

Clark Montessori Senior Project Web Site

By

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Abstract

Clark Montessori Senior Project Web site is a dynamic, visually appealing site focused specifically on the high school's Senior Project curriculum. The current site for Clark Montessori contains no pages or content about the Senior Project course. Mr. Robert Girton, the instructor of the course, required a need for a Web site that allowed the Clark community access to students' projects. I created this site using simple interfaces, easy navigation, and made it simple for the students to begin creating their online portfolios. My site was design using the latest tools: Macromedia Dreamweaver MX, Microsoft Access 2002, and ASP technology. The site is easy to maintain for Mr. Girton or other staff by using the Admin Login Page to access the tools necessary for keeping the site clean and running smoothly.

Clark Montessori Senior Project Web Site

1. Statement of the Problem

The communities in the Greater Cincinnati area provided many opportunities or needs that required a suitable Information Technology (IT) solution. Dr. Maria Kreppel introduced me to these community needs as an option to pursue one of them as a potential Senior Design capstone project. My choice was Web site design or development, and Dr. Kreppel directed me to Clark Montessori.

The school needed a Web site focused on their Senior Project curriculum. The problem that Mr. Girton needed solved focuses on the availability of the seniors' projects for mentors. Mr. Girton wanted senior project materials posted on a Web site that would be available to Clark faculty and outside experts to review. Another feature would be for students being able to use the Web site to review the work of their peers, and to post suggestions of where to gather additional resources to use when completing the senior project.

The Clark Montessori Senior Project Web site was developed to make the Senior Projects of Clark Montessori students available on the Internet for the Clark community to observe. Clark does have a general school Web site already, but it contains no pages or content about the Senior Project curriculum.

2. Description of the solution

I have created a Web site centered on Clark Montessori seniors and the Senior Project curriculum. I have developed a user-friendly Web site that is easy to navigate and explore for a wide range of users such as Clark students, faculty, parents, and

outside experts. To create this site I used my Web design, Web programming, programming, multimedia, and database knowledge and experience.

During my many discussions with Bob Girton, we determined what functionality and features he wanted to see in the Web site. The Web site should include the following:

- Fixed navigational links that are always present on the site so the audience can easily access any page they desire.
- A home page with a background section that provides information on the Senior Project curriculum, what it is, what its about.
- A student portfolios section with a list of all the seniors, topics, and faculty mentors where the audience can click on a name and view that student's online portfolio.
- A course documents section where the students can view and download important documents relating to the course like quarterly due dates and project requirements.
- A student login page where the students must login in order to upload files or remove them. Once logged in, the students can also update their project topic and faculty mentor, as well as change their password.
- A student only discussion forum accessible to students only after logging in first where the students can chat and leave messages relating to Senior Project.
- An administrative login page where Mr. Girton can login and perform administrative duties like registering student accounts and adding files to the course documents page.

The entire Web site was created using Macromedia Dreamweaver MX.

Designers, developers, and programmers can work within one environment to easily create and manage any professional Web site, whether you are using HTML, XHTML, XML, ColdFusion, ASP.NET, ASP, JSP, or PHP. The database back-end was developed using Microsoft Access 2002. I used ASP (Active Server Pages) for the student logins and accessing the database. ASP provided a reliable connection

link to my and many other databases that was compliant to the Open Database Connection (ODBC) standards. It also provided the resources to establish secure connections to the database.

2.1 User Profiles

The intended users of the Senior Project section will have three categories: Administrator, Students, and Other Users.

2.1.1 Administrator

The administrator of the Senior Project section will be Mr. Robert Girton, who is responsible for the project curriculum, the students, and their projects. His duties will include ensuring the students are posting their materials online, creating student accounts, uploading course documents, and forum duties like delete messages, modify messages, add forums, etc.

2.1.2 Students

The seniors in the curriculum will have to log in with registered student accounts in order to add, remove, or replace their project materials. The students are expected to be familiar with browsing the Internet with a browser such as Internet Explorer. The students should also know simple features like using a message board and downloading important Senior Project forms and documents.

2.1.3 Other Users

Other intended users of the site are Clark faculty, parents, mentors, and outside experts or anyone who wants to learn about the Senior Project

and see the products the students are producing. These users are expected to be familiar with basic navigation of the Internet, and exploring Clark's site with a Web browser like Internet Explorer. They are also expected to know how to use a message board and download project materials to review later.

2.2 Design Protocols

The entire Web site was created using Macromedia Dreamweaver MX. Dreamweaver MX is the first choice of professionals for building Web sites and rich Internet applications. At its roots, Dreamweaver is a WYSIWYG (What You See Is What You Get) HTML generator. What this means is that if you change something with Dreamweaver, it will show you the results immediately.¹ Dreamweaver is also a comprehensive Web application development tool, capable of creating superior Web applications, dynamically data-driven sites, and a lot more. Designers, developers, and programmers can work within one environment to easily create and manage any professional Web site, whether you are using HTML, XHTML, XML, ColdFusion, ASP.NET, ASP, JSP, or PHP.

My only experience with Web design was "The Internet" course, but this is the first time I have had to design and develop a major Web project. I preferred to work in a visual editing environment, where I could view the results of my development instantly. I also wanted to learn the HTML code behind the Web pages I was designing, because I knew I would have to write some code to troubleshoot problems that came up, like browser incompatibility. I also had to write some code with ASP to get my dynamic pages interacting correctly with my database back-end. Dreamweaver MX was the

¹ Green, Garo and Abigail Rudner. *Dreamweaver MX: Hands-On Training*.

perfect software choice for me because I could quickly add design and functionality to my Web pages with little code, and at the click of a button I could view the HTML code behind the designs.

The database back-end was developed using Microsoft Access 2002. I chose to use Access rather than MySQL or Microsoft SQL Server, because I did not need a complex high-end application like SQL in developing my project. The data I stored is very simple, student accounts and passwords, project materials like documents, pictures, scans, and the messages from the message boards. In addition, Access will be a lot easier database program for Mr. Girton to use and maintain the Web site. He will also most likely learn and understand Access database design more easily and quickly than SQL Server.

I used ASP (Active Server Pages) for the student logins and accessing the database. Active Server Pages are browser independent. The browser only sees pure HTML pages and code. No third-party applications or extensions were needed. ASP also hides code from the user, and allows a sufficient method to insert, remove, update, browse, and search database records. ASP provided a reliable connection link to my and many other databases that was compliant to the Open Database Connection (ODBC) standards. It also provided the resources to establish secure connections to the database.

2.2.1 Database Design

Figure 1 shows the table relationships of the MS Access database for the Senior Project Web Site.

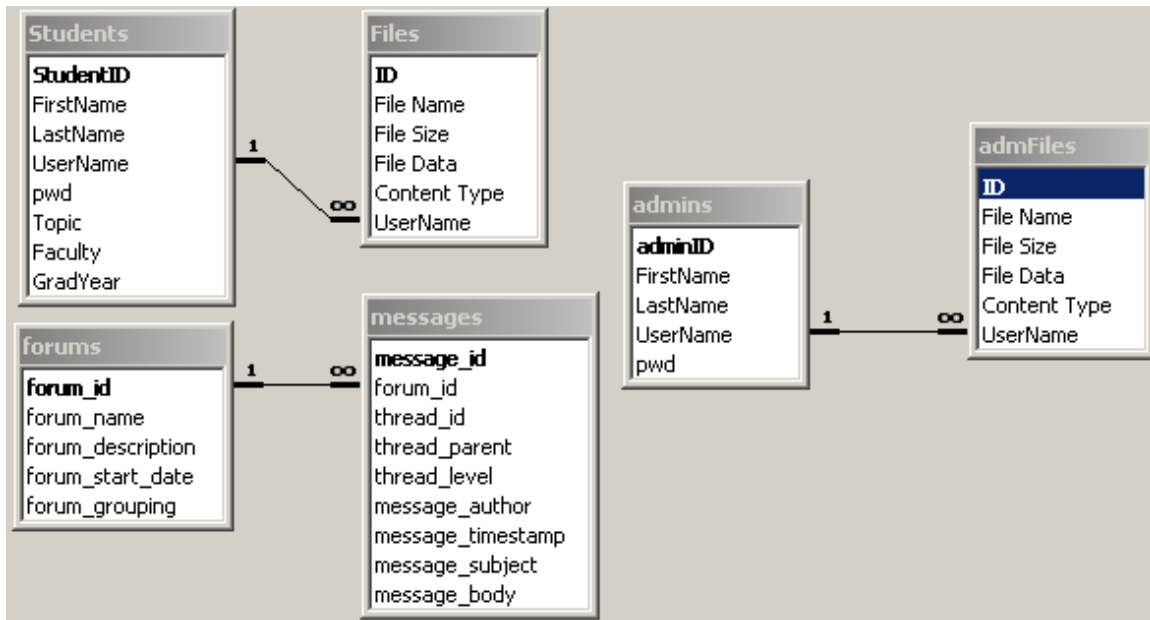


Figure 1. Database Design

2.2.2 Software and Hardware Requirements

Software

- Macromedia Dreamweaver MX
- Microsoft Access 2002
- Active Server Pages software

Hardware

I originally wanted to host my project on Clark's Web server as an additional section to their general school Web site. However, during this past summer quarter, I was in constant contact with Vince Hammerstein, Clark's Webmaster and Dee Elmore, the CPS Webmaster, and they decided Home Link is more appropriate to host my project. Home Link is the district's Web site for teachers to communicate with their classroom community, parents, and teachers. Home Link seems to best fit Bob's needs if he wants to showcase student work. Bob also has to be able to maintain this Web site after I graduate, and Home Link allows him to do this easily. Home Link is a template-based program that is

accessible via the Internet so it can be accessed and viewed from school or home. Home Link also has a discussion board component, which they will setup for him once he attends a Home Link class and his site is up and running. Home Link does not support the full interactivity of my project and therefore I will complete the project for Senior Design with the understanding that Home Link will not support it. My project is feasible and it is not my fault that they choose not to use it.

3. Deliverables

1. A demo Web site that gives the Clark community access to Senior Projects.
2. The demo Web site will be user friendly, and easy to navigate and explore for all users.
3. The seniors in the course will have their own accounts for which they will need to add, remove, or replace project materials. They will also have the option to change their password if they want to.
4. A home page with a background section that provides information on the Senior Project curriculum.
5. Fixed persistent navigational links that are always present on the site so the audience can easily access any page they desire.
6. A student portfolio section with a list of all the seniors, their topics, and faculty mentors where the audience can click on a name and view that student's online portfolio.
7. A controlled-access student-only discussion forum accessible to students only by logging-in first where the students can chat and leave messages relating to Senior Project.
8. A course documents section where the students can view and download important documents relating to the course like quarterly due dates and project requirements.
9. An administrative login page where Mr. Girton can login and perform administrative duties like registering student accounts and adding files to the course documents page.
10. The administrative profile page will give access to all the tools necessary to maintain the Web site. Mr. Girton will be able to create student accounts, add course documents, delete files, and page/view records.
11. Mr. Girton will also have forum duties such as add forums, delete forums, modify messages, delete messages, and modify name headings.

4. Design and Development

The next sections describe the project's timeline, overall budget with hardware, software, and book costs.

4.1 Timeline

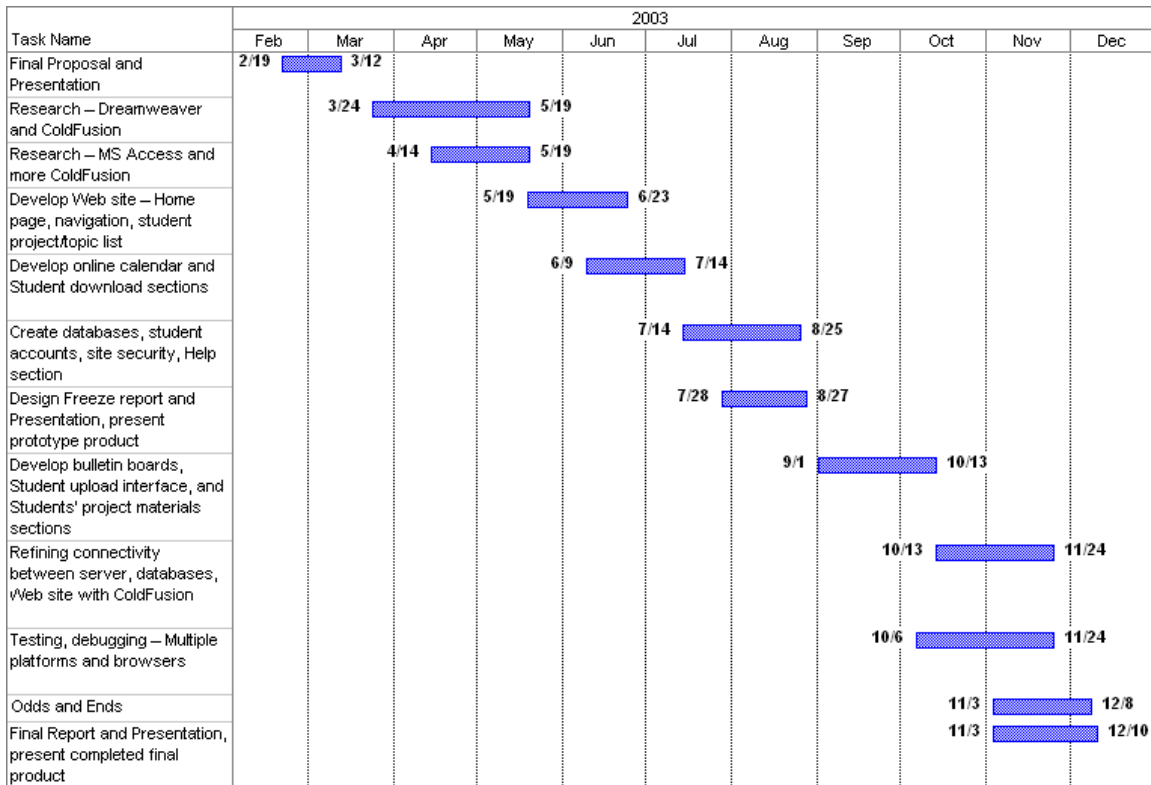


Figure 2. Project Timeline

4.2 Budget

Item	Cost
Macromedia Studio MX	\$200
MS Office XP Pro. (owned for while)	20
Pentium 4 motherboard/processor	200
512 MB RAM	190
30 GB hard disk drive	50
Software Books	100
Total	\$760
My Total	\$300

Figure 3. Project Budget

5. Proof of Design

The next section shows in detail how deliverables of the project were fulfilled and objectives met.

5.1 Student Portfolios Section

For this section I created a dynamic ASP page that generates a sorted list of registered students ordered by descending graduation year first then by Last Name. I first executed a query to retrieve all student records and all fields from the Students table, and stored the results in a recordset object. I then started a table with the headings of Student Name, Topic, and Faculty. The rest of the table was created dynamically by moving through the recordset in the order

specified in the query. I used a while loop that moved through the recordset record by record until the end of the recordset, and within the loop I displayed the student's first and last names as a hyperlink, then their respective topic and faculty mentor to complete the table (See Figure 4). The table is dynamic in the sense that any newly created student accounts will automatically show up on the list in the proper place according to their graduation year and last name, and deleted accounts will disappear from the list as well.

Student Portfolios Section		
Student Name	Topic	Faculty
<u>Mike Abrinica</u>	e-commerce	Said
<u>John Doe</u>	interactive album	eli duberow
<u>Mark Leonhartsberger</u>	fossils flash site	sam geonetta
<u>Brain Harwell</u>	zoomtown	mark stockman
<u>Keith Mitchell</u>	online jukebox	russ m
<u>Matt Weil</u>	web app	tom wulf

Figure 4. Portfolios Section

To show the students' individual portfolio, I created the hyperlinks above to pass the student's first and last names as variables to another ASP page to be used in queries to display the correct files according to what name was clicked. On this new page, I used the first and last names in a query to retrieve the student's user name from a recordset; I then used that user name to retrieve all

files the student had currently uploaded from the Files table, which has file detail fields plus a field for the user name of the student who uploaded the file. I then generate a list of the files for the audience to click on and view or save to local disk, and I also display the student's name at the top to show whose portfolio they are viewing (See Figure 5).

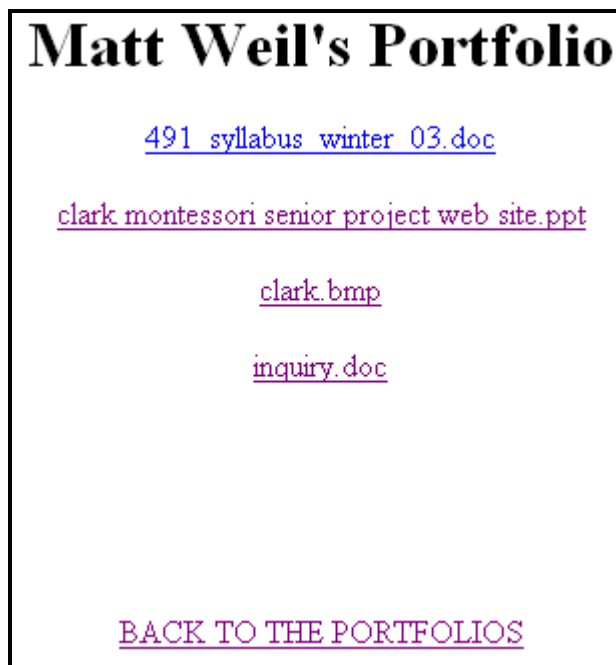


Figure 5. Individual Portfolio

5.2 Course Documents Page

This page shows a list of important documents from the Senior Project course that Mr. Girton wants accessible to the students and faculty mentors by allowing them to view a document and print it out or download it for use later. Mr. Girton has links on the admin profile page that allow him to directly add or remove files on this page; to create this page I simply retrieve all the files from

the admFiles table and generate a list or table in the same manner as the student portfolios.

5.3 Senior Login and Profile Page

This section has a secure login where the students must login first to gain access to the student profile page, which is the same for every student except for their list of files. To store students' records a Microsoft Access 2002 database was created. Mr. Girton creates all the student accounts, and then gives the students their login information. ASP was employed as the backend tool to connect to the database and ensure secure login by comparing the current login to the one stored in the database (See Figure 6).

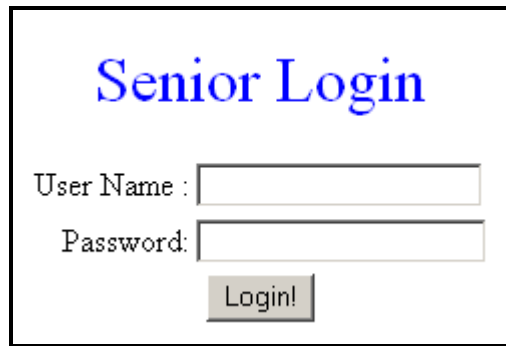
A screenshot of a web form titled "Senior Login" in blue serif font. Below the title, there are two input fields: "User Name :" followed by a text box, and "Password:" followed by a text box. Below the password field is a "Login!" button with a grey gradient and a black border.

Figure 6. Senior Login

After the login is verified, the student is directed to the student profile page where I display their name at the top, a little note about the page, a list of their files, and finally links or tools at the bottom of the page. The links give access for the student to add files, remove files, replace files, and change their password. There is also a link to log out and to go to the Student Forums that only students have can access (See Figure 7).



Figure 7. Student Profile

5.4 Admin Login and Profile Page

I created a separate table to store admin accounts, and then created an account in Access to use as the admin login. I employed the same method as the student login to connect to the database and verify valid login to give access to the admin profile page. After Mr. Girton logs in to the admin profile page, he is presented with links or tools to execute various administrative tasks. The links give Mr. Girton access to create student accounts, add course documents, remove course documents, delete files, and page/view records. There is also a link to the Forum Administration Page where he can perform forum duties like add forums, delete forums, modify messages, delete messages, etc (See Figure 8).



Figure 8. Admin Profile

6. Conclusions and Recommendations

6.1 Conclusions

This project was created in response to a need at Clark Montessori High School for a Web site focused on their Senior Project curriculum. I created a visually appealing student-oriented site that includes a Student Portfolios section, a Course Documents page, a Senior Login page, and an Admin Login page. These sections are totally dynamic, easy to read, and the fixed persistent navigation links allows access to any page from any other page, plus there are links to Clark's Home Page, the CPS Home Page, and Home Link. To prepare the project I used Macromedia Dreamweaver MX, Microsoft Access 2002, and ASP. The project was completed over the three quarter Senior Design sequence. The project fulfilled all Design Freeze deliverables. I tested the project myself to ensure the Web site's usability.

6.2 Recommendations

While I was working on this project, I encountered quite a few challenges. A solid understanding of Dreamweaver and Web design and development is recommended before beginning a mostly dynamic Web site like the one I created. Beginning developers and users of Dreamweaver need to take into account that the learning curve might be steeper than expected. I found that a period of four to six weeks was needed in order to use the software efficiently.

I also recommend upgrading to Microsoft SQL Server 2000. Access is okay for right now, but if Mr. Girton plans to display many years of projects he will need a more robust and expandable database backend. Access only allows about 1 or 2 Gb of total space, which is not enough to hold future project years. SQL allows easy expandability, it offers better security, and will allow more efficient access to the databases by the dynamic pages. Benchmarked for scalability, speed, and performance, SQL Server 2000 is a fully enterprise-class database product, providing core support for Extensible Markup Language (XML) and Internet queries.

I would also recommend using ASP.NET pages which is newer technology. ASP.NET makes building real world Web applications dramatically easier. ASP.NET server controls enable an HTML-like style of declarative programming that let you build great pages with far less code than with classic ASP. Displaying data, validating user input, and uploading files are all amazingly easy. Best of all, ASP.NET pages work in all browsers -- including Netscape, AOL, and Internet Explorer. ASP.NET lets you leverage your current

programming language skills. Unlike classic ASP, which supports only interpreted VBScript and JScript, ASP.NET now supports more than 25 .NET languages (including built-in support for VB.NET, C#, and JScript.NET -- no tool required), giving you unprecedented flexibility in your choice of language.

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