# UC Faculty Interactive Web Site

by

John Montgomery

Submitted to
the Faculty of the Information Engineering Technology Program
in Partial Fulfillment of the Requirements
for
the Degree of Bachelor of Science
in Information Engineering Technology

University of Cincinnati
OMI College of Applied Science

March 2000

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John M. Montgomery Jr. — Date: 3-13-2000

Dr. Sam Geonetta — Date: 3-13-2000

Dr. Kim Myers — Date: 3/14/2000

# Acknowledgements

I would like to express my deepest thanks to my fiancé. She has given me support throughout the past three years and has also been my worse critic. She was always truthful and informed me when I could do better. I am certainly glad that this adventure is coming to an end. Now, my wife to be and I can finally spend some quality time together.

I would also like to give special thanks to Dr. Geonetta for his continued support and guidance throughout the past three years. Dr. Geonetta teaches several classes and works long hours, but always had the time to sit down and discuss school or life in general. At one point in my academic career, I considered leaving school for a full-time position with a former co-op company. However, I talked it over with Dr. Geonetta and we decided that finishing my degree would be better in the long run. Thank God I listened and beard through it. For those that have the pleasure of establishing a relationship with Dr. Geonetta-- please do so; it will be well worth your time and personal growth. Thank you for the great experience at the College of Applied Science.

I would also like to give thanks to my mother for all her support and loving nature. There were times when I was stressed out and felt like quitting, but she always gave me the inspiration that I needed to keep going. Finishing her degree around the same time as me, she could really relate to what I was going through. Thanks for all your support.

# Table of Contents

# List of Figures

# Abstract

The Internet is an amazing research tool for anyone with the knowledge and know-how to harness its power. To use the Web effectively, one must find a Web site that addresses all their needs specifically or the capabilities to tailor it to fit a specific need. My intention for creating the UC faculty Web site was to gather several forms of resources that may be of use to UC professors in one concise site. The main features of the Web site consist of professional resource links to other universities and agencies, a UC faculty message board, a UC faculty chat room, a mission statement of the site and its purpose, and any course material reference links or tutorials that would be relevant to the faculty member's needs.

This document explains the *Problem* and *Solution* in terms of Web site design. A *Literature Discussion* including Web site architecture--regarding design features, navigation, user profiles, and functionality. Also, it discusses the "deliverables," budget, time line, hardware and software. The *Proof of Design* consists of screen shots of the finished product. The appendices displays specialty Java scripts that gives the site added functionality and aesthetics of a good Web site.

## 1. Statement of the Problem

The Faculty members at many institutions have been caught in a mad dash to enhance their courses with on-line materials and activities for students. Some professors have taken a do-it-yourself approach, designing their own World Wide Web pages from the ground up (3, p. 1). This process can become time consuming and tedious especially if the faculty member has little or no experience with Web page development.

My project consists of an interactive Web site for the University of Cincinnati faculty that teach first-year students. This Web site includes a multitude of resources and collaboration facilities to assist professors. The main features of this Web site consists of professional resource links to other universities and agencies, a UC faculty message board, a UC faculty chat room, a mission statement of the site and it's purpose, and any course material reference links or tutorials that would be relevant to the site's objectives.

## 2. Literature Discussion

Relevant literature is cited within the body of my report, including direct quotes, software reviews, and Web site design sources.

## 3. Description of the Solution

The following two sections describe the solution that I implemented and why this solution was chosen.

### 3.1 User Profile

The Internet in all its glory is still relatively new. With this "newness" in technology, the standards are still evolving. Without a distinct standard, one site may look and work totally different than another.

These differences from site to site probably won't change much in the future, which is what makes the Internet interesting. However, that is also what makes the Internet sometimes frustrating and confusing. When designing a Web site the user's perspective is the best approach. "Contrary to what you might conclude from observing the architectures of many large, corporate Web sites, users do not like to get lost in chaotic hypertextual webs. Poor information architectures make busy users confused, frustrated, and angry" (5, p. 12). Because different users have varying needs, it is important to support multiple modes of finding information. Some users know exactly what they are looking for while other users do not. They come to the site with a vague idea of the information that they need. They may not know when their mouse rolls over an image and it changes either color or the image itself changes, that it is an active hyper-link. Therefore, providing a textual link as well may alleviate some confusion.

The committee that I designed a Web site for has varying degrees of Internet expertise. They are mainly professors some relatively new while others are seasoned veterans. Their ages range from early 20's to 50+. With the wide difference in age and level of Internet expertise, I decided on a basic level of usability, which means that I took extra steps to ensure ease of navigation and that information access was as intuitive as possible.

From my experience, users that know exactly what they are looking for in a site move quickly and efficiently through that site. Advanced users typically ignore the help screens and other helpful tips that can really benefit a novice user. In the next section, *Design protocols,* I will explain what measures I took to ensure this ease of use.

## 3.2 Design Protocols

| | |
|---|---|
| **Color Scheme** | --In DreamWeaver (Web Authoring Tool) I used *Cascading Style Sheets*. The style sheets set a consistent style and design for all the web pages created thereafter.<br>--Background: Textured light gray<br>--Main headings: Fire-engine red with the UC Bearcat Paw logo.<br>--Font: Headings: 16 pt Arial Bold with Drop Shadow<br>Content Pages: 12 pt Arial |
| **Graphical Navigation** | ***Navigation:***<br>I used two types of navigation - image and textual. The *left* frame is standard on all pages and is used as the Global Navigation throughout the site. I used a small blue sphere that changes to green when a mouse rolls over it. Directly to the right of the blue sphere is the textual hyperlink. Either the image or the textual link will navigate the user to that link.<br><br>The resource links page works a little differently. I used a Java script that provides navigation similarly to that of Windows Explorer. Blue Folder Icons appear in the left frame. These folders are labeled by the types of resource links that they provide. By clicking on the "+" or "-" signs the folders will expand or collapse to reveal the hyperlinks of that folder. Then the user clicks on the document image (accompanied by a textual description of the link) to navigate them to that page. I used this type of navigation to save space and keep the user from having to scroll down the page to see all the links. |
| **Graphical Images** | I used a few animations for aesthetics and some function, but I tried to stay relatively simple. |
| **Font** | *Arial* font is primarily used for the text in paragraphs. |

**Figure 1. This table shows the overall design of the Web site.**

## 4. Objectives of the project

A Web site can be a valuable tool with several advantages if designed correctly. Design itself, was the major element in my project. I had to answer several questions about design. For instance, what does a Web site entail and why does one need one? Is there an alternative to this decision? If a Web site is the solution to the problem- who is the audience? What are their needs?

What types of links or resources need to be incorporated? These are just a few basic, but important, questions that I had to address effectively in order to design a professional Web site. Through my research and questioning of clients these issues were resolved. I concluded that to fully serve the issues and concerns of my clients, a Web site was the only answer.

In this ever changing, fast-paced world, a dynamic and global means of communication is the only way to keep up. This is what a Web site delivers: a dynamic, global means of resources and communication. Several Universities have adopted the need for a specialized Web site to supplement their teachings. I liked some of their features and designs. However, I customized my Web site to fit the need of UC's faculty. The following sites are similar to the design and functionality that I implemented.

- Washington University has a great site for faculty members and a professional design to complement it (1).
- Another good site is Teacher's Net. This site has a lot of the functionality that I want in my project (2).

There was such a need of a professional resource Web site for my clients that they created a committee to address their issues and concerns.

The participants of this committee are:

Gigi Escoe (University of Cincinnati Department of Economics),

Wayne Hall (University of Cincinnati Department of English),

Marlene Miner (University of Cincinnati Department of English RWC),

Rosemary Young (University of Cincinnati Libraries CAS),

Antoinette Mastin (University of Cincinnati Department of Humanities),

Terry Bullock (University of Cincinnati Associate Dean U College),

Allison Armstrong (University of Cincinnati Libraries).

The committee challenged me with the task of creating an interactive Web site for the University of Cincinnati faculty that teach first-year students. This Web site was to include several resources and collaboration functions to assist professors. The main features of this Web site were to be professional resource links to other universities and agencies, a UC faculty message board, a UC faculty chat room, a mission statement of the site and its purpose, and any course materials, reference links or tutorials that would be relevant to the committee's objectives.

## 5. Design and Development

### 5.1 Budget

One of the external resources that I needed was a host provider for the Web site. This could have been a costly endeavor, but the University provided the Web hosting at no charge. Along those same lines was the expense of software needed to accomplish the task. The IET department provided the software, DreamWeaver 2.0 Web Authoring Tool.

However, the DreamWeaver software did not come with a manual to learn how to use the software. I purchased The DreamWeaver 2.0 Bible for $34.00. I also had to purchase a Zip disk to store my files for the site, for $9.99.

### 5.2 Timeline

Most of my research for this project consisted of Web design\Web site implementation books, professional periodicals and journals and a few Web sites.

Two of the major resource guides that I used for this project were *Information Architecture for the World Wide Web* by Louis Rosenfield and Peter Morville and *World Wide Web Design Guide* by Steven Wilson. These two books divide the design considerations for a professional Web site in a clear and concise manner. Since the design and implementation are the major elements of the project, most of my research time was spent learning the intricacies of each.

In creating a professional Web site four main objectives were considered:

- Clarifying the mission and vision for the site
- Determining what content and functionality the site will contain
- Specifying how the users will find information within the site by developing its organization, navigation, labeling, and searching systems; and
- Determining how the site will accommodate change and growth over time (5, p. 11).

I had some strict guidelines set for March of 2000 that I successfully accomplished. What I did was break the project into three quarters. For the spring quarter 1999, my milestone was to submit a completed Senior Design proposal and receive the advisors' acceptance.

My second milestone was by the end of fall quarter 1999: to have a working prototype of the Web site completed, hosted, and accessible to the participants. This prototype had some of the desired links for research purposes, navigational help, and a design for the overall site itself.

By the middle of winter quarter 2000, I wanted to have a workable message board and chat room for the UC faculty to test and provide feedback.

I actually had a rough prototype of message board and chat capabilities completed by the end of fall quarter. I was a little ahead of schedule. At the beginning of winter quarter I developed a usability survey to assess the construction of the site and distributed it to the faculty members. Unfortunately, the committee members did not respond to the survey for reasons unknown to me. An example of the survey that I used is in Appendix A.

Finally, by March 2000 the completed Web site with all its functionality was submitted.

I believe that following time frames are a close representation of hours spent per quarter Proposal (Spring 99) - 30 hours, Research Development (Fall 99) - 100 hours, and Implementation (Winter 2000) - 200 hours.

## 5.3 Software

One element of implementation was the choice of software and software utilities needed to complete the task. I researched a lot of Web authoring tools: Microsoft FrontPage 98, Netscape Composer, Adobe PageMill, HotMetal Pro, Claris Home Page, just to name a few. There were several editorials and reviews raving over the improved functionality, ease of use, and advanced features that Macromedia Dreamweaver 2 possessed. I really liked Dreamweaver because of its learning curve, functionality and price. Macworld gave it runner-up marks to GoLive CyberStudio 3 Professional Edition that sells for a modest $550.00. Macworld states, "That Dreamweaver can't be surpassed when it comes to the sheer number of HTML features it supports. It also makes an excellent choice for cross-platform Web design teams. The ease of drag and drop scripts and controls are an invaluable asset to the software" (6, pp. 81-82).

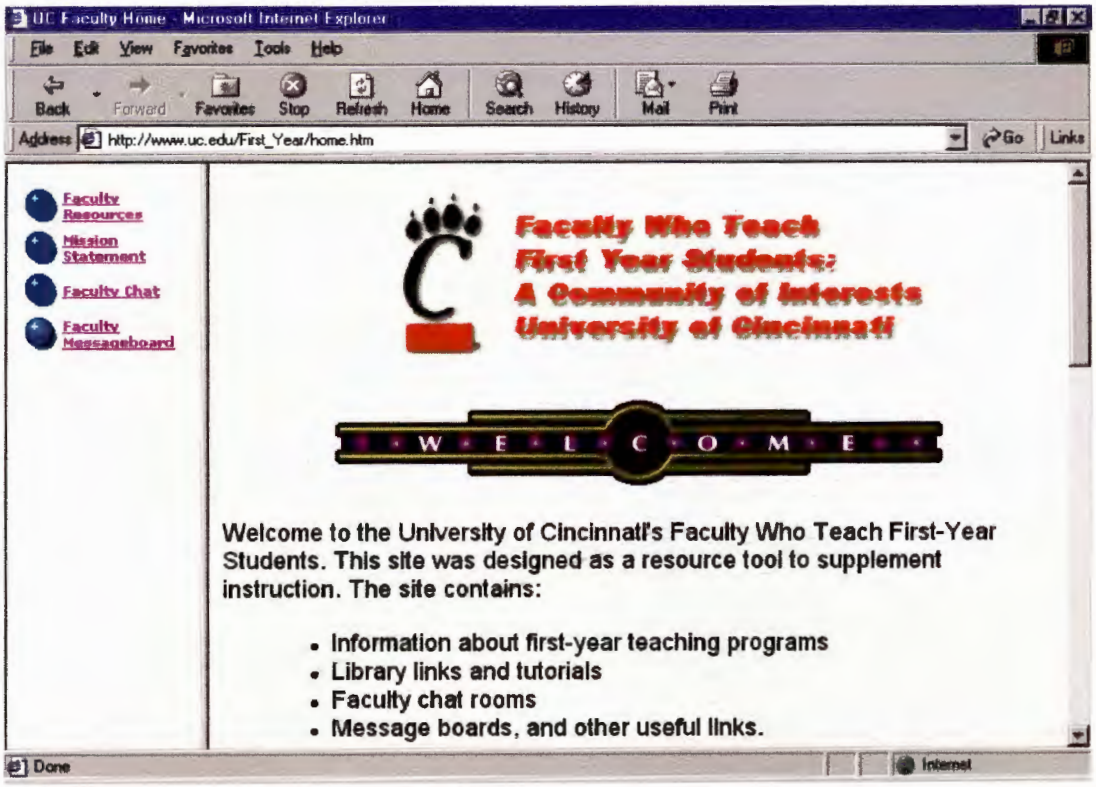
PC Magazine states, "That for creating sites on the bleeding edge of design, there is no better choice than Dreamweaver 2.0" (4, pp. 105-106).

Supplementary utilities that I needed for the project were scripting languages. Some of the most popular scripting languages in use are Java script, Visual Basic script and CGI. Most Web authoring packages will support these scripting languages. I used the Dreamweaver 2 Web authoring tool to create a professional cascading Web site with just enough visual enhancements to compliment the site. I used Java script for the advanced features of Web design like message boards, chat rooms, real-time clock and global navigation.

## 5.4 Hardware

There were no hardware requirements. The University of Cincinnati provided the Web server and hosting for my site.

# 6 Proof of Design




## 6.1 Figure 2. Screen shot of UC Faculty Home Page

The UC Faculty Home page demonstrates the overall design and layout of the site. This page conveys to the user the type of content that can be accessed within this site, the recommended browser \ versions, recommended monitor resolution, contact information and help on navigating the site.

## 6.2 Proof of Design

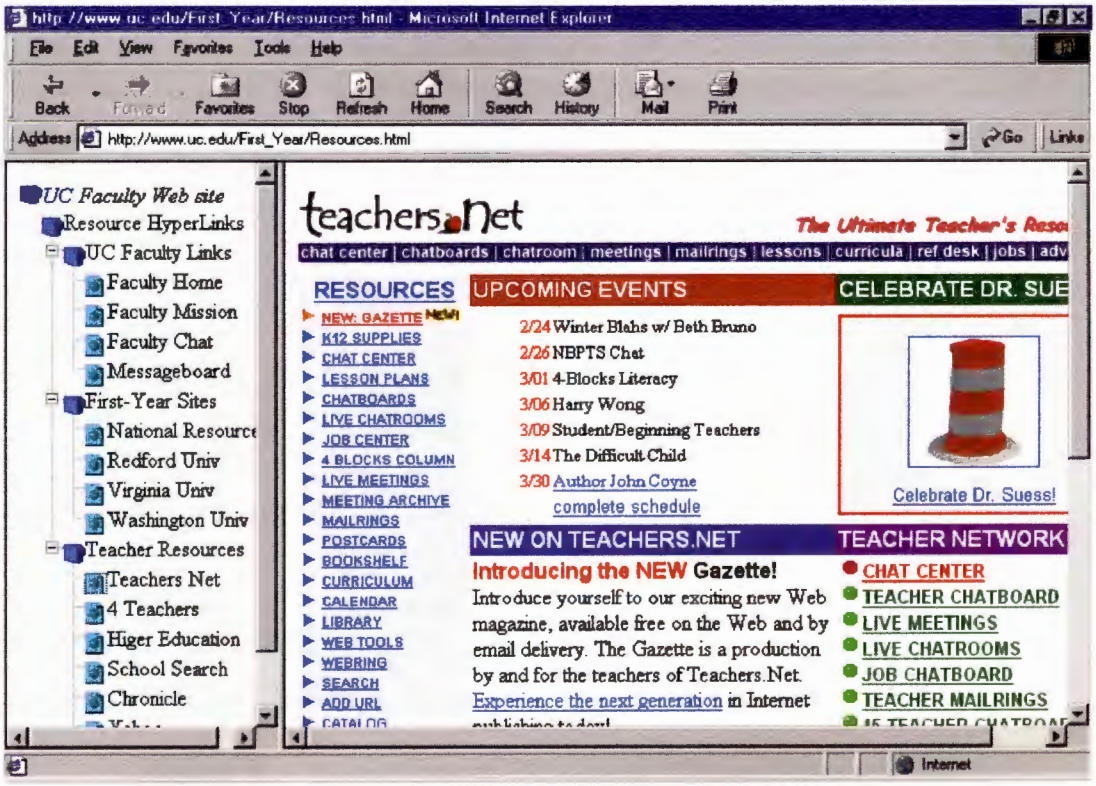



**Figure 3** **Screen shot of UC Faculty Resource Links with the expanding and collapsing folder tree Java script**

The UC Faculty Resource page demonstrates the effective use of Java script to organize several links in a concise, structured and space saving method. Each main folder can expand or collapse by clicking on either the "+" or "-" signs. This feature can provide access to a more specialized research without all the clutter of the other links. I have provided the code for this Java script in Appendix B of this report.

## 6.3 Proof of Design

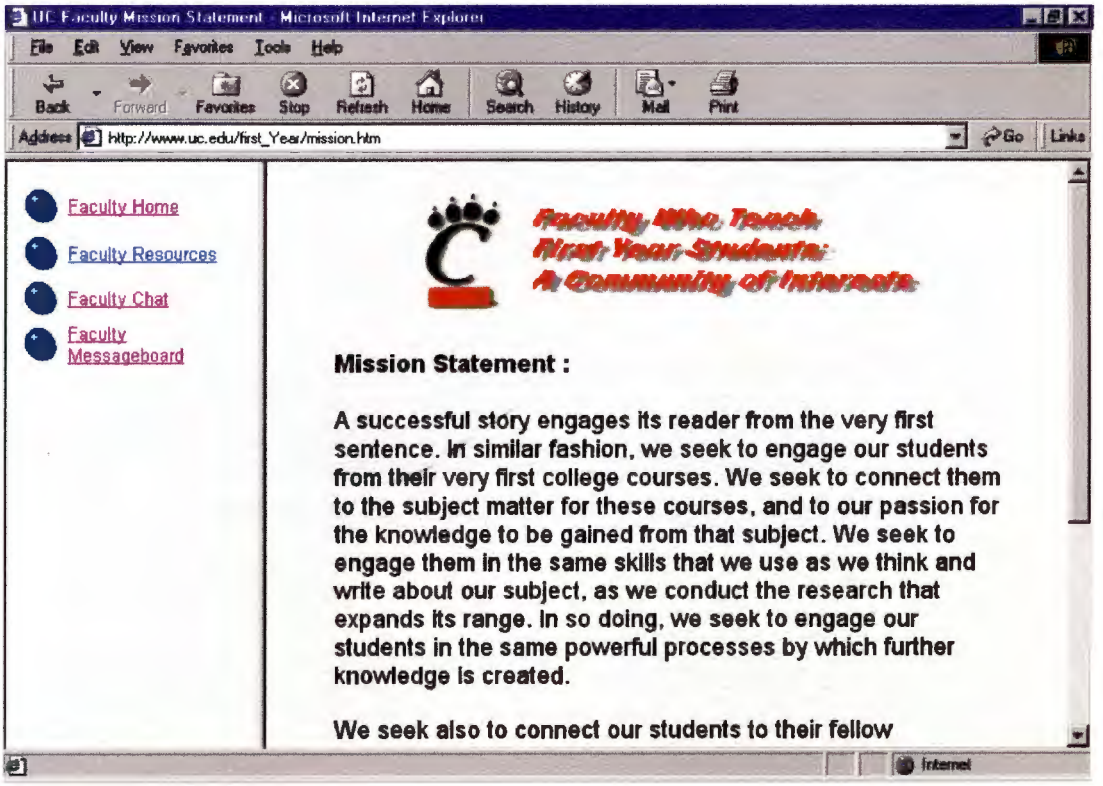



**Figure 4** **Screen shot of UC Faculty Mission Statement page**

The Mission Statement page was written by the faculty members. The Mission page conveys the mission or purpose of the site.

## 6.4 Proof of Design

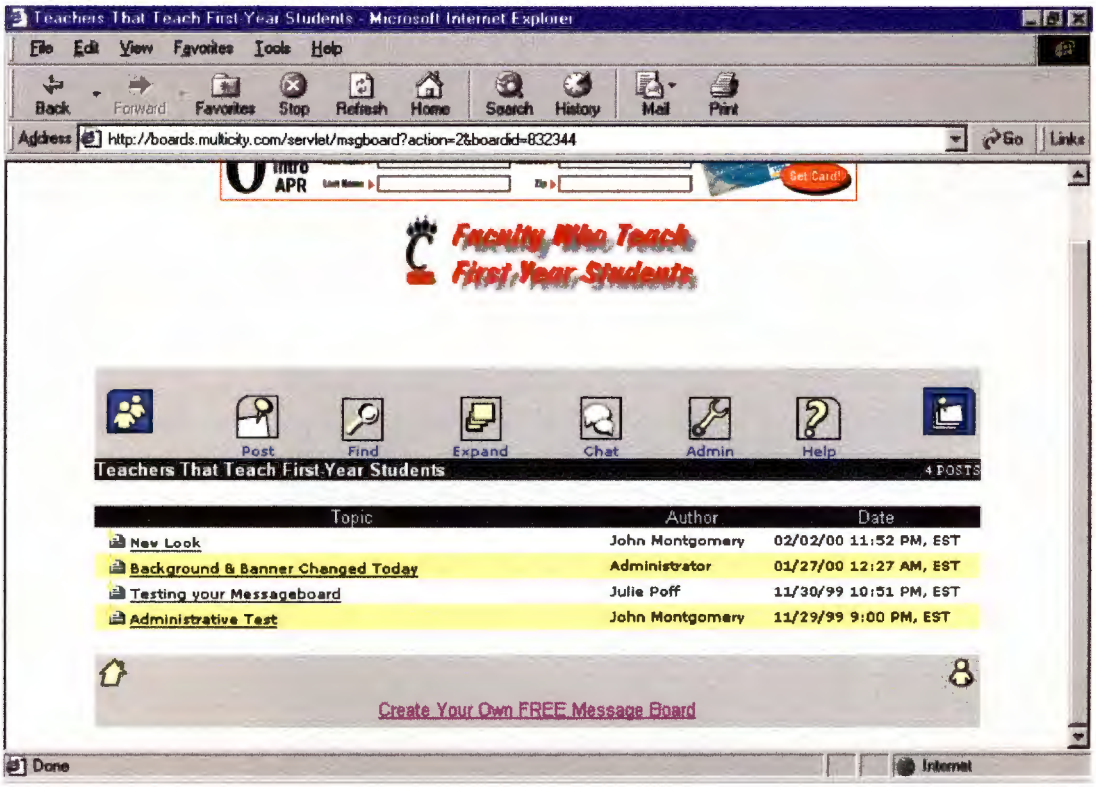



**Figure 5 Screen shot of UC Faculty Message Board**

The UC Faculty Message board page demonstrates a forum or news group type of functionality. A user can post information on this board in the form of a question or just an informative message regarding course work, teaching practices or other good sites that one may be interested in.

## 6.5 Proof of Design (Continued)

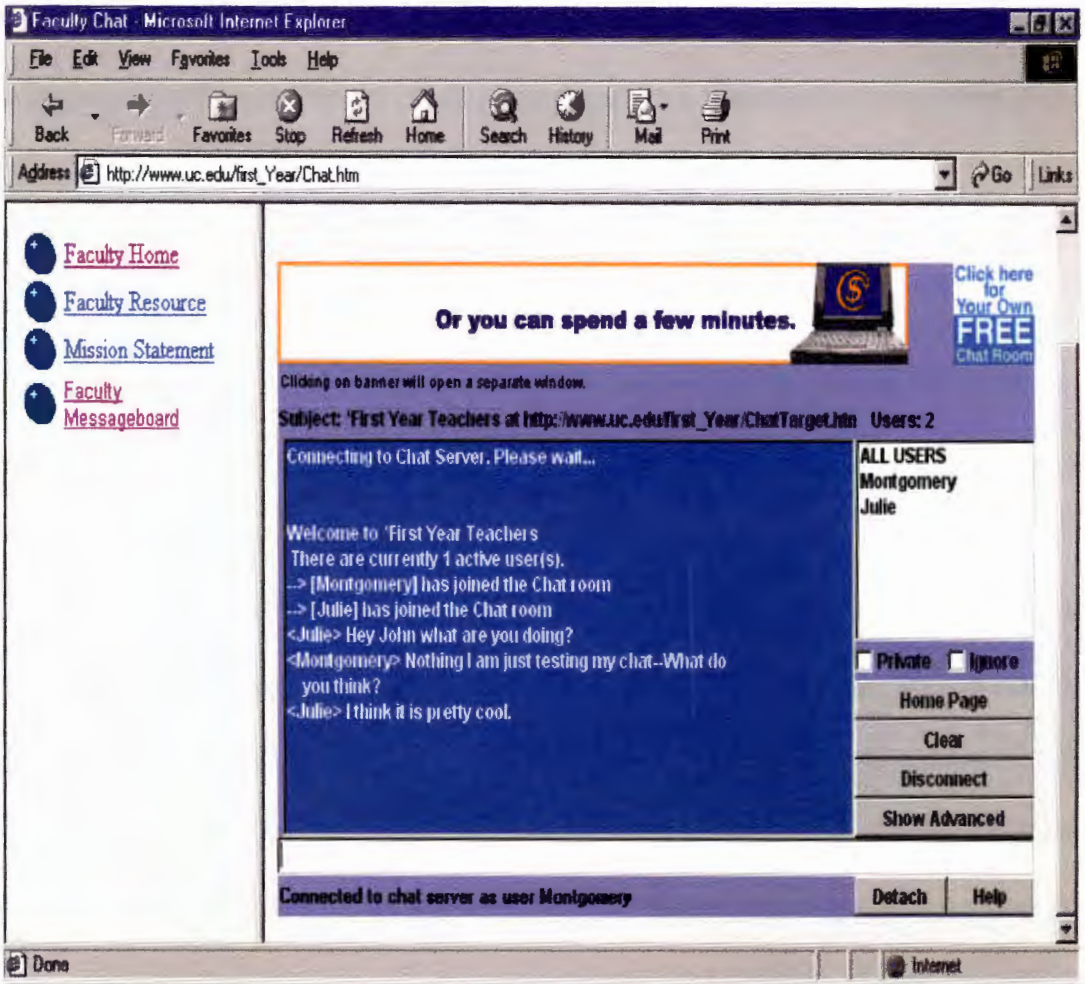



**Figure 5 Screen shot of UC Faculty Chat room**

The UC faculty Chat room page demonstrates the interactivity of real-time conversation with several users at a time. The users can limit their discussions to a private forum (UC faculty members only) or open it up to the World Wide Web. While involved in a chat session, the user can surf the Web, submit or request personal user profiles, page a specific user or change Fonts types and size.

## 7. Conclusions and Recommendation

The purpose of this project was to meet or exceed the objectives that were set forth in the beginning of Senior Design. Those objectives were to deliver an interactive Web site for the University of Cincinnati faculty that teaches first-year students. The Web site would include a number of resources and collaboration functions to assist professors. The main features of this Web site would be professional resource links to other universities and agencies, a UC faculty message board, a UC faculty chat room, a mission statement of the site and its purpose, and any course material, reference links or tutorials that would be relevant to the committee's objectives.

My project met all of the above objectives in a timely manner. Although I had some difficulties along the way; I consider my project to be a success. Things that could have been improved upon would have undoubtedly been the communication with the committee members. I tried on several occasions to meet with them and discuss their concerns to no avail. I think because the committee had no out-of-pocket expense for this project, the project evaluation and analysis was not a high priority. I took the time to draw up and distribute a usability survey, with the assistance of Dr. Geonetta, and the committee didn't even take the time to respond. Nevertheless, it was a great learning experience and I'm glad I had the opportunity.

The future of this site is unknown at this point. I have recently received some responses from the committee members in regards to the site. Their opinions of the site were favorable, and they were requesting that some type of turn over for maintaining the site take place. I replied that I would be happy to discuss any issues that they may have now or even after I graduate from this college.

# Appendix A

## Usability Survey

**Name:**
**Description:**
**Intended Use:**

**Environments for User:** _____ Home _____ School

**User Computer Literacy:** _____ Low _____ Moderate _____ High

**Preparation to Use:**

____ None ____ Needs subject matter knowledge ____ Needs workshop or training

**Ease of Use/Interface design**
**(Rate each criterion on scale of 1 (poor) to 5 (excellent) or N/A (not applicable)**

1 2 3 4 5 __ N/A – Follows protocols for platform in use (i.e., Windows Interface, Browser Interface)?

1 2 3 4 5 __ N/A – Program optimized?

1 2 3 4 5 __ N/A – Navigation within page?

1 2 3 4 5 __ N/A – Icons and graphical symbols?

1 2 3 4 5 __ N/A – Help available or needed?

1 2 3 4 5 __ N/A – Overall ease of use: what's the learning curve?

1 2 3 4 5 __ N/A – Does it enable the user to do what the program is apparently designed to do?

**Design Features**

1 2 3 4 5 – Clear interface

1 2 3 4 5 – Good level of interactivity

1 2 3 4 5 – Use of colors, icons, etc.

1 2 3 4 5 – Satisfies intended use

## Appendix A (Continued)

**Usability Survey**

**Strengths:**

**Weaknesses:**

**Potential:**

**Overall rating:**

(Low) 1 2 3 4 5 (High)

# Appendix B

## Expanding/Collapsing Folder Tree Java Script

```
// Definition of class Folder
//
*****************************************************************

function Folder(folderDescription, hreference) //constructor
{
 //constant data
 this.desc = folderDescription
 this.hreference = hreference
 this.id = -1
 this.navObj = 0
 this.iconImg = 0
 this.nodeImg = 0
 this.isLastNode = 0

 //dynamic data
 this.isOpen = true
 this.iconSrc = "Attributes/foldOp2.gif"
 this.children = new Array
 this.nChildren = 0

 //methods
 this.initialize = initializeFolder
 this.setState = setStateFolder
 this.addChild = addChild
 this.createIndex = createEntryIndex
 this.hide = hideFolder
 this.display = display
 this.renderOb = drawFolder
 this.totalHeight = totalHeight
 this.subEntries = folderSubEntries
 this.outputLink = outputFolderLink
}

function setStateFolder(isOpen)
{
 var subEntries
 var totalHeight
 var fIt = 0
 var i=0
```

```
 if (isOpen == this.isOpen)
  return

 if (browserVersion == 2)
 {
  totalHeight = 0
  for (i=0; i < this.nChildren; i++)
   totalHeight = totalHeight + this.children[i].navObj.clip.height
   subEntries = this.subEntries()
  if (this.isOpen)
   totalHeight = 0 - totalHeight
  for (fIt = this.id + subEntries + 1; fIt < nEntries; fIt++)
   indexOfEntries[fIt].navObj.moveBy(0, totalHeight)
 }
 this.isOpen = isOpen
 propagateChangesInState(this)
}

function propagateChangesInState(folder)
{
 var i=0

 if (folder.isOpen)
 {
  if (folder.nodeImg)
   if (folder.isLastNode)
    folder.nodeImg.src = "Attributes/ftv2mlastnode.gif"
   else
        folder.nodeImg.src = "Attributes/ftv2mnode.gif"
  folder.iconImg.src = "Attributes/foldOp2.gif"
  for (i=0; i<folder.nChildren; i++)
   folder.children[i].display()
 }
 else
 {
  if (folder.nodeImg)
   if (folder.isLastNode)
    folder.nodeImg.src = "Attributes/ftv2plastnode.gif"
   else
        folder.nodeImg.src = "Attributes/ftv2pnode.gif"
  folder.iconImg.src = "Attributes/foldCl2.gif"
  for (i=0; i<folder.nChildren; i++)
   folder.children[i].hide()
 }
}
```

```
function hideFolder()
{
 if (browserVersion == 1) {
  if (this.navObj.style.display == "none")
   return
  this.navObj.style.display = "none"
 } else {
  if (this.navObj.visibility == "hiden")
   return
  this.navObj.visibility = "hiden"
 }

 this.setState(0)
}

function initializeFolder(level, lastNode, leftSide)
{
var j=0
var i=0
var numberOfFolders
var numberOfDocs
var nc

 nc = this.nChildren

 this.createIndex()

 var auxEv = ""

 if (browserVersion > 0)
  auxEv = "<a href='javascript:clickOnNode("+this.id+")'>"
 else
  auxEv = "<a>"

 if (level>0)
  if (lastNode) //the last 'brother' in the children array
  {
   this.renderOb(leftSide + auxEv + "<img name='nodeIcon" + this.id + "'
src='ftv2mlastnode.gif' width=16 height=22 border=0></a>")
   leftSide = leftSide + "<img src='Attributes/ftv2blank.gif' width=16 height=22>"
   this.isLastNode = 1
  }
  else
  {
```

```
    this.renderOb(leftSide + auxEv + "<img name='nodeIcon" + this.id + "'
src='Attributes/ftv2mnode.gif' width=16 height=22 border=0></a>")
    leftSide = leftSide + "<img src='Attributes/ftv2vertline.gif' width=16 height=22>"
    this.isLastNode = 0
   }
  else
   this.renderOb("")

  if (nc > 0)
  {
   level = level + 1
   for (i=0 ; i < this.nChildren; i++)
   {
    if (i == this.nChildren-1)
     this.children[i].initialize(level, 1, leftSide)
    else
     this.children[i].initialize(level, 0, leftSide)
    }
  }
}

function drawFolder(leftSide)
{
  if (browserVersion == 2) {
   if (!doc.yPos)
    doc.yPos=8
   doc.write("<layer id='folder" + this.id + "' top=" + doc.yPos + " visibility=hiden>")
  }

  doc.write("<table ")
  if (browserVersion == 1)
   doc.write(" id='folder" + this.id + "' style='position:block;' ")
  doc.write(" border=0 cellspacing=0 cellpadding=0>")
  doc.write("<tr><td>")
  doc.write(leftSide)
  this.outputLink()
  doc.write("<img name='folderIcon" + this.id + "' ")
  doc.write("src='" + this.iconSrc+"' border=0></a>")
  doc.write("</td><td valign=middle nowrap>")
  if (USETEXTLINKS)
  {
   this.outputLink()
   doc.write(this.desc + "</a>")
  }
  else
   doc.write(this.desc)
```

```
  doc.write("</td>")
  doc.write("</table>")

  if (browserVersion == 2) {
    doc.write("</layer>")
  }

  if (browserVersion == 1) {
    this.navObj = doc.all["folder"+this.id]
    this.iconImg = doc.all["folderIcon"+this.id]
    this.nodeImg = doc.all["nodeIcon"+this.id]
  } else if (browserVersion == 2) {
    this.navObj = doc.layers["folder"+this.id]
    this.iconImg = this.navObj.document.images["folderIcon"+this.id]
    this.nodeImg = this.navObj.document.images["nodeIcon"+this.id]
    doc.yPos=doc.yPos+this.navObj.clip.height
  }
}

function outputFolderLink()
{
  if (this.hreference)
  {
    doc.write("<a href='" + this.hreference + "' TARGET=\"basefrm\" ")
    if (browserVersion > 0)
      doc.write("onClick='javascript:clickOnFolder("+this.id+")'")
    doc.write(">")
  }
  else
    doc.write("<a>")
//  doc.write("<a href='javascript:clickOnFolder("+this.id+")'>")
}

function addChild(childNode)
{
  this.children[this.nChildren] = childNode
  this.nChildren++
  return childNode
}

function folderSubEntries()
{
  var i = 0
  var se = this.nChildren

  for (i=0; i < this.nChildren; i++){
```

```
    if (this.children[i].children) //is a folder
      se = se + this.children[i].subEntries()
  }

  return se
}


// Definition of class Item (a document or link inside a Folder)
// *********************************************************

function Item(itemDescription, itemLink) // Constructor
{
  // constant data
  this.desc = itemDescription
  this.link = itemLink
  this.id = -1 //initialized in initalize()
  this.navObj = 0 //initialized in render()
  this.iconImg = 0 //initialized in render()
  this.iconSrc = "Attributes/Doc.gif"

  // methods
  this.initialize = initializeItem
  this.createIndex = createEntryIndex
  this.hide = hideItem
  this.display = display
  this.renderOb = drawItem
  this.totalHeight = totalHeight
}

function hideItem()
{
  if (browserVersion == 1) {
    if (this.navObj.style.display == "none")
      return
    this.navObj.style.display = "none"
  } else {
    if (this.navObj.visibility == "hiden")
      return
    this.navObj.visibility = "hiden"
  }
}

function initializeItem(level, lastNode, leftSide)
{
  this.createIndex()
```

```
 if (level>0)
   if (lastNode) //the last 'brother' in the children array
   {
    this.renderOb(leftSide + "<img src='Attributes/ftv2lastnode.gif' width=16
height=22>")
    leftSide = leftSide + "<img src='Attributes/ftv2blank.gif' width=16 height=22>"
   }
   else
   {
    this.renderOb(leftSide + "<img src='Attributes/ftv2node.gif' width=16 height=22>")
    leftSide = leftSide + "<img src='Attributes/ftv2vertline.gif' width=16 height=22>"
   }
 else
  this.renderOb("")
}

function drawItem(leftSide)
{
 if (browserVersion == 2)
  doc.write("<layer id='item" + this.id + "' top=" + doc.yPos + " visibility=hiden>")

 doc.write("<table ")
 if (browserVersion == 1)
  doc.write(" id='item" + this.id + "' style='position:block;' ")
 doc.write(" border=0 cellspacing=0 cellpadding=0>")
 doc.write("<tr><td>")
 doc.write(leftSide)
 doc.write("<a href=" + this.link + ">")
 doc.write("<img id='itemIcon"+this.id+"' ")
 doc.write("src='"+this.iconSrc+"' border=0>")
 doc.write("</a>")
 doc.write("</td><td valign=middle nowrap>")
 if (USETEXTLINKS)
  doc.write("<a href=" + this.link + ">" + this.desc + "</a>")
 else
  doc.write(this.desc)
 doc.write("</table>")

 if (browserVersion == 2)
  doc.write("</layer>")

 if (browserVersion == 1) {
  this.navObj = doc.all["item"+this.id]
  this.iconImg = doc.all["itemIcon"+this.id]
 } else if (browserVersion == 2) {
```

```
    this.navObj = doc.layers["item"+this.id]
    this.iconImg = this.navObj.document.images["itemIcon"+this.id]
    doc.yPos=doc.yPos+this.navObj.clip.height
  }
}


// Methods common to both objects (pseudo-inheritance)
// ********************************************************

function display()
{
 if (browserVersion == 1)
   this.navObj.style.display = "block"
 else
   this.navObj.visibility = "show"
}

function createEntryIndex()
{
 this.id = nEntries
 indexOfEntries[nEntries] = this
 nEntries++
}

// total height of subEntries open
function totalHeight() //used with browserVersion == 2
{
 var h = this.navObj.clip.height
 var i = 0

 if (this.isOpen) //is a folder and _is_ open
   for (i=0 ; i < this.nChildren; i++)
     h = h + this.children[i].totalHeight()

 return h
}


// Events
// ********************************************************

function clickOnFolder(folderId)
{
 var clicked = indexOfEntries[folderId]
```

```
  if (!clicked.isOpen)
    clickOnNode(folderId)

  return

  if (clicked.isSelected)
    return
}

function clickOnNode(folderId)
{
  var clickedFolder = 0
  var state = 0

  clickedFolder = indexOfEntries[folderId]
  state = clickedFolder.isOpen

  clickedFolder.setState(!state) //open<->close
}

function initializeDocument()
{
  if (doc.all)
    browserVersion = 1 //IE4
  else
    if (doc.layers)
      browserVersion = 2 //NS4
    else
      browserVersion = 0 //other

  foldersTree.initialize(0, 1, "")
  foldersTree.display()

  if (browserVersion > 0)
  {
    doc.write("<layer top="+indexOfEntries[nEntries-1].navObj.top+"> </layer>")

    // close the whole tree
    clickOnNode(0)
    // open the root folder
    clickOnNode(0)
  }
}

// Auxiliary Functions for Folder-Tree backward compatibility
// ***********************************************************
```

```
function gFld(description, hreference)
{
 folder = new Folder(description, hreference)
 return folder
}

function gLnk(target, description, linkData)
{
 fullLink = ""

 if (target==0)
 {
  fullLink = """+linkData+"" target=\"basefrm\""
 }
 else
 {
  if (target==1)
     fullLink = ""http://"+linkData+"" target=_parent"
  else
     fullLink = ""http://"+linkData+"" target=\"basefrm\""
 }

 linkItem = new Item(description, fullLink)
 return linkItem
}

function insFld(parentFolder, childFolder)
{
 return parentFolder.addChild(childFolder)
}

function insDoc(parentFolder, document)
{
 parentFolder.addChild(document)
}

// Global variables
// ****************

USETEXTLINKS = 0
indexOfEntries = new Array
nEntries = 0
doc = document
browserVersion = 0
selectedFolder=0
```

# Appendix C

## Folders with embedded HTML Links

```
foldersTree = gFld("<i>UC Faculty Web site</i>", "Banner.htm")
        aux1 = insFld(foldersTree, gFld("Resource HyperLinks"))
            aux2 = insFld(aux1, gFld("UC Faculty Links"))
                        insDoc(aux2, gLnk(1, "Faculty Home",
"www.uc.edu/first_Year/Home.htm"))
                        insDoc(aux2, gLnk(1, "Faculty Mission",
                "www.uc.edu/first_Year/mission.htm"))
                        insDoc(aux2, gLnk(1, "Faculty Chat",
"www.uc.edu/first_Year/chat.htm"))
                        insDoc(aux2, gLnk(1, "Messageboard",
                "boards.multicity.com/servlet/msgboard?action=2&boardid=832344"))


            aux2 = insFld(aux1, gFld("First-Year Sites"))
                        insDoc(aux2, gLnk(2, "National Resource",

        "www.sc.edu/fye/"))
                        insDoc(aux2, gLnk(2, "Redford Univ",
                                                    "www.runet.edu/~cte-
web/mjtr/freshmen.html"))
                        insDoc(aux2, gLnk(2, "Virginia Univ",

        "www.vcu.edu/teaching/resources/teachingfreshmen.html"))
                        insDoc(aux2, gLnk(2, "Washington Univ",

        "depts.washington.edu/catalyst/home.html"))

            aux2 = insFld(aux1, gFld("Teacher Resources"))
                        insDoc(aux2, gLnk(2, "Teachers Net", "www.teachers.net"))
                        insDoc(aux2, gLnk(2, "4 Teachers",
"www.4teachers.org/home/index.shtml"))
                        insDoc(aux2, gLnk(2, "Higer Education", "www.educause.edu"))

                        insDoc(aux2, gLnk(2, "School Search", "school.net/home.html"))
                        insDoc(aux2, gLnk(2, "Chronicle", "chronicle.merit.edu"))

                        insDoc(aux2, gLnk(2, "Yahoo", "www.yahoo.com"))
```

# References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