLC[2] Evaluative Sheet (2 of 2)

		5	4	3	2	1
		Useful in Instruction → → → Not Too Useful				
Construct[2]	Observational Item					
I S U	*i. Self-Identification*					
	ii. E-mailing					
	iii. Forums					
	iv. Blogs					
	v. Journals					
C P	*i. Posting*					
	ii. Threaded Discussions					
	iii. Self-Identification					
	iv. Workshop					
	v. Time-spent online					
CB	*i. Reply to Postings*					
	ii. Web Linking					
	iii. Online Chat					
	iv. External Resources					
	v. Surveys					
	Total					

Note[2]

Instructional Perspective

Online Leaning Community (OLC)

Constructs

ISU → Individual System Use
CP → Communications Patterns
CB → Collaborative Behaviors

Appendix G: Internet-Based Adult Instruction Open-ended Questionnaire

Net-centric Adult Instruction (Net.AI) Open Ended Questions

The items below are to learn about specific experiences related to the use or no-use of the key tenets of **the Net-centric Adult Instruction (Net.AI) Model,** the items involved with the **Instructional Management System (IMS),** and any other **Instructional System Design (ISD)** used as part of your distance learning course.

Name:		**Date:**
Organization		**Title**
Professional Role:		**Focus**
Web Address:		

Q1a: Describe any relevant issues experienced as part of doing or participating in online instruction.

Q1b: Share how these issues relate to any of the following online instruction areas:

- Learners
- Facilitators
- Distance Learning tools and processes

Q2: Share what you see to be at the root of the challenges encountered.

Q3: Explain your personal stance vis-à-vis greater use or deployment of **IMS** as a means to teach adults.

Q4: Discuss the key issues encountered with your **IMS** i.e. Moodle, Blackboard, Centra, Horizon Wimba, Sakai, Yahoo Groups that fall within the scope of the study.

Q5: Discuss any specific challenge encountered in designing, presenting, or assessing online instruction to your group of learners and any **ISD** employed.

Q6: Share your thoughts concerning **Andragogy** (Teaching of adults) and **Pedagogy** (Teaching of youth) instructional approaches in general and the theoretical guidance provided by **Net.AI Model** in particular.

Q7: Given your experience with online instruction of adults, explain the key items that you believe need to be taken into consideration to make the **Net.AI Model** a more helpful distance learning **ISD Model/Framework**.

Q8: Explain any changes you foresee in your instructional approach as a result of being exposed to the **Net.AI Model**.

Q9: Discuss some of the ways you see that your learners can benefit in the long run through greater use of an **ISD** framework.

Q10: Give some examples of approaches that you might consider using (or have now begun to use) in your academic environment to develop/maintain an online learning community and/or support lifelong learning efforts.

Q11a: Share how you foresee the **Net.AI Model** might assist with the orientation towards lifelong learning or building an online learning community.

Q11b: Suggest some ways to more specifically fine-tune the **Net.AI Model** to address the key issues encountered during the study or raised during the interview.

Q12: Please provide any final thoughts (Optimistic/Pessimistic) with regards to teaching adult online and suggestions regarding the **Net.AI Model** as a tool to help with Distance Learning in general.

Thank you for your time and for completing the Net-centric Adult Instruction interview/questionnaire!

Appendix H: Potential Participant Invite Letter

Patrick Guilbaud
307 Westfield Road
Charlottesville, VA 22901
Phone: (434) 245-1689
Cell: (434) 242-5712

{Date}

Dear {Study Participant}:

The purpose of this letter is to request your participation in a research study that I am conducting on adult learning/professional training and net-centric education.

As you are aware, recent research shows that an accelerated pace towards adaptive, boundary-less and pervasive learning has created the need for greater use and mastery of Web-centric or net-centric instructional systems. In addition, adult learners seeking both basic education as well as professional development training are using non school-based environments such as homes, the workplace, community centers and churches as key places for teaching and learning.

Thus the proposed study is being undertaken to take a look at instructional use of CMS/LMS within a context of adult education/professional training. More specifically, the proposed study seeks to uncover relevant teaching approaches, learning strategies and technical considerations involved in net-centric instruction via the use of tools such as Blackboard, WebCT, Centra, Yahoo Groups and Moodle.

I will call you in the next few days to answer any questions you may have, and to confirm your participation. I may be reached by phone or by email at pg3w@virginia.edu.

Please feel free to contact my research advisor, Dr. Bob Covert, at rwc3q@virginia.edu, if you have any questions about this study.

Sincerely,

Patrick Guilbaud, MSE, MBA

Appendix K: Andragogy & Online Learning IRB Protocol

Checklist for Researchers

Institutional Review Board for the Social and Behavioral Sciences
University of Virginia

To submit your protocol to the IRB-SBS, please follow these steps:

1. Submit one electronic copy of all of your materials to **irbsbs@virginia.edu**. These materials include:
   a. ☒ **Protocol Form**
   b. ☒ **Request for Exemption Form (Submit ONLY if your proposal qualifies for exemption status.)**
   c. ☐ **Protocol Status Form (for fourth year review of continuing protocols ONLY)**
   d. ☒ **Consent Form(s) (if applicable)**
   e. ☐ **Debriefing Form and Post-Debrief Release Form (if applicable)**
   f. ☐ **Data Release Form (if applicable)**
   g. ☐ **Materials Release Form (if applicable)**
   h. ☒ **All materials used to contact participants, including flyers, advertisements, letters, and emails. If you will contact them in person, please provide an oral script outlining what you will say to participants. Please include your IRB-SBS number on the materials (you will receive your number after you submit; include the number on the final draft).**
   i. ☒ **All instruments, surveys, interview questions, observation checklists, data extraction forms, etc, to be used in study. The IRB-SBS has a collection of instruments (listed on our website at http://www.virginia.edu/vprgs/irb/sbs_library.html). If you are using one of the listed instruments, you don't need to submit it, but instead indicate in 9b which instrument you will use.**
2. Submit one hard copy of the following signed materials (**Signed materials can be submitted by mail, drop-box, fax** (924-1992), **or email** (scanned document to irbsbs@virginia.edu). Please see our website for submission directions (www.virginia.edu/vprgs/irbsbs.html).)
   a. **Protocol signature pages with all appropriate signatures.**
   b. **Investigator's Agreement with all appropriate signatures.**
3. Make sure that you have completed or updated the **IRB-SBS Online Training Module** so that you are certified to conduct human subjects research (**the certification is valid for three years**). **All researchers listed on the protocol** including the **Principal Investigator**, **Faculty Advisor**, and **any other researchers** must complete the Online Training. **If you do not complete the Online Training, it will prevent our office**

from sending approval/ exemption letters. Please visit our website (www.virginia.edu/vprgs/irb) to access the Online Training Module.

Before you email your submission, please review the following:

- ☐ Provide the protocol number provided for resubmissions, fourth year review, or re-openings.
- ☐ Describe the study in lay terms.
- ☐ Proofread the protocol to assure that grammar and spelling are correct.
- ☐ Follow the "Guidelines for Preparing the Informed Consent Agreement" in the "General Consent Template"; for ethnographic work which meets the criteria, follow the "Alternative Consent and Risk Reduction Procedures" found on the Forms page of the IRB-SBS website.
- ☐ **DO NOT submit blank forms or forms that do not apply to your protocol.**

IRB-SBS Review Procedures:

1. After the IRB-SBS receives your materials, a member of our staff will pre-review your materials to verify that everything is submitted properly. Pre-review submissions will not be subject to deadlines but instead will be accepted and processed on an on-going basis.*
2. Within two business days you will receive a response from an IRB-SBS staff member outlining suggested revisions for the protocol.
3. When the protocol has completed the pre-review process, the IRB staff member will recommend your protocol for either full board review or expedited review.
4. The protocol will then be reviewed by an IRB-SBS member in an expedited review, or it will be assigned to the next available full board meeting.* Please note that the IRB-SBS committee member conducting the expedited review could require that the protocol be reviewed at the full board meeting.
5. After the protocol is reviewed by the Board, you will receive an email confirmation regarding the IRB-SBS decision and further directions for revisions or resubmission, if necessary. If/when the protocol is approved or exempt, you will receive an email confirmation followed by a hard copy letter which will include stamped consent forms. **Do not conduct your research until you have received confirmation of your approval or exemption.**

If you have questions regarding your submission, please contact the IRB-SBS office at 434-924-5999 or irbsbshelp@virginia.edu.

***If a protocol requires full board review, it must be received by the Tuesday a week prior to the meeting in order be included in the meeting's agenda. (For example, if the meeting is on October 12th, than the cut-off date is October 4th at 5:00 PM.) In order for our office to process the protocols and for our reviewers to have time to adequately review the protocols, it is**

necessary that we adhere to this cut-off schedule. An IRB-SBS staff member will notify you if your protocol requires full board review and will remind you of upcoming meeting deadlines. Please plan for at least a month's time for your review (from submission to approval/exemption). The IRB-SBS cannot accommodate last-minute full board review requests.

INVESTIGATOR AGREEMENT

Institutional Review Board for the Social and Behavioral Sciences (IRB-SBS)

UNIVERSITY OF VIRGINIA

Title of Study: _____

IRB-SBS Protocol Number: _____

BY SIGNING THIS DOCUMENT, THE INVESTIGATOR AGREES:

1. That no participants will be recruited or entered under the protocol until the Investigator has received the final approval or exemption letter signed by the Chair of the Institutional Review Board for the Social and Behavioral Sciences (IRB-SBS) or designee.
2. That no participants will be recruited or entered under the protocol until all key personnel for the project have completed their yearly human investigation educational requirement.
3. That any modifications of the protocol or consent form will not be initiated without prior written approval from the Chair of the IRB-SBS, except when necessary to eliminate immediate hazards to the participants.
4. That any deviation from the protocol and/or consent form, adverse events that are serious, unexpected and related to the study or a death occurring during the study will be reported promptly to the SBS Review Board in writing.
5. That all protocol forms for continuations of this protocol will be completed and returned within the time limit stated on the renewal notification letter.
6. That if this study involves any funding or resources from a source outside UVA, the Investigator will contact the Office of Sponsored Programs regarding the need for a contract and letter of indemnification. If it is determined that either a contract or letter of indemnification is needed, participants cannot be enrolled until these documents are complete.
7. That all participants will be recruited and consented as stated in the protocol approved or exempted by the IRB-SBS board. If written consent is required, all participants will be consented by signing a copy of the consent form that has a non-expired IRB approval stamp.
8. That the IRB-SBS office will be notified within 30 days of a change in the Principal Investigator for the study.
9. That the IRB-SBS office will be notified within 30 days of the closure of this study.
10. **That all researchers involved in the protocol including the Principal Investigator and the Faculty Advisor have completed the Online Training module and are certified to conduct this study.**

Patrick Guilbaud _____ _____
11/20/2006_____
Principal Investigator Principal Investigator
Date
(Name Printed) (Signature)

FOR STUDENT AND STAFF PROPOSALS ONLY
BY SIGNING THIS DOCUMENT, THE FACULTY ADVISOR AGREES:

1. To assume overall responsibility for the conduct of this investigator.
2. To work with the investigator, and with the SBS Review Board, as needed, in maintaining compliance with this agreement.
3. That the Principal Investigator is qualified to perform this study.

Robert Covert _____ _____

_____

Faculty Advisor Faculty Advisor
Date
(Name Printed) (Signature)

Associate Professor _____
Title of Faculty Advisor

The SBS Review Board reserves the right to terminate this study at any time if, in its opinion, (1) the risks of further experimentation are prohibitive, or (2) the above agreement is breached.

IRB-SBS # (Office Use Only)

Human Subjects Research Protocol Submitted for Review to the Institutional Review Board for the Social and Behavioral Sciences University of Virginia

GENERAL INFORMATION

1. **Project Title:** Andragogy & Online Learning
2. **Type of submission** (*check one*):

☒New Protocol
☐Resubmission of previously rejected protocol
☐Fourth year full protocol submission of approved protocol due to expire
☐Reopening expired protocol

If you checked Resubmission, Fourth year submission or Reopening, provide the IRB-SBS protocol number:

3. **Principal Investigator:**

   Name: Patrick Guilbaud

   Professional Title:

   School, Department or Center: Curry School

   Division (*if applicable*): Leadership Foundations & Policies Studies

   Messenger Mail Address:

   Mailing Address (*only if messenger mail address is not available*): 307 Westfield Road Charlottesville VA 22901

   Telephone: 434-245-1689

   UVA e-mail address (no aliases, please): pg3w@virginia.edu
   Your computing ID is used for tracking on-line human subjects training.

   Preferred e-mail address for correspondence (if applicable):

   Are you (*Please check all that apply*):

   ☐Faculty ☒Graduate Student ☐Undergraduate Student ☐Staff

   This research is for (*Please check all that apply*):

   ☐Class project ☐Master's thesis ☒Doctoral dissertation ☐Faculty research

   ☐Other (*Describe*):

   Signature of Principal Investigator:

   _____

4. **Anticipated start and completion dates for collecting and analyzing data**: 11-01-06

5. **Funding source**: If research is funded, please provide the following: grant name (or name of the funding source): funding period (month/year):

grant number:

6. **Please list all other researchers that will be working with human subjects as part of the project. Please provide the following information for each researcher: Name, UVA email address (*no aliases, please.)* All researchers listed here must complete the IRB-SBS Online Training. If you have a question about a researcher's training status, please contact our office (irbsbshelp@virginia.edu).**

   If there are researchers not associated with UVA, please provide the following information for each researcher: Name, Institution, Phone Number, Mailing Address, Email Address. All researchers listed here must provide proof of completing IRB training at their institution or they must complete the IRB-SBS Online Training. Proof of training can be submitted to our office via fax (434-924-1992), by mail (PO Box 800392 Charlottesville, VA 22908-0392) or by email (irbsbs@virginia.edu). If you have a question about a researcher's training status, please contact our office (irbsbshelp@virginia.edu).

7. **Faculty Advisor** (*Must be completed for all student and staff research proposals.*):

   Name: Robert Covert

   School, Department or Center: Curry School

   Division (*if applicable*): Leadership Foundations & Policies Studies

   Messenger mail address: PO Box 400265, Ruffner Hall, 280

   Telephone: 434-924-0833

   UVA e-mail address (no aliases, please): rwc3q@Virginia.EDU
   Your computing ID is used for tracking on-line training.

   Faculty Advisor, please note. In signing this document, you verify that you have reviewed the protocol and approve of the procedures described therein. Also, in order to act as the Faculty Advisor for this student, you must complete the IRB-SBS Online Training. If you have any question about your training status, please contact our office (irbsbshelp@virginia.edu). Training is valid for three years.

Signature of Faculty Advisor:

_____

DESCRIPTION OF THE RESEARCH STUDY

8. **Brief Description of the Research**. Write an original, **brief**, non-technical description of the project addressed to lay members of the SBS Review Board. If you have multiple phases to your study, please outline each phase. Do not copy the abstract from your grant proposal. **Include in your description:**

a. **Your research hypothesis or question**:
What are the salient factors pertaining to net-centric/online instruction which support or enhance the Teaching of Adult, or Andragogy?

b. **A narrative that explains the major constructs of your study**:
The proposed research seeks to uncover relevant teaching approaches, learning strategies and technical considerations involved in net-centric instruction. Specifically, the research seeks to understand the ways in which adult teachers, as learners, can manipulate available features of an Instructional Management System (IMS) to create, review, synthesize communicate and assess course-related contents for use in the online space. Finally, the research is looking to gauge the most salient extrinsic & intrinsic instructional factors that are related to mastery of net-centric education.

c. **The methodology**:
This is an Action Research Qualitative study. It will proceed in an iterative fashion, Adjustments will be made continually as new data are evaluated, new insights are discovered and reflections are made.

d. **From where/whom the data will be collected**:
Data Collection will consist of these sources: 1) Questionnaire, 2) Structured Interviews, 3) Personal Notes, 4) Interpretations and 5) Archival Documents.

e. **How the data will advance your research hypothesis or question**:
Data will be collected from actual usage activities and will thus shed light on the intemtions, orientations and considerations from participants pertaining use of the routine of IMS as well as Net-centric teaching practices.

f. **A brief description of the investigator(s)' and faculty advisor's (where applicable) experience in working with this population**:
The Primary Investigator has been involved for a number of years in teaching graduate student as well as faculty at UVA, using various Instructional Technology applications and tools. PI has also taught

adult education teachers, using distance learning tools and applications.

9. **What will the participants do in the study?** Describe all steps the participants will follow. What do the data consist of? (*Please submit one copy of all instruments, surveys, interview questions or outlines, observation checklists, to irbsbs@virginia.edu or see 9b below.*)
a. Depth rather breadth will be a prime focus in the study.

1) Four teachers who are directly involved in some aspects of online adult education will be selected for the study. The aim of the study is take in-depth look and exploration of the following constructs:
Interactions,
Behaviors,
Beliefs,
Considerations,
Motivation,
Technical capacity, and
Perspectives related to teaching and learning with an IMS.

2) We will consent participants using IRB-approved consent forms.

3) Participants will be given a brief description of the study. (See accompanying one-page summary of the study.)

4) Participants will be asked to fill a pre-test questionnaire to provide basic demographics, preliminary assessment of technical skills, and familiarity with various Instructional Management Systems.

(See attached pre-test questionnaire for the study.)

5) Basic contact information will be captured, which will be used for the purpose of following-up during fieldwork phase of the study.

6) Participants will be offered an introduction level of training in Andragogy (Teaching of Adults) principles.

This will entail familiarizing participants with key tenets and assumptions about Andragogical methods and models, as advanced by leading learning theorists and practitioners. These include: Andragogical Assumptions (Malcolm Knowles), Situated Learning (Jean Lavé), Adult Learning Styles (Allen Tough & Malcolm Tight) Engagement/Participation by adult learners (Patricia Kross, Stephen Brookfield), and lifelong learning (Peter Senge).

Contrasts between of Pedagogy, (Teaching of young people) and Andragogy will also be drawn.

Participant will also be familiarized with the most relevant aspects of the Andragogical and Net-centric model being proposed for the study.

These will include:

i) Facilitator or Extrinsic factors --- Goal Focused, Need Analysis, Assessment, Outcomes, Instructional Components and Distributed Teaching Design Approach

ii) Learner or Intrinsic factors --- Relevancy, Accessibility, Collaborative & Hands-on practice, Virtual Self/Time online and Motivation

iii) Process – Ex/In-trinsic factors --- Media-selection, Future Orientation, Continuous Improvement, Online Learning Community, and Pervasiveness

(See attachments for more details.)

7) Participants will be trained in the use of the specific aspects of the IMS (Blackboard, Moodle, Centra or Yahoo Groups) which are suitable for the learning context involved.

The focus of the IMS training will be two-fold:

I) Contents Creation; Anticipated duration: ~60 minutes.

- System & Navigation
- File upload & download
- Net-centric (Audio/Video streaming)
- Online cases
- Collaboration tools (Wikis, Blogs

II) Contents Management; Anticipated duration: ~30 minutes.

- Communications (E-mail, Posting, Blogs, Discussion Board & Virtual Chats, Threaded discussions)
- User categories/groups
- Team Assignments
- Archiving
- Online access

(See attachments for more details.)

8) Participants will use their IMS as part of an online Adult Education course.

9) Post-test interviews will be conducted. This will focus on use/non-use of the net-centric instructional materials related to the study. (See the attached post-test questionnaire for the study.)

10) Participants will be asked open ended questions related to their experience with the IMS used and Net-centric instruction. They will be asked to discuss their reactions concerning learning strategies and technical considerations for teaching adults online. Participants will be prompted to share their thoughts regarding about features applications, and processes pertaining to DT/L that they found relevant.

11) Participants will be provided a copy of the interview transcript for review.

12) E-mail communications will be used throughout the study to confirm and/or clarify responses provided by participants.

b. The IRB-SBS has an **Instrument Library** (listed on our website at http://www.virginia.edu/vprgs/irb/sbs_library.html). If you are using one of the listed instruments, you don't need to submit it, but instead list the **Instrument Number** here:

10. **Location where study will be conducted** (*Please be specific.*):
This study is examining the use of the proposed Net-centric Andragogical Model/Framework, which has a focus on developing competence with tools, processes and applications available for use by teachers/facilitators who are involved in non-residential Adult Education. As a result, the study will be conducted online or virtually, for the most part. Physical facilities may be used for training and follow-on support, as necessary. The two physical locations which are being considered for training are the Darden Graduate Business School and McLeod Nursing Hall, at UVA.

11. **Data:** Describe what will be done with the data and resulting analysis, who will have access to this information, and if/when it will be destroyed.

Once the interviews are done, the data collected will be first transcribed and then typed into MS-Word. The transcribed data will then be loaded into NVivo, a qualitative data analysis which allows coding of textual data. NVivo also offers a relatively easy means of annotating, retrieving and reviewing coded data and documents.

Analysis of the data will involve the following steps.

- Read for a general understanding of the data.

• Key phrases, group of words or unique instructional vocabulary will be evaluated to determine clues, pertaining to specific attitudes, common practices with regards to online teaching

• Grouping, Categorization and Memoing will be used to develop preliminary assertions

• Phrases or words describing the content of the data will be developed on the transcripts, to provide preliminary sub-themes and emerging themes.

• Triangulation: Validity of assertions will be achieved through cross-check with participants and personal observations.

12. **Benefits:** What benefits can reasonably be expected from the study? (Benefits may be to the participants and/or to the knowledge base of the area. Benefits do not include compensation.)
The main benefit to be gained from this study is a keener understanding of the salient considerations and implications with using a Net-centric IMS in adult Education. As the research study involves actual and practical instructional activities, dissemination of key findings should be benefecial to practitioners.

RECRUITMENT AND SELECTION OF PARTICIPANTS

13. **Participant numbers:** If you have multiple types of participants (e.g. students, parents, teachers) please specify the number, age, and gender of the participants.
    a. **Estimated number of participants in upcoming protocol year or sample size for archival data sets:**
    4

    b. **Age:**
    22 - 80

    c. **Gender:**
    Either

14. **Participation Coordination**
    a. **Selection:** Please describe the criteria you will use to select participants. If applicable, please describe the criteria you will use to exclude participants from the study.
    Participants for the study are instructors, facilitators, admistrators or support personnel who are directly involved in online teaching.

    b. **Recruitment:** Describe in detail how you will contact participants regarding this study.

Please provide all materials used to contact participants in this study. These materials could include letters, emails, flyers, advertisements, etc. If you will contact participants verbally, please provide a script that outlines what you will say to participants.
Potential volunteers for the study will be solicited via list-serv posting and general e-mail announcements. All levels of Internet-experience (Modest, Average or Advanced) will be equally considered for the study.

c. **Relationships:** State the relationship between Principal Investigator, Faculty Advisor (*if applicable*) and Participants. Do any of the researchers have positions of authority over the participants, such as grading authority, professional authority, etc.? Are there any relevant financial relationships?
None

15. **Consent Procedures:** Describe in detail how you will obtain consent from participants and/or parents/ guardians. Participants who express interest will be given the Informed Consent Agreement to review. This will be done face to face. Participants will be given at least a week to review and reflect on the study. If participants agree to take part in the study they will be asked to sign the Agreement. Participants will be asked if they have any questions and these questions will be answered.

16. **Confidentiality:** In this section, please describe how you will protect the confidentiality of your participants. Indicate whether the data are **archival, anonymous, confidential,** or **confidentiality not assured** and then provide the additional information requested in that section. **The IRB-SBS asks that if it is possible for you to collect your data anonymously (i.e. without collecting the participants' identifiable information), please construct your study in this manner. Data collection in which the subject is not identifiable (i.e. anonymous) can be exempted in most cases.**

1. **Are the data archival? (Data are already collected).**
☒**No (Please skip to #2)** ☐**Yes (Please answer a-d below)**
Please note: If your study only includes archival data, answer no to 16-2, 16-3, 16-4, and leave 16-5 blank.
   a. **Are the data publicly accessible?** ☐**No** ☐**Yes**
   If no, please describe how you will obtain access to this data and provide the board with proof of permission to access the data:

   b. **Will you receive the data stripped of identifying information,** including names, postal addresses, telephone numbers, e-mail

addresses, social security numbers, medical record numbers, birth dates, etc? ☐**No** ☐**Yes**

If yes, please describe who will link and strip the data. *Please note that this person should have regular access to the data and they should be a neutral third party not involved in the study.*

If no, please describe why this information will not be removed:

c. **Can the names of the participants be deduced from the data set?** ☐ **No** ☐**Yes**

If yes, please describe:

Initial the following: **I will not attempt to deduce the identity of the participants in this study.** ____

d. **Please provide the list of data fields** you intend to use for your analysis and/or provide the original instruments used in the study.

2. **Are the data that you will collect anonymous? (Data do not contain identifying information including names, postal addresses, telephone numbers, e-mail addresses, social security numbers, medical record numbers, birth dates, etc., and cannot be linked to identifying information by use of codes or other means. If you are recording the participant on audio or video tape, etc., this is not considered anonymous data.)**
☒**No (Please skip to #3)** ☐**Yes (Please answer a and b below)**
   a. **Describe the process you will use to collect the data to ensure that it is anonymous.**

   b. **Can the names of the participants be deduced from the data?** ☐ **No** ☐**Yes**
   If yes, please describe:

   Initial the following: **I will not attempt to deduce the identity of the participants in this study.** ____

3. **Are the data that you will collect confidential? (Data do contain identifying information and/or can be linked to identifying information by use of codes or other means.)** *Please note that if you will use participant*

data (such as photos, videos, etc.) for presentations beyond data analysis for the research study (classroom presentations, library archive, conference presentations, etc.) you need to provide a Materials Release Form to the participant.

☒**No (Please skip to #4)** ☐**Yes (Please answer the following:)**

Please describe the process you will use to collect the data and to ensure the confidentiality of the participants. Verify that the list linking codes to personal identifiers will be kept secure.

4. **Will confidentiality not be assured in the study? (For example, will the identity of the participant be known or will it be easily deduced?)** *Please note that if you will use participant data (such as photos, videos, etc.) for presentations beyond data analysis for the research study (classroom presentations, library archive, conference presentations, etc.) you need to provide a Materials Release Form to the participant.*

   ☒**No (Please skip to #5)** ☐**Yes (Please answer the following:)**

   Please describe why confidentiality will not be assured.

5. **If you answered "No" to ALL of the questions in section 16 (#1-4), please describe confidentiality in your study.**

   This study will take an in-depth look at teaching considerations and implications with the use of an IMS in Net-centric learning environment from different instructor perspectives. Data to be collected will contain basic identifying information to be linked by the use of codes. Data as confidential or confidentiality is not assured in the study. Any list inking codes to personal identifiers will be kept secure.

DECEPTION

17. **Are any aspects of the study kept secret from the participants (e.g. the full purpose of the study)?**

    ☒No ☐Yes (*Describe.*)

18. **Is any deception used in the study?** ☒No ☐Yes (*If yes, describe the deception involved and the debrief procedures. Attach a post-experiment debriefing statement and consent form offering participants the option of having data destroyed.*)

19. **Will participants be debriefed?** ☐No ☒Yes (*Attach a copy of your Debriefing Statement. If the answer to protocol question # 18 is yes, then the investigator*

must debrief the participant. If your study include participants from a participant pool, please include a debrief statement.)

MEDIA USE

20. If you answer yes to any question below, in question 8c, please provide a description of how the media will be used and justify why it is necessary to use the media to collect data. Include a description in the Informed Consent Agreement under "What you will do in the study."
    1. **Will the participant be recorded on audiotape?** ☐No ☒Yes
    2. **Will the participant be recorded on videotape?** ☒No ☐Yes
    3. **Will the participant be photographed?** ☒No ☐Yes
    4. **Will the participant be audio taped, videotaped, or photographed without their knowledge?**
    ☒No ☐Yes
    If yes, please describe the deception and the debrief procedures: *Attach a post-experiment debriefing statement and a post-deception consent form offering participants the option of having their tape/photograph destroyed.*

    5. **If a participant withdraws from a study, how will you withdraw them from the audio tape, video tape, or photograph?** *Please include a description in the Informed Consent Agreement under "How to withdraw from the study."*

RISKS

21. **Are there any possible physical, psychological, professional or personal risks and/or hazards for the participants? (Please be sensitive regarding potential risks for participants, particularly vulnerable populations such as minors, prisoners, etc. If there is a potential for you to collect information about illegal behaviors, consider instructing the participant not to discuss these behaviors or apply for a Certificate of Confidentiality. If data are not anonymous, loss of confidentiality may be a risk.)**
☒No ☐Yes *If yes, please answer the following:*

    a. **Describe the risks:**

    b. **What will you do to protect participants from these risks or hazards?**

FOR FOURTH YEAR REVIEW OF CONTINUING PROTOCOLS ONLY

Complete the "Protocol Status Form" found on the forms page of the IRB-SBS website and submit it along with this protocol.

If you have questions regarding your submission, please contact the IRB-SBS office at 434-924-5999 or irbsbshelp@virginia.edu.

Appendix L: Andragogy & Online Learning Code Table

Factors	Category	Coding Items
Extrinsic	Andragogy	○ Adult Education ○ Professional Training ○ Careers ○ Job-Security
	Instruction Design	○ Model ○ Planning ○ Design ○ Assessment ○ Student-Centered Teaching ○ Constructivism ○ Engaging The Learner ○ Lecture
	Online Participation	○ E-Mail Contact ○ Chat-Rooms ○ Posting ○ Blogs ○ Reply to Posting
Intrinsic	Online Learning Community	○ Online Learning ○ Collaboration ○ Sub-Groups ○ Cultures ○ Community
	Lifelong Learning	○ Community ○ Culture ○ Future Outlook
	Communications	○ E-Mail ○ Contact ○ Chat-Rooms ○ Posting ○ Blogs
	Virtual Self	○ Personalization ○ Journal ○ Synchronous / Asynchronous Sessions

Factors	Category	Coding Items
	Motivation	o Self-Train o Training o Pace o Self-Management o E-Mail Contact o Chat-Rooms o Posting o Blogs
In-Ex	Technical Environment	o Resources o Database o Centra o Yahoo o Moodle o Horizon Wimba o Blackboard o WebCT o Instruction Management System, IMS o Learning Management System, LMS o Course Management System, CMS o Internet o Tapped-In o Microsoft Hardware o Word, Excel o PowerPoint
	Tech Support	o Logon Problems o Password o Lack Of Support o Training o Use The System o Test
	Administration	o Organization o Structure o Policies o Readiness o Faculty Members o Staff o Integration

Appendix M: Glossary of Instructional Methods/Approaches

IT Term	Definition
Active Learning	Any approach that engages learners by matching instruction to the learner's interests, understanding, and developmental level. Often includes hands-on and authentic activities.
Alternative Assessments	Any of a variety of assessments that allow teachers to evaluate their students' understanding or performance. Examples include: performance assessments, portfolios, journals, and authentic assessments.
Anchored Instruction	A form of constructivism where learning is tied to the students' real world "anchors" (such as social or work experiences).
Application Teaching	A constructivist approach centered on activities which involve learning which proceeds from more basic ideas to more complex. The expected products generated by the students are determined by the teacher.
Audio-visuals	Includes many categories of educational materials including: posters, paintings, slides, videos, films, audio tapes, and videotapes.
Computer-Assisted Instruction CAI)	CAI offers student the opportunity to learn at own pace with interactive computer programs.
Case Studies	Case studies are real life problems that have arisen in the workplace that students must solve. Can also be used to explore interpersonal relationships.
Cognitive Apprenticeship	Cognitive apprenticeships take many forms, but the two key components are social interactions to allow students to work on problems that may be too difficult for them to handle individually, and a focus on real world problems using real-world tools.
Collaborative Learning	Any kind of learning activity guided by a mentor that involves two or more students.
Cooperative Learning Model	In this approach, students share knowledge with other students through a variety of structures. True cooperative learning includes five essential elements: positive interdependence, face-to-face interactions, individual accountability, some structured activity, and team-building (group processing) skills.
Direct Instruction	Teacher-centered instruction which includes lecture, presentation, and recitation.
Direct-Interactive Teaching Model	A direct teaching approach that typically follows a cycle that includes: checking previous work, presenting new material, student practice with new material, feedback from the

IT Term	Definition
	teacher, independent practice, regular reviews.
Experiments	Tests to demonstrate or discover something.
Games	Games can take many forms, but in the classroom, any activity that involves a competition, social interaction, and some form of prize or award would be considered a game. Classroom game activities are typically not graded, and student participation is based on the desire to contribute to a team or to individually achieve some prize or recognition. Usually games have "winners." Ideally, even the "losers" of the game should feel that the experience was enjoyable.
Group Investigation	The class is divided into teams. Teams select topics to investigate, gather information, prepare a report, then assemble to present their findings to the entire class.
Holistic Instruction	Involves the use of problems or activities which are multi-dimensional or multidisciplinary. Usually involves long- term and authentic activities.
Interactive Video	Any of several systems that allow a user to interact with a video by making choices between video segments. Delivery modes can include: CD-ROM, DVD, or a computer linked to a VHS tape system.
Lecture	A direct instructional method. The teacher talks with the purpose of transmitting information. Lectures may, but often don't, include visual aids or noted to accompany the talking.
Microteaching	A form of practice teaching in which the student prepares a short (6-15 minute) lesson and presents the lesson to peers for constructive evaluation.
Multimedia	Typically refers to the presentation of information using a computer and including text-based, audio, and visual components.
Observational Learning	Albert Bandura's learning theory stating that much human learning occurs through our observation of the behavior of others. This theory is now often called "social learning" model or theory.
Problem-Based Learning (PBL)	Inductive teaching method. No direct instruction. Teacher poses authentic (real-world) problem. Students learn particular content and skills as they work cooperatively to solve the problem.
Situated Learning	An educational theory by Jean Lave proposing that learning normally occurs in a specific context (i.e. with certain people or while performing certain tasks). Learning, then involves both social interactions and interactions with the real-life materials and places where the knowledge would be applied. Variations of situated learning would include apprenticeships and cognitive apprenticeships.

Appendix N: Researcher's CV

CURRICULUM VITAE
Patrick Guilbaud, PhD

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Home Phone: (434) 245-1689; **Mobile**: (434) 242-5712
Web: http://www.people.virginia.edu/~pg3w/
Email: guilbaud@virginia.edu

ACADEMIC AND PROFESSIONAL INTERESTS

- Design and deployment of Instructional Learning Systems and Web-based courseware tools;
- Development of innovative Net-centric distributed learning systems for professional development and life-long learning;
- Decision Science, Information Systems and Entrepreneurship;
- Examination of public-private partnerships opportunities for the purpose of broadening the availability programs focused on professional training and lifelong learning;
- Development and facilitation of collaborative teaching networks and online learning communities; and
- Identification of the economic and social benefits of lifelong and continuing education

EDUCATION

PhD, Instructional Technology, University of Virginia, May 2007

Doctoral Thesis: "*Andragogy & Online Learning: Towards a Systematic Instruction Framework.*"

MSE, Engineering & Applied Sciences, University of Virginia, *2003*

MBA, Darden Graduate School of Business, University of Virginia, *1995*

BSBA/Finance, College of Business, University of Florida, *1986*

EXPERIENCE (Academic)

University Of Virginia, Charlottesville VA, 2000 – Present
Graduate Research Assistant / Lecturer

- Assist UVA faculty in managing the electronic classroom environment, facilitating the use of CMS/LMS, Interactive White Board, and Videoconferencing (e.g. Blackboard, E-folio, Toolkit, Moodle, Sakai, Centra, Horizon Wimba, Polycom)
- Coordinate distance learning activities and residency programs utilizing a variety of instructional approaches e.g., One-on-One Tutorials,

Group/Collaborative Learning, Computer-Assisted Instruction, Interactive Case Studies and Educational Games

- Support UVA faculty in the implementation of Web/PC-based tools, simplifying activities such as class mailing, homework assignments and grade submission
- Developed and taught various short-term courses and seminars in areas such as: Basic Computing Applications, Instructional Technology, Learner Assessment, Life-Long Learning and Distance Education

American University of the Caribbean (AUC), Cayes, Haiti 2004 – Present
Adjunct Faculty / Distance Learning / Online Instructor

- Developed and taught upper division Distance Learning Project Management course
- Conducted MIS, Health Education and Decision Analysis seminars

EXPERIENCE (Professional)

Self-Employed, Charlottesville, VA, 1999–Present
Management Consultant/Senior Business Analyst/Operations Consultant

- Spearheaded a market analysis and business plan effort for a new high-tech venture resulting in a third-place finish in a regional business plan competition and first-stage outside investments
- Led a team of four analysts in analyzing suitable business plans, business strategies and competitive advantage capabilities for entry in a High Growth market
- Conducted marketing analyses, streamlined operational processes, and evaluated core capabilities leading to significant cost savings for a small high-tech firm

Metamor /LCT, Chantilly, VA, 1998–1999
Program/Project Manager

- Managed the development and roll-out of a systems integration RFP project for the Fairfax County Human Services Deputy Area
- Analyzed transfer of information between users of more than 50 service delivery systems then applying management objectives, Critical Success Factors, Cost/Benefits, BPR Requirements and Probability of Success to develop three IT architectures with recommended systems interfaces and phasing plans.

AMS Birmingham, AL, Frankfurt, Germany & Fairfax, VA 1995–1999
Deputy Program Manager/Senior Financial Analyst/Technical Consultant

- Led financial analysis effort contributing to award of a multi-million dollars customer care and billing applications development project;
- Coordinated project/program plan, requirement analysis, risk assessment, mitigation strategies & implementation readiness assessment for the program office;
- Tracked major deliverables and participated in internal QA checkpoints / ISO 9000 preparations.

Project Manager/Senior Analyst (1995-1997)

- Led a team of consultants and technical analysts in the implementation of a decision support system for the marketing group of a major telecommunications provider;
- Led teams of business analysts, I/S support personnel and user representatives to establish overall QA ISO standards in the implementation of a strategic billing system for leading RBOC;
- Conducted walkthroughs, coordinated software change requests and managed user training.

EDS Plano, TX, Burlington, VT & Farmington, Ct 1988–1993
Systems Engineer/Analyst

- Consulting, Quality Assurance & Applications Development:
- Consulted with senior managers of the Connecticut & Vermont Medicaid Programs in the implementation of a claims payment and processing system;
- Facilitated workshops with the department's senior management to review cross-organizational impacts, dependencies and system requirements.

OVERALL RESEARCH INTEREST, THEME & COMPETENCE

Synopsis

Key thrust of research is to uncover relevant teaching approaches, learning strategies and technical considerations involved in teaching adults online. Specifically, the research seeks to understand the ways in which adult teachers and learners manipulate available features of an Instructional Management System (IMS) to create, review, synthesize, disseminate and assess course-related contents for use in the online space.

Focus

Examine Net-Based & Web-centric Teaching, Collaborative Learning, Professional Development and Life-Long Learning.

Aim

Understand and disseminate the critical issues that are involved in the introduction of online learning systems in non-traditional learning environments.

Activities

1. Train users in the basic and advanced features of Computing Tools/Applications;
2. Evaluate ways in which learners in non-traditional schooling environments (Home, Office, Community Center etc.,) can leverage collaborative online learning environments for the purpose of self-improvement and continuing education;
3. Assess critical needs and relevant issues related to online learning.

Outcomes

1. Strengthen links for professional development, self-improvement and life-long learning opportunities,
2. Organization and implementation of distance education / distance learning (DE/DL) courses,
3. Formation of collaborative online learning groups/communities.

PUBLICATIONS

Published Work (Refereed)

Guilbaud, P., & Jerome-D'Emilia, B. (2005). *Integrating WebLearn in the School of Nursing at UVA: Approaches to Anchoring and Facilitating Online Learning in an Online Master Degree Program.* In Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2005 (pp. 685-690). Norfolk, VA: AACE.

Farrell, S. P., Mahone, I. H., & Guilbaud, P. (2004). *Web technology for persons with serious mental illness.* Archives of Psychiatric Nursing, 18, 121-125.

Work In Progress

Guilbaud, P. (2007) "Net-Based Teachings Adult Education: Concerns, Benefits & Issues."

Guilbaud, P. (2007) "Role Changes in Online Learning: Teacher-Learner, Learner-Leaner and Learner-Teacher Interactions."

Guilbaud, P & Preston M (2007) "Healthcare Education and Training with PDA's: System-Wide Needs, Uses & Outcomes."

PRESENTATIONS

Integrating Weblearn at SON, E-Learn 2005 World Conference on eLearning in Corporate, Government, Healthcare, & Higher Education, 26 October 2005, Vancouver, British Columbia

Leveraging the online learning environment: Maximizing students' potential to succeed AACN Masters Education Conference Feb 17- 19, 2005 San Diego, CA

SEMINARS & WORKSHOPS

Distance Learning Tools & Applications, Curry School, UVA, Spring 2004

Teaching with Blackboard, Curry School, UVA, Spring 2005

Developing Contents with Moodle, Curry School, UVA, Spring 2005

Basic Computing Workshop & Technology Boot Camp, School of Nursing, University of Virginia Jan 2005, Summer 2004 & Jan 2004

Introduction to Decision Analysis, AUC, Aug 2005

TECHNICAL SKILLS & PROFESSIONAL TRAINING

CMS-LMS: MS-Productivity, Centra, Blackboard/WebCT & Moodle

Analysis & Design: Systems Life Cycle & Object Oriented with Use Cases

Media Authoring, Programming & Web Design: HTML, Dreamweaver, Photoshop, Macromedia Flash, ActionScript, JavaScript, PHP & MySQL

FOREIGN LANGUAGES

Fluent in French & Haitian Creole

SERVICE, GRANTS, RECOGNITION & AWARDS

2002 – 2007 UVA Teaching & Technology Support Program Fellow (TTSP)

2005 – 2006, $12,000 Research Grant from the UVA Center for Global Health-Ellison Fellow

2005 – Third Place Finalist in the Darden-UVA Business Plan Competition

2001 – 2004 KPMG Scholar

1995 –The Darden School's C. Stewart Sheppard Award for Service Excellence

VOLUNTEERING

- Charlottesville Adult Learning Center, Instruction & Technical Support
- Friend & supporter of AUC, an American style University in Les Cayes, Haiti in the capacity of IT faculty, fund-raising & development