2001

Creating a student accessible online syllabus

Kenneth Louis Decroo

Follow this and additional works at: https://scholarworks.lib.csusb.edu/etd-project

Part of the Instructional Media Design Commons

Recommended Citation
https://scholarworks.lib.csusb.edu/etd-project/1737

This Project is brought to you for free and open access by the John M. Pfau Library at CSUSB ScholarWorks. It has been accepted for inclusion in Theses Digitization Project by an authorized administrator of CSUSB ScholarWorks. For more information, please contact scholarworks@csusb.edu.
CREATING A STUDENT ACCESSIBLE ONLINE SYLLABUS

____________________

A Project
Presented to the
Faculty of
California State University,
San Bernardino

____________________

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Education:
Instructional Technology

____________________

by
Kenneth Louis Decroo

December 2001
CREATING A STUDENT ACCESSIBLE ONLINE SYLLABUS

A Project
Presented to the
Faculty of
California State University,
San Bernardino

by
Kenneth Louis Decroo
December 2001

Approved by:

Dr. Amy LeH, First Reader

Dr. Sylvester Robertson, Second Reader
ABSTRACT

This project addresses how to create an online syllabus that is accessible to students and parents, that empowers students to take responsibility for their own learning while enhancing school/home communication, and serves as a graphic representation of what students have accomplished.

Web quests are used as the principle means of instructional delivery to engage middle school students in problem-based projects that address real life situations using rigorous and relevant curricula.

Elements of an online syllabus and the content of the course it supports are examined. The role, an online syllabus plays in fulfilling the goals of techno-constructivism, the move from a top down, broadcast model to a decentralized, constructivism model of instructional delivery is addressed.
ACKNOWLEDGMENTS

First and foremost, I would like to thank my wife Tammy, for her love and support, her constant reassuring humor, over several years, as I attempted to retool and change careers, shamelessly throwing our life into upheaval, to fulfill a life long dream to become a teacher. We truly know what it is like to ride a comet. I love you very much.

Second, my love and thanks go to my parents, Ken and Lois, who believed in my dream and supported me in every possible way. I could not have fulfilled my dream without their help. You are my most precious treasure.

Third, I wish to thank my sister, Audrey, my niece, Karis and my stepchildren Brandy, Mike and Sam. You were, are the stars that canopy my life. Your words of support and understanding, when I could not be with you, strengthened my resolve to become a teacher.

Fourth, I would like to thank my professors, Dr. Amy Leh, Dr. Robertson. You have been an inspiration, diligently refining my practice. Thank you for your patience and understanding as I found my way in a new endeavor. Also, I want to give special thanks to several professors. Each one, in their unique and personal way, inspired me to understand that teaching is more than
occupation. It is a mission, a way of life: Dr. James Monaghan; Dr. Iris Riggs; Dr. Thom Gehring; Drs. Bonnie and Herb Brunkhorst; Dr. Nena Torrez, Dr. Estaban Diaz; Dr. Barbara Flores; and Dr. Joseph Jesunathadas.

Fifth, I would liked to thank Dr. Marlin Brown, Principal, of H.S. Truman Middle School for his belief in me and his constant support. He is truly a visionary leader.

And Finally, I would like to thank my friend and colleague, Pat Rynearson, who was always willing to try yet another idea and has, over the years, demonstrated the art of truly world class teaching. It has been a long and fruitful relationship not to mention just plain fun.
DEDICATION

This humble work is dedicated to my wife, colleague and best friend, Tammy. You inspired me to return to my first love, education. Your constant encouragement and belief in my commitment to education kept me going when the long hours of work, school and family piled up.

Your enthusiasm for teaching and the love you display to everyone you come into contact with energizes me. When I see you in your classroom, I am reassured that, with teachers like you, the future of our practice is in good hands. I love you very much.
TABLE OF CONTENTS

ABSTRACT ............................................................... iii
ACKNOWLEDGMENTS ......................................................... iv
LIST OF FIGURES ............................................................ viii
CHAPTER ONE: INTRODUCTION ............................................... 1
    Web Quest ............................................................ 2
    Background .......................................................... 3
    Need for an Online Syllabus ......................................... 5
    Goal of the Project ................................................... 8
    Project Overview ....................................................... 9
CHAPTER TWO: REVIEW OF THE LITERATURE ................................
    Introduction .......................................................... 13
    The Role of Multimedia ................................................ 13
    Benefits of Multimedia ............................................... 15
    Shortcomings of Multimedia .......................................... 20
    Foundations in Educational Theory .................................. 23
    Techno-Constructivism: A New Teaching Model .................... 26
CHAPTER THREE: DESIGN AND METHODOLOGY ...................................
    Introduction ............................................................ 36
    Analysis ................................................................. 36
    Preliminary Findings .................................................. 39
    Elements of an Online Syllabus ....................................... 40
    Elements of Course Content .......................................... 42
    Instructional Design Model ............................................ 46
    Instructional Goal ....................................................... 47
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Analysis and Performance</td>
<td>48</td>
</tr>
<tr>
<td>Objectives</td>
<td></td>
</tr>
<tr>
<td>Entry Behaviors and Learner Characteristics</td>
<td>50</td>
</tr>
<tr>
<td>Criterion-Referenced Test Items</td>
<td>51</td>
</tr>
<tr>
<td>Instructional Strategy and Instructional Materials and Environment</td>
<td>51</td>
</tr>
<tr>
<td>Formative Evaluation</td>
<td>52</td>
</tr>
<tr>
<td>CHAPTER FOUR: CONCLUSIONS AND RECOMMENDATIONS</td>
<td></td>
</tr>
<tr>
<td>Recommendations</td>
<td>57</td>
</tr>
<tr>
<td>Conclusion</td>
<td>60</td>
</tr>
<tr>
<td>APPENDIX A: ONLINE SYLLABUS</td>
<td>62</td>
</tr>
<tr>
<td>APPENDIX B: WEB EVALUATION</td>
<td>73</td>
</tr>
<tr>
<td>APPENDIX C: SUMMARY OF THEORETICAL FOUNDATIONS</td>
<td>76</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>79</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 1. URL's Used in the Questionnaire ............. 37

Figure 2. Ranking Based on Mean Scores
(Evaluation) ........................................ 39

Figure 3. Elements of an Online Syllabus ............... 45

Figure 4. Dick and Carey ID Model ..................... 47
CHAPTER ONE
INTRODUCTION

This project addresses how to create an online syllabus that is accessible to students and parents, that empowers students to take responsibility for their own learning while enhancing school/home communication, and serves as a graphic representation of what students have accomplished. It promotes ownership for students by being a graphic representation of what the students have accomplished over the period of the course.

While an online syllabus has much in common with a traditional syllabus found in most any course, it differs in a very important way. It is interactive. Its web-based structure allows it to be open-ended and multi-layered. It is accessible in a way a traditional syllabus cannot be. While its very existence on the Internet qualifies it as web site, its interactivity and multi-layerness have shaped it into a special kind of web site termed a web quest. For the purpose of this study, an online syllabus is defined as a web quest that uses other web quests as a vehicle of instructional delivery. Because of the joint structure of an online syllabus of being and using web
quests, it is necessary at this juncture to present what a web quest actually is.

**Web Quest**

A web quest presents information, in an interactive format, providing students the opportunity to control large parts of their learning. In this environment, the student is able to navigate through the site by both accessing information about the course and engaging in the solving of authentic problems, as well as, linking with other related sites that support learning.

There are two different kinds of web quests, short term and long term. The instructional goal of a short-term web quest is to facilitate knowledge acquisition and integration. At the end of a short-term web quest, a learner will have grappled with a significant amount of new information and made sense of it. Short-term web quests are usually completed in less than a week. The short-term web quest is the principle vehicle of instructional delivery of the day-to-day assignments of the course the online syllabus supports.

The instructional goal of a long-term web quest is to extend and refine knowledge. After completing a longer-term web quest, a learner would have analyzed a
body of knowledge deeply, changed it in some way, and demonstrated an understanding of the material by creating something that others can respond to, on-line or off-. A long-term web quest will typically take between one week and a month in a classroom setting. The long-termed web quest is the medium that structures the course at the meta-content level.

When an online syllabus is viewed as a special kind of web quest, it becomes an exciting prospect for education having huge potential for future educational environments but is, on the whole, largely underdeveloped and untested. Its use in this venue has been very productive, and it is the purpose of this thesis is to document its design and implementation.

Background

Since the onset of the Internet and its hybrid, the World Wide Web (WWW), educators have recognized its potential to engage students in constructive learning. When students go online, they enter a world of learning where they can find information about seemingly any subject. Interconnected around the world, there are literally millions of web pages representing the entire array of human endeavors. It is a vast resource of
information that doubles every year (Taspcott, 1997). The shear volume of the Internet, often makes the process of understanding, evaluating and using it, seem overwhelming. Not all sources in this vast and diverse media are equal in reliability and quality.

Millions of web sites are created in both academic and commercial environments every year. In this expanding environment, it is the challenge for every educator to hone this vast resource to support existing curriculum. Few studies have examined the effectiveness of using web sites in teaching. The design of web sites has developed, in the last ten years, from simple linear presentations to interactive multi/hypermedia sources of information.

We are faced with the challenge of teaching our students the strategy of making sense of it and finding their way around it. But very often, it is just the opposite of this that plays out in the classroom. Our students, having grown up digitally, are comfortable in this media and find themselves in the reversed role of teaching their teachers how to use the Internet. This is less than an ideal pedagogy.
Need for an Online Syllabus

Can we design instructional materials that take advantage of this technology and prepare and engage students to succeed in skills of technology literacy, technical reading and writing? Can these materials help educators shift their role as depositors of information to facilitators?

With the growth of families that have computers connected to the Internet at home, and community centers that provide access after school, students have increased opportunities to access an online syllabus than ever before. The need to give students access to the information of the classroom and school is growing, especially, when most of the rest of the environment a student lives in is going online. School should not be the last institution to recognize and address the needs of students to use the Internet to support their education.

Students should have the opportunity to communicate with the teacher and other students via synchronous and asynchronous media and access information from the class even when school is not in session. Students should use the media they will be expected to use when they enter the workplace.
Students should have access to media that helps them move from a linear presentation of information to the learning environment of hypermedia learning. Classrooms should help students shift from the textbook format of reading from beginning to end, to one of hyperlinked, multi-layered information that can be followed, non-linearly, on an "as need" basis.

Students need to have access to the structure and schedule of the course on their terms, where the focus of the course moves from teacher-centered to learner-centered. This shift is paramount to building a community of lifelong learners.

Students need instructional materials that help them take charge of their own learning moving from the perception that learning only takes place at school. Students need materials that build lifelong learners.

Students and teachers, need instructional materials that will help them shift from instruction to construction and discovery, from places to teach to places to learn, where the techno-constructivist attempts to facilitate learning partnerships and learning cultures. These kinds of materials foster an environment where teachers and students become learning partners.
Teachers need instructional materials that provide an opportunity to post support materials that allow the student to access and address content from a variety of approaches on their own, anywhere and at any time. These materials should help the teacher move toward the techno-constructivist's goal of shifting from a transmitter of information to a facilitator.

Parents should have the opportunity to see what their children are doing daily and have the ability to communicate with the teacher even when school is not in session. A broader access to their child's education becomes an inclusive act on the part of the teacher.

We all need instructional materials that help us move from the industrial economy's focus on mass education to the information economy of customized learning. This is a shift from the concept that one size fits all. We need instructional materials that promote a shift from learning as redundant and repetitious to one as an experience that is enjoyable. We need a curriculum delivery that is aligned more closely to the multimedia that students are likely to encounter outside of school.

An online syllabus goes a long way in fulfilling these instructional needs. It can be a powerful support to any teacher's practice by making the course content more
accessible to the students and families, colleagues, and administrators by placing it on the Internet.

Goal of the Project

The goal of this MA project is to produce an online syllabus for a computer elective course, for grades sixth – eighth, that will serve as a model for other teachers to use and will facilitate a shift in pedagogy from broadcast to techno-constructivism.

This Online syllabus will serve to facilitate the following goals:

1. Develop real world technical skills in a content, skill-linked setting.
2. Provide consistent and constant feedback by increasing communication opportunities.
3. Facilitate students in developing process skills, technical reading and writing, and computer literacy that form the basis of life-long learning.
4. Enhance understanding of schoolwork through visual reinforcement.
5. Heighten motivation to succeed because work may be published to a broad audience.
6. Take up little physical space and is easily accessed. One can easily add sound, pictures, graphics, and video.

7. Give students access to accurate information in context.

8. Serve as a vehicle to help empower student learning by giving them access to the content of the course any time, anywhere.

Project Overview

The online syllabus, developed in this project, was really three concepts with one intention. It should be viewed as a traditional syllabus, a web site and web quest. As a traditional syllabus, it serves as concept map of the course guiding the student through the content. As a web site, it presents this concept map on the Internet as a hypermedia document with all the associated interactive, multi-layered, non-lineal, open access elements that HTML, Java and a decentralized network can provide. As a web quest, it presents both the meta-content and the lessons of the content in an engaging and problem-based, student-centered manner.

The intent of an online syllabus is to make learning more visible and supportive by providing a medium for the
teacher to post instructional materials online that supplement and illuminate the in-class content. It is meant to facilitate communication between teachers and students, administration and the community at large by linking course content to electronic communication. This communication is intended to be dynamic in that it can be changed and updated from anywhere in the world via the Internet. It is expected to model how technology is used in the world outside of school by presenting content in a media that is comparable to how it is done in business and entertainment. Most importantly, it is intended to engage students by giving them a boarder audience to display their work. It is expected to build a community of learners.

Appendix A contains copies of some of the main pages of the online syllabus created for this project. This site, Virtual Teacher, can be viewed in its entirety at http://virtual-teacher.com. This site was created, designed and programmed by the author of this thesis. It was first written, in 1999, using raw HTML in Notepad. Later, as the site grew in size and faster updating was needed, Microsoft FrontPage 97 was adopted as an HTML editor. Presently, FrontPage 2000 is used. Originally, a PC platform was used but today an Apple G-4 PowerBook is
used because of the need for more compatibility to the school network.

There are over 1100 files that make up this site. It is impractical to make hard copies of every web page included in the on-line syllabus. Every effort has been made to include a representative sample, in hard-copy form, of the site. However, to review the site with its backgrounds, font colors, animations, and active hyperlinks, it is recommended that the CD or online site be accessed.

The online syllabus and the computerquest content was delivered in a computer lab that had 34, 5600, Macintosh, Power PC’s (220). Each workstation consisted of a Power PC, keyboard and mouse. All computers were connected to the Internet with T-1 and networked with Apple Talk using Ethernet base 10/100. Each student had a secure file to save work to and was expected to save to disk (3.5” floppy) as well.

Adjacent to the lab was a video broadcast studio complete with editing equipment, originators, and audio mixing equipment. The lab and studio had two G-3s and five I-Macs. The teacher used a G-3 to monitor the lab. A G-3 and three I-Macs were used for digital editing. The lab also had a Proxima 5000 projector that could display video
or computer screens on a big screen. A WeatherLink, weather Station was connected to the network. There were 30 sets of three Lego™ packages for lab use: Technic I™, Technic II™ and Control Lab™.

All the workstations shared the following software: OS 8.2 operating system, Netscape Communicator, HyperStudio, PowerPoint, Word, Excel, MicroWorlds, AppleWorks, Avid Cinema, I-Movie, Quick Time, Real Player, Shock Wave, Lego, Mavis Beacon and Adobe PhotoShop.

The lab was in operation for six, 50-minute periods a day. Five periods were regular computer elective classes that this syllabus represents. The first period of the day was devoted to student and teacher training.

Chapter two will address the literature related to supporting curriculum online. It will investigate the relationship techno-constructivism has to the basic foundations of educational philosophy. It will discuss how multimedia is used to construct web sites and how an online syllabus is a particular kind. It will further investigate the web quest and how an online syllabus is a particular one.
CHAPTER TWO

REVIEW OF THE LITERATURE

Introduction

Often in education, multimedia and the use of the Internet have been misunderstood. It has been seen by many as a means of information retrieval only. In this setting, students use this powerful tool to retrieve information from software encyclopedias or web sites. This is certainly a use for the technology but it does not take advantage of its real power.

The Role of Multimedia

Multimedia is the driving force of this new web based instruction. It is the tool used to construct these web quests. It is, also, important to discuss the role of multimedia in education. Multimedia technology has grown from the relatively simple programs of the eighties, consisting of simple elements of sound combined with moving pictures, to the sophisticated authoring programs of today. These new programs make use of advanced features, such as animation, video clips, movies, panoramic views and direct connections to the Internet. Today, multimedia technology is everywhere. It is embedded in most of the computer based instructional materials we
use, as well, as functioning as stand alone, powerful authoring programs.

Schools are beginning to embrace this technology in several ways. One popular use of multimedia is utilizing its powerful authoring software to create presentations and web sites such as an online syllabus. Using a variety of software products, students and teachers can turn a text-based report into a computer-based exhibition complete with animation, video, and voice-over to produce a "Hollywood" like production. These can then be posted on the Internet. Students in schools around the world are producing amazing presentations using this technology, with and sometimes in spite of their teachers.

On the one hand, multimedia appears to fit well into the learning styles of young learners. Many claim that children are naturally "multimedia" thinkers (Taspcott, 1997). As we grow older, we tend to forget how important multimedia elements were to the way we learned, even before they were termed such. Further, many scholars and teachers alike feel that incorporating multimedia into the classroom is giving students the tools they will need to enter the workforce of the future.

But many would argue that in spite of all this hoopla, multimedia is not the savior of education. It is
just a tool among many at the disposal of teachers. In fact, its use may well be harmful to our students' learning by focusing their attention overly on the delivery vehicle rather than the content being presented or learned. We may be dealing with yet another "form or function" debate in education. Many veteran teachers would argue that they have been teaching quite successfully to this point without the need of web quests, multimedia or online syllabi.

But if this technology continues to grow at its present rate, multimedia will soon find a niche in every educational setting. Before buying into this new technology, it is necessary to weigh its benefits against its shortcomings, and determine if it will benefit our students and support our curriculum. An investigation into the benefits versus the shortcomings, of the use of multimedia in education, can be very productive in examining the usefulness of an online syllabus since it is created and presented in a multimedia form.

Benefits of Multimedia

Many, who work with children, see the parallels in how children think and how multimedia is structured. "Kids are naturally multimedia thinkers and they will not be
denied" (Young, 1999, p. 58). Multimedia is not new to them. These children who have grown up digitally construct their world with elements of sound and sight that are just as important to them as words.

Taspcott (1997) suggests that these new generations of children think and construct the world very differently from children of previous generations. This new generation, the N-generation, is the first to grow up with the Net. Their world is very different from the previous TV generation. This new generation requires a level of sound and visual representation that can only be produced digitally. And more importantly, they require a high degree of interactivity with media. They are not content to sit back and be fed information. Their world is not the top-down, broadcast structure of television. The teacher, to them, is no longer the sage on the stage. To these children, multimedia is a natural extension of how they make sense of the world.

Young (1999) contends, "...kids are natural multimedia storytellers" (p. 58). If the multimedia production tools are simple enough to use, these students will incorporate images and sounds that do more than just add to a story of words but are essential components to it.
Besides using multimedia because it matches the learning styles of many of these net-generationers, there is a practical reason to incorporate it into our practice. It is the standard of communication for international business.

We are all being effected by this new digital world. The major difference between educators and their students is that the students have grown up with this new technology. They do not remember decades without these marvels. They do not see these technological innovations as miracles. They take them for granted. More so, they expect these elements in their lives.

Multimedia has the potential to change our curriculum. It has the potential to put learning events into real-world context. Research in cognitive science suggest that children's thinking is, by nature, social and situated in the context of what is being learned (Vygotsky, 1978). Multimedia has enormous potential to place learning events into context for children.

Instructional designers of the future will follow a trend of developing software and web sites that place what children learn in real-life settings; math learned in a virtual grocery store, gas pump, backyard gardening, etc.
and these real-life settings will be linked closely to prior experiences (Gagné, Briggs, & Wagner, 1992).

There are currently a number of on-line projects taking advantage of this new technology. There is a trend, in some sectors of education, toward project based, on-line learning settings. In these projects, students collaborate with researchers in on-going projects, very often in real time. Many of these projects (such as the Camp Internet, Classroom Connect and WISE) follow teams of scholars, adventures and researchers as they investigate scientific questions. Several projects exist right now that engage students in this kind of authentic research, conducted by real scientists, in real time.

Multimedia will continue to effect the way we work, communicate and learn. It can make complex issues visible and accessible to students. When used to its fullest potential, it puts learning into context. It is ideal when applied to complex topics that require collaborative problem solving as exemplified by web based on-line projects.

This is the setting we are preparing students to enter in the workplace. But most importantly, the multimedia world resembles very closely the world of children. Children live in a multi-sensual environment. By
giving children these multimedia tools and materials, we match this environment.

The pedagogy, underpinning the organization of the web quest, is problem-based learning which is described as a strategy for posing significant, contextualized, real world situations, and providing resources, guidance, and instruction to learners as they develop content knowledge and problem-solving skills (Linn & Hsi, 1999).

Problem-based learning begins with identifying essential skills and perhaps selecting key outcomes, and then addressing these with students by capitalizing on current, intriguing problems. Current research suggests retrofitting existing curricular content into authentic problems. It is critical that viable, engaging curriculum be in place that this technology can support (Gagné, Briggs, & Wagner, 1992).

Lederman (1992) addresses models of cognitive structures and memory that are associated transfer problems and conceptual understanding. Transfer problems are defined, in this article, as the solving of unfamiliar problems using previously encountered concepts. The author contends that ideas can be connected conceptually within and across disciplines.
Therefore, an online syllabus must be structured as an online project. It must demonstrate to students how the course, it describes, is relevant and in the context of their prior learning. It must draw on what they know already and engage them in meaningful problem-based projects. It should be in a form and structure that requires students to use technology to learn technology.

Shortcomings of Multimedia

Central to our practice as teachers is staying current with the latest innovations in our field. Few would argue that multimedia has entered our field, for good or bad, with force. It is our challenge to separate the hype from the facts. "Happily, we are past the point at which people expect a computer, by itself, to jump start any curriculum. But there is still much more faith than fact driving the push to technology-dependent instruction. Currently, a major area of enthusiasm is multimedia" (Rukeyser, 1999, p. 60).

Rukeyser (1999) feels that, in many areas, multimedia has been beneficial. But in other areas, it may be harmful. It may focus students' and teachers' attention on the vehicle of delivery rather than the content being learned.
Many educators believe that multimedia will be the communication of the future, especially in business. Our students will need these skills to enter the workplace of the next century. We certainly have seen a shift in the way information is presented in sales and educational presentations and corporate reports. But most of this new media has focused more on persuasion than conveying information. In fact, the jury is still out on how much multimedia will be used in conveying routine information in business, education and industry.

The routine information of the private sector is what drives it, and much of it, may still be conveyed by text-based applications. The PowerPoint presentation, so often seen in business and educational conferences, has evolved from innovative to boring in a short period of time. Rukeyser (1999) points out that “(it) is not because people are producing duller presentations, it is because expectations have out-paced technology” (p. 60).

We can be sure of one thing; production techniques of the future will not be the same as today. They may not even be linear descendants of the software-hardware combinations in use presently. We may be fooling ourselves into believing that the mastery of present day computer
technology will prepare students for the technology of the twenty-first century.

Business leaders have been clear on one thing. The skills and attributes that children will need in the future will be more general, in nature, than specific technological skills: ability to communicate (orally and in writing), good observational skills, mental flexibility, understanding the nature and value of work, and suiting up and showing up to work! Many would add basic skills of mathematical computing to this list. It is possible to teach these skills with or without a computer.

Educational psychologist Jane Healy has raised many concerns about technology and multimedia. She has researched and written on the effects of both on children. Healy and Healy (1991) state their concern with the over-reliance of computers in the classroom. They contend this over-reliance leads to shorter attention spans in children.

In her most recent work, Healy (1998) discusses the dangers to pedagogy resulting from blind faith in technology. However, she does single out multimedia authoring as having some benefits to our practice.
Foundations in Educational Theory

This problem-based model is supported by traditional educational theory. Pragmatism (Dewey, 1907) is a central underpinning to the design of an online syllabus, supported by critical theory (Freire, 1971), progressivism (Counts, 1939), and social reconstructionism (Giroux & Mclaren, 1989). These orientations are natural extensions of pragmatism. Each evolves out of the other, moving from concerns with the learning and development of the individual to the development and change of society as a whole.

All four perspectives share common concepts and goals. They differ, however, in degree, plasticity, and emphasis. The common goal is to empower students to be in charge of their own learning, to think critically and apply knowledge to new situations, to suspect authority by questioning it, and strive to improve the nature of things in the world. The differences are many. The interrelatedness of these orientations stands together but not alone. They share similarities and common ground.

All these orientations hold that the environment is constantly changing and that learning is an interaction between the learner and the environment. Moreover,
knowledge and values cannot be static because their context constantly changes. Knowledge and values change to accommodate this changing universe.

Central to survival is change. It is critical that teachers impart problem-solving skills to their students. From these skills, constructive change can occur. The key to problem solving is using a method of inquiry and analysis (Dewey, 1907). As discussed in the previous section, web quests and online problem-based projects are well suited to imparting the skills required in problem solving.

Knowledge is best gained through interdisciplinary study that serves three functions: 1) It attempts to make sense of the cultural heritage by simplifying its premise. 2) It purifies it. 3) It places it into perspective. This pursuit of knowledge should be available to everyone and need not lower educational standards. Knowledge is open-ended and indeterminate, and requires risk to acquire it (Counts, 1939).

The key principles of how a child pursues knowledge are as follows: 1) The child should develop naturally. 2) Schooling should engage the child’s interests. This interest should be stimulated by experience. 3) The teacher facilitates learning, serving as a guide and
resource. 4) There should be close cooperation between the home and the school. Knowledge of the students' culture, language, and community is important. 5) The school is a place of pedagogical experimentation. Teachers should be constantly analyzing their practice (Dewey, 1907). Web quests fit well into this model as a vehicle of analysis.

Schools should not house authoritarian teachers that manipulate students physically or psychologically. Curriculum should be flexible and not book based. Content should be taught in the context of the social reality which the student is grounded (Vygotsky, 1978). It should consist of hands-on activities that emphasize problem solving and web-based projects, fieldtrips and other forms of expression.

The learning theory of constructivism as defined by Vygotsky (1978) is central to both pragmatism and progressivism. This project assumes a social constructivism, in the Vygotskian perspective. Vygotsky (1978) contended learning was social in nature, a result of a transaction between the learner and the environment. Learning is essentially a creation of meaning from an active construction of the concepts of reality. It is shaped by prior knowledge but this prior knowledge, is continually being reconstructed by the learner. Learners
construct new knowledge by interacting in social situations. Constructivism is suited well for inquiry in all content areas but is used in the science and technology to great effect. For the purposes of this project and when used in this context, constructivism is referred to as techno-constructivism.

Techno-Constructivism: A New Teaching Model

There are several important hallmarks of this exciting type of learning:

1. Access to primary sources. When studying bugs, students look at real bugs. When talking about bones, kids hold and touch actual bones. Technology can be an important way to access primary sources. Students use their Internet connection to see pictures from the Holocaust, explore paintings in the Louvre, take virtual field trips, or to see photographs in the American Memory Collection at the Library of Congress. Email is a vital link to subject matter experts.

2. Technology is in the hands of students. Educators need to be able to use and support technology, but its ultimate role in the
classroom is to enhance student learning (Schon, 1987). Students can learn to decide when technology is appropriate to answer their questions or to communicate with others. Computers are tools like the other classroom tools—video players, CD-ROMs, laser discs, books, and manipulatives.

3. Teachers control curriculum and assessment, but students control learning. In a Techno-Constructivist's classroom, students participate in making decisions about what they will learn and how they will learn it. For example, when studying mammals, students are allowed to select which animal they want to explore in depth. The class works together to set rubrics for the projects they will create and students make choices about how to present their results to the rest of the class and the teacher. Within appropriate boundaries, students have control over their learning and the processes they use to develop outcomes.

Theorists like (Counts, 1939; Freire, 1971; Giroux & McLaren, 1989), generally agree that it is critical to begin with the end in mind. Just as assessment shapes the
learning process, so our vision of technology in the classroom guides our thinking about teaching with computers. The Internet and technology in the classroom is more than interactive web pages or creative PowerPoint presentations. Rather, technology is an invitation to innovation in learning. Schools have invested too much money into computers to limit their influence into becoming the next great visual aid. Let us consider the possibility that technology can reshape the way we teach, and in so doing, foster a more authentic learning community for our students and encourage reflective teachers.

Friere (1970) believes we must look beyond our own classrooms to the overview of how education is structured nation wide. What is the agenda of our educational system? While pragmatism and progressivism address the student and how the student learns (Counts, 1939), critical theory questions what the student learns. Critical theory helps us define our purpose as teachers. Critical theory views schools as instruments to keep the people in power, in power.

Schools impose the beliefs, knowledge, and values of the people in power on those lacking it. Teachers often become unwitting agents of this hidden curriculum that
serves to keep the disposed out of power. This curriculum reinforces corporate values and implies that we reside in a society where the conditions are as they should be (Freire, 1971).

Critical theory (Giroux & McLaren, 1989) adjures teachers to question the system of which they are agents. Who controls schools? Who determines the social, ethical, and economic goals of education? Who designs and defines the curriculum? What is the motivation behind our system of education?

Freire (1971) contends it is our responsibility to go beyond simply analyzing and questioning the system in which we teach and develop our own reform agenda that will empower those who lack control over their lives. By imparting knowledge, especially literacy, we rise the consciousness of the oppressed and disenfranchised and give them a means to take control of their own learning and subsequent lives. We give our students access to information. Literacy is the key and technology is the door to global information.

This questioning of existing policy has placed many teachers in the heart of school, district, state and national politics because teaching and education are political by nature. This is especially true in the areas
of bilingual education and technology (Freire, 1971). The ultimate goal of a teacher is to improve the world. Education should empower our students to direct reform. We should help students integrate new technology and ideas into the parts of our society that empower and rise the consciousness of people.

Czerniak and Lumpe (1996) contend that the reform in science education that has been advocated by Project 2061, National Science Education Standards, and America 2000 have all ignored the role the classroom teacher plays in insuring success of these programs. In a review of the research, they summarize that research needs to address the relationship between teacher beliefs and science education reform. Of these beliefs, the authors contend self-efficacy may relate to a teacher's willingness to enact reform recommendations. They conclude that teachers' beliefs about the necessity of reforms were a strong predictor of their implementation. As supported in their review of the literature, beliefs influence actions. They were particularly alarmed that 81% of the teachers found constructivist strategies unnecessary and 74% reported using these strategies less than once a week or never.

We live in the time of the information age, the information revolution. There is a huge gap between ideas
of the industrial age and this new information age. Counts (1939) argued that teachers must lead students in a searching inquiry of their values. Giroux and McLaren (1989) contend that we must look at our culture in the context of global interdependence. Dewey (1907) viewed knowledge as an instrument of change in this context and our schools must serve as "think tanks" for social reconstruction.

Streitberger (1994) has developed a seven-part action research project that focuses on technology and society. In this procedure, the student presents the pro and cons of an issue, does a background literature search of the issue, addresses other points of view, conducts research, interviews "experts," takes a stand after summarizing the findings, and recommends further study on the issue. The literature addresses some aspects of this learning environment, and its impact on teaching, but there is little that focuses on its actual implementation.

Lederman (1992) contends, that while there are conflicting findings, effective teachers' practice are typified by the following:

1. Students active participation in problem solving, inquiry type questioning.
2. Frequent interaction between teachers and students.

3. Little use of independent seatwork.

4. Infrequent reliance on rote memory/recall practices.

Furthermore, effective teachers supported and encouraged risk taking to solve analytical problems. Lederman concludes that teachers competency in his/her subject matter is not enough to guarantee student success.

At the University of California, Berkeley, Linn and Hsi (1999) have developed a promising learning environment termed the Knowledge Integration Environment (KIE). They suggest that science courses can be developed in a way to promote lifelong learning. They accomplish this by constructing science models that relate to everyday life problems. They engage students in relevant science projects where they can connect to typical science resources found on the Internet. The instructional framework termed Scaffold Knowledge Integration (SKI) guides the design of the Knowledge Integration Environment. This research is very important because it is some of the only work that attempts to quantify the effects and results of using the Internet in teaching.
Linn (1995) reported that the KIE combines network resources and software with sound pedagogical principles, to improve learning. In this investigation, students work collaboratively to answer scientific questions. With the KIE, students use evidence from the Internet and tools such as an electronic notebook and on-line discussion tools to make collaborative decisions. They contend that KIE networking tools allow students to use scientific evidence in activities that foster knowledge integration.

Two private companies (Classroom Connect and Camp Internet) have developed some very engaging and interactive web quests. The participants can engage in authentic research, even changing the course of the investigation by voting (Appendix A).

Classrooms around the world can subscribe to these web quests giving access to the web site and its adventures. Students and teachers are provided with materials and resources that support a thematic unit. Classrooms follow teams of adventures and scientists who are linked together, and to each other, via satellite. They access updates from the team in real time reports; articles posted on the web site or electronic bulletin boards. Students cooperatively work with other students around the world via email and chat rooms. This is new and
exciting technology, that will soon be enhanced with real-time audio and video capabilities, where students will actually be able to hear and see each other during these on-line conferences. In short, the Internet is a powerful tool that facilitates the learning process.

Further, a classroom need not be connected to the Internet to have access to Internet resources. Software makes it possible to download single web pages, groups of web pages, or entire web sites, including text, graphics, movies, animations, and links to other web sites. For example, a teacher can store these "whacked" web pages on the computer's desktop. The "whacked" web pages can be placed into files and transported between computers. If a school only has one connection to the Internet, a teacher can save web resources from the connected computer to a diskette. The diskette can then be inserted into the classroom computer for students to access the downloaded WWW resources.

This is a technology that is in the reach of many classroom teachers. With a limited amount of training, teachers can perform the procedures just described or even program their own web sites to support their curriculum, tailoring them to their students needs. This is indeed an exciting potential.
Chapter three will discuss the instructional design of the project, present preliminary findings of a web site evaluation and recommend basic elements that one should include.
CHAPTER THREE
DESIGN AND METHODOLOGY

Introduction

A central question to this discussion is "what constitutes a good web site"? This is important because first and foremost, an online syllabus is a web site. If a teacher has a strong curriculum and wishes to integrate interactive web sites into it and post it, in syllabus form online, what criterion should be used to identify and evaluate its components? This is an important question to answer, if we wish to design web sites that support our practice to greatest effect. If the power of the Internet is in its ability to engage and motivate students, then it is important to design web sites that take full advantage of this. Any analysis of web sites must be addressed from the prospective of both teachers and students.

Analysis

Because of the dearth literature examining the use of web sites in the teaching, some preliminary research was conducted to examine how students and teachers rank ten different web sites. Discovering if there is a difference between how teachers and students rank the same web sites was thought to be important considering most web sites, in
education, are designed by adults for the consumption of students.

The scope of this preliminary study was limited to the two groups' (teachers and students) over-all rating and ranking of ten web sites (Figure 1).

Figure 1.

URL's Used in the Questionnaire

<table>
<thead>
<tr>
<th>A. Virtual Teacher: <a href="http://virtual-teacher.com">http://virtual-teacher.com</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>B. NASA Quest: <a href="http://quest.arc.nasa.gov/">http://quest.arc.nasa.gov/</a></td>
</tr>
<tr>
<td>C. Exploratorium: <a href="http://www.exploratorium.edu/exhibits/index.html">http://www.exploratorium.edu/exhibits/index.html</a></td>
</tr>
<tr>
<td>D. Weather Project: <a href="http://projects.edtech.sandi.net/langacad/weather/weatherproject.htm">http://projects.edtech.sandi.net/langacad/weather/weatherproject.htm</a></td>
</tr>
<tr>
<td>E. Lego: <a href="http://lego.com">http://lego.com</a></td>
</tr>
<tr>
<td>F. Compass: <a href="http://www.uio.no/~kjetikj/compass/lesson1.html">http://www.uio.no/~kjetikj/compass/lesson1.html</a></td>
</tr>
<tr>
<td>H. Free Zone: <a href="http://freezone.com/">http://freezone.com/</a></td>
</tr>
<tr>
<td>I. Homework Helper: <a href="http://www.bjpinchbeck.com/">http://www.bjpinchbeck.com/</a></td>
</tr>
<tr>
<td>J. Camp Internet: <a href="http://www.rain.org/campinternet/">http://www.rain.org/campinternet/</a></td>
</tr>
</tbody>
</table>

The mean score for each group's rating of a particular web site was used to rank each web site. The two groups' evaluations (teachers and students) of ten web
sites were collected using a questionnaire designed by the author (Appendix C). Many students and teachers helped in the construction of this questionnaire by suggesting characteristics they felt important to include. Students and teachers at Truman Middle School were consulted on what elements should be included in a web site.

Every attempt was made to make the process as easy as possible for the respondent by posting the questionnaire as a web site, then including its URL in an initial query. In this way, a respondent just clicked a hot link to the web site with the questionnaire, selected the URL to be evaluated, answered the questionnaire while reviewing the URL, and then just clicked "send."

The mean score was computed for each groups' selections for each of the 10 web sites evaluated. The mean scores were then ranked from one to ten (one being the best and ten being the worst). There were 16 possible "yes" responses on the questionnaire. Sixteen "yes" responses constituted an excellent web site and zero constituted a poor web site. The items on the questionnaire were weighted equally.

The ten web sites were selected on the recommendation of educators who were the author's colleagues. Teachers and students evaluated them by using the questionnaire.
The goal was to rate over-all the merit of a web site by isolating sixteen characteristics that were thought to make up a good and engaging web site.

Preliminary Findings

Teachers and students ranked the web sites differently. Figure 2 illustrates these differences.

Figure 2.

Ranking Based on Mean Scores (Evaluation)

<table>
<thead>
<tr>
<th>URL</th>
<th>Teacher</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>C</td>
<td>3.5</td>
<td>1.5</td>
</tr>
<tr>
<td>D</td>
<td>3.5</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>5</td>
<td>1.5</td>
</tr>
<tr>
<td>F</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>G</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>H</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>J</td>
<td>10</td>
<td>9</td>
</tr>
</tbody>
</table>

Caution should be exercised in generalizing these results. This pilot study runs the risk of being unrepresentative, and skewed. With that said, it seems
students and teachers evaluated and ranked web sites differently. This is very important to anyone committed to designing and integrating these into teaching.

Elements of an Online Syllabus

Based on open-end discussions with the students and teachers that completed the web site evaluation (figure 2), several elements were isolated that were thought to be characteristic of a good online syllabus. It should be expansive, yet manageable, be accessible, yet powerful, and be continually evolving, enhance student learning, not encumber it.

1. It must be easily accessible but secure and should run on any platform that has access to the Internet. An alternative policy for students without direct access to the Internet must be stated.

2. It should have a clear and legible design that is easily navigated and understood. It should be intuitive and "kid" friendly by nature. It should have plenty of illustrations and photographs that promote student ownership of the course.
3. It must be clearly organized and clarify the following areas. a) It should have a course description that outlines the goals and objectives of the course. b) It should set standards for attendance and grading. c) It should clearly state standards of behavior and positive and negative consequences. d) It should include a schedule and an outline of types of assessments included in the course. e) A schedule of the course with each week clearly described. f) Have descriptions and rubrics of required projects with examples of student work showcased to serve as examples of acceptable work.

4. Have hyperlinks that clearly illustrate content and include an annotated list of resources and links that support the course.

5. Have a communication center that includes electronic discussion media that supports asynchronous and synchronous communication, between students and instructor, which includes email, class list-serve, chat, and threaded discussion board.
6. Have a homework center that is accessible to students and families 24 hours a day, seven days a week.

7. Have extra projects for students to do when school is not in session.

8. Provide a means to access the instructor when school is not in session. A clearly stated protocol of how this interaction is to be conducted.

9. List important school and community contacts.

Elements of Course Content

The content of the course that this online syllabus supports was part of the Fontana Unified School District's middle school elective program. Each school site had wide latitude to develop and implement electives. At Truman Middle School, it was decided by the site administration to make the computer elective a single course that lasted three trimesters. Students would have the same elective for the entire academic year. The author was charged with designing and implementing that program.

The goal was to design a course of study that engaged students while building their computer literacy skills. It was important that the course supported the rest of the
standards-based curriculum at the school by transparently infusing computer technology into all disciplines taught at the school. This was a big order. Skills that were at the foundation of the other disciplines were identified. The ability to technically read and write and critically think were the skills emphasized and taught throughout the year in the course.

Out of this, an elective course, ComputerQuest, was born that used web quests and an on-line syllabus (a meta-quest) to meet these objectives of building students proficiency in technical reading and writing, and critical thinking. The main objective of the course was to structure a learning environment where students became computer literate. This literacy encompassed four main areas.

1. The use of technology as a tool to create documents and communicate with others (applications and electronic communication, Mavis Beacon, AppleWorks: word-processing, spreadsheets, and drawing, Email, chat rooms, list serves);

2. The use of technologies as a tool to conduct research and retrieve information (reference
resources, newsgroups and the Internet, including search engines);

3. The use of technology as a tool to express oneself (presentation and multimedia including PowerPoint, ClarisSlides, HyperStudio, video production and HTML web page construction);

4. The use of technology as a tool to interface with our world (robotics and probes including Lego™ with logo language, GPS/GIS projects).

Figure 3, on the next page, summarizes the discussion of this section. It particularly illustrates the relationship between the three main functions of an online syllabus: communication, learning approaches, and course content. For the purpose of this chart, the term “online syllabus” draws on the discussion in chapter one, where it is defined as web site. Hence, the course, ComputerQuest, is supported by the Internet.
Figure 3.

Elements of an Online Syllabus

[Diagram showing the elements of an online syllabus, including Communication, Learning Approaches, Content, Student Work, and Problem-based learning.]
Instructional Design Model

This project used the Dick and Carey Instructional Design Model to develop the elements of the online syllabus and course content (Dick & Carey, 1990). The Dick and Carey Model is well suited to this project because of its simplicity, its capacity to evaluate feedback and revise instruction.

This model categorizes all stages of instructional design into three functions: 1) the identification of instructional outcomes, 2) the development of instruction, 3) and the evaluation of the effectiveness of the instruction (Dick & Carey, 1990).

The Dick and Carey Design Model can be further broken into ten stages or activities that demonstrate the development of an instructional project. Figure 4, illustrates the relationship of these stages.
A discussion of the design of this project and how it fits the Dick and Carey Design Model will follow. It should be noted that not all the categories of the model apply to this project.

**Instructional Goal**

The purpose of this project is to develop an online syllabus and course that promotes technical literacy, technical reading and writing while building a community of learners that have access to it anywhere, any time.
Instructional Analysis and Performance Objectives

1. Over the course of three trimesters, students used the online class syllabus during class to access information about course content.
   a. Before beginning class work, students accessed the splash page of the syllabus and navigated to the appropriate week to gain instructions and support for assignments.
   b. Students read content before asking for oral instructions from the instructor.
   c. Students accurately followed directions as provided in the syllabus.
   d. Students posted all work in the appropriate CGI form or as a web site according to instructions provide in the syllabus.
   e. Students accessed the support information provided in the syllabus.

2. Students mastered the course content posted in the syllabus.
   a. Students were able to identify the basic components of a computer and perform basic computer lab routines.
b. Students were able to type a minimum of 25 WPM using Mavis Beacon™ software.

c. Students read and posted the CGI form on Acceptable Use Policy and do the class standards web quest.

d. Students mastered the word processing, database, and drawing skills of AppleWorks™.

e. Students mastered the techniques of constructing a web page using HTML and Netscape Composer™.

f. Students completed several long-term and short-term web quests.

g. Students mastered the following multimedia presentation software: HyperStudio™, ClarisSlides™, and PowerPoint™.

h. Students mastered the video editing software: Avid Cinema™ and I-Movie™ to produce school documentaries. They broadcasted a daily bulletin and streamed video as webcasts.

i. Students used basic Logo™ programming to control various Lego™ models they have constructed.
j. Students will be able to plot waypoints with a GPS and plot them using GIS software.

k. Students ran a WeatherLink™ station and post daily reports on the Internet.

Entry Behaviors and Learner Characteristics

The learners that participated in this project were seventh and eighth-grade middle school students that had enrolled in the three-trimester, computer elective course called ComputerQuest. Skills ranged from a complete lack of keyboarding skills and computer literacy to advanced Internet and programming skills. More competent peers were teamed with less competent peers and the basic premise of using online projects that required using technology to learn technology be used throughout the course.

The class population reflected that of the school. Seventy-eight percent of the students were Hispanic. English was the second language of sixty percent. Truman Middle School was a Title I school and ninety-two percent of its student body received free lunches. The students, in the course, read at the 30th percentile grade level or more of the SAT-9, Reading Comprehension section.
Criterion-Referenced Test Items

The assessment of learner performance served to determine the students' ability to use the online syllabus to access the course content. Students were measured on their daily performance. The criteria was how appropriate was their use of the syllabus. Were they using it to access the course content? Or did they need assistance in finding information that was contained in it? Had they successfully completed the web quests that measured mastery of the content?

Instructional Strategy and Instructional Materials and Environment

At the beginning of the course, in the first few weeks, scaffolding by the instructor was imperative. The instructor used small steps to lead the student through the syllabus. A projector was helpful in making navigation visible to students. In this way, the instructor modeled and demonstrated the organization, content, and features of the syllabus.

Since the instructor and students posted content weekly, students were able to watch the growth of content and were able to relate it to the in-class presentations and activities. The intention was to avoid making the content overwhelming in the initial stages.
The HTML format of the syllabus allowed it to contain strong visual components that were personal and interactive. The use of colorful backgrounds and in-class photographs was intended to engage the students. The interactivity of the syllabus was intended to provide motivating activities.

It was extremely important to scaffold the student early on. This was done my daily modeling of the appropriate use of the syllabus and teaming students in cooperative groups the contained more competent peers.

Organization of the syllabus had an index or splash page that helped students navigate. It included a "Table of Contents." The text and content was designed to be clear and simple. Hyperlinks were designed to be easily identifiable and accessed. Instructions and content were supported by graphic illustrations whenever possible. Font and font size were designed to be legible.

Formative Evaluation

This project was developed over the 1999-2000 and 2000-2001 academic years beginning in August and continuing to June. It was tested and refined in five computer elective classes for seventh and eighth graders at Harry S. Truman Middle School (Fontana Unified School
District) during the academic year beginning in August 2000 and ending in June 2001.

Students used the syllabus daily while attending the computer elective class. Students were considered active participants and their input were used to refine the structure of the syllabus. The number of students that have used the syllabus and given input about its elements and course content it represents is over 700 students. Also, several selected sixth grade classes were used to test the syllabus throughout the year.

The first evaluation occurred during the first trimester of school in the fall of 1999. The syllabus had been constructed during the summer break before the newly design elective, ComputerQuest, had actually been taught. Students were evaluated, based on their observed performance and their product, on how well they could navigate through the syllabus, access the course content, and how well they mastered course content. Based on student feedback the syllabus was revised. Better navigation guides were provided and more tutorials to the content were added. The web pages were designed to load faster and the font was made larger. Greater attention was devoted to simplifying the vocabulary and streamlining the amount of text. Quality over quantity was sought.
Using the newly revised syllabus, the second evaluation was done during the second trimester of the same year. Students were observed again on the three objectives mentioned above using the same criteria. Extensive changes were made to the content and structure of the syllabus to make it more readable and easy to navigate. Graphics were aligned more to illustrate text. A "Table of Contents" was designed to anchor each week of the course as a separate web page. More links were provided to support content and several online tests were developed to measure content benchmarks.

The third evaluation occurred during the third trimester of that year. Again the same criteria and objectives were used. While the structure of the syllabus seemed to work for students, based on their performance and feedback, changes were still necessary to the course content. A GPS/GIS, mapping unit was introduced to align course content more to curriculum goals. A lego/logo unit was also added for the same reason.

The fourth evaluation was completed at end of the first trimester of the following year 2000-2001. Students were assessed at three stages of the course. At the first stage, students were immediately evaluated after being introduced to the class syllabus by the teacher. The
teacher modeled the use of the syllabus using the projector screen. Oral and visual instructions were presented to the whole class during the first class session. Students were then evaluated using the previous mentioned criteria and objectives. At the second stage, students were assessed at the mid-term, six weeks into the course. Over eighty-eight percent of the students did not need to ask assistance in accessing course content.

The final evaluation took place during the last week of the trimester. Ninety-three percent of the students in all periods could access the proper week of the syllabus, follow written directions and post a CGI form message to the teacher, while he was on assignment with Camp Internet in the Channel Islands. This occurred under the supervision of a substitute teacher who lacked the computer literacy to support the students.

Based on the criteria and objectives mentioned the only changes were to add addition content. The Lego unit introduced in the previous trimester was expanded to include Control Lab/Logo language to align with the curriculum goal of technology interface with the environment, using computers to make machines work for people. This was at the request of the principal. This fourth evaluation has lain the foundation for the final
revised syllabus that will be used in future classes of the ComputerQuest course.

Chapter four will present some recommendations to professionals that are interested in implementing a project such as the one presented. Some closing remarks on the role of web supported instruction and its relationship to educational philosophy will be presented with some suggestions as to how to position a project like this into existing educational theory.
CHAPTER FOUR

CONCLUSIONS AND RECOMMENDATIONS

Recommendations

An attempt has been made to include recommendations as they came up in the body of this work but a few are so important to the success of project like this that they have been included as a closing topic.

Several issues have surfaced as a result the discussion in chapter three about developing criteria for designing an instrument for evaluating a web site. First, designing and testing the validity of the instrument is critical. Selecting the proper questions on it is extremely important to isolate traits that explain why teachers and students rank web sites differently. A design and rationale must be developed to accomplish this goal.

Second, selecting a random, representative sample of subjects is central to this goal. This may best be accomplished by sending the questionnaire out to several large mail rings consisting of teachers and students; criteria must be designed to identify representative subjects.
Third, URLs must be selected that cover a representative sample of excellent to poor sites. Many respondents suggested criterion for selecting web sites.

Future projects of this sort would benefit by keeping two factors in mind. First, a good evaluative tool is needed to rank web pages that reconcile the needs of teachers with those of students. From this tool a rubric could be made to design almost any web-based project. Second, it is important to design an exemplary web site (online syllabus) that would serve as a model to teachers and students around the world.

The structure of the content of the course this online syllabus supported was comprehensive and demanding. It was discovered that students spent the better part of the first trimester learning the basic concepts and skills required and used the next two to perfect and develop them. The learning curve was quite steep in the first trimester.

For this concept to work, students need access to the Internet and school-based workstations that are networked. Since their work is web-based, it is important to have a file server or some other place to save their work.

The use of a web editor such as FrontPage is imperative to insure timely updates that are so important
in the day-to-day working of the course. Student should also be enlisted as "teaching assistants" to help maintain the site. This helps with the work while giving students ownership.

A laptop with the appropriate software is the ideal way to maintain the site. This gives portability as well as the convenience of always using the same files from the hard drive of the laptop whenever uploading to the server. As the online syllabus grows, the file management and synchronization become major concerns.

And finally, the issue of equity will come up. Not all students have equal access to the Internet. Campus and community resources must be identified and tapped to direct students to connectivity. Libraries on and off campus, community centers, and time before and after school must be provided to students that cannot access the Internet from their home. Many students, when helped to think of alternatives Internet connections, found neighbors and relatives that were accessible. Over the last three years, accessibility has become less of an issue as more and more families get connected to the Internet.
Conclusion

In respect to web-based instruction, education is involved in a debate that is old: What is more important, form or function? We are dealing with a debate over substance and style.

It is imperative that educators not blindly accept technology as an educational panacea. We must be careful that we do not solely judge students on their presentations.

Content is paramount to what we expect of our students. The mastery of subject matter, by our students, is why we are in business. We must be careful not to narrow the materials we present our students, in an attempt to embrace and use these multimedia materials. The lack of available multimedia material should not narrow what we, as teachers, present to or expect from our students. It is from such challenges that we construct instructional materials such as this project.

In the final analysis, it is a matter of finding balance. The use of computers, especially multimedia and web based instruction, has many powerful benefits but also pitfalls. It is our responsibility as educators, to be informed about this issue. If we use this powerful tool’s potential to unlock the learning styles of our students,
tempered with our knowledge of its shortcomings; we can make prudent decisions as to its use and integration into our existing curriculum. Any method or technology is only helpful if integrated into an existing curriculum of quality.

It is hoped that by using technology to teach technology, standards based content will be made visible in a hands-on, graphical format to students. Further, it is hoped that this syllabus will serve as the central focus in demonstrating how learning can occur outside the walls of the campus empowering students to take charge of their own learning.
APPENDIX A

ONLINE SYLLABUS
Welcome to Ken DeCeroo's Virtual Teacher's Web Site

We're on a Mission

The mission of Virtual-Teacher.com is to take full advantage of current instructional technology and the rapidly expanding resources of the Internet so as to provide comprehensive educational programs which will enable students to become productive, life-long learners. Ken DeCeroo, Pat Rynearson, Silvanna Guarracini-Pierce and Tommy DeCeroo.
Course Contents

Class Description:

You will learn how to better write English by studying technology. This course will give you opportunities daily to read, write, and speak English. I believe that the better you read and speak English, the better you will write. We will study the mechanics of writing English and will work to improve your command of it.

This course will investigate the role of technology in our daily lives. We will learn how to use computer technology in four important ways: 1. As a tool to create documents and communicate with each other (application) and electronic communication, i.e., Email, chat room, list serve, etc. 2. As a tool to conduct research and retrieve information (reference resources, newsgroups and the Internet). 3. As a tool to express ourselves (presentation and multimedia). 4. As a tool to interface with the world (robotics and probes). The goal of this class is to use all four of the above-mentioned areas to improve our writing.

You will be expected to find information by doing projects on the internet. We call these projects WebQuests. A WebQuest is an activity in which some or all of the information that you find will come from resources on the internet. There are at least two levels of WebQuests.
Short Term WebQuest:
The goal of a short term WebQuest is to gain a deep understanding of a subject and be able to use it for something. At the end of a short term WebQuest, you will have read about something important and made sense of it by writing your ideas. A short term WebQuest is designed to be completed in one to three class periods.

Longer Term WebQuest:
The goal of a longer term WebQuest is to use what you learned to expand your knowledge.

After completing a longer term WebQuest, you will have studied a subject deeply, changed it in some way, and shown an understanding of the subject by creating something that others can respond to on line or off. A longer term WebQuest will typically take between one week and a month working in class.

Class Standards:
1. Everyone will come to class prepared to work and support each other.
2. Students will show mutual respect to each other and to anyone in the room.
3. We will act as learners and help each other in that goal. We will never distract another student or teacher in the course of their work.
4. There will be no eating or drinking in the lab.
5. Everyone will stay on task and in assigned seats. The only exception is when the teacher assigns a group activity.
6. When doing on-line assignments, students will remain on the directed site.
7. When working as groups, every student will do their assigned job.
8. There will be absolutely no put-downs.
9. All students will finish assigned work.
10. You will have as much freedom to direct your own learning as you can responsibly handle.

Attendance:
For learning to occur, you must be here every day, on time. You will be graded on your attendance.

Seating:
You will be assigned a computer on the first day of class. That is your computer for the year unless your teacher changes it.

Your files are saved on it and your password is for that computer only. Do not change seats unless directed by the teacher!

Grades:

- Attendance: 10%
- Class Contribution: 20%
- Weekly Quizzes: 10%
- Projects: 10%
- Assignments:

Assignments/Class Goals:

1. Homework will be assigned several times a week. You will be expected to turn it in on time.

2. In class activities will occur daily. You will be expected to finish them in the time allowed.

3. Every trimester, there will be a project required that emphasizes writing about the four areas this class addresses. These will be group-based and individual projects that will include a class presentation. More information and a rubric (what I expect) will be given out in the next few weeks.

Web Page:
Each student in the class will make a personal web page that will be used to link work completed. This is called an e-portfolio. Your electronic portfolio is where you will show your work and will be one of the most important parts of the course.

Quizzes: A quiz will be given every Friday.
Agenda Weeks One and Two

Welcome to Mr. Deeroof's Online Syllabus
ComputerQuest ELD

Week One

Week Two

Agenda for weeks One and Two

*Read the word, read the world!*

*Lectura de la palabra... Lectura del mundo,* Paulo Freire (1970)

Weeks one and two are found below. Be sure to read everything included under the headings. Make sure you write all assignments and their due dates into your student handbook so you will not forget. These are found under the "To Do" heading. The "To Visit and Read" heading is where you will find many of the answers to the web quests and scavenger hunts. Be sure to visit these sites.

Introduce class online syllabus.

Introduce course textbook.

Discuss seating arrangement & procedures.

Introduce student handbooks.

Do a web quest on online syllabus.

Do a web quest on class rules (8/10).

Do a web quest on the AUP (8/17).

Discuss the course content: writing rubric and material to write about, form writing teams, discuss writing standards for ELD 7th and 8th grades.

Preview assignments.

Do the Mac Tutorial (8/7).

Homework: Bring in article about technology and how it effects the way we live (8/3).

Write an essay about your experience with technology (7/30).

Applications and skills that will be introduced.

MavisBeacon

AppleWorks – Save AS
Week One

Class rules and Computer Basics.

Today:
- Review of computer basics; class procedures, review online syllabus.
- Do the Mac Tutorial
- Scavenger Hunt:
  1. Do Student Questionnaire.
  2. Find the Scavenger Hunt on this page (STP).
  3. Do the Scavenger Hunt on the ChIPs.
  4. Submit progress report for week's work on Friday (8/10).
  5. Homework: Clip an article and share it with the class on technology and its influence on society (8/3).

To View and Read:
- What is the Internet? Read about Internet Safety.
- Learn and Remember the basic Internet Safety Rules.
- What is a WebQuest?
- Example WebQuest: Camp Internet
- Assessment of keyboarding skills: Turkey Reason
- Why know about using computers?
- Procedures: Turning on your Mac and opening a Browser. Closing everything before you leave class.

Homework: Bring an article to class about technology.
Extra Credit! Computer Quest vocabulary word search

Click here to view students at work from last year!

Week Two

Acceptable Use Policy (AUP)

To Do:
- Scavenger Hunt. You will read the Acceptable Use Policy (AUP) for this course and then submit your AUP agreement.
  1. Do the AUP scavenger hunt (STP).
  2. Submit the AUP.
  3. Submit progress report for Week Two on Friday (8/10).
  4. Finish all three scavenger hunts by Friday! You must have these assignments finished before you can begin learning how to make your own web page.
  5. Return the hard copy of the AUP signed by your parents. This is your ticket to the Internet!
TO VISIT AND READ:

Read the Acceptable Use Policy (AUP) for this course:

- What is the Internet? Read about Internet Safety!
- Learn and Remember these basic Internet Safety Rules.

Finished with your work? Look and study these sites:

1. Homework Help
2. Ask Jeeves
3. Web Monkey for Kids

Extra Credit! Computer Games! Vocabulary Word Search

Home
Agenda Weeks Three and Four

Electronic portfolio: “All About Me” becomes splash page; Check for grammar and spelling and content, build vocabulary page “wall.”

Practice exercises in Mavis Beacon.

Learn elements of Claris HomePage: Splash page, table linking all work including writing, rubric, inserting images from saved images on the internet and from digital imaging.

Learn AppleWorks: Make notes for web page (electronic portfolio).

Use the digital camera to make images for home page.

Weeks Three and Four

Truman Technology Camp

To Do:
• Make your own Splash page (home page);
• Make pages with your answers to the three scavenger hunts: Class Standards, Chips, AUP;
• Insert a picture
• Saving your work to the network
• Saving your work to a floppy disk

• Friday: Watch Intel video and construct circuits and switches.

To Read and Visit:
• Taking digital images and inserting them into your page.

Demonstration of Claris HomePage (Web Page Editor): Creating a new page, selecting a background color, selecting a text style and color, inserting an image, creating a website hyperlink, creating an email hyperlink, and saving your page to the hard drive and to a floppy disk.

Practice writing raw HTML: You will write your first “Splash” page in raw HTML.

Personal HomePage: Create a home page with Claris HomePage with links to other websites and pages you have created.

• The purpose of your home page will be to serve as a showcase for your work, interests and activities. Your home page will have the following elements: 1. A title with your name and grade level; 2. A picture of you centered below the title; 3. A statement of your interests and activities at school; 4. A link to a page that showcases your assignments; 5. A link to a page listing and describing useful sites; 6. A link to a page that showcases your final assignments; All these links should be included in a table like the one found at the top of this page.
• Make a splash page, Showcase page, Favorite Sites page and Final Project page. Link all pages together and write a brief introduction at the top of each page. On favorite sites page, list at least ten sites and write a brief description for each entry. Link each entry to the site you listed.

Go to and Read:

# Resources:

HTML Tags - Web Monkey

Home
Web Site Evaluation

Mr. Becker
Harry S. Truman Middle School

You are being asked to fill out this web site evaluation because you are either in my computer elective class or you are a colleague, whose opinion I respect. I want to know if I am using the best web sites and co-operative projects in my practice. I am especially interested in knowing what web sites students and teachers think are good. I will use the information you give me to help make my course better and to improve graduate research. My students will find that this survey is in the same form as the online tests they have been doing all year. The only difference is that I want your opinion. There is no right or wrong answer. Your responses will be confidential.

Remember to include your name and the name of the site you are evaluating. Also, be sure to select a response for each question. Based on our findings, I will decide what to do for next year. Thanks!

Please fill out the form below for each of the follow 10 web sites. To send your responses, please select the "submit" button. When you are ready to evaluate the next site, click "reset" and begin again. Be sure to include your name and the name of the web site you are evaluating in the appropriate boxes below.

A. Virtual Zookeeper: http://virtual-zookeeper.com
B. NASA Quest: http://quest.arc.nasa.gov/
C. Exploration: http://www.exploration.edu/exhibits/index.html
D. Weather Project: http://projects.edtech.sandi.net/hangerd/weather/weatherproject.htm
E. Logo: http://logocom
H. Free Zone: http://freezone.com/
I. Hamburger Helper: http://www.hamburger.com/
J. Camp Internet: http://www.web.org/campinternet/

Name: __________________________________________
Website: ________________________________________

Arrangement/Ease of Use:

1. Is the site "user friendly"?
   Yes ☐  No ☐

2. Does the page take a long time to load?
   Yes ☐  No ☐

3. Is the information presented in a logical, ordered manner?
   Yes ☐  No ☐

4. Is there a clear site map or hypermedia index?
   Yes ☐  No ☐

5. Do graphics and hypermedia add to or detract from the quality of the site?
   Yes ☐  No ☐
6. Is using the site a pleasant experience?
   Yes ☐ No ☐

Scope

7. Does the title of the page tell you what it is about?
   Yes ☐ No ☐
8. Is the purpose of the site to provide information?
   Yes ☐ No ☐
9. Does the site promote a position?
   Yes ☐ No ☐
10. Do the pages include links to support the ideas?
    Yes ☐ No ☐

Currency

11. Can you tell when the site was created?
    Yes ☐ No ☐
12. Has it been updated since its creation?
    Yes ☐ No ☐
13. How up to date are the links?
    Yes ☐ No ☐

Author

14. Is the author(s) knowledgeable about the topic(s)?
    Yes ☐ No ☐
15. Is an e-mail address included to contact the author?
    Yes ☐ No ☐

Treatment

16. Are sources documented in a bibliography or by hyperlinks?
    Yes ☐ No ☐

- When you have completed this test, select the "Submit" button below.
- If you have successfully sent your answers to us, you will receive a message congratulating you.
- If you have forgotten to fill in some of the answers or blanks, you will receive a message telling you which ones to complete.
- If you would like to do the test over before sending it, select "clear" and try again.

Submit  Reset
APPENDIX C

SUMMARY OF THEORETICAL FOUNDATIONS
<table>
<thead>
<tr>
<th>Educational Implications</th>
<th>Proponents</th>
<th>Best References</th>
</tr>
</thead>
</table>
| At the individual level instruction is organized around problem solving. A person should be educated according to his/her needs and interests. | Friere  
Habermas  
Giroux  
McLaren  
Childs  
Dewey  
James  
Peirce  
Kilpatrick  
Parker  
Washburne  
Brameld  
Counts  
Stanley | Pedagogy of the Oppressed (1971) by Paulo Freire |
| At the social level, instruction is organized around a critical analysis of what are the underlying motives of schooling. The ultimate goal of education is to reconstruct society. | | Dare the School Build a New Social Order? (1932) by George S. Counts |

**References**

- Pedagogy of the Oppressed (1971) by Paulo Freire
- Dare the School Build a New Social Order? (1932) by George S. Counts
- Critical Pedagogy, the State and Cultural Struggle (1989) Ed. by Henry A. Giroux and Peter McLaren
- The Child and the Curriculum (1902) by John Dewey
- Mind in Society (1978) by Lev Vygotsky
<table>
<thead>
<tr>
<th>Metaphysics</th>
<th>Epistemology</th>
<th>Axiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the individual level, reality is an interaction between the learner and the environment.</td>
<td>At the individual level, knowing comes from experience. It is the result of solving problems using the scientific method.</td>
<td>At the individual level, values and beauty are situational or relative.</td>
</tr>
<tr>
<td>At the social level, reality is socially, economically and politically constructed.</td>
<td>At the social level, knowing comes from a critical analysis of class struggle and social strain.</td>
<td>At the social level, values and beauty are constructed and defined in terms of social power.</td>
</tr>
<tr>
<td>At the individual or social level, reality is not absolute.</td>
<td>At the individual or social level, knowing is a result of analysis and problem solving.</td>
<td>At the individual or social level, values and beauty are constructed.</td>
</tr>
</tbody>
</table>
REFERENCES


