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Jeremy Charles Johnson

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# Designing An Electronic Learning Website Using ASP

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

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

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by  
Jeremy Charles Johnson  
March 2004

# Designing An Electronic Learning Website Using ASP

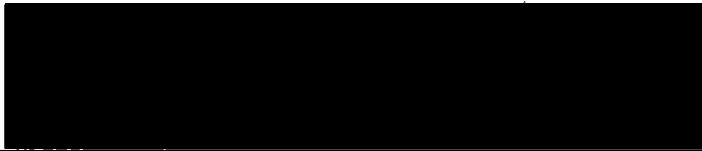
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by  
Jeremy Charles Johnson  
March 2004

Approved by:

  
Dr. Eun-Ok Baek, First Reader

  
Dr. Brian Newberry, Second Reader

2/24/04  
Date

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## ABSTRACT

This project has two major purposes. One is to develop an online forum to improve and facilitate communication among educators, parents, and students resulting in more informed decisions by everyone involved in the educational process. The second purpose is the personal development of an electronic learning application using online tools needed for an effective online learning environment that will cost the school district little or nothing. The research reviews the benefits of Active Server Scripting (ASP), important factors for designing an electronic learning website, synchronous and asynchronous methods of web based instruction, and the implementation of web based instruction. Based on the research and student surveys collected, the project outlines the ADDIE MODEL - analysis, design, development, implementation, and evaluation.

## ACKNOWLEDGMENTS

I wish to express my appreciation for the help and guidance I have received from my advisor, Dr. Eun-Ok Baek and the second reader of my thesis, Dr. Brian Newberry. Their support, direction, and understanding were a guiding force in the completion of my master's thesis.

A special thank you to my parents, Roger and Irene Johnson, who encouraged and supported me throughout my endeavor, both are educators and whose skills I truly appreciated. In addition, I wish to thank my wife, Kimberly, and my daughter McKenzy, who were supportive and cooperative during the time I devoted to pursuing my degree.

## DEDICATION

I would like to dedicate my thesis to my sister Heather Johnson who, in the pursuit of her degree in elementary education, died in an automobile accident at the age of twenty.

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## CHAPTER ONE

### BACKGROUND

#### Introduction

Technology is a powerful and effective online communication tool that connects educators, parents, and students. Electronic Learning Websites are impressive educational resources that keep everyone up-to-date so that "no child is left behind". Defining and implementing a solution to the communication process requires analyzing the technical aspects of the problem and providing teaching resources to communicate effectively with parents and students. The primary purpose of this project is to develop an online forum to facilitate communication among educators, parents, and students and furnish an open environment for more informed decisions by all those involved in the educational process.

#### Statement of the Problem

In today's technological world, the cost of electronics and technological tools can surpass the budget, but the solutions that the technology can provide are still needed. The development of an electronic learning web application will allow any subject area to be transformed into an online collaborative website that can

be used asynchronously or synchronously. Popular online environments such as Blackboard and Web\_Ct would cost school districts tens of thousands of dollars or at the very least, three hundred dollars per course. The personal development of an electronic learning web application will ultimately allow the district the freedom to use all the online tools needed for an effective online learning environment with little or no cost to the school district.

#### Purpose of the Project

The distance learning application proposed would be extremely useful to districts that wish to offer an online environment to their schools. This application will be built with a low maintenance and a low cost idea that offers schools the alternative to expensive web portals and will provide the online forum necessary to facilitate communication among educators, parents, and students resulting in more informed decisions.

#### Significance of the Project

The significance of this project is that it allows the educator to build an online teaching environment while preserving the traditional classroom setting. The project proposed is an online learning community that will give the instructor access to the collaborative tools that are

essential to building an asynchronous or synchronous website for any subject area. The e-learning application will be built using active server scripting, which is a scripting language that runs on a Microsoft Windows Server and allows for HTML, Java scripting, and Visual Basic Scripting to be combined, any one of which is used to call to the components of the webpage. Active Server Scripting allows the information on the website to be organized and driven by different tables in a database. By using several tables in a database, the information can be organized and stored into columns that reside within each table. In order for the information to become dynamic and useable, queries are necessary and will be the foundation to building an electronic learning environment. The most important part of building an electronic learning application is security. A username and password will be important in identifying students and distinguishing between students and instructors. By assigning each account a username and password, the ability to secure data is possible. Then, using those same usernames, other components of the electronic learning application may be used such as a discussion board, online quiz, and email.

## Limitations

During the development of the project, a number of possible limitations were noted. These limitations were the following: access to an internet hosting company that allows for active server pages, access to Macromedia Dreamweaver MX software, access to Microsoft Access Database software, lack of Active Server Scripting knowledge, and lack of computer skills.

Some students declared their limitations as the following: a lack of keyboarding skills, an inadequate level of computer knowledge and computer skills, no computer at home, no internet access at home, and web based instruction is too time consuming.

Other limitations noted in the literature review research were that online learning environments limit us by allowing communication through the computer technology and not a real person; therefore, it loses some humanity (Huang, 2002). Another limitation that Huang states is that some learning takes place beyond the instructor's capacity and that some responses from fellow learners may be "ineffective, incomplete, or even erroneous" (Huang, 2002, p. 31).

## Definition of Terms

The following terms are defined as they apply to the project:

Active Server Pages - or the abbreviation ASP, is the technology built by Microsoft that contains embedded programming code that is presented in an HTML format.

Asynchronous - is not simultaneous in time. Examples of this are emails and discussion boards.

Database Source Name - Less Connection - or the abbreviation DSN-less connection, provides the connectivity to a database such as the database name and user information.

Hybrid Situation - is the ability to combine traditional classroom teaching methods with web based teaching methods.

Hyper Text Markup Language - or the abbreviation HTML, is the code used to present information on a web page.

Open DataBase Connectivity - or the abbreviation ODBC, is the method used to connect to a standard database and was developed by the Microsoft Corporation.

Structured Query Language - or the abbreviation SQL, is the standard query language for requesting information from a database.



Synchronous - is simultaneous in time. An example of this  
is chat rooms.

## CHAPTER TWO

### REVIEW OF THE LITERATURE

#### Introduction

Electronic Learning Websites or web-based learning environments are rapidly emerging as a means of providing instruction and offering many opportunities and exciting avenues for education. Using the Internet in meaningful ways will create fascinating and stimulating instruction but can also pose challenges for teachers (Deal, 1998). The use of the World Wide Web as a means of learning has captured the interest and imagination of educators worldwide, and innovative teachers realize there are many uses of technology for effective instruction that will serve the different learning styles of children (Clovis, 1997).

There are costly commercial websites designed specifically for the purpose of implementing and executing distance, web enhanced, and hybrid education programs. However, due to financial constraints, many school districts cannot afford to purchase these costly database-driven programs. The purpose of this project is to help financially strapped school districts implement web enhanced education at a minimal cost.

The Web site can be a magnificent public relations device which is another goal or purpose of this project. The website will help to improve communication by providing an online forum that connects educators, parents, and students. This supports the belief that this form of communication will enhance the educational process needed to create a learning environment and give a sense of security to parents (Simkins, 1996).

#### Evolution of Online Distance Learning

Evolution of Online Distance Learning first appeared in 1972 with different technologies such as audio conferencing, video conferencing, interactive television, and computer network (Jung, 2001).

However, since the origination of the Advanced Research Projects Agency Network (ARPANET), there have been many studies investigating its technical features and connecting these to form web based instruction (Jung, 2001). The term "Internet" was not really used until the 1980's.

The use of electronic learning websites has grown at an unprecedented rate over the last five years and schools continue to seek ways to use online collaborative tools to deliver instruction. Even though there is increased

interest in developing a website, there are numerous challenges to implement a successful web based learning environment (Hill, 2002).

In the fall of 2000, Blackboard released an edition that serves as an application service provider (ASP) listing development tools to assist in the creation of interactive websites (Reisman, Dear, Edge, 2001). Before the emergence of the internet, online instruction included mailing lists and bulletin boards (Ibrahim & Franklin, 1995).

#### Benefits of Active Server Scripting

Active Server Pages or ASP has revolutionized the way information can be displayed on a webpage. Active Server Pages allow a webpage to combine traditional Hyper Text Markup Language (HTML) with scripting language produced from real time data and dynamically generated each time one visits the webpage. A benefit of using ASP or VBScript is that the work requested by the visitor is performed by the Internet Information Server or IIS rather than relying on the visitors' browser to generate the information (Buczek, 1999).

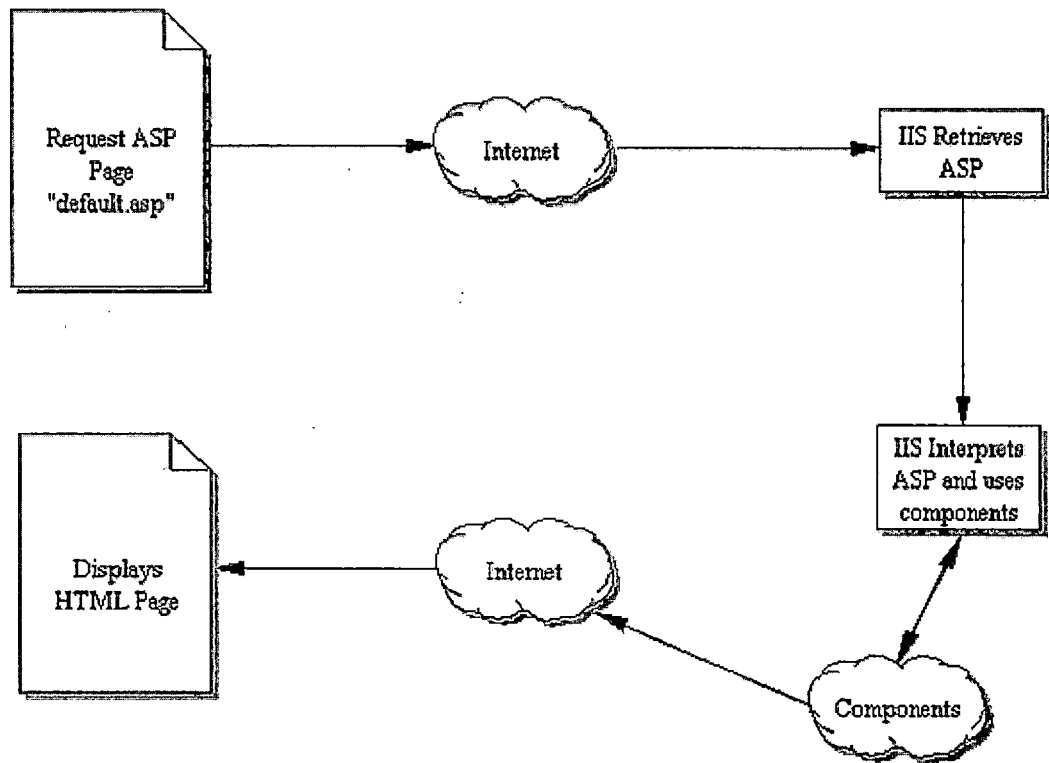


Figure 1. ASP Request and Response Process

Source: Buczek, G. (1999). *Instant ASP scripts*. New York: McGraw-Hill.

The process of generating dynamic content to the webpage begins when the visitor requests the information from a page with the .asp extension. Then the IIS retrieves and interprets the information that generates HTML, placing the information in the specified area of the webpage, and no separate programs are required to view the content. This information may be generated from the server's date and time, from a database with specified field names, and from visitor customization such as the

color of the background, navigational layout, or the text used to display the information (Buczek, 1999).

There are several significant reasons to using Active Server Scripting over static web pages. One reason is that the webmaster can control the content being viewed and which components of a web page are being used. The second is that security can be added to specific pages of the website and slow bandwidth issues can also be resolved because the data is processed on the server and presented on the user's internet browser in a simple HTML format (Buczek, 1999).

#### Important Factors for Designing an Electronic Learning Website

One of the major factors in designing an Electronic Learning Website is the approach the teacher makes. Lieblein, Dean of the Graduate School Computer and Information Services at Nova Southeastern University, found that some teachers may do an outstanding job using only e-mail and the telephone, while other teachers fail miserably using an integrated system that has eight or more sophisticated online tools (Lieblein, 2001). Also, there are some teachers who will argue that online classes without live lectures are inevitably inferior, even though they have found no research to support their views. From

experience and observations, one can conclude that even without or minimal live lectures, online delivery may be a better learning model where students actually learn more because they play a greater role in the learning process. As Lieblein concluded, students become more responsible for their learning and must assume a more active role (Lieblein, 2001). Many agree with those proponents of on-line learning that online facilitates more student-to-student and student-to-teacher interaction because students are more comfortable with and learning from their peers (Lieblein, 2001).

Another significant factor is that each class taught might have its own webpage that is user-friendly and includes a short welcome message or announcements page, a brief class description, syllabus, and a discussion board. The webpage might have a schedule of assignments, frequently asked questions or help page, instructions on how to submit assignments, email addresses and email features, a links page with important references and links to sample student projects, Internet resources, grading criteria, and how to contact the instructor. The webpage should also include "buttons" and "navigational links" that make it easy to use so students can easily find the information requested. Classroom web pages provide parents

and students with important information and website links for students to resources that are related to the curriculum. Charland also emphasizes that by creating a website for the classroom, both parents and students become more involved (Charland, 1998). Also critical to the success of an online class is the time it takes a teacher to respond to his students' questions or e-mails and to provide them feedback on the work they have completed. A network serves more and more as a communication facilitator. Networking by definition, implies communication, or people's interaction with knowledge, other people, or both (Nachmias and Tuvi, 2001). It is essential that teachers respond within 24 hours, and, if this is not possible, they should notify their students in advance. Perhaps a teacher's response time should also be included in his syllabus (Lieblein, 2001). Lieblein also advises that to insure students understand the syllabus and realize the expectations of them, the teacher should ask them to read the course description and syllabus and confirm by e-mail when they have done so. Equally important to the design and success of an online class is the ease and approach for students to submit their completed assignments (Lieblein, 2001). Some constructed learner sites have students submit their



assignments directly to the website; however, in a computer lab situation, students can save their work to a specified server locally within the lab.

Extremely important as well are the faculty issues, which are inevitable. Many teachers are terrified by technology and because of this intense fear, they do not agree with online teaching. Other teachers are convinced that face-to-face teaching is the only effective teaching method. Unless online teaching is required by their contracts, it is best not to force this issue upon them. We should concentrate on those teachers who are enthusiastic about web-based learning and those who would not mind trying it. Eventually some of the others may agree to try it. In addition, web based teaching can be made a requirement for future teachers hired.

Another important and crucial factor when designing an electronic learning website is cost. Of special interest in this time of decreasing budgets are database driven resources that are constructed using free software and source codes (Bennett, 2003).

#### Synchronous Versus Asynchronous Methods of Web Based Instruction

A very important element in designing Electronic Learning Websites is the synchronous and the asynchronous

methods of instruction (Lieblein, 2001). In a synchronous situation, students will meet online at the same time and in an asynchronous situation, students will access the information at different times using the class webpage, email, or the discussion board (Lieblein, 2001). A locally constructed electronic learning website may allow these forms or methods to be used in any class setting. Students may access the information in class at the same time, but depending on the time it takes to find the answer to questions and based on the directions in the class, the students may also answer the questions asynchronously. Students who were absent are still able to participate in the class assignments from home or when they return to the classroom.

#### Implementation of Web Based Instruction

When a decision has been made to use a database driven webpage, the first important issue to consider is whether to purchase a commercial system such as Blackboard or Web\_CT, or to develop a system locally. Commercial software is available at many different levels and prices and has been implemented successfully at many schools and colleges. Local development may be most beneficial, especially for smaller projects, when cost is an important

issue, or when full access to all source code is essential.

If a decision is made to develop dynamic web pages independently of commercial vendors, a choice of programming or scripting language must be used. The most commonly used programming languages, Java and Perl, and the most commonly scripting languages, PHP and ASP, provide the functionality needed to produce a web portal that contains the tools needed for web based instruction.

Bailey and Blythe offer this proposition in their article entitled "Outlining, Diagramming, and Storyboarding, Or How to Create Great Educational Websites": the real challenge for teachers will be creating graphics, audio, and video using storyboarding. This is a relatively new skill in web design that will be widely discussed and used in the next few years (Bailey & Blythe 1998). They pose this significant question, "Is another medium more powerful than the common text-based format" (Bailey & Blythe, 1998, p. 7)?

There are limitations to web based instruction. It is limited by the technological expertise of participating teachers and students and the capabilities of the website used for the web based instruction (Frey and Faul, 2003).

## Summary

This project covers several issues of general importance for creating all electronic learning websites. When considering local development of educational applications, important issues to be considered include (1) ease of use for the user, (2) the number of available features, (3) the software price, (4) and the availability of the skills needed to build and maintain the applications (Dorup, Hansen, Ribe, Larsen, 2002).

## CHAPTER THREE

### PROJECT DESIGN PROCESSES

#### Introduction

The design of an educator's Electronic Learning Website depends heavily upon the learning theory utilized by the educator. In addition, the skills and knowledge of the students, combined with the desired learner outcomes, become crucial predictors of the success and usability of the Electronic Learning Website, <http://www.etecsolutions.net/thesis/>.

Junior high school, high school, and college students can easily utilize the design and development of a user-friendly Electronic Learning Website outlined in a systematic format. However, implementing the Electronic Learning Website into the classroom may require that the instructor be knowledgeable about the layout and functionality of the key components of a web based environment. Most importantly, the website design should work with any subject area and contain the tools needed to communicate easily and effectively with parents, students, and instructors.

Evaluation of the success of the achievements of the desired learning theories, the attainment of the desired

learner objectives, and the use and success of the communication desired is an essential element in the analysis, design, development, implementation, and evaluation of the Electronic Learning Website.

### Analysis

When designing an Electronic Learning Website, the designer may face the challenge of redesigning his theory of learning to reflect a shift from behavioral and cognitive perspectives of learning evident in the past to constructivist's learning theories prevalent today (Huang, 2002).

Meaningful learning has always been the major goal of education. In the past, many of the teaching methods were concerned with behavioral change. They did not take into consideration learner readiness or maturity and individual learning differences.

Today constructivists emphasize that the design of the learning environment is crucial and that it is important that learning meet real life experiences. Research suggests that constructivism must apply to online web based environments, and that since an Electronic Learning Website is a very different setting from the conventional classroom, educators need to utilize special

techniques and perceptions that lead to success (Huang, 2002).

In education today with all the mandates and directives issued from the national, state, and local education departments and districts, the backwards design approach appears to be the most practical and usable approach to education. This theory emphasizes that educators must assess before designing classroom curriculum and specific lessons and consider in advance how students can attain the desired outcomes. Educators must ask themselves what they would accept as evidence that students have attained the desired understandings and proficiencies. After they have determined their acceptable evidence, only then should they proceed to plan teaching and learning experiences. Therefore, the three basic stages in the backwards design process are 1) identify the desired results 2) determine acceptable evidence 3) and plan learning experiences and instruction (Wiggins & McTighe). When educators apply these three steps of curriculum design outlined in the backward design process, they are more likely to achieve greater student comprehension and adhere more closely to the required standards.

In addition to the backwards design approach, the discovery-learning approach proposes that students learn by means of experimentation and discovery. Idealistically this method may be most conducive to stimulate student excitement and curiosity and perhaps may work great in a senior high or college setting. However, for teaching subject standards or required course objectives at the junior high level, other learning approaches and theories may need to be used because experience and knowledge of the subject area may be limited.

Therefore, with current web based learning environments, a collective approach to curriculum design and instruction by combining ideas from the discovery learning approach and the backwards design approach seems essential and the most usable.

### Design

In the design of this Electronic Learning Website, it was determined that Active Server Pages would be used to present the database information to the user. With the ability for Active Server Scripting to convert the information to an HTML format, the information will be compatible with any updated version of a web browser on any computer operating system. The design of the database



is essential in the development of this web based environment, and it is assumed that most educational institutions would have the Microsoft Access Database program so that application will be used rather than structured query language or SQL Server. However, the ability to convert the Microsoft Database to a SQL Server Database is possible. With this in mind, it has been determined that the database connection will be a separate "include file" that can easily be converted to a specific database program and database connection type. Most educators will not have access to the institution's web server to make an Open DataBase Connectivity or ODBC connection to the database so in this Electronic Learning Website, a Data Source Name or DSN-less connection will be used to connect the ASP scripts to the database. The database will contain ten fields and each field will contain the necessary columns that will save the information for each of the Active Server Pages. For the design of this website, "include files" will be used to form the template of the website. "Include files" will make it much easier to update or change the user interface and will be referred to in query requests from each page. For this Electronic Learning Website, Macromedia

Dreamweaver MX software will be used for both the visual website design and file transfer protocol.

### Development

In the development of the default page template of this Electronic Learning Website, the web page will consist of two main tables that will contain sub-tables with information relevant to each page's purpose. The first table will contain the heading that includes an ASP "include file" labeled "header.asp". The "header.asp" file contains an image and flash navigational buttons built with Macromedia Dreamweaver MX. Each button links to a page within the website and can easily be adjusted to fit the needs of the instructor. The purpose of this header is to enhance the navigational options available to the user and create an eye-catching design. The default page properties of the Electronic Learning Website consist of the following: the font face is listed according to the user's default web browser settings, "Verdana, Arial, and Helvetica"; the font color is black, web links are blue, and visited links are purple because they are accepted web browser defaults.

The second table will display the user interface "include file" labeled "taskbar.asp". The user interface

contains all the links within the website and helps to create a user friendly environment for all users. This interface also displays website administrative options based on security settings set forth by a query statement. Instructor's rights are different from that of the user in that the instructor has the ability to change settings, delete content, and display optional information. These rights are necessary to the instructor to control the environment, view user information, and post pertinent information to the Electronic Learning Website. The second table will also contain the following: a link to the number of new email messages that will clearly indicate new email, an edit profile link that will allow the user to change user information, and a sign out link.

Finally, a table at the bottom of the page will display an "include file" labeled "footer.asp". This file links to an outside email address that a user may utilize to email the administrator of the webpage. This file can easily be changed to an instructor's email address, an email web form already in existence, or any link so desired by the administrator of this webpage. (See Figure 2, Electronic Learning Website)

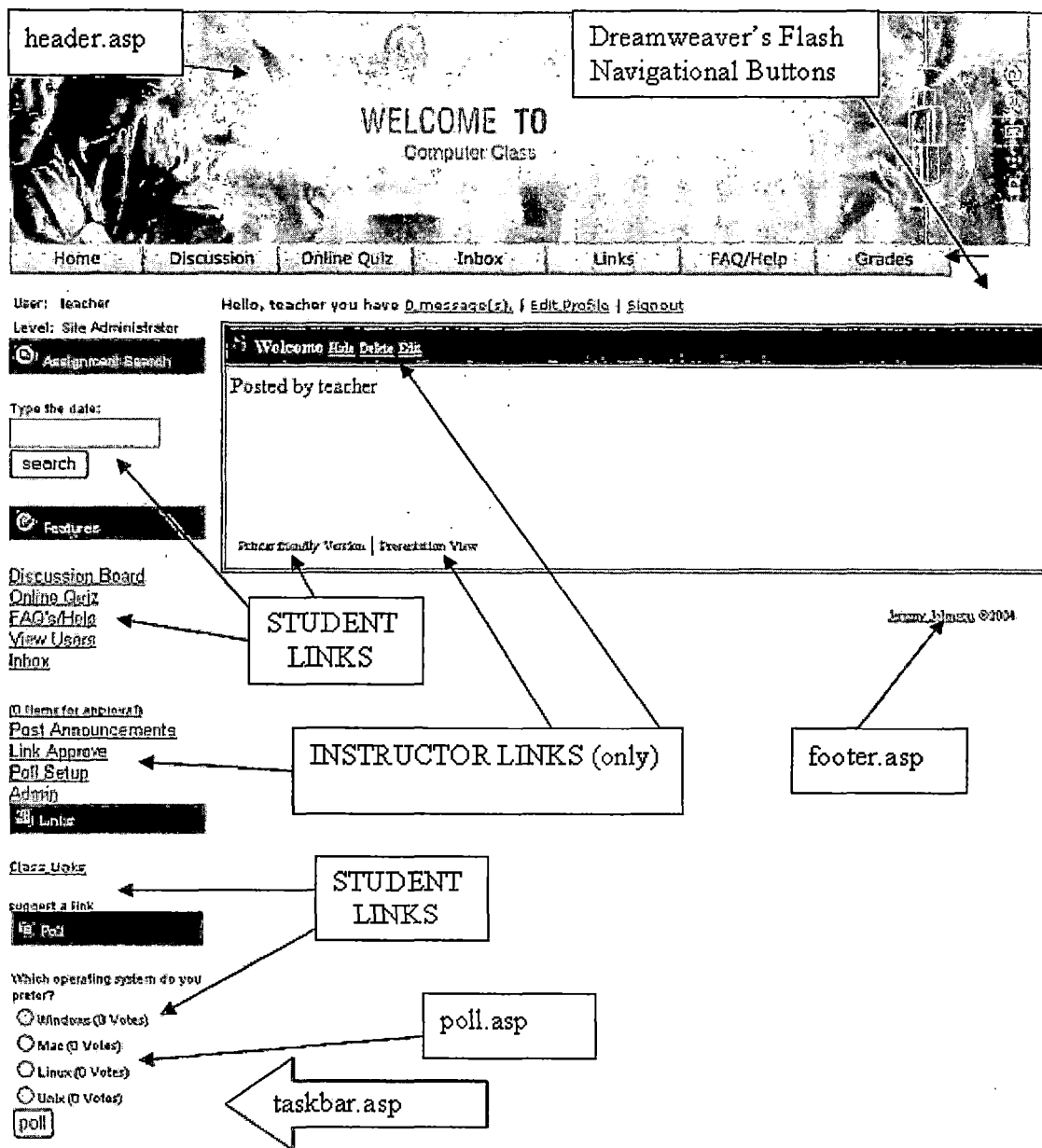


Figure 2. Electronic Learning Website

User Registration for the Electronic Learning Website is setup so students can create their own username and password. However, the instructor creates a registration code by editing the "register.asp" file. The file clearly

displays within a comment tag where to edit the code or phrase to allow for registration. This feature deters students not in the class from registering for the Electronic Learning Website.

Users log in with a username and password either from the default page of the website or the website labeled "nologin.asp". The student usernames are set to a value of zero and the instructor's username is set to a value of 10. This value determines what links are displayed on the website. The default instructor username is "teacher" and the password is "instruct". In order for an instructor to create a personalized username, the instructor must register that username and set the value from within the administrative panel using the default username and password.

The first page of the Electronic Learning Website is the Announcements Page. This page is labeled as "default.asp" and allows the server to read it as the index for that particular folder. The Announcement page displays the class's current announcements and the instructor has the ability to post this information from any computer in the world that is connected to the internet. With administrative privileges, the instructor is presented with a separate toolbar. The administrative

toolbar displays the Post Announcements Link labeled "post\_main.asp" to post announcements; the Announcements Approval Link labeled "mainapprove.asp" to approve and add the announcements; and the option to change or delete the announcement with the Announcements View Link labeled "newsview.asp".

Student Assignment Search labeled "search.asp" allows students to search for assignments they missed on a specific date. The results from the assignment search are listed on the Assignments Search Results page labeled "newsread.asp".

The Discussion Board Link labeled "board.asp" displays the class discussion questions and allows students to view other students' postings and to post an answer of their own by clicking on each discussion board question separately. The instructor can post a discussion board question by clicking on the Post Discussion Board Questions Link labeled "post.asp" which is only displayed to those with administrative privileges.

The Frequently Asked Questions and Help Page Link allow the students to view questions posted by other students or helpful tips posted by the instructor. Questions can be posted by using the Submit A Question Link labeled "help\_submit.asp".

By clicking "Link Approve", the instructor has the ability to create separate categories for each group of submitted web links. Once a Category is set, the instructor can submit links and approve links submitted by students and can arrange them into each of those categories.

Mini Classroom Polls can be used to take a vote within the class website. The instructor can design the poll up using the Poll Setup Link labeled "linkapprove.asp" located on the administrative toolbar. The Mini Poll logs the IP address of the user so it will not allow more than one vote per user.

The Classroom Email feature of the Electronic Learning Website allows the students and the instructor to email within the class. The Inbox Link labeled "inbox.asp" displays the class emails specific to each username and allows the user to create, delete, or reply to email. (See Figure 3, Storyboard)

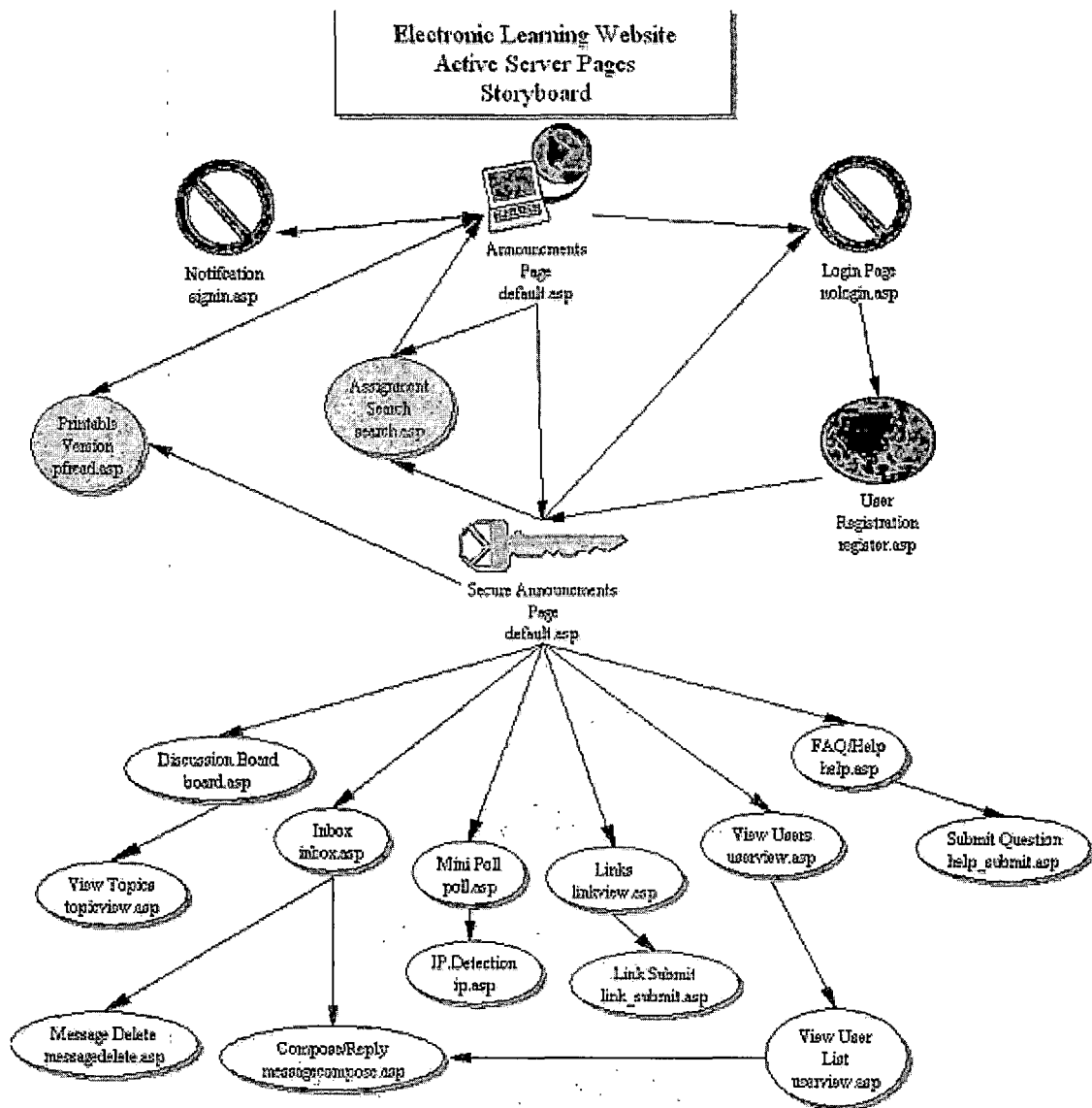


Figure 3. Storyboard

The Administration Panel labeled "asp\_admin.asp" allows the instructor to edit and delete all users, send a message to all users, display a detailed list of user information, post announcements, post discussion board questions, setup a mini classroom poll, approve submitted web links, view all classroom emails sent within the



class, and post frequently asked questions or help directions to the Electronic Learning Website.

The List, Edit, Delete link labeled "asp\_admin-profile.asp" in the Administration Panel, lets the instructor edit or delete user account information. The Message to All Users link allows the instructor to send a message to all students from one convenient location. The Full List link labeled "asp-admin-fulllist.asp" allows the instructor to view and print a detailed list of user information that is sorted alphabetically according to the username. The View Class Email Messages link labeled "asp\_admin-emaillist.asp" permits the instructor to monitor all emails sent and received within the Electronic Learning Website. (See Figure 4, Administration Panel)

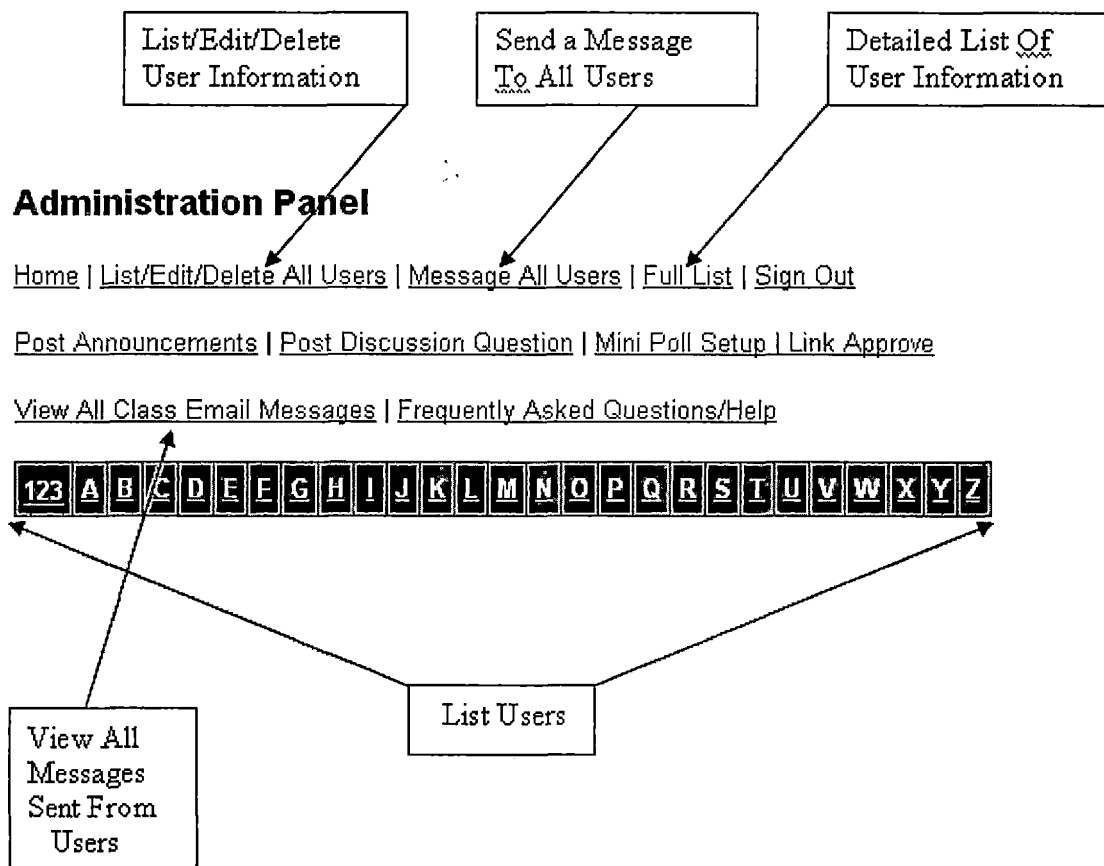


Figure 4. Administration Panel

### Implementation

In order to implement this Electronic Learning Website into the classroom it must first be uploaded to a web server that allows for active server pages. First, locate an internet hosting company that uses Microsoft Windows Servers or contact the administrator of the school, district, or county web server that offers Active Server Scripting Language as a web component. Second, ensure that programs such as Macromedia Dreamweaver MX and Microsoft Access are readily available. Third, change the

"CONN.ASP" file to the server map path address of the existing database. For example, the `Server.MapPath("/administrativesystem/DATABASE.mdb")` is currently set to read the database file in the "administrativesystem's folder". The location of the database and the database itself can be renamed but it must reflect the change in the server map path. In order for the SQL server to run properly, the driver type currently set in the `Server.CreateObject` would need to reflect the driver available for SQL server. Also, the Microsoft Database would need to be converted to a SQL server database using the SQL server conversation feature. Finally, one must upload the files to the web server and test the default active server page. If the page does not display properly, then the following information will be displayed: "Microsoft JET Database Engine error '80004005' Could not find file C:\Domains\wwwroot\administrativesystem\DATABASE.mdb', line 6". This means the "CONN.ASP" map path is not correct, and one must change the path to the database and upload the "CONN.ASP" file again.

The default login for the instructor or website administrator is "teacher" and the default password is "instruct". Keep in mind that a new username and password

can be created for the instructor using the new user registration link. Each new user that registers will have student rights by default. This can be changed in the administrative control panel.

Implementing the Electronic Learning Website into the classroom will require that the instructor be knowledgeable about the layout and functionality of the Electronic Learning Website. The website is designed to work with any subject area and contains the communication tools needed to run and maintain a web based environment.

This Electronic Learning Website was implemented into a junior high school computer applications class to test the user interface, website design, and functionality of each of the key components of a web based environment. By testing the website in the middle school setting, the data suggests that the Electronic Learning Website can be used by middle school students, high school students, and college students. The website will be used to teach computer applications for eighteen weeks in a hybrid situation and will use all of the features that the website offers. Using the website will help improve communication among students, parents, and teachers.

Setup for the Electronic Learning Website can be achieved in four easy steps. Step one is the setup of the

announcements page. The instructor posts an announcement to explain the directions for the day. Each announcement is used in the event that the instructor or students are absent and should be labeled with the key words that reflect the current date.

Step two is the setup of the Discussion Board Questions that will reflect the findings and thoughts of students. In this project, a question will be asked that will allow students to introduce themselves.

Step three is the setup of web links that are necessary for the class. The web links category will remain as the default "Class Links" which reflects the links desired in this particular classroom setting.

Step four is the mini classroom poll that will be left as the default question, "Which operating system do you prefer" and the instructor will create frequently asked questions as needed to assist students struggling with assignments.

User registration is the first step in introducing the website into a classroom and students need to understand the questions asked in the registration process. Allowing students to use their own names and passwords will decrease the number of forgotten login information requests. Once each student has created a

username and password, the instructor must explain the user interface, its functions, and how it will be applied to the course. From there, students should learn how to find each page on the website. Next, the students should answer the first discussion board question, email a fellow student, search for the current announcement, and review the class web links.

Some of the basic guidelines for building an electronic learning website are as follows:

1. Locate an internet hosting company that uses Microsoft Windows Servers and offers Active Server Scripting Language as a web component.
2. Utilize Macromedia Dreamweaver MX to create the webpage and as a file transfer protocol.
3. Utilize Microsoft Access Database to create the database.
4. Utilize several online resources such as <http://hotscripts.com> or <http://aspin.com>.
5. Test and improve each component as it is added.
6. Implement outside resources such as online grading, online quizzes, and other advanced Active Server Scripts.

7. Incorporate the electronic learning application into the classroom.

### Evaluation

The Electronic Learning Website was used in an eighth grade classroom in a computer applications class over an eighteen week semester. The computer applications class met Monday through Friday for fifty-five minutes each day, and the website was used on a daily basis for web based instruction. The course essentially used no paper and assignments were submitted electronically. In the event there was a substitute teacher in the classroom, the students would log on to the Electronic Learning Website to read the instructions for the day. Students of the junior high school had never been exposed to web based instruction, and, as the data indicates, the students prefer it to lecture based instruction. Anonymous surveys were given to two computer application classes and only those students who wished to participate submitted the survey. Fifty-four students participated in the survey, four students were absent, and two did not submit survey forms. The results are as follows: eighty percent of the students who participated in the survey felt that after

using the class website for web based instruction, they prefer web based instruction to lecture based instruction.

The class was also asked questions on the survey if the Electronic Learning Website was user-friendly because its navigational buttons and links made it easier to click from one page to the next. Twenty-four percent of the students strongly agreed and seventy-six percent of the students agreed. Zero students disagreed or answered not at all. Next, the survey asked nine questions about the ease-of-use of some of the main components of the Electronic Learning Website. The results are as follows: Please rate the ease-of-use for some of the components of the class webpage.



Table 1. Student Survey Results

Webpage Component	Easy	Difficult
User Registration	Easy 53 (98%)	Difficult 1 (2%)
Username and Password Login	Easy 54 (100%)	Difficult 0 (0%)
Assignment Search for Dates You Are Absent.	Easy 42 (78%)	Difficult 12 (22%)
Discussion Board	Easy 50 (93%)	Difficult 4 (7%)
FAQ's and Help Page	Easy 45 (83%)	Difficult 9 (17%)
Website Email	Easy 51 (94%)	Difficult 3 (6%)
Web Links Page	Easy 50 (93%)	Difficult 4 (7%)
Website Mini Poll	Easy 52 (96%)	Difficult 2 (4%)
Email the Instructor	Easy 47 (87%)	Difficult 7 (13%)

As the results indicate, an overwhelming majority of the students of junior high age felt that the Electronic

Learning Website was easy to use. From this data one can assume that students in high school and college would have no problems using the Electronic Learning Website.

However, students who participated in the survey felt that they have weaknesses when using computers in the classroom. Thirty-seven percent of the students felt that they had a lack of keyboarding skills, nineteen percent felt they had a lack of knowledge and skills of computers, seven percent of the students had no computer at home, fifteen percent felt that computers were too time consuming, and finally, thirteen percent answered other. The data suggests that keyboarding skills are essential in a web based environment and need to be taught at a young age. The data also suggests that students need to be taught the skills necessary to help them use computers at the junior high age and beyond.

#### Summary

In summary, crucial to the design, development, and implementation of any Electronic Learning Website are the learning approaches adhered to by the educator designing the website, the measurement and evaluation of the desired learning outcomes, and the successful and meaningful usage of all involved in the communication process.

Research supports the belief that the backwards design process appears to be the most sensible and realistic approach to education when using the Electronic Learning Website. By thoroughly and carefully analyzing and evaluating the desired learner outcomes, the educator can effectively plan teaching and learning experiences. In addition to the backwards design process, the intuitive designer must also consider the discovery-learning approach whereby students learn by exploration and experimentation. Sankaran explains that when teachers use various means of instruction, better learning outcomes are produced because they are meeting different learning modalities (Sankaran, 2000).

The design of the database of an Electronic Learning Website is extremely important as are the "include files" that can be readily converted to specific database programs and database connection types. These ASP "include files" will also form the template of the website and will make it easier to update or to make changes.

Significant or important "include files" on the website template layout are the following: (a) Announcements Page (default.asp), (b) Discussion Board (board.asp), (c) Frequently Asked Questions and Help (topicview.asp), (d) Web Links Page (linkview.asp), (e)

Mini Classroom Poll (linkapprove.asp), (f) Assignment Search (search.asp), (g) Classroom Email (inbox.asp), and (h) User Registration (signupform.asp).

In addition, there are several other web pages and functions available to all users; however, the administrator panel is only available to administrators of the website.

The Electronic Learning Website works with any subject area; however, implementing the Electronic Learning Website into the classroom requires that the educator be knowledgeable of and familiar with the Electronic Learning Website design.

In the data analysis and collection stage of the Electronic Learning Website, the survey proves that the Electronic Learning Website has a user-friendly interface and that each component of the web-based environment is simple to use.

Finally, even though students surveyed preferred web based instruction over lecture based instruction, they indicated certain weaknesses that hampered their learning such as a lack of keyboarding skills and knowledge of computers, not having a computer at home and not having access to the internet at home, and some believed that using computers was too time consuming.

## CHAPTER FOUR

### CONCLUSIONS AND RECOMMENDATIONS

#### Introduction

As research has shown Electronic Learning Websites or web-based learning environments are rapidly emerging as a means of providing instruction and have captured the interest of educators worldwide. Also, the results of the surveys used to assess active participants in an ongoing Electronic Learning Website, overwhelmingly indicate that an online teaching environment supplemented by direct classroom instruction is the ideal mode for learning that adapts to various learning modalities.

Furthermore, the distance learning application proposed in this project not only allows the educator to build an online teaching environment but also preserves the traditional classroom setting. The online learning community gives the instructor access to the collaborative tools that are essential to building both an asynchronous and synchronous website for any subject area the educator may need in today's rapidly changing technological environment.

Also, the costly commercial websites are fine for those schools that can afford them. However, outlined in

this project is a low cost secure system that is a cost effective alternative for those teachers who wish to develop technology to enhance their learning environment. This proposed Electronic Learning Website is not only economically feasible for a school site but also allows the freedom to use all the online tools needed for an effective online learning environment. It is a little maintenance and low cost idea that offers schools the alternative to expensive web portals with the ability to provide an online forum to facilitate communication. It also provides the needed security that is essential in the learning environment in today's society.

### Conclusions

Finally, developing a usable, secure system takes time to construct. By studying examples of scripts and examining the active server pages already built under the General Public License, instructors can develop a system that is tailored to their individual needs. An important consideration in the development of the website is to contact the district's system administrator to determine if the web server is a Windows Server and if the server supports Active Server Pages. A program such as Macromedia's Dreamweaver must be located to design and

edit web pages. Electronic Learning Website installation and setup instructions must also be developed. The website folder must be uploaded and the "CONN.ASP" file must be located and edited to reflect the exact path to the database. If a different quiz service other than Quizstar is used, the "default.asp" file within the quiz folder must be edited. Finally, the tutorials on the Active Server Pages must be read to gain a working knowledge of Active Server Page Scripting Language and database connections.

#### Recommendations

As Nachimias and Tuvi stated in 2001, the following are significant factors of a webpage: it is user-friendly, includes an announcement page, and that it serves as a communication facilitator. This technology provides teaching resources that will effectively communicate with parents and students. This online forum not only facilitates communication among educators, parents, and students but also allows an open environment for more informed decisions for all involved in the educational process. All of these elements are included in the Electronic Learning Website that can be developed by

the enthusiastic educator to be adapted to a particular class.

However, before developing an Electronic Learning Website, teachers need to be familiar with a specific design approach or learning theory to present their subject matter on a website effectively. Next, the resources and content for the course should be determined that can be presented electronically. Time must be spent setting up the Electronic Learning Website that must include the following: posting a welcome announcement, designing a discussion board question that allows students to introduce themselves, and posting frequently asked questions or help directions. Other important additions are class website links and mini classroom polls. Also, a free reliable quiz service should be selected such as Quizstar.com designed by the University of Kansas.

Also, instructors need to spend adequate time on the website to understand the administrative features well. Only the administrator of the site sees the following links: Post Announcements Link; Link Approve; Poll Setup; Admin Panel; the hide, delete, edit, and presentation links on each class announcement. Other links within the administrative panel that allow only the instructor access are the ability to post discussion board questions, to see



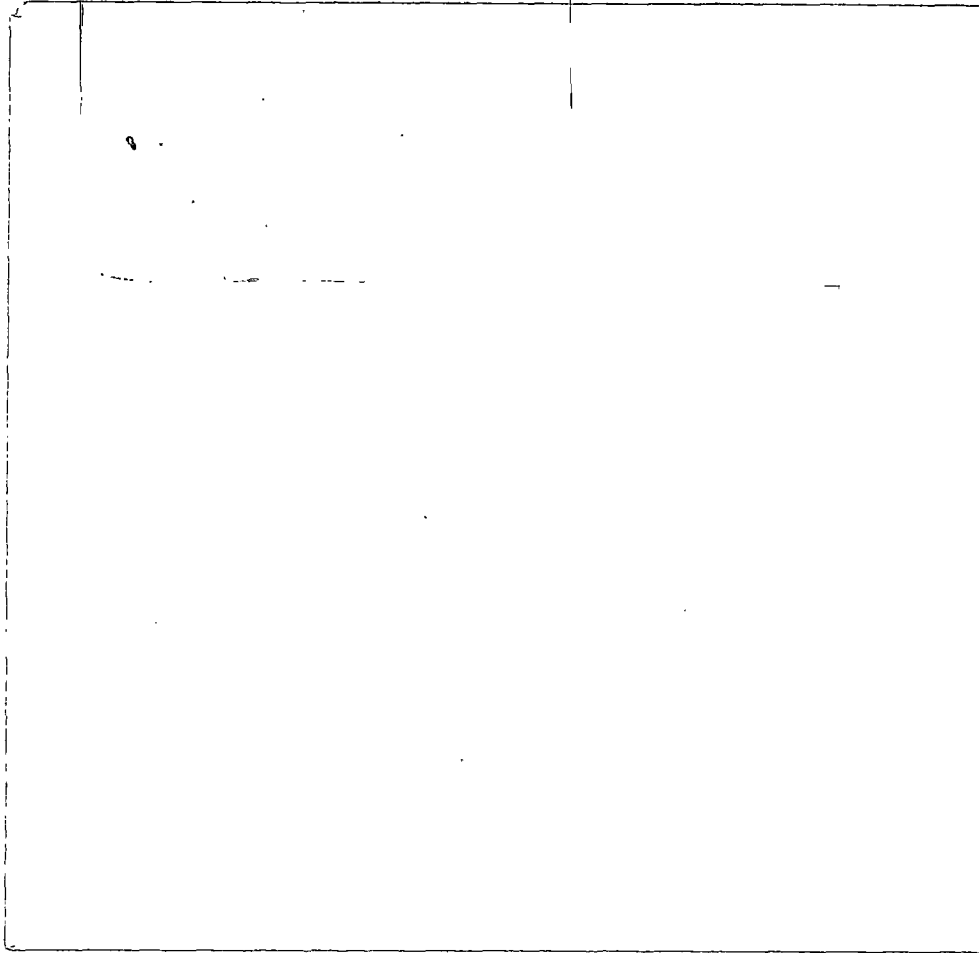
and edit student information, to send messages to all students, and to read all messages sent throughout the class website. This allows the administrator to provide a secure system that is an essential element of any Electronic Learning Website. Future updates, additional components, and recommended changes can be found on the Electronic Learning Website, <http://www.etccsolutions.net/thesis/>.

#### Summary

If teachers consider their individual learning approaches and become familiar with all of the online tools available to them, they should have no difficulty designing and constructing a web page for their classrooms. In addition to the development of a website, teachers will provide the technology necessary to allow parents, students, and themselves to communicate effectively with each other and provide for differentiated instruction.

APPENDIX A  
CD. OF PROJECT

CD OF PROJECT



APPENDIX B  
ASP FILE LIST

## ASP FILE LIST

 administrativesystem	 ip	 replydelete
 images	 link_submit	 replyprocess
 quiz	 linkapprove	 search
 animate	 linkapproveprocess	 signin
 asp_admin	 linkcat	 signout
 asp_admin-delete	 linkdelete	 signupform
 asp_admin-fulllist	 linkprocess	 signupprocess
 asp_admin-fulllistprint	 linkview	 taskbar
 asp_admin-fulllistquizstar	 lndelete	 taskbarlinks
 asp_admin-login	 mainapprove	 topicdelete
 asp_admin-messageall	 mainapproveprocess	 topicview
 asp_admin-messageallsend	 maindelete	 user
 asp_admin-profile	 mainrename	 userview
 asp_admin-profile_update	 messagecompose	
 asp_admin-signout	 messagedelete	
 asp_formatfunctions	 messageformat	
 board	 messagesend	
 button1	 newsread	
 button2	 newsview	
 button3	 nologin	
 button4	 page	
 button5	 pfred	
 button6	 poll	
 button7	 pollprocess	
 catset	 pollsetup	
 changepwd	 post	
 CONN	 post_main	
 default	 postprocess	
 footer	 postprocess_main	
 header	 present	
 help	 print	
 help_submit	 profile	
 helpdelete	 profile_update	
 helpprocess	 pwd_update	
 inbox	 register	

APPENDIX C  
STUDENT SURVEY

## STUDENT SURVEY

1. The class website is an example of an electronic learning website that is designed for web based instruction. Do you prefer web-based instruction or lecture based instruction? (Choose one)

Web-based Instruction      Lecture Based Instruction

2. The class website is user-friendly because of its navigational buttons and links which make it easy to click from one page to the next.

Strongly Agree   Agree      Disagree   Not At All

3. Please rate the ease-of-use for some of the components of the class webpage.

User Registration	Easy	Difficult
Username and Password Login	Easy	Difficult
Assignment Search for Dates You Are Absent.	Easy	Difficult
Discussion Board	Easy	Difficult
FAQ's and Help Page	Easy	Difficult

STUDENT SURVEY (Continued)

Website Email	Easy	Difficult
Web Links Page	Easy	Difficult
Website Mini Poll	Easy	Difficult
Email the Instructor	Easy	Difficult

4. What do you feel is your weakness when using computers in the classroom?  
(Check all that apply)

Lack of keyboarding skills	
Lack of knowledge and skills of computers.	
No computer at home.	
Too time consuming.	

Other: \_\_\_\_\_



## REFERENCES

- Antelman, K. (2003). Database driven websites. *Journal Of Medical Library Association*, 91(4), 494-495.
- Bailey G. & Blythe, M. (1998). Outlining, diagramming, and Storyboarding: or how to create great educational websites. *Learning and leading with technology*, 25(8), 6-11.
- Buczek, G. (1999). *Instant ASP scripts*. New York: McGraw-Hill.
- Charland, T. (1998). Classroom home page connections. *THE Journal*, 25(9), 62-64.
- Clovis, D. L. (1997). Lights, television, action! *Educational Leadership*, 55, 38-40.
- Deal, N. (1998). Getting teacher educators caught in a web. *THE Journal*, 26(1), 50-53.
- Dorup, J. & Hansen, S. & Ribe, L. & Larsen, K. (2002). A comparison of technologies for database-driven websites for medical education. *Medical Informatics*, 27(4), 281-289.
- Fardanesh, H. (2002). Learning theory approaches and teaching methods. *British Journal of Educational Technology*, 33(1), 95-98.
- Frey, A. & Faul, A. (2003). Student perceptions of web-assisted teaching strategies. *Journal of Social Work Education*, 39(3), 443-457.
- Hill, J. & Raven, A. & Han, S. (2002). Connections in web-based learning environments. *The Quarterly Review of Distance Education*, 34, 383-393.
- Huang, H. (2002). Toward constructivism for adult learners in online learning environments. *British Journal of Educational Technology*, 33(1), 27-37.
- Ibrahim, B. & Franklin, S (1995). Advanced Educational Uses of the World-Wide Web. Retrieved January 20, 2004 from [http://www.igd.fhg.de/archieve/1995\\_www95/papers/89/paper.html](http://www.igd.fhg.de/archieve/1995_www95/papers/89/paper.html)

- Jung, I. (2001). Building a theoretical framework of web-based instruction in the context of distance education. *British Journal of Educational Technology*, 32(5), 525-534.
- Lieblein, E. (2000). Critical factors for successful delivery of online programs. *Internet and Higher Education*, 3, 161-174.
- Nachmias, R. & Tuvi, I. (2001). Taxonomy of scientifically oriented educational websites. *Journal of Science Education and Technology*, 10(1), 93-104.
- Reisman, S. & Dear, R. & Edge, D. (2001). Evolution of web-based distance learning strategies. *The International Journal of Educational Management*, 15(5), 245-251.
- Simkins, M. (1996). Spread your good news with a school web site. *Thrust for Educational Leadership*, 26, 13.
- Wiggins, G. & McTighe, J. *Understanding By Design*. Retrieved January 24, 2004, from [http://www.Pgcps.pg.k12.md.us/~croom/what\\_is\\_backward\\_design.htm](http://www.Pgcps.pg.k12.md.us/~croom/what_is_backward_design.htm)