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Transitioning a course from face-to-face in distance mode : analysis and implementation

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**Transitioning a Course from Face-to-Face in Distance Mode:
Analysis and Implementation**

A Project Report

Presented to

The Faculty of the Interdisciplinary Studies Program

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

By

Terry Neil Meyerson

December 2003

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ABSTRACT

Transitioning a Course from Face-to-Face in Distance Mode:

Analysis and Implementation

by Terry N. Meyerson

This document is a summary of a special project that addresses the transitioning of a university level writing course from traditional face-to-face format to blended learning format combining face-to-face instruction with digitally mediated instruction. This paper documents the: (1) goals of the project; (2) theoretical foundation for translating the existing teaching and learning behaviors in a specific instance of CA100W into technical specifications supporting an online environment; (3) digital technologies implemented and deployed; and (4) subjective evaluation of the success of the special project.

TABLE OF CONTENTS

List of Tables	vii
List of Figures	viii
I. Introduction	1
Search for Technology to Deliver an Online Course.....	2
Project Participants and Roles	4
II. Creative Arts 100W: Description and Project Goals	6
General University 100W Requirements.....	6
Creative Arts 100W	7
Communications Assessment	8
Transition Goals.....	11
III. Theoretical Foundations: Teaching and Learning Behaviors	16
Moore's Theory of Transactional Distance	16
IV. Technologies of Distance Independent Teaching and Learning.....	24
Historical Models.....	24
First Generation: Correspondence School	26
Second Generation: Multiple Media.....	28
Third Generation: Computer Networks and Blended e-Learning.....	30
Historically Supported Pedagogical Methods.....	42
V. Implementation	44
CA100W, Fall 1997	44
Course Format.....	44

WebCT	45
CommonSpace™	49
Handbook and Assignments	49
VI. Evaluation and Conclusion	55
References	59
Appendix	62

LIST OF TABLES

Table 1: CA 100W Communication Matrix	8
Table 2: Descriptive Dimensions of Historical Distance Independent Teaching and Learning Models	41
Table 3: Technologies Used to Deliver the CA100W Course.....	53

LIST OF FIGURES

Figure 1: Learner Autonomy and Transactional Distance.....	18
Figure 2: Dimensions of Transactional Distance (Structure and Dialog).....	19
Figure 3: Inverse Relationship between Dialog and Structure	21
Figure 4: Increasing Transactional Distance.....	22

I. Introduction

It is highly likely that the processes of teaching and learning in the information age will be markedly different from those processes that shaped higher education in all but the last decade of the Twentieth Century. Through intermediating technologies, the processes of teaching and learning are challenging temporal and spatial boundaries. This special project documentation describes an exploratory project in the use of such intermediating technologies for the delivery of a Creative Arts course at San Jose State University (SJSU) in Fall, 1997. The goal of the project was to take a traditional campus-based course and transition it to a largely (but not entirely) digital environment and to do so without sacrificing either the values of the traditional environment or the quality of the educational experience.

The special project documentation is organized as follows: *Creative Arts 100—Writing* (CA100W), as a face-to-face teaching and learning experience, is described in Chapter II. The discussion focuses on the pedagogy and the communication patterns of the face-to-face experience that either needed to be supported directly in the technology-mediated environment of the project or be recast through equally supportive digital means. Chapter III provides an analytic framework for defining the goals of the transition of CA100W from a face-to-face to a digital teaching and learning environment in terms of Michael Moore's theory of transactional distance. Chapter IV describes the enabling technologies used in the special project. Chapter IV also reviews the historical roles of information and communications technologies in mediated teaching and learning for those studying at a distance. One of the goals of Chapter IV is to provide a bridge

between Chapters II and III and the synthesis of technology and learning in Chapter V, where the focus shifts to course implementation. Chapter VI concludes the discussion with a subjective evaluation of the special project.

The special project described in this document is admittedly exploratory—no empirical measures were used to determine success or failure. However, a number of subjective criteria—e.g., grades earned, student evaluations, and the professor's sense of success as compared to her long history of face-to-face teaching—demonstrate that successful transitions from a resident classroom to technology-mediated teaching and learning can be highly successful.

Search for Technology to Deliver an Online Course

This was an exploratory online course at San Jose State University. In 1997, the University as a whole was not prepared to deliver instruction over the Internet. During the spring and summer semesters of 1997, the professor and computer technical designer met with SJSU University Computing (UC) and various departments to determine if hardware and software were available to deliver this course online. The resources available were extremely limited. There was no direct access to SJSU's Web servers for maintenance and updating of course websites by faculty. All such maintenance functions were restricted to UC personnel.

To meet the university requirement for in-class writing, a classroom with computers was needed. The in-class writing requirement will be discussed in greater depth in Chapter II. At the time this course was delivered, UC did not have a dedicated classroom with networked computers and existing networked department level computer

classrooms were unavailable. To meet the project's requirement for a computer classroom, UC closed a computer lab on Saturday mornings for four hours allowing the class to meet. The computer lab provided students with the computers needed for the in-class writing assignments. However, it was difficult for the professor to deliver her lectures due to the furniture layout of the room and the noise of the air conditioning unit needed to keep the computer equipment adequately cooled. UC also made technical support personnel available during the class sessions that met in the lab. UC installed a Web browser, word processing software, CommonSpace™ (collaborative document authoring software), and HTML authoring software on the lab computers for use by the class. The computer lab fulfilled the in-class writing requirements, leaving the course website and online chat software to be determined.¹

University Computing's policy for Web server maintenance and updating was restricted to UC personnel. Therefore, the decision was made not to use the UC Web services. Since the project personnel would need continuous and convenient access to course materials, having to submit materials to UC personnel for website updating would have caused detrimental delays in the efficient and effective development and maintenance of the course website.

In addition, the University Web servers did not have software designed to manage an online course. They also did not have online chat software installed and available for use by the course.

¹ The University requires that 30% of the writing assignments be completed during face-to-face class sessions.

After learning from UC that online technologies were limited or extremely restricted, we looked off campus to find the resources needed to present this online course. Available Web-based course management systems (CMS) were researched and colleagues at other universities using these systems were contacted. A collaborative arrangement was established with Syracuse University, School of Information Studies, to use their CMS. WebCT, the CMS they were using will be discussed in Chapter V. WebCT provided the CA100W course with a secure website for course materials, online course management tools, direct access by the professor and project staff to update and maintain course materials, and an online chat feature. WebCT was relatively easy for a professor, project staff and students to learn and to use.

Project Participants and Roles

Dr. Marylou Lewandowski, Professor. Dr. Lewandowski was the course professor and content creator. She taught the traditional classroom version of the CA100W for many years. She was also responsible for validating that the online version of CA100W met the SJSU upper division writing requirements. At the time this course was presented, Dr. Lewandowski had a limited knowledge of online technologies and how they could be used to present this course.

Karen Suty, Undergraduate Student Assistant. Ms. Suty's roles in the project were to:

- support the professor and students;
- create HTML pages from the documents provided by the professor;
- upload the HTML pages to the Web server;

- assist the professor with administration of the course; and
- assist students with online technologies in and out of class.

Terry Meyerson, Technical Designer (Designer). His roles were to:

- assist the professor in determining the appropriate technologies needed;
- develop mechanisms to transition the traditional classroom course to an online format;
- research and obtain commitments for technologies needed to deliver the class;
- be responsible for verifying the readiness of the computer classroom used for part of the course;
- be responsible for guaranteeing that hardware and software were available when needed to deliver the class;
- provide training on technologies, provide technical support to professor, staff and students;
- be the liaison with University Computing and Syracuse University; and
- be responsible for maintenance of all materials in the course management system.

An overview of the project, how it came about, and its various participants has been provided in this Introduction. Chapter II will expand on the online CA100W course requirements and the goals of this project.

II. Creative Arts 100W: Description and Project Goals

This chapter provides a discussion of the University requirements to present this course in the non-digital format. Chapter II also provides an outline of the student deliverables required by the course and assesses communication flows in the CA100W course. This chapter concludes with a discussion of the goals in transitioning the non-digital course to a digitally mediated format.

General University 100W Requirements

As part of the undergraduate curriculum at San Jose State University (SJSU), students are required to demonstrate a prescribed level of writing proficiency before they are allowed to graduate. To demonstrate this proficiency, undergraduate students must pass the University compulsory Writing Skills Test. If a student does not pass the Writing Skills Test, he or she is required to take an upper-division writing course with the designation of 100W. Many departments around the campus offer their own version of the 100W course that focuses the content and writing skills around its discipline. One of the requirements mandated by SJSU for all of the 100W courses, no matter the discipline, is that at least thirty percent of the student writing assignments be written in-person in a non-digital classroom during weekly face-to-face meetings. While this requirement might be viewed as an impediment to this project, it comports with a number of programs at other universities that have brief residency requirements for distance independent

courses. In fact, the residencies might be viewed as highly effective mechanisms for cohort bonding and socialization.²

Creative Arts 100W

The 100W course described in this special project documentation is the upper-division undergraduate course offered by the Creative Arts Department. The course focuses on teaching students writing for arts organizations. Prior to this project, the CA100W course was taught as an instructor-led course with face-to-face meetings in a classroom without computers (i.e., non-digital). The traditional course format was fifteen weekly face-to-face meetings. Each of these weekly meetings was a combination of lecture by the professor, class discussion, in-class writing, team discussion, and peer editing. All of the in-class writing and peer editing were performed in non-digital (paper) media. The professor preferred (but did not require) that the final version of all of the writing assignments be submitted for grading in a digital format. Over the course of the semester, students were required to complete the following writing assignments:

- Position paper about the value of one's art
- Questions to interview a classmate
- Biography of the classmate interviewed
- Arts event promotional team project
 - Press release
 - Public service announcement
 - Publicity article
 - An interview
 - Fliers
 - Model for a poster
- Review of a magazine or journal article
- Evaluation of the promotional project
- Grant proposal for an arts organization

² The actual purpose of the University requirement is for author authentication and to foreclose the possibility of other forms of academic dishonesty.

A number of these assignments will be discussed in greater depth in Chapter V.

One of the other requirements of the CA100W course is peer editing of a classmate's compositions. Therefore, all of the non-digital in-class writing assignments were exchanged with fellow classmates for peer editing. Upon completion of the editing, the writing assignments were returned to their authors and in-class discussions were held regarding the edits. Once the authoring student and his or her editor have negotiated an agreement on the edits, the author was required to rewrite the assignment and submit the original and the edited final version to the professor for grading.

Communications Assessment

The professor used a combination of communication methods. Of particular interest to this special project documentation are methods that can be framed along two dimensions: time dependencies and the direction of communication flows. These dimensions are inextricably linked to pedagogical issues to be discussed more fully in Chapters III and IV. Table 1 illustrates the factors of interest along both dimensions and provides examples of the sorts of communicative activities at the intersections of the two dimensions.

Communication Time Dependencies	Direction of Communication Flows	
	Asymmetrical (One-way Interaction)	Symmetrical (Two-way Interaction)
Asynchronous (Time Independent)	<ul style="list-style-type: none">• Electronic listserv	<ul style="list-style-type: none">• E-mail
Synchronous (Time Dependent)	<ul style="list-style-type: none">• In-class lecture• Student presentations	<ul style="list-style-type: none">• Discussion• Meetings

Table 1: CA 100W Communication Matrix

In Table 1 the rows denote time dependencies. To be time independent means that participants need not be interacting in the same time frame (i.e., asynchronous) while participants that must interact simultaneously are time dependent (i.e., synchronous). The columns in the table denote the directional flows of communication between faculty and students and among students. For example in a large lecture hall where students receive information but do not interact with the instructor the communication flow is asymmetrical. In contrast, in a seminar where all participants interact, the flows are generally symmetrical to one varying degree. In any instructional situation there will likely be moments of asymmetrical and symmetrical flows.³

Given the above, the non-digital CA100W course of interest to this special project documentation included various forms of activities that cut across both dimensions of the matrix. Since the class was “live” (i.e., face-to-face in real time), the most emphasis was placed on synchronous activities; however the activities ranged along a continuum from the purely asymmetrical (lectures) to the symmetrical (discussions). Student-to-student interactions were primarily synchronous and symmetrical as they engaged in their peer editing and when they held synchronous, symmetrical face-to-face meetings outside of class to discuss the team projects.

While asymmetric communications in the form of lectures were present, the general tenor of the non-digital CA100W course to be transitioned to a digital environment may be characterized as one in which the understandings reached by course participants were the result of symmetrical open discussion—what Habermas (1987)

³ The asymmetrical or symmetrical nature of the flows function independently of the mode of instruction; i.e., either pattern can occur in face-to-face instruction as well as in distance independent instruction.

would call non-combative discourse. These discursive modes of reaching legitimate understandings support the constructivist educational theory as expressed by Piaget and others that learning is a social, collaborative process with peer taking place in as natural settings as possible.

However, as will be discussed at greater length in terms of Michael Moore's theory of transactional distance in Chapter III, teaching behaviors in distance independent teaching and learning fall into two clusters: dialog and structure (Moore & Kearsley, 1996, p. 200). The constructivist elements of asymmetrical and symmetrical communication noted above fall within Moore's dialog cluster. Aspects of the structure cluster in the traditional CA100W course were the well defined expectations of the syllabus, agendas and the course lectures.

In order to successfully transition CA100W from a non-digital face-to-face classroom to a technology-mediated distance independent one, the professor and the designer needed to be cognizant of the following factors: the roles played by both of Moore's teaching behavior clusters in the processes of learning in a distance independent mode and how the needs of both the professor and the students might be addressed in terms of the available technologies. Those needs can be expressed in terms of the following two questions:

1. *What levels of structure and dialog would need to be established and maintained through the enabling technologies in order to preclude transactional distance as much as possible?* This question is largely addressed in Chapter III through the lens

of Moore's theory of transactional distance with its focus on the juxtaposition of individual student autonomy and the notions of class structure and dialog.

2. *What kinds of teaching methods does this particular professor use in face-to-face teaching in CA100W and how can those methods be supported through the available digital technologies?* This question is largely addressed in Chapter IV where a brief examination of Habermas' three forms of pedagogical legitimacy (historical, quasi-scientific, and discursive (constructivist)) are examined in the context of the three generations of distance independent education.

Transition Goals

The grand objective of this project is to convert a course being taught at present, a required upper-division writing course (CA 100W), into an on-line offering. Effecting such an objective means (1) redesigning the course to take advantage of the possibilities open through electronic communication, (2) finding campus help in setting up the on-line components of the course (software/hardware), and (3) structuring the course in such a way the students may finish early and then move on, if they wish and are qualified, to a writing internship with an arts agency. ¶ Specific objectives involve . . . adding some assignments which will enhance the students' knowledge and use of electronic communication, particularly e-mail, chat-room, listserv, and Web use (Lewandowski, 1997, p. 1).

To provide a learning experience in which the "grand objectives" might be achieved and the values of the non-digital instructor-led CA100W class could be transitioned to a digital environment, the following goals were identified:

- *Secured Website and Repository.* The Website established for the course would need to be secure. Password protecting all files in the course repository would provide both privacy and security for the professor and students and protect intellectual property rights in the documents posted to the Website.

- *Unlimited Access.* To effectively deliver this online course, dynamic real-time 24 hours, 7 days a week access to the Web servers, the course Website and course materials was needed. This allows direct access by the professor, staff and students to maintain and update the course Website and course materials. In a traditional face-to-face class the professor shifts educational approaches and materials used based on the changing needs of the class as a whole and of individual students in particular. Thus, to replicate the flexibility of the traditional class dynamic real-time access to instructional resources through the course Website would be needed to present the online course effectively. For example, as a course progresses and the professor realizes that a topic needs additional clarification/correction or educational materials the professor needs real-time access to the Website and course materials to change/update these resources.
- *Centralized Course Location.* “One stop” access to all of the course materials would be needed by the professor, staff, and the students. This would alleviate the need to go to multiple Websites for course content. All of the course materials, student materials, and the course administration needed to be handled through one unified site. Using a unified environment allows the students to build coherent mental models of the learning environment. It is a well-settled principle that in order for a human being to interact effectively with technology of any sort, he or she must have a functional mental model of how that technology works. The mental model need not be perfect or even necessarily accurate in all respects—it need merely be sufficiently correct to make it possible for the person to interact with the technology in such a way that

necessary tasks for which the tool was designed may be accomplished. For example, the popularity of the Apple Macintosh is largely the result of providing the user with an interface metaphor of a desk top by which the user can quickly build a useful mental model of the machine's behavior and functionality. As the user of a Macintosh moves from one function to another, the metaphors evoked by the interface icons shape the user's understandings—i.e., they frame the user's mental model of the machine and its applications.⁴

- *Repository Space.* Online repository space for course content would be required for both the professor and students. This space would contain the professor's course syllabus, handbook, supplemental course materials, and glossary. It would also provide online repository space for student assignments, supplemental materials, and presentations.
- *Course Announcements.* Throughout the duration of the class, there would be numerous occasions when the professor or a student would want to make announcements to the whole class. Having a centralized place to post and retrieve such announcements would make it easier for both the professor and the students to communicate.

⁴ The concept of the mental model need not be limited to computers and machines. It also can be applied to other less obvious technologies such as the traditional classroom. When students arrive in a physical classroom on the first day of instruction and find a space with a single large round or rectangular table, their experience-derived mental model of the educational system leads them to think that the instructional format might well be that of a seminar. Similarly, when arriving in a classroom with many rows of desks or tables facing a single desk on a podium in the front of the room, the student's experience-derived mental model is of an entirely different form of student/teacher interaction—a different mental model. Problems with mental models arise in two contexts: (1) the person cannot construct a mental model from environmental clues or from instructions; and/or (2) the system builds one sort of mental model in its users and then does not act accordingly or does so erratically.

- *Synchronous Online Text Chat.* Since the online portion of the class would not have the live “face time” interactions possible in a non-digital classroom, an online text chat system would be needed to provide a mechanism for synchronous communications among the class participants. Text chat could be used to hold synchronous course discussion, synchronous office hours between the professor and students, and synchronous collaborative discussions among the students.
- *Online Course Administration.* To ease the burden of class administration, the professor needed to be able to maintain student information and grades online, to view which students have viewed specific pages, to maintain online course files, and to update course materials.
- *File Transfer Mechanisms.* Throughout the course, both the professor and the students would be moving many files (e.g., course resources and student assignments) between local machines and the online environment. The processes for doing so needed to be as transparent and simple as possible.
- *Online Communication.* In addition to the needed synchronous chat facilities noted above, the system needed to provide integrated means of asynchronous communications through email that could be managed by the professor and the students within the context of the online class environment.

Each of these goals will be addressed in greater depth in the special project documentation discussion of the actual implementation of the digital CA100W class in Chapter V.

This chapter presented an outline of the Creative Arts 100W course in its traditional non-digital format: face-to-face instruction, in-class peer editing, written assignments, etc. This provides a general overview of the traditional non-digital CA100W course and its requirements and deliverables. This chapter also outlined the goals of the project in terms of a set of requirements to transition the non-digital CA100W course to a digital mediated format. Also introduced in this chapter were the principles of communication flows—asynchronous and synchronous—and how they are used to deliver instruction. An understanding of communication patterns and principles embodied in a traditional course are necessary for that course to be transitioned to a digitally mediated format. Further discussion of the communication flows and how they were used to implement the online version of the CA100W course is presented in Chapter V. Chapter II briefly alluded to Moore’s theory of “transactional distance” and its correlation to human interaction in learning. Chapter III will expand on Moore’s theories and introduce other theoretical foundations of teaching and learning behaviors useful in framing choices made as the course transitioned to an online environment.

III. Theoretical Foundations: Teaching and Learning Behaviors

In order to transition a college-level course such as CA100W from a traditional face-to-face environment to a technological-mediated, distance independent one, it is essential to frame the use of the enabling technologies in ways that support both the behaviors of the teacher as she pursued the tasks of instruction and the learning preferences and needs of different sorts of students as they learn. The focus of this Chapter is on the theoretical lens that informed the design choices made in the project.

The theoretical lens used is Michael Moore's theory of transactional distance with its focus on the relationship between student autonomy and the intertwined notions of structure and dialog (Moore & Kearsley, 1996; Moore, 1973, 1983, 1989). The theory was useful in the analysis both of the non-digital course to be transitioned to a distance independent mode and in the balancing use of various technologies and strategies in the new digital environment. The following pages of this chapter explain the fundamental principles of Moore's theory of transactional distance. In Chapter V, the theory is applied to the design of the online CA100W class.

Moore's Theory of Transactional Distance

Michael G. Moore was the first American theorist to grapple with distance education as a phenomenon. Relying on emerging European theories and the loosening grip of the behaviorist tradition that shaped much of educational theory in the middle part of the Twentieth Century, Moore set out to develop a theory that balanced the prevalent

view of education as a highly structured, teacher-centered activity with a countervailing reality found in distance education—the need of the adult student to exercise independent control over the learning process. Moore first framed what would become known as the theory of transactional distance in a presentation to the Ninth World Conference of the International Council for Correspondence Education in 1972 (Moore & Kearsley, 1996, p. 199; see also Moore, 1973, 1983, 1989). The theory holds that there are two fundamental, interdependent dimensions to teaching and learning: student autonomy and transactional distance.

Moore defines the first dimension, student autonomy, in terms of the student's ability to function independently to varying degrees in setting learning objectives and how those objectives will be met. Moore states:

The ability of a learner to develop a personal learning plan in some ways different from others, the ability to find resources for study in one's own work or community environment, and the ability to decide for oneself when progress was satisfactory should not be conceived as extraneous and regrettable noise in a smooth-running, instructor-controlled system. ... [P]rograms can be defined and described in terms of what degree of autonomy learners are expected or permitted to exercise. (Moore & Kearsley, 1996, p. 205)

The second dimension Moore calls transactional distance. While discussed in greater depth below, it is sufficient here to define transactional distance generally in Moore's own words and to establish its relation to learner autonomy.

The transaction that we call distance education is the interplay between people who are teachers and learners, in environments that have the special characteristic of being separate from one another, and a consequent set of special teaching and learning behaviors. It is the physical distance that leads to a communication gap, a psychological space of potential misunderstandings between the behaviors of

instructors and those of learners, and this is the transactional distance (Moore & Kearsley, 1996, p. 200).

Figure 1 illustrates the relationship between these two general dimensions.

Figure 1: Learner Autonomy and Transactional Distance

The two axes of Figure 1 denote low to high values along both the theories controlling dimensions. The space defined by these axes has been divided into four quadrants (A-D). The theory holds that learners capable and willing to exercise a greater degree of autonomy can withstand higher levels of transactional distance. Conversely, learners with low levels of personal autonomy can tolerate less transactional distance, which, once again, Moore defines as “the physical distance that leads to communication gaps” and “a psychological space of potential misunderstandings” (Moore & Kearsley, 1996 , p. 200). Thus, in Figure 1, learners with low autonomy may or may not succeed depending on the degree of transactional distance. Those in the lower-left hand corner of quadrant “A” are likely to succeed because the levels of transactional distance are low; however, as we move toward quadrant “B,” success grows more problematic for learners

with lower levels of autonomy. In like fashion, the learner with a high level of personal autonomy in an environment with low transactional distance as (denoted by the lower-right hand quadrant “D”), is likely to have his or her educational needs met. Such a person cast into a situation with high transactional distance (i.e., quadrant “C”), may or may not find the experience personally gratifying but is likely to succeed.

Moore’s theory does not stop with the framing of these two dimensions. The degrees of transactional distance afforded by any given teaching and learning situation (conventional or at a distance) is the result of two clusters of teaching behaviors—*dialog* and *structure*. Like the general dimensions of the theory, in Figure 2 these clusters of teaching behaviors from which transactional distance is shaped are presented as two dimensions of an event space.

Figure 2: Dimensions of Transactional Distance (Structure and Dialog)

As Figure 2 implies, dialog and structure represents two faces of control in the learning process. A highly structured teaching environment places the locus of control over the processes of learning in the hands of the professor. For example, where learning

is achieved through video or audio transmission or tapes with no interaction (dialog) between professor and student, where highly structured workbooks frame the sequence of learning, and carefully devised testing takes place at precise times and in a precise manner, one can say that such a course is highly structured. Control is clearly in the hands of the professor. There is little or no room for the individuation of the learning experience to meet individual learner needs or interests.

A learning environment marked with heavy instructor-to-student and student-to-student dialog will place greater control over the content and direction of the learning process in the hands of the learner—this is achieved only by taking some level of control away from the instructor.

It is important to note:

[T]ransactional distance is a continuous rather than a discrete variable; in other words, transactional distance is relative rather than absolute. As long as there is a learner and teacher and a means of communication there will be some transactional distance. If there is neither learner nor teacher nor a communication channel, there can be no transactional distance, because there can be no educational transaction (Moore & Kearsley, 1996, p. 200)!

As dialog increases, structure decreases. This fact has been demonstrated empirically in the work of Farhad Saba. Saba's work on the theory of transactional distance demonstrates an inverse relationship between structure and dialog (Saba, 1988, p. 17-24). Using negative feedback in a system dynamics causal loop, Saba found that "[a]s dialogue increases, structure decreases, and as structure decreases, dialogue increases to keep the system stable" (Saba, 1988, p. 22). Saba's findings (1988, p. 22)

are represented in Figure 3 with the curved line running through quadrants “A,” “B,” and “D.” The inverse relationship precludes quadrant “C.”

Figure 3: Inverse Relationship between Dialog and Structure

The implications of Saba’s findings for this discussion are two-fold. First, the balance between dialog and structure will be different from one teaching and learning situation to another and, in most instances, will be cast and recast numerous times over the timeframe of a given course. When transactional distance develops, recalibration is generally called for. For example, when there is a communication gap or misunderstanding regarding the behaviors of the instructor or the learner, recalibration may involve increased (and hopefully clarifying) dialog. Or, it might involve more defining structure. The second implication of the dynamics of the inverse relationship between structure and dialog flows from the first and will inevitably result in a system that fails some (if not all) of its learners absent some mechanisms to keep the system stable.

Moore and Kearsley state:

What determines the success of distance teaching is the extent to which the institution and the individual instructor are able to provide the appropriate structure of learning materials, and the appropriate quantity and quality of dialog between teacher and learner taking into account the extent of the learner's autonomy. ... The more highly autonomous the learners, the greater is the distance they can be comfortable with—that is, *the less the dialog and the less the structure* [emphasis added]. For others the goal must be to reduce distance by increasing dialog At other times it may be appropriate to design highly structured courses or programs but to limit dialog (1996, pp. 205-206).

Figure 4 graphically represents the dynamics Moore describes.

Figure 4: Increasing Transactional Distance

Figure 4 again represents the inverse relationship between structure and dialog; however, it is possible (although far from desirable) to imagine a learning environment absent *either* structure or dialog, i.e., a learning environment with extremely high transactional distance. In such a case, Moore's theory and Saba's findings would indicate that only learners with a strong sense of autonomy would survive. Only such individuals would be able to frame their own goals and learning objectives, secure learning

resources, develop and maintain processes leading to progress, develop individual reinforcement devices and mechanisms of evaluation. This suggests that transactional distance will increase in the absence of mechanisms to support the dynamic relationship between structure and dialog. Transactional distance will increase for many learners given a reduction of dialog absent a countervailing increase in structure. In like fashion, transactional distance will increase for others given a decrease in structure and no countervailing increase in dialog.

One final, but very important observation regarding Moore's theory: since levels of student autonomy and learning style preferences vary considerably, no *single* balance between structure and dialog in a given class will ever be optimal for all of its learners—thus, the inevitable existence of *either* some degree of transactional distance, or considerable tailoring of the environment to meet varying individual levels of autonomy.⁵

⁵ With the exception of varying levels of dialog made possible by the use of asynchronous communications mechanisms such as email and bulletin boards and flexibility in the scheduling of the final course deliverable, no attempts were made in the delivery of CA100W to tailor the environment to meet the individual needs of students demonstrating different learning styles (e.g., auditory, visual, tactual, kinesthetic) or different psychological types (i.e., students demonstrating different Meyers Briggs Type preferences (Soles & Moller, 2001).

IV. Technologies of Distance Independent Teaching and Learning

Historical Models

Students of distance learning assert that there are three generations that represent models of learning historically linked to the technologies used to communicate with learners at temporal or spatial distance. (Sutton, 1996; see also Moore & Kearsley, 1996 p. 20) The three generally recognized generations or models of distance independent education form a continuum ranging from the traditional correspondence teaching of the first generation through the multiple media and broadcast delivery mechanisms of the second to the fully interactive, dialogic mechanisms of the third. All contemporary programs (or parts of programs) in distance independent education come to rest somewhere on this continuum. Being a continuum, there are few, if any, pure instantiations of any of the three models. Instead, contemporary programs mix and match model attributes to achieve educational goals.

In the following paragraphs of this chapter, the attributes of each of the three generations are described. Since the enabling technologies of the third generation are the most critical to this special project, the greatest attention will be paid to that generation. Each generation is described along five dimensions:⁶

1. **Participant Identities**. This dimension describes the recognizable identities of the various participants in the educational experience in terms of their awareness of the personal attributes of each other. In a sense, this dimension embodies an

⁶ Dimensions two and three were briefly introduced in Chapter II in the discussion related to Table 1.

admittedly crude statement about the “humanness” of the teaching and learning experience.

2. Communication Flows. As set out in Chapter II, any given communication may be characterized in terms of the directional flows of communicative symbols as being either symmetric or asymmetric. An asymmetric flow is unidirectional—only one party to the communication transfers information. A symmetrical flow is best characterized as a conversation or dialog—both parties to the communication are engaged in transmitting and receiving *responsive* communicative signals.
3. Temporal and Spatial Dependencies. Teaching and learning experiences for an *individual* always occur at a given place and time. The temporal dependency dimension denotes whether the *aggregate experiences* of the professor and students must occur simultaneously—i.e., must they be synchronous? Or, are the various experiences time independent—i.e., asynchronous. In like fashion, the spatial dependency dimension denotes whether the aggregate experiences must occur in the same place. The two dependencies function independently. For example, students may be required to gather in a specific place such as a remote classroom (spatially dependent) to view a video lecture recorded earlier by the professor (temporally independent).⁷

⁷ An argument can be made that the experience is temporally dependent for the students who must gather at a specific time to view the video lecture and temporally independent for the professor who may record the lecture at a time quite independent of the time of the student viewing. When students may listen to the lecture at any time from their networked home computer or from a publicly available machine, it can be said that the aggregate experiences of the teacher and learners are temporally and spatially independent.

4. Peer-to-Peer Communications. This dimension denotes the nature of interactions among the students. The dimension is a continuum with one pole representing a lack of peer-to-peer communications where students work in total isolation one from another to the other pole that represents a discursive environment in which students are actively engaged in peer-to-peer communications.
5. Media. This dimension notes the forms of communicative media or channels that are available to participants in the educational experience. Media range from simple text representations to multiple media (video, audio, graphics, and computer simulations, to name a few)) to multimedia (aggregated media). The richer the range of available media, the greater the number of learning styles that can be addressed.

This chapter concludes with an explanation of the pedagogical models each generation was capable of supporting.

First Generation: Correspondence School

The first of these generations is the traditional correspondence school in which the sole form of communication between student and teacher is textual, asynchronous in nature, and asymmetrical in that information flows from the instructor to the student without discourse. Student peer-to-peer communications are nonexistent. The first generation can be divided into two fairly distinct, overlapping phases.

Phase One:

Correspondence teaching has its root in the United States in a period that predates the maturation of modern postal service. As a result, early experiences in this generation

took the following form. An educational institution would send the student a complete course package consisting completely of textual materials. The student was expected to work his or her way through the package and return the result to the educational institution where it was assessed.

The student's awareness of participant identities was limited to the educational institution itself. The student had no sense of the personal identity of an instructor. While obviously aware that the instructional materials were prepared by one or more people, the student had no awareness of their individual identities. This lack of awareness would have been exacerbated by the fact that there were no communications between the student and the institution during the period that the student worked his or her way through the instructional materials. Similarly, the individual student had no personal sense of any peers; thus, no peer-to-peer communications.

There were no spatial or temporal dependencies in the first generation. While an educational institution might place an outer limit on the time available for the student to work through the instructional package, the student was otherwise free to complete the individual components of the work at his or her own pace and wherever he or she wished.

Phase Two:

The second phase of the first generation of distance learning in the United States begins with the advent of the modern postal system. This system made it possible for the various components of the educational package to be returned by the student to the educational institution for assessment and feedback upon the completion of each component. In a sense, the student entered into a limited form of dialogue in which his or

her contribution was a completed component and the institution's contribution was an assessment of the student's work and possible guidance on next-steps. For the first time, the student had a sense of the identity of an individual instructor guiding the student's work. It is this single sense of instructor identity and the limited (and largely asymmetrical) communications that differentiates phase two of the first generation from phase one. Along all of the other dimensions, nothing changed.

Second Generation: Multiple Media

The second generation of distance learning is mistakenly referred to by commentators as multimedia distance learning, when what is usually meant is multiple media and not integrated media. In this generation, other media including video and audio tapes, and, with increasing frequency, broadcast media in the form of radio and television are added to the text-based resources of the first generation. With some variations of note discussed below, interaction patterns in the second generation remain largely the same as in the first. Also, like the first generation, the second can be roughly divided into two overlapping phases with new patterns of communication being the distinguishing factor between the two.

Phase One:

In the first phase of the second generation, sound and video recordings were added to the purely text-based resources of the first generation. The addition of auditory and visual media meant that an effective educational experience could be made available to students whose learning styles differed from those effectively reached through purely textual media.

Since materials reached the student through the postal system, like the first generation, this phase of the second was purely asynchronous with periodic communications between instructor and student in the form of work assessments. Thus, the communication flows remained asymmetric even with the new media. Given the visual and auditory clues as to the personal identity of the instructor, for the first time the instructor has a truly human face or voice. In this sense, it could be said that the new media had a humanizing affect on the teaching and learning experience. However, like the first generation, peer-to-peer communications did not exist in this phase of the second generation.

Phase Two:

The second phase of the second generation of distance learning witnessed the introduction of instructional delivery using broadcast media. While a seemingly subtle distinction between receiving a video lecture or a demonstration through an in-hand recording and receiving it over the air, the affects on the various dimension of concern here were substantial. First, time dependencies were altered. While the student was able to listen to the taped recording at any time of his or her own choosing, broadcast media required him or her to be present at specific times to receive the broadcast transmission. In some instances, the students were required to congregate in a specific location to receive the broadcast. In such cases, both temporal and spatial dependencies were imposed. Of course, possibly for the first time in the history of distance independent education, peer-to-peer communications became possible under such circumstances.

The advent of Instructional Television Fixed Service (ITFS) during this period marked the first awkward instances of symmetrical communication—i.e., the first “conversations” with participants in distance independent teaching and learning. With ITFS, the video signal of the instructor is broadcast from a classroom or studio to students at one or more remote locations. The students are linked back to the instructor either by means of telephone connections or additional ITFS video signals. It should be noted, however, that symmetry could be achieved only through temporally binding the participants. It is not until the third generation that symmetrical communications can exist in the face of temporal and spatial independence.

Third Generation: Computer Networks and Blended e-Learning

With the advent of ubiquitous computer networks,⁸ came dynamic shifts in the flows and time dependencies of communications in distance independent teaching and learning and the emergence of a third generation. Like the two previous generations, the third can be roughly divided into two phases: first a phase during which the various new communication and file management tools emerged, and, second, a phase when the new tools were wrapped with integrating management shells.⁹

Phase One: Disaggregation of Applications

As the Internet emerged, a number of communication devices and network search tools were developed to take advantage of the new TCP/IP packet switching protocols.

⁸ Use of the phrase “computer networks” is intended to include interconnection of computers through one or more digital networks and thus includes computers linked through local area networks (LANs), wide area networks (WANs) and combinations of the two.

⁹ While the discussion here divides the third generation into two phases or stages of development, a third phase was emerging at the time of the project—a phase that would shift focus from the enabling technologies and their integration to course content in the form of reusable learning objects. Since such objects played no role in the project, this emergent phase will not be discussed here.

Through applications such as Gopher, Archie and Veronica (all three no longer generally in use), users of the Internet were able to search for resources by traversing open file structures on remote network machines. The File Transfer Protocol (FTP) made it possible with appropriate permissions to download and upload files to and from distant servers.

Fundamental network tools for communicating asynchronously one-to-one and one-to-many (and, thus, many-to-many) were quickly developed to serve the early users of the Internet—the scientific and defense communities. Chief among these asynchronous communication tools were the following:

- E-mail. It can be said that e-mail is the core technology for networked asynchronous communications. It is designed for both one-to-one communications and for ad hoc one-to-many communications. Messages sent from one person to another automatically appear in that person's email listings. One need not "join" anything to send and receive e-mail. All that is necessary is a network connection, an e-mail application and knowledge of the e-mail address of the recipient.
- Listservs and Mail Reflectors. Both listservs and mail reflectors were built on the underlying functionality of e-mail but were designed to manage the one-to-many communications amongst established groups of networked users that either joined or were placed on the "list." Messages sent to member users of a listserv and to the less sophisticated mail reflectors show up automatically in those members'

regular e-mail listings; thus, there is no separate listserv login to retrieve messages.

- Bulletin Boards. Like listservs and mail reflectors, bulletin boards (sometime called forums) made it possible for established groups of networked users to establish ongoing communications. However, unlike listservs and mail reflectors, bulletin board messages do not show up in the participants list of regular e-mail messages. Instead, bulletin board members must log onto the bulletin board (frequently password protected but not always) to read the “postings” of their fellow members of the bulletin board and to post their own messages.

Early in the history of computer networks, elementary synchronous communications were possible with tools such as Internet Relay Chat (IRC) and other forms of chat rooms. With these technologies, people using networked computers were able to enter metaphorical rooms where they could engage in text-based synchronous chat with others who had entered the same room. Some sophisticated chat room implementations made it possible for any two participants in a room to go into private mode for individual conversations—a form of network whispering. In many instances, the transcript of such text-based chats was kept for later reference or distribution.¹⁰

To the suite of early network tools chronicled above, various “streaming” media were added as network bandwidth increased. Used in both synchronous (audio and video conferencing) and asynchronous (recorded audio and video) modes, these media took the network past its purely text-based origins.

¹⁰ Today, data mining can be used on such transcripts to gain personal information about chat participants and to ferret out useful information for commerce and other purposes.

While these powerful networked communications and file management technologies made possible a level and quality of communication and resource sharing amongst geographically distributed people never before possible, they were not intended for the faint of heart. Before the advent of graphical user interfaces (GUI), each tool had to be evoked from the computer's command line—frequently with arcane syntax that varied from one operating system to another. Thus, each tool was evoked differently. Each tool had a different interface and different interaction patterns. Even within a given class of tools—e.g., e-mail applications, different developers approached the task differently. Thus, if a user was somehow compelled to use several different e-mail packages (either at once or one after another), he or she had to learn very different systems from the ground up.

In the early world of networked computers and the tools designed to take advantage of the TCP/IP protocols, users were compelled to develop multiple mental models as they gained control of the various applications. The learning curves on those mental models were not trivial. For some users, the curves were impossible.¹¹ There was no single unifying metaphor like the Macintosh desk top. This is the world entered by the early adopters of networked computers for use in distance independent teaching and learning.

Phase Two: Aggregation

¹¹ For example, in order to upload or download a file from or to a remote server using the FTP protocol, the user needs to understand when it is necessary to send or receive the file in text or binary mode. To choose incorrectly means that the transferred file cannot be used. This requires users to understand the encoding schemes of files—not always a simple task for the average and/or occasional user.

Tim Berners-Lee's invention of the World Wide Web in 1991 and Marc Andreessen's invention of the Mosaic "browser" in 1993 forever changed the nature of the use of a large part of the Internet. These two technologies—the Web and the browser—provided the framework for constructing network environments that could support users in building relatively simple, unified mental models of complex interactions among the already existing technologies noted above and others that were to emerge. The role of the Web as a universal medium to provide access to the learning material and to support interaction and collaboration among teachers and learners was recognized by many academics in the middle of the 1990s. The browsable Web made it possible for the first time to construct virtual digital classrooms framed around reasonable, if not perfect, mental models of the learning environment.

The first wave of such supporting technologies began to arrive a year or so before this special project in the form of course management software (CMS), sometimes referred to as course shells. Each was built on the browser technologies introduced in 1993 and the extant Internet communications and file management protocols and applications.

From inception, the goal of the CMS has been to provide integrated support for Web-based distance and traditional education. A variety of innovative systems to support different parts of the educational process were developed such as QuestWriter (Bogley, Dorbolo, Robson & Sechrest, 1996) from Oregon State University, ClassNet (Gorp & Boysen, 1996) from Iowa State University, CourseWeaver (Rebelsky, 1997) and ASML (Owen & Makedon, 1997) from Dartmouth College, Online (Rehak, 1997) from Carnegie

Mellon University, and FLAX (Routen, Graves & Ryan, 1997) from De Montfort University in the United Kingdom. In America and Canada, a strong demand helped many research-level tools quickly evolve into products available from their home universities. Some well-known systems of this generation were: WebCT from University of British Columbia (Goldberg, Salari & Swoboda, 1996), CyberProf (Hubler & Assad, 1995) and Mallard (Graham, Swafford & Brown, 1997) from University of Illinois at Urbana-Champaign, Serf™ from University of Delaware (Serf Team, 1998), WebAssign from North Carolina State University (Titus, Martin & Beichner, 1998), and Virtual-U from Simon Fraser University (Harasim, Calvert & Groenboer, 1997). At that point in time a number of new and traditional companies joined the race and a fierce competition soon brought a new kind of integrated CMS that included every possible feature pioneered in the earlier systems. All of them were used in dozens of universities (Brusilovsky & Miller, 2001). The most well-known examples in this category are WebCT (<http://www.webct.com/>) and Blackboard (<http://www.blackboard.com/>), though more than a dozen similar systems are used in different universities and companies.

The course design model in extant CMS is relatively simple: hypermedia organized as a hierarchy of sections that can be named as lessons, lectures, topics, etc. The simplest systems use a table of contents with a list of links to individual pages with “lectures” or “chapters” that have no further internal structure. However, the better systems let the professors develop rich-looking “electronic textbooks” with deep hierarchical structure (chapters, sections, subsections, etc.) and elaborate hierarchical navigation. Each section of these “textbooks” can include multiple diverse items of

primary and secondary material in the form of plain text or a rich blend of audio and visual media. Since the mid-1990s, all major producers of CMS have been providing support for creating such hierarchically structured hypertext courseware that make it possible for professors and other curriculum designers to build resource-rich interactive environments.

In evaluating a CMS, it is important to note that each has a more-or-less constraining world view—a potential pedagogical position of advocacy built into the structure of the technology. In other words, it is possible for a CMS to manifest a binding set of values that limit how students will learn and how teachers will teach. Ideally, a CMS would be a value-neutral shell that supports (as best it can within contemporary technological constraints) a diverse set of pedagogies along Moore's structure/dialog continuum.

At the time of this special project, the ultimate goals of the various CMS were (and remain today) five-fold:

1. Transparent, Integrated Applications. The principal goal of CMS is to wrap the disparate applications necessary to build a digital course environment in a transparent shell that provides a single interface to their various functions. To the degree possible, this shell hides application complexity. It may also be thought of as the general service layer—the layer that provides environmental security. Since the CMS is Web-based, its various course environments can be accessed from anywhere in the world where there is an Internet connection and a Web

browser available. The CMS security mechanisms prevent access to the course environment by unauthorized persons.

2. Class Communications Management. The CMS builds on the basic functions of e-mail, listservs and bulletin boards but provides a single interface and an administrative layer. This administrative layer makes it simple for the professor to quickly create any number of private or public bulletin boards, and, where private, to assign individual students from the digital course roster. As discussed in Chapter II, having flexible mechanisms to manage the ebb and flow of dialog among course participants is critical to minimizing transactional distance. Thus, the suite of communication tools provided, as well as their ease of use, is critical to the success of third generation distance independent teaching and learning.
3. Course Content Management. In order for the CMS to provide a single point of entry for all of the digital work in the course environment, it must provide well developed mechanisms for the uploading and downloading of files containing course content by both the professor and the students. It must provide the professor with simple, intuitive means for segmenting the course environment into public and private spaces where course content can be stored, worked on by select class members, and, where appropriate, published to all course participants. While the file transfer mechanisms of the CMS build on the functionality of the FTP protocol, they do so while hiding the complexity presented by the movement and management of multiple file formats. Lastly, the CMS must provide the professor with a means for both working on course content online but in the

background and publishing that content to the students when the professor is ready. It must also provide for automatic, timed publication and de-publication of course content.

4. Student Management and Student Assessment. The CMS provides the professor with a suite of tools for managing student matters including, but not limited to the following: digitally enrolling students in a course and managing their access to various course functions and environment spaces; accepting student assignments; administering quizzes and examinations that may or may not be automatically graded; assigning grades and making those assignments privately available to the students; monitoring student resource usage statistics; and assigning groups of students to private bulletin boards and file spaces for collaborative work.
5. Enterprise Communication Management. In large academic environments such a contemporary university, CMS must coexist in the context of enterprise systems such as PeopleSoft and SAP, to name but a few. At a minimum, CMS should be able to infuse the roster for a course automatically from the enterprise system and publish student grades to that system at the end of an academic term. Ideally, ongoing interactions between the CMS and the enterprise system should be possible—alerting the CMS and, therefore, alerting the professor of changes in a student's status or special student needs.

The third generation may be described along the five dimensions of concern as follows:

- Peer-to-Peer Communications. E-mail, bulletin boards, and chat rooms make possible substantial levels of communication among peers and groups of peers. Where the technologies of the first two generations focused primarily on the instructor-student relationship, the third opened the possibility of managing varying levels of dialog.
- Communication Flows. While asymmetrical flows remain in the third generation in various forms of lecture and content dissemination, the technologies do not preclude symmetrical flows when such flows are built into course design. With the exception of ITFS and similar technologies, the students of the first two generations had no mechanisms to disagree with the content as presented or to engage with the instructor and their fellow students in constructive discussion and debate. The technologies of the third generation support such discursive environments.
- Participant Identities. The one-to-one and one-to-many communication mechanisms of the third generation make it possible for students to develop well-formed senses of participant identities. Well thought out exercises utilizing Web-based media including pictures of self, family and friends, make it possible to be engaged at personal levels not possible in the first two generations.
- Temporal and Spatial Dependencies. Third generation technologies make it possible to cast temporal and spatial dependencies for various components of a course in ways that maximize their utility for students with different needs. For example, conversations can be synchronous (using chat rooms and streaming

audio/video technologies) or asynchronous (using e-mail, bulletin board and listserv technologies). Or, should circumstances require, any given component may be cast in both synchronous and asynchronous modes to support varying life needs and learning styles. As will be noted in Chapter V, it is partially this flexibility in casting various forms of synchronous and asynchronous experiences that make it possible to manage the dynamic relationship between dialog and structure in a distance independent environment.

- Media. As was noted at the beginning of this chapter, the various generations of distance independent teaching and learning have been shaped by their enabling technologies. With the advent of the networked computers and the Web, the palette of available media makes it possible to shape learning experiences for students studying at a distance that meet their various learning styles and type indicators (Soles & Moller, 2001).

Table 2 summarizes the general features of the three generations of distance independent teaching and learning.

	First Generation <i>Correspondence</i>		Second Generation <i>Multiple Media</i>		Third Generation <i>Computer Networks & Blended e-Learning</i>	
	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2
Teacher & Student Identities	Anonymous	Semi-Anonymous	Known Identities	Known Identities	Known Identities	Known Identities
Communication Flows	Asymmetrical	Semi-Symmetrical	Asymmetrical	Symmetrical and Asymmetrical	Symmetrical	Symmetrical
Temporal & Spatial Dependencies	No dependencies	No Dependencies	No Dependencies	Varying Temporal and Spatial Dependencies	Varying Temporal Dependencies	Varying Temporal Dependencies
Peer-to-Peer Communications	None	None	None	Limited Symmetry (e.g., ITFS)	Symmetrical	Symmetrical
Delivery Media	Print	Print	Audio, Video, and Text	Broadcast Audio/Video and Text	Networked Multiple Media and Multimedia	Networked Multiple Media and Multimedia

Table 2: Descriptive Dimensions of Historical Distance Independent Teaching and Learning Models

Historically Supported Pedagogical Methods

The technologies supporting each of the three generations of distance learning also make possible a palette of pedagogical methods. In the early generations (one and two), the palette was extremely limited. However, each successive generation provided mechanisms to enrich the educational experience, and, in the second phase of the second generation, the support of new communication patterns becomes possible.

In general, the first two generations can be characterized in terms of the personal solitude of the student and the unidirectional nature of the communication flows. As the history above notes, the second phase of the second generation opens windows on interactive synchronous experiences through technologies such as ITFS.

In sharp contrast to the first two generations of distance independent learning, the third is social in nature and emphasizes both asynchronous and synchronous communications among all members of the academic community. Teaching and learning in the third generation are collaborative processes in which the legitimacy of what is learned is a function of consensus and non-dominative discourse.

The successes of the first two generations reflect the legitimacy of the historical method of education in which what the parents were taught the children should be taught and the quasi-scientific method in which what is legitimate to know are those theories and findings of the experts (Habermas, 1987). Both of these mechanisms of educational legitimacy can be rooted in a finite base of highly structured information stemming either directly from the instructor or from an equally finite base of literature provided in text or other non-interactive media.

However, a discursive mechanism for establishing the legitimacy of education as social process as exemplified in constructivist models can only be achieved through full discourse; and, full discourse requires a mix of time dependent and time independent technologies that support symmetrical communication flows. It is posited here that only with the enabling technologies of the third generation is a full and flexible calibration possible in a digital environment between structure and dialog as embodied in Moore's theory of transactional distance.

In Chapter V of this special project documentation, the confluence of the enabling technologies of the third generation of distance independent teaching and learning, the pedagogical methods supported by those technologies, the conceptual framework of Moore's theory, and the implementation of CA100W are explored.

V. Implementation

CA100W, Fall 1997

Course Format

In the fall semester of 1997, the online version of CA100W was offered to the general SJSU campus community. The previous Spring semester, promotional materials were created and distributed in order to attract students to enroll. As stated in the promotional materials, students were required to have a general knowledge of using e-mail, the Internet, and an electronic word processor. Six of the eight students originally enrolled completed the course.¹² The delivery format was as follows:

- Three 5-6 hour Saturday on-campus classes were planned, on the 1st, 3rd, and 6th week of the semester. Each of the on-campus sessions included instruction on how to use the computer resources available and, during each, the students completed a writing assignment using an electronic word processor, thereby satisfying the present University requirement that 30% of the course grade be based on face-to-face in-class writing.
- Between on-campus meetings there were “virtual” class meetings in the WebCT chat-room at specified, agreed-on times during the each week during which the professor and the students discussed assignments and problems.

¹² Since the students involved in this project were self-selected, it might be assumed that they demonstrated a higher-than-normal level of “autonomy” as defined by Moore and discussed at length in Chapter III. Therefore, it might be further assumed that they were capable of tolerating substantial transactional distance. Since there was no formal instrument available for measuring levels of student autonomy, levels of tolerance to transactional distance is a matter of conjecture.

- Students also used the chat-room to meet individually and in groups without the professor to work on course assignments.
- Notices, reminders and other useful information from students or the professor were shared via the WebCT course bulletin board or through e-mail.
- “Office hours” between the professor and students were arranged via e-mail and held using the chat-room.

In the following paragraphs the relationship between those transitional goals and integrated, online technologies are identified.

WebCT

WebCT was created in 1995 by Murray Goldberg, a professor of computer science at the University of British Columbia, Canada.

Goldberg observed that instructors who were seeking to leverage the Web in their teaching were using “home-grown” online course platforms they’d toiled to create, and that were forcing them to spend much of their time on technology, rather than teaching. He saw an acute need for the creation of an online course platform that would be both easy for instructors to use and scalable throughout a learning institution. Thus Goldberg developed WebCT, designed to make it easy for instructors to apply innovative technologies to facilitate course preparation and enrich students' learning experiences.” (Retrieved July 23, 2002, from WebCT website:

http://www.webct.com/company/viewpage?name=company_bio_murray)

WebCT provided the following functionality for the course:

- *Secured Website.* WebCT provided a private secured website for holding the course online. It allowed the professor to establish an online course environment and to limit access to course materials to those enrolled in the course. The system also allowed the professor or system administrator to control student access down to the level of

specific files. All content in the environment was secure from the public viewing unless a user has been granted a password or was enrolled in the course. WebCT allowed the users (professor or students) to define their own passwords. Another feature of WebCT was that all course content uploaded by a professor remained private until the professor or system administrator “published” the materials to the course website for viewing. The system also allowed the professor to easily create secure group work areas for students. These team work areas were password protected for only the assigned students of that team. These work group spaces made it possible for the team members to jointly store files and to work collaboratively.

- *Unlimited Access.* Once a professor, course developer, or student was given a password to an online course environment, they had unlimited access 24 hours a day, 7 days a week (24/7) to course content. This allowed the professor and the student assistants the flexibility to view, upload, download, maintain, and update course content on their own schedules, not when others dictate. At the same time using the WebCT Content Management System (CMS) allowed the students 24/7 access to view course content and to access their own areas within the repositories that they had been given permission to use. Given Web access, students and faculty were able to work dynamically and interactively throughout the course at anytime and at anyplace.
- *Centralized Course Location.* “One stop” access to the majority of the course materials provided the users with a centralized place for the online course environment. WebCT provided the administration tools needed by the professor to enroll specific students in a class, maintain student grades, give online quizzes and

exams, send unified announcements to all course participants, and provide other reports on the progress of the students. On the student side, WebCT provided a central environment for a student to go for all of the course materials, quizzes, and exams and provided a course repository for each individual student's work.

- *Repository.* WebCT provided a dedicated, secured file space for all of the course content. This WebCT repository was password protected and online course content stored in it could only be viewed by authorized users. This also held true for the student side of the repository. Students were allocated space in the repository to store electronic documents and could restrict access to specified users. In the CA100W class repository, space was provided for students to store their assignments, and to work collaboratively. They were provided space for the team event promotion project documents and presentations, as well as a Web environment to display the online materials created for the promotion project for the arts event. WebCT also provided a tool to build an online course glossary.
- *Course Announcements.* For this class, the professor and students used the bulletin board feature in WebCT to post course announcements. Students and the professor would notice that the "Bulletins" icon would be flashing on the course homepage when they logged into the course Website. This flashing icon told the class there were new announcements from either the professor, student assistants or fellow students. This feature allowed the professor and students to notify the whole class of critical deadlines, issues or events relating to the course.

- *Synchronous Online Text Chat.* WebCT provided secure, synchronous, interactive online text chat. Only authorized users could participate in the discussions. The online chat sessions were held each week and were used to discuss each week's readings. These chat sessions were also used to discuss any questions posed by students. Part of the text chat feature of WebCT was the ability to create a transcript of the online text chat session. This functionality allowed the professor and students to review the dialogue from the past text chat sessions. Also, the online text chat area was used by the student project teams to work collaboratively online on their projects.
- *Online Course Administration.* WebCT provided the professor with a comprehensive system to easily establish, maintain and control the online course environment. Features included: secured content repositories, student registration and information, "one stop" access to course reports and maintenance, a place for student grades, tools to view student participation (e.g., which students had viewed a specific document and for how long), access to online tools for customization of course content in the web environment, online quiz and test builder, and many other features.
- *File Transfer.* WebCT provided a uniform online Web interface and place where the professor and students could upload and download files easily. The participants in the course did not have to attach files to email or use FTP programs to submit assignments or share files. The repository provided a place for students to upload assignments for the professor to retrieve and grade. At the same time, it allowed the professor to return the corrected and graded assignments to the students for them to download and review.

- *Online communication.* WebCT provided the course participants with a centralized and course specific email address. All correspondence among the course participants could be sent and received within the WebCT system. WebCT provided an easy to use, relatively intuitive interface to upload and download email file attachments.

CommonSpace™

Another electronic tool used for the course was a collaborative writing tool, CommonSpace™, by Sixth Floor Media (Houghton-Mifflin Company, <http://college.hmco.com/sixthfloor/>). Features of CommonSpace™ included:

- The ability to open and edit documents created in disparate word processors;
- A text editor that allows a group of users to create and revise an electronic document together in a column-based interface;
- The ability for users to make annotations in text or sound and enhance the commenting process by linking annotations to the source text;
- The ability to compare drafts;
- The ability to have real-time collaboration using TCP/IP networks; and
- Support for collaborative teaching and learning of writing as a process.

On the first attempt to use the CommonSpace™ software, students found it far too difficult to use. The professor decided to discontinue use of the CommonSpace™ software and have the students print out their documents and do manual non-electronic peer editing for the rest of the semester.

Handbook and Assignments

The handbook created by the professor contained chapters devoted to different writing styles to be used as a reference guide for all of the course writing assignments. The handbook was converted to HTML code for Web viewing and then uploaded to the WebCT CA100W course environment. With the handbook uploaded to WebCT, enrolled students had unlimited 24/7 access to the course reading and writing assignments. The course writing assignments are outlined below along with the procedures and tools required to complete them:

- *Assignment 1—Position paper.* In a well-organized essay, the student had to present and defend his or her definition of art, or a specific art. This assignment was completed during the first day of class in the on-campus classroom using the classroom word processors. Each of the students created and saved their position papers to the course file repository area of the WebCT system. The students then paired up to do in-class peer editing using. Once the position papers were edited, the author uploaded the edited document to the WebCT repository. Once uploaded the file was sent, via WebCT email, to the professor for grading.
- *Assignment 2—Interview form and techniques.* The students used the online course handbook in the WebCT environment for information on how to conduct an interview. Each student created a list of questions to use in interviewing a fellow student. These questions were then e-mailed to their classmate (interviewee) to be answered. The interviewee answered the questions and returned the completed questionnaire via e-mail to the interviewer. The interviewer then created a Web page, using HTML tagging, for the interviewee to introduce that person to the entire class.

The Web page was then uploaded to the WebCT environment for all in the course to view online. Interviewing was used later in the course on other assignments, introducing it here helped the students get to know one another using the online environment.

- *Assignment 3—Review.* Students composed a review of an Arts Event and saved this review on a diskette or in the student repository area of WebCT. During the 2nd on-campus meeting, they did one-to-one peer editing. When all of the corrections were made, the final version of the edited document was uploaded to WebCT for grading by the professor and for general viewing by the class.
- *Assignment 4—Promotional project.* Groups of two or three students worked together to create promotional materials to promote an actual arts event, either on or off campus. Assignments included writing public service announcements and press releases, doing interviews with a person involved in the event, writing publicity articles, and designing promotional materials. The students used the group project repository area on WebCT to store these materials as well as a place to share and collaborate on the materials. After the promotional materials were completed, they were loaded to the course promotional projects Website. Paper versions of posters and fliers were posted and distributed around the campus. During the projects, the groups communicated among its members in class, they used the online chat-room and via e-mail. After the projects were completed the students wrote an in-class analysis and evaluation of this project using the computers in the classroom.

- *Assignment 5—Critical paper.* During the third in-class meeting, the professor gave a lecture and Web demonstration on finding electronic publications for the arts as well as techniques for writing an article for publication in a professional journal. For this assignment the students researched an arts topic on the Web, and also researched on-line publications in different art fields in order to write an article suitable for publication in a professional journal. A condensed version suitable for an on-line publication was also written. The tips and techniques in this assignment were tools for use in the grant proposal project.
- *Assignment 6—Grant proposal.* Using handbook information and examples provided on the Website, students wrote a grant proposal. For part of this assignment, the students were required to read the online grant writing materials offered by the University of Kansas (Retrieved July, 1997, from University of Kansas, Writing Center Website, <http://falcon.cc.ukans.edu/~writingc/grants.html>). After reading the online resources the students were to either find an actual arts organization or create a fictitious arts organization and create a grant proposal. Once they decided on an arts organization the students searched the Web for actual funding agencies offering grants to arts organizations. After selecting a funding agency, the students had to research the guidelines and writing form required in order to submit a grant proposal to the agency. The students submitted one draft via e-mail to professor prior to submitting the final version at the end of the semester. Not only was this a learning experience for the student but another goal of this assignment was to help an arts organization obtain funding through the grant proposal.

Table 3 lists the online technologies used in course delivery and the relationship between those technologies and the course's various assignments, activities, communication processes and course resources.

	Digital Technologies Used in CA100W							
	WebCT File Space	WebCT E-Mail	WebCT Chat- Room	WebCT Bulletin Board	WebCT Glossary	Internet WWW	Netscape HTML Editor	Classroom Computers
Assignments/Activities								
Position Paper	X							X
Interview	X	X						X
Review	X	X						X
Promotional Project	X	X	X			X	X	X
Critical Paper	X	X	X			X		X
Grant Proposal	X	X	X			X		
In-class Peer Editing	X							X
Web Page Authoring							X	
In-class Writing								X
Communications								
General Communication	X	X	X	X		X		
Synchronous Office hours			X					
Synchronous Professor-to-Students			X					
Synchronous Student-to-Student			X					
Course Resources								
Syllabus	X							
Handbook	X							
Course Announcements				X				
Course Definitions					X			
Online Resources	X					X		
Grant Writing Tutorial	X				X			

Table 3: Technologies Used to Deliver the CA100W Course

This chapter presented which technologies and how they were used to deliver the CA100W online. Efforts were made to create a user friendly online environment for the professor and students to promote teaching and learning. When designing this online

course we tried to accommodate as many users as possible. Since the students for this course were self-selected, the professor and student assistants did their best to support the students when needed. The next chapter will present the assessment of how well the project met its goals and objectives.

VI. Evaluation and Conclusion

In evaluating the successful completion of this special project, it is necessary to distinguish between two aspects of its execution: (1) the implementation and deployment of the technical tools and technical support needed to reach the project's goal of transitioning the teaching and learning environment of a face-to-face course to a digital environment; and (2) the actual success of the course delivery overall. While the first of these two aspects would be pivotal to the success of the second, it was not necessarily the controlling factor in such success. In the end, successful use of the environment by the professor was not within the control of the designer. However, even given the difficulty of separating roles in evaluating success, this designer believes that the environment developed met the goals as originally defined.

Chapter II stated that the broad goals of the project could be framed in terms of two high-level questions:

1. What kinds of teaching methods does this particular professor use in face-to-face teaching in CA100W and how can those methods be supported through the available digital technologies?
- and
2. What levels of structure and dialog would need to be established and maintained through the enabling technologies in order to preclude transactional distance as much as possible?

The first of these two questions required the designer to examine the existing face-to-face course in order to determine not only the nature of the content to be transitioned to the digital environment but also the pedagogical techniques that were part of the professor's teaching repertoire. In order to develop and deploy an appropriate teaching and learning environment, the designer had to theoretically ground the behaviors of the professor in order to understand those behaviors as well as their implications in terms of available technologies. Moore's well articulated theory of transactional distance provided the theoretical means for framing the roles of structure and dialog and their inverse relationship in determining transactional distance as well as providing practical steps in assessing problems of misperceptions in the environment and "recalibrating" behaviors through the technologies to aid in their elimination.

Grounded in Moore's behavioral paradigm as a means of viewing and explaining the activities used by the professor in the face-to-face environment, the designer examined the available technologies in order to develop a networked digital environment that could support the values inherent in the professor's behaviors. In terms of the second question, the designer concluded that the mix of structure in the form of both instructional materials and activities and clarifying dialog in the face-to-face environment called for technical tools that could support high levels of dialog (what the professor called "much interaction with the students" (Appendix, p. 63)) while providing the means to impose equally high levels of structure when needed. In the end, it was the assessment of the professor that the levels of support for dialog available in the online environment developed for the course were equal to those in the face-to-face classroom leading her to

state that "... I believe that this kind of course offers as much interaction as any I have taught on campus." (Appendix, p. 67).

In terms of the "participant identities" factor noted in the Chapter III discussion of the descriptive dimensions of the generations of distance education, the professor noted: "I think I really came to know the students in the class well. It's true that the class was very small, and that certainly helped, but somehow one gets to know students better through the e-mails they write, and through the problems they write about rather than just ask about." (Appendix, p. 71) This comment indicates that the depersonalizing aspects of the first and second generations of distance education need not be part of the third.

The only technology that did not meet expectations was the online chat application. The professor noted:

The one aspect of the course that did not work well was the chatroom session. This was a problem for two reasons: first, personal online services kept shutting down after a certain time and students had to reconnect, having lost contact with the chatroom and, thus, the flow of the discussion; second, even with the small size of the class the interruption of questions and responses was frustrating. It was clearly much more efficient for me, as an instructor, to take individual questions by e-mail and to respond individually or to post a general answer on the bulletin board. As a result of the difficulties I decided I would not include such sessions again. (Appendix, p. 64)

This comment affirms the difficulty in discussion management observed when using chat applications with numerous participants.

A concluding quote from the professor's evaluation of the course effectiveness puts the class into perspective:

In addition to my personal reactions, however, there are more resounding issues involved here. Though I was aware, tangentially, of the value of online courses for students who live far away, I now see advantages for many student groups. For example, one of the students in this course encountered a serious problem when her mother became extremely ill and this student had to “move” to Sacramento to care for her for a number of weeks. The usual scenario would involve the student’s dropping her course for the semester, but this woman kept up with her work and did very well in the course. I am also very aware of the problems disabled students—and teachers—have in trying to maintain some kind of normal life on campus. Online courses, filling an entire or even a partial schedule, would benefit these people enormously.

There are also great benefits for a campus like San Jose State. In my proposal I argued that one of the reasons I supported teaching and learning online was because of the terrible parking problem that exists on our campus. That might be somewhat alleviated by such courses as the one I taught, especially if a student could take all of the courses he or she needed—at least for one semester—in an online program. An even larger concern in our valley is the traffic and the resultant pollution. Anything that might help these two large problems is a positive thing.

I suspect that in the future many more courses will be taught online. I think most professors are concerned about the extra time such a course may take. My advice for writing instructors is to make sure the requirements are perfectly clear, in writing, and, yes, plan to spend a bit more time with this kind of course. . . especially the first time around. On the other hand, the rewards are great, both in the knowledge gained and in the assurance that this method is of great help to a significant number of people. (Appendix, p. 71)

And finally, the professor states:

Given the usual variations of students’ ability, creativity, time, and previous writing sophistication, the papers and written projects required from this online course—and the final results, in terms of grades—mirrored those from the same course taught on campus. I am convinced that course quality was maintained and that individual student integrity was consistent. (Appendix, p. 68)

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APPENDIX

Dr. Marylou Lewandowski, Professor's Assessment

Course Planning

In one sense the planning of this online course was simple. Long before I had started to teach this particular version of a "100W" writing class, I had proposed to the English Department a course numbered 102, which I titled "Professional Writing." This course really relied on business forms to a large extent. I thought it was important that English majors know how to write, among other things, business letters and other short business forms (different kinds of memos, resumes, etc.), reports on current data, analyses other than that kind known as "literary criticism," and grant proposals.

Not long after I proposed and taught this course, the "Writing Across the Curriculum" movement swept the country and SJSU adopted an upper-division writing requirement which was (1) in line with that movement which encouraged professional writing appropriate to any discipline and (2) a way to check on the writing skills of transfer students from community colleges. These writing courses were taught by professors in the departments in which the students had declared their major. At this point I had, for some time, divided my teaching between the English and the Creative Arts Programs at SJSU. English had a number of writing professors who could create the appropriate upper-division course; I proposed a course for Creative Arts, called "Writing for the Arts."

This course was refined over the semesters, but my original conviction that it was exactly what the university required—i.e., a professional writing course for students

majoring in the arts—never wavered. I believed strongly that arts students needed to know how to write for their field, and that they particularly needed to know how to use promotional writing and grant writing in order to raise funds for the work to which they devoted their lives. I taught this course for twelve years, even while I was Chairperson of the English Department and Associate Dean of Graduate and International Studies.

Thus, when I applied for an “Improvement of Instruction” grant, I had the general organization of the course firmly in mind. The question was how to make it an involving, even exciting, online course.

Challenge: The technical aspects

My usual teaching format for this class included lectures for part of every class meeting, one promotional group project, and much interaction with the students. Then there were all the technical difficulties associated with teaching a course online: since I am certainly not a “techie” I had no idea even where to begin!

This last looming problem was solved by writing into the grant proposal a small fund to be paid to someone with both the technical knowledge I required and also with enough knowledge of the course to comprehend exactly what I would need for each section of the curriculum.

I was extremely fortunate to have had one student in a previous class who had the requisite expertise to lift that great burden from me--Terry Meyerson, the writer of this project report. Once many on-campus obstacles were overcome, Terry helped in locating the appropriate courseware. WebCT offered me a virtual classroom with “spaces” for everything we would need for the course:

- a space for the text, for special technical information, and for notes on documentation;
- chatrooms, including small ones where the promotional groups could meet and discuss their project, and a large one where we could all meet for special sessions;
- a bulletin board where anyone could make an announcement;
- a space where papers could be posted for me to pick up, correct and re-post to the each student. (With WebCT, privacy was insured—an important issue as I prepared the course.)

Evaluation: The Technical Aspects

It was disappointing at first to discover that the SJSU computer people could not set up some of the elements we needed for the course. However, once we were invited to join the Syracuse University experiment with the WebCT software, things progressed much more smoothly. Initial instruction to the students in using the courseware was given by my assistant, Terry Meyerson, who was also available online and even by phone when students (or their non-techie instructor) hit snags.

The one aspect of the course that did not work well was the chatroom session. This was a problem for two reasons: first, personal online services kept shutting down after a certain time and students had to reconnect, having lost contact with the chatroom and, thus, the flow of the discussion; second, even with the small size of the class the interruption of questions and responses was frustrating. It was clearly much more efficient for me, as an instructor, to take individual questions by e-mail and to respond

individually or to post a general answer on the bulletin board. As a result of the difficulties I decided I would not include such sessions again.

Challenge: Lecture to Textbook

Having been use to preparing lectures from often-used notes in the past, the next question in my mind was whether I could make written instructions as informative as a lecture in a classroom. The task ahead was to take all the notes and all the examples I had collected and to put them into a text that could be posted online. The task was daunting and took enough time so that the chapters appeared only as the weeks progressed. It was, however, rewarding to see that the chapters I provided were well received and that the papers and projects assigned were returned on time and in the appropriate form. The message had been clear in each chapter and the students were able to do the work without the tradition lecture.

Evaluation: Lecture to Textbook

Though the information was well received, and the students asked intelligent questions about the assignments, I was disappointed to find many simple errors in the text as I tried to use the material in other classes. A great deal of editing was necessary and I regretted not having more time before the course started to make the online text perfect. Probably I should have had someone else edit the work before posting it to the website.

Still, it was rewarding to see that the concepts were understood and the text actually worked well.

Challenge: Interaction with Students

As mentioned earlier, I am used to interacting a great deal with students, both in class and in office hours. Thus I worried, as did some of the students, about the possible impersonal quality of an online course. In a sense, we were fortunate that the University requires that 30% of the writing be done in class. Because of that requirement, we arranged to meet the students in three day-long sessions on campus. The first session provided the opportunity to establish the course procedures, to address the technical problems, to observe the students working on computers in a lab provided, and to answer all initial questions about structure and procedure face-to-face.

More importantly, for many of us, it gave us a chance to learn about each other. Among the first day's student tasks was to interview another student and then write the results of that process in one of two forms. Thus the students learned a great deal about the others, and I learned much about them. We were fortunate to have a student assistant in this course, Karen Suty, a Creative Arts Major who was completing an internship. Karen was very effective with the students, since she worked for a computer company and had hands-on knowledge which allowed her to interact well with Terry Meyerson. She could offer specific, personal help with technical processes after Mr. Meyerson had given more lengthy and general instructions about a particular process.

For me, of course, this session offered a chance to put a name with a face, and to get some idea of the students' experience in writing. Also, this session allowed me to talk to students about my standards and my goals for the course. It allowed me to anticipate the kinds of concerns that might erupt during the course and to answer specific questions dealing with the procedures we would be following.

Perhaps most important here, the meeting allowed us to exchange e-mail addresses. I could encourage the students to contact me whenever they needed to, by e-mail, or by phone in case of emergency. I think it was important to assure them of my interest and my availability; that was made possible in this first face-to-face session.

Evaluation: Interaction with students

Perhaps one of the students voiced it best: "I thought this would be the most impersonal course I have ever taken. Instead it was the most personal." Granted, the class was small, and I had more time than usual to spend online. Still, the quality of our exchanges via e-mail was as exclusive and even as extended as a personal meeting would have allowed. Questions could be asked and answered individually. Personal problems could be expressed and handled easily.

Still, I was constantly aware that were the class the same size as those usually taught in writing courses on campus, I would probably have to manage my own time more efficiently. Thus, I would, in the future, maintain a schedule for answering questions about the course or a specific project, while allowing e-mails about personal problems to come at any time.

Generally, however, I believe that this kind of course offers as much interaction as any I have taught on campus.

Challenge: Maintaining Quality Control

This challenge came in two parts: first, could the course I taught really reach the levels and the same goals as the one I taught in the classroom and, second, how could I tell if the students were writing their own papers?

Most of the answer to that first part of this challenge can be found in the above. I taught what I usually teach, using a textbook I wrote and which was posted on the course website. The assignments were exactly the same as those I gave in class. The second was answered for me, actually, since the students had to write 30% of their papers in the three sessions we held on campus, and during those sessions I learned a lot about their plans for future writing assignments. I was assured that what they submitted was their own writing.

Evaluation: Maintaining Quality Control

Given the usual variations of students' ability, creativity, time, and previous writing sophistication, the papers and written projects required from this online course—and the final results, in terms of grades—mirrored those from the same course taught on campus. I am convinced that course quality was maintained and that individual student integrity was consistent.

Challenge: Time Limits on Work for this Course

One of my greatest concerns was that I would spend all of my free time on this course, partly because of my own interest and partly because such a course demands that one develop new techniques for passing along information and for evaluating the students' writing. The truth is that, had the class been larger, I would have felt overwhelmed at times.

The largest problem came the first time I sat down to correct the papers I found waiting for me at the WebCT site. Originally I had planned to use a program called CommonSpace™, one which would allow students to peer-edit each others' papers and

allow the instructor to a final editing/correcting of the papers. After a few assignments we discovered that the program didn't work well for us because of a transmission problem when the work was done.

Thus I needed to invent a correcting technique that would allow students to see and understand their errors, and to offer corrected text when that seemed appropriate or helpful. The final solution was that once I had received a student's text, I would underline problem constructions or errors and then comment in a different, larger font in parentheses. At the end of the paper, again in that different font, I would comment on structural problems and make recommendations for improvement in that area. I suspect that software that will make this process easier will soon be available or that the problems we had with CommonSpace™ will have been solved.

Evaluation: Time Limits on Work for this course

An interesting result of my correcting papers this way was that I did a better job than I ever had before. Although I put comments about simple, common errors on the bulletin board for the attention of all, I discovered that, with only the printed page in front of me and my printed response as an indicator to the student of his or her problems, I had to be very clear about the difficulty I saw and to suggest ways that error might be corrected. This is very different, of course, from sitting with a paper in front of you, on which you can clearly underline or circle an error, and make a terse comment about what it is. And too often we are likely to make a correction there on the page without explaining what the problem is. Assuredly the standard mode of correcting paper takes less time than my technique online.

Clearly I did not solve the problem, at least in terms of saving time spent on correcting papers in a writing course. The best I can do at present is warn instructors to plan carefully when designing a writing course for a large class. He or she might want to have the students buy a style guide and refer the students to special sections of a text with an indicating shorthand mark of some kind. Still, many of the problems one encounters are more complex or even student-specific and they take an extended explanation.

Personal Overall Evaluation of this Teaching Experience and Recommendations for Future CA 100W Online Courses

On a personal level, I think this course was one of the most interesting I have taught in some time, simply because I was learning new things as I prepared to teach the course and throughout the semester. When people have asked me in the past why I teach, I have often replied "Because I learn so much from my students!" That certainly happened this time and my education was enhanced by my technical assistant, Terry Meyerson and the student assistant, Karen Suty.

Also, despite those errors I found in the text I wrote for the course, I believe the fact that I had written everything in that form benefited the students greatly. First, I realized that I needed to include an example of each kind of writing assignment, something I had not done before with a class. Students were grateful for that. Second, I now have a text I can try to market, since almost no text I can find at present does the same thing.

I think I really came to know the students in the class well. It's true that the class was very small, and that certainly helped, but somehow one gets to know students better

through the e-mails they write, and through the problems they write about rather than just ask about.

In addition to my personal reactions, however, there are more resounding issues involved here. Though I was aware, tangentially, of the value of online courses for students who live far away, I now see advantages for many student groups. For example, one of the students in this course encountered a serious problem when her mother became extremely ill and this student had to “move” to Sacramento to care for her for a number of weeks. The usual scenario would involve the student’s dropping her course for the semester, but this woman kept up with her work and did very well in the course. I am also very aware of the problems disabled students—and teachers—have in trying to maintain some kind of normal life on campus. Online courses, filling an entire or even a partial schedule, would benefit these people enormously.

There are also great benefits for a campus like San Jose State. In my proposal I argued that one of the reasons I supported teaching and learning online was because of the terrible parking problem that exists on our campus. That might be somewhat alleviated by such courses as the one I taught, especially if a student could take all of the courses he or she needed—at least for one semester—in an online program. An even larger concern in our valley is the traffic and the resultant pollution. Anything that might help these two large problems is a positive thing

I suspect that in the future many more courses will be taught online. I think most professors are concerned about the extra time such a course may take. My advice for writing instructors is to make sure the requirements are perfectly clear, in writing, and,

yes, plan to spend a bit more time with this kind of course. . .especially the first time around. On the other hand, the rewards are great, both in the knowledge gained and in the assurance that this method is of great help to a significant number of people.