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## The Technology Coordinators' Web Site Project

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## The Technology Coordinators' Web Site Project

### Abstract

Technology in the schools has been a major push in Iowa schools for the past ten years. Our state legislature has given each school district within the state money to purchase technology for their district (R. Herdliska, personal communication, February, 1999). With this money, districts have been forced to look for help in purchasing this computing equipment. Sometimes they look outside for help and hire people who have been in the business world to meet this need. Sometimes they are forced to look within their building to teachers and staff members who have a "niche" with technology to meet this need.

THE TECHNOLOGY COORDINATORS' WEB SITE PROJECT

A Graduate Project

Submitted to the

Division of Educational Technology

Department of Curriculum and Instruction

in Partial Fulfillment

of the Requirements for the Degree

Master of Arts

UNIVERSITY OF NORTHERN IOWA

By

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This Project by: Jason Vetter

Titled: The Technology Coordinators' Web Site Project

has been approved as meeting the research requirements for the  
Degree of Master of Arts

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May 4, 1999  
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## Introduction

Technology in the schools has been a major push in Iowa schools for the past ten years. Our state legislature has given each school district within the state money to purchase technology for their district (R. Herdliska, personal communication, February, 1999). With this money, districts have been forced to look for help in purchasing this computing equipment. Sometimes they look outside for help and hire people who have been in the business world to meet this need. Sometimes they are forced to look within their building to teachers and staff members who have a “niche” with technology to meet this need.

Most of the time these teachers and staff members receive little or no compensation for their work and are often asked to do this technical duty on their own time (R. Herdliska, personal communication, February, 1999). This technical duty can range from developing teacher workshops to researching hardware and software for the district as well as maintaining the network. This can become very difficult trying to juggle a full load of classes along with a technical position. Teachers who are hired in this capacity, as well as full time coordinators, need a site that is asynchronous in nature, making information available to them when they need it.

The main reason for producing a web site rather than having weekly meetings on the Iowa Communications Network (ICN), or some other form of scheduled communication, is the asynchronous nature of the web. The information is

available when the coordinator needs it. The site could give school technology coordinators a resource to find technical resources when they need them without spending a lot of time looking for them. The site also serves as a place that coordinators can post questions to other coordinators around the state (and possibly around the country), forming a community of technology coordinators sharing ideas and knowledge. These questions could be about hardware, software, policies, or any other technology related problems they might be having within their school district. And last, to give coordinators a place to find other coordinators from around the state. This report outlines some considerations for such a site and discusses the development and components of this prototype site.

## Relevant Literature

When designing a web site there are many aspects to consider. File structure, layout, navigation, text, which colors and graphics to use, are only a part of what needs to be considered. It is also important to look at who the audience is and what is the purpose of the web site. By having a clear purpose, objectives, and an outline of what the site will contain will help in the development of the site (Lynch & Horton, 1999). Keeping these factors in mind, the next section will explore the steps in creating an effective web site.

### The Audience

A site that is well designed should be able to serve as variety of users with various skills and interests (Lynch & Horton, 1999). It is important to look at the kind of users who might visit the site and try to make it easy for all of them to use. It seems easy in theory, but can be difficult for many reasons. An advanced user usually wants information quickly with lots of choices and a novice user might need a bit more help to find what he or she is seeking. Other audience members might include visually disabled users who cannot see graphics. This problem may be solved by building in alternate messages using the alt tag “so that users without graphics capabilities can still understand the function of the graphics on your pages” (Lynch & Horton, 1999, p. 14). In any case, it is important to accommodate all users by carefully planning what kind of content will be available, where that content will be, and how the end user will get that content.

## Designing the Site

After considering the audience, the web designer needs to consider the topology and the depth of content of the site. Will the site be used for self-directed learning, reference, training, or for the occasional browser? Depending on which purpose is chosen will directly impact how the site is laid out. A site for self-directed learning will tend to be non-linear and have content that is more complex and lengthy. A reference site will also be non-linear but have information that is concise in nature. A training site will have information that is more linear and concise and brief in nature. What the occasional browser will want from a site could be any of the above (Lynch & Horton, 1999).

Knowing the topology and depth of content will also help to design the navigation of the site. Navigation consistency can give your site strength and also distinction from other sites (Duncan, 1996). For sites that are for self-directed learning or reference, the designer should make “links to every section from every single page” (Duncan, 1996, p. 1). This tactic is called “mapping” the site. (Duncan, 1996) It makes it very easy to jump from page to page very quickly. Sites that require a more linear approach, such as a training or teaching site, might not adopt this philosophy. Those kind of sites will want the user to be more focused in navigating the site, keeping the user within certain sections. Whichever is chosen, it is important to make sure that wherever the end user is, he/she can

get back to the home page, and to most other major navigation points within the site (Lynch & Horton, 1999).

### File Structure

File structure can save the web designer time and energy when linking to files and folders with the site. When naming files and folders it is important to “use all lowercase letters” (Williams & Tollett, 1998). This makes it easier when creating relative links within a web site because it is not necessary to remember if the file is named with upper case letters or not. It can also make the site more transportable. Some web servers, such as those running on UNIX computers have case-sensitive file names. By using lower-case file names all the time, end user will not notice a difference if, for example, the web designer moves the site from a Mac to a UNIX server. It is also important to keep the file names short and without any non-standard characters (Williams & Tollett, 1998). This is mainly, again, for the benefit for the end-user. By keeping the file names short and in lower-case letters, the URLs are easier to type in correctly.

Another aspect to consider is the file structure of the different sub folders within a site. By carefully planning out this structure, the designer can keep the files within the site organized. If the designer has a lot of images, sounds, or movies within the site, it would be advantageous to create sub folders accordingly. If the designer creates multiple pages that correspond with only parts of the site or have special graphics, they might create a sub folder with those

pages in it. This sub folder might contain its own images folder depending on the nature of this portion of the site. What is important to remember is that by laying out the file structure of a site first and planning for growth, the site designer can keep from having to go back and fix problems that might arise from a lack of organization or structure.

When naming files, it is important to come up with a standard since web pages can either use the .htm or .html extension. Which one to use may depend on the server, but usually it is left up to the discretion of the web page designer. The important part to remember is to remain consistent throughout the site by not having both .htm and .html files (R. Seeley, personal communication, March, 1999). Similarly the graphical format that web page designer might also have to consider is whether to use the extension .jpg or .jpeg. The standard for the web is probably .jpg, but either is considered correct. (R. Seeley, personal communication, March, 1999)

### Layout and Navigation

Once everything from the above sections is accomplished, the web page designer must decide how the page will look. This includes everything from color of the background and text to where the navigation bar is incorporated within the site. This next section will explore how to layout web sites effectively.

When developing the web site it is important to “establish a layout grid and a style for handling your text and graphics, then stick with it to build a consistent

rhythm and unity across all the pages of your site” (Lynch & Horton, 1999, p. 9).

Placing your navigation buttons, the title, and text of the web page can make a difference in the focus of the page. Lynch and Horton (1999) suggest:

Readers see pages first as large masses of shape and color (see below), with foreground elements contrasted against the background field. Only secondarily do they begin to pick out specific information, first from graphics if they are present, and only afterward do they start parsing the "harder" medium of text and begin to read individual words and phrases. (p. 3)

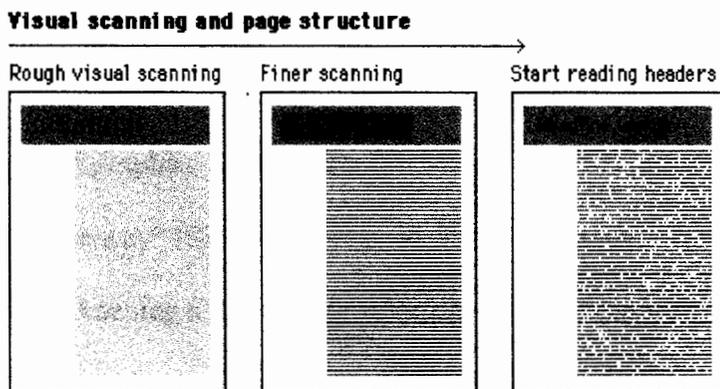


Figure 1

Note: above graphic is from Yale C/AIM Web Style Guide web site.

The above example shows that by careful layout the designer can use alignment techniques to lead the end-user’s eyes down the page. Because of the nature of hypertext markup language, it is often difficult to align pages the way

the designer wants to. One way to overcome this problem is to use tables (Duncan, 1996).

Tables are used in a variety of ways within web pages. A table is made up of several different sections called cells. Each cell can be used to align the different parts of the page. The most common use is to align text, like in the illustration above. By using tables, sections can be created within a page that could not normally be created using basic hypertext markup language including a title graphic, a navigation bar, and the main text of the page. Duncan suggests that “a page with graphical and textual elements aligned vertically or horizontally can create a strong impression. The reason: there’s a visual connection between those elements” (1996). One word of caution, when using tables within a web page to align text and graphics do not leave the borders “on”. “They are not only ugly, they get in the way” (Siegel, 1997, p. 4). Tables are a great way to align text and graphics. By keeping a few design principles in mind the web designer can create very effective web pages.

After the designer has a basic layout of the pages in mind, it is necessary to decide on a color scheme for the site. This includes background color, text color, link color, visited link color, and making sure that the graphics on the page do not clash with the rest of the site. Out of all of those things to consider, the only one that the web designer has true control over is the graphics, and then only if the

end-user chooses to load them. With that in mind, the next few paragraphs will describe how to best use color within a web site.

Colors can be placed within tags to give different color of text or backgrounds with regular words like “red” or “blue” but most web designers want more control when assigning colors. This control is given within a special numbering system of colors called hexadecimal code. Within a hexadecimal code, you will find a pattern of letters and numbers preceded by the “#” symbol (#RRGGBB).

Knowing which numbers go with which colors is helpful if the web designer is creating a page with basic HTML, but for a web designer who is using an HTML editor it becomes less important. The “what you see is what you get” format of most web page editors will show you the 216 “web safe” colors which are used by both IBM and Macintosh computers (Lynch & Horton, 1999). Just remember if the end-user wants the pages to show up with a different color scheme that the user has the power over the web page designer when it comes to background color, text color, link color, and visited link color through their browser preferences.

Which color scheme the designer chooses should be done carefully. A dark background with a dark text color will be hard to view by the end-user and may not print out. It is best to use a light background with dark text or a dark background with light text. “Black text on white background yields the best overall type contrast and legibility” (Lynch & Horton, 1999, p. 6). If the purpose

of the web site is to deliver information, it would probably be best to use that color scheme. As for link color and visited link color, most people understand that if the text is underlined it is a link so any color could be used. What ever the web designer decides, keep in mind that the end-user still has ultimate power over those colors of the site through their browser background and font color preferences.

By creating a background graphic, title graphics, and buttons, the designer almost guarantees what the end-user will see. The only drawback to creating graphics for the site is the time or money involved in the creation of those graphics. The benefits to using graphics developed by the designer, on the other hand, can be very positive. Navigation buttons that look like they are raised above the surface instead of plain words can make it clearer to the end user that they are truly “buttons” (Kirsanov, 1999). By creating original graphics for the site, the designer not only has total control on how the graphics will look; but also will have a site that is more appropriate and original.

### Summary

Web site design can be a time consuming process with many things to consider along the way. Hopefully the above sections have made some of those aspects a bit clearer and drew attention to things that might not have been considered. Know that with careful planning, the site designer can make a site that is both useful and accommodating to many users of the World Wide Web.

## The Project

The Technology Coordinators' Web Site was first conceived as a site that would bring web information quickly to technology coordinators and other people involved with technology. Because of characteristics of most technology positions, the site would have to be easily navigated and searchable content, giving results quickly. The site designer would originally develop the content, but with the feedback from other technology coordinators, the content would eventually derive from the end-user. The next section will describe the different parts of the site, process in developing the site, and how decisions were made.

## The Web Site

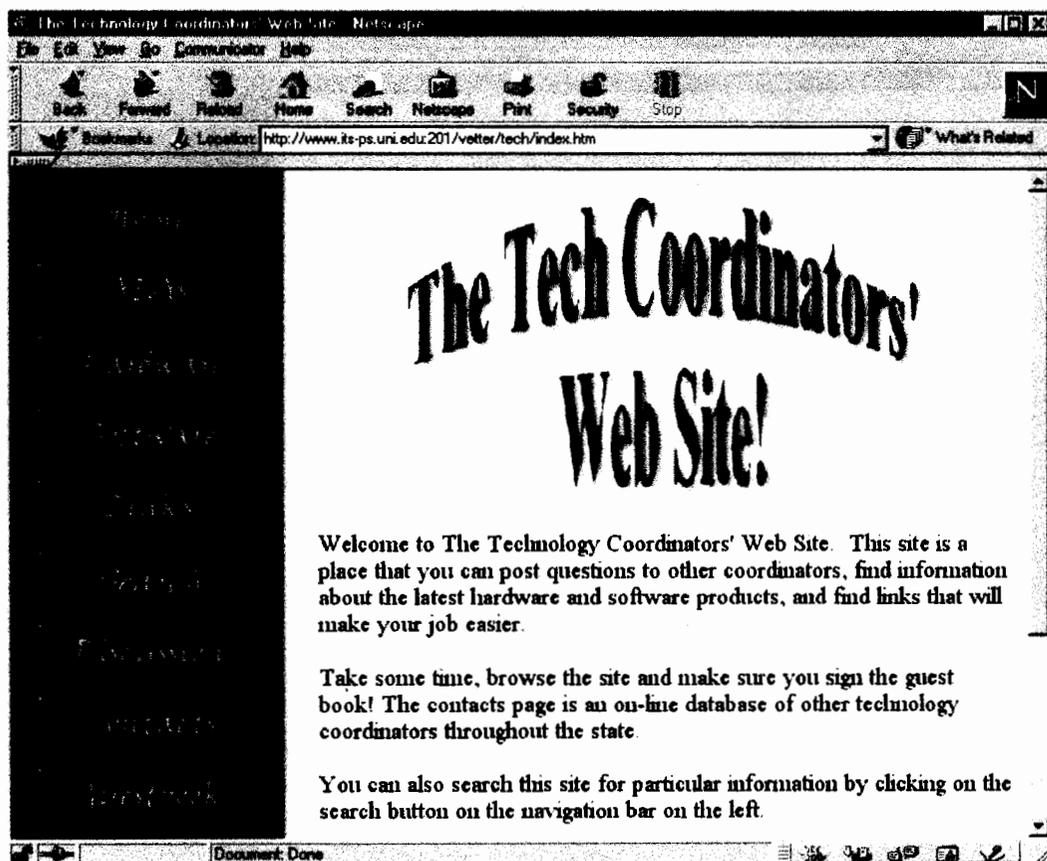


Figure 2

The home page (figure 2) of the web site has a welcome message as well as general information about the site. It gives descriptions of some of the more useful features of the site as well as asking them to sign an on-line guest book for the site. The first page also includes an e-mail link for comments about the site and a link to add their own favorite sites to the database.

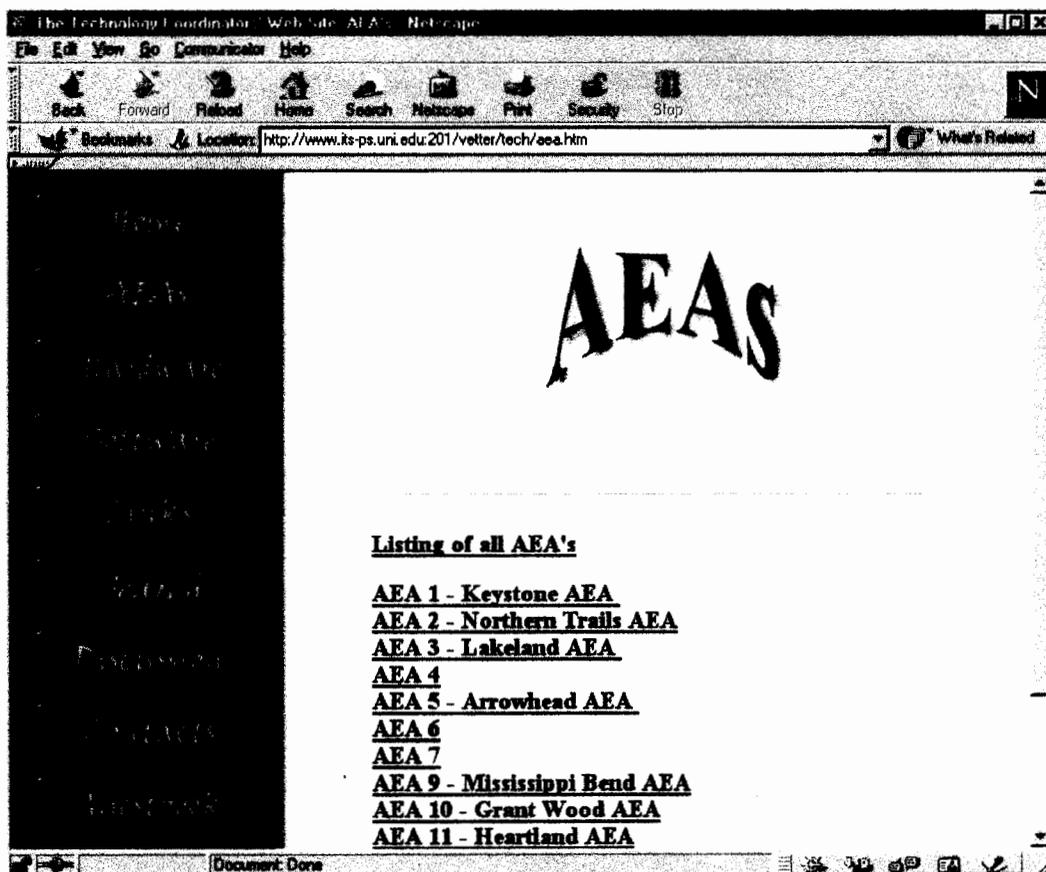


Figure 3

Iowa's Area Education Agencies are a vast resource to Iowa educators. The AEA's have found that one way to get information out to their schools that they serve is to develop web pages with the information the schools need on them. The AEA page would include each AEA's home page giving coordinators links to other technical documents produced by each AEA. By combining these links into one page it will not only save technology coordinators time, but will also give them access to AEA materials other than their own.

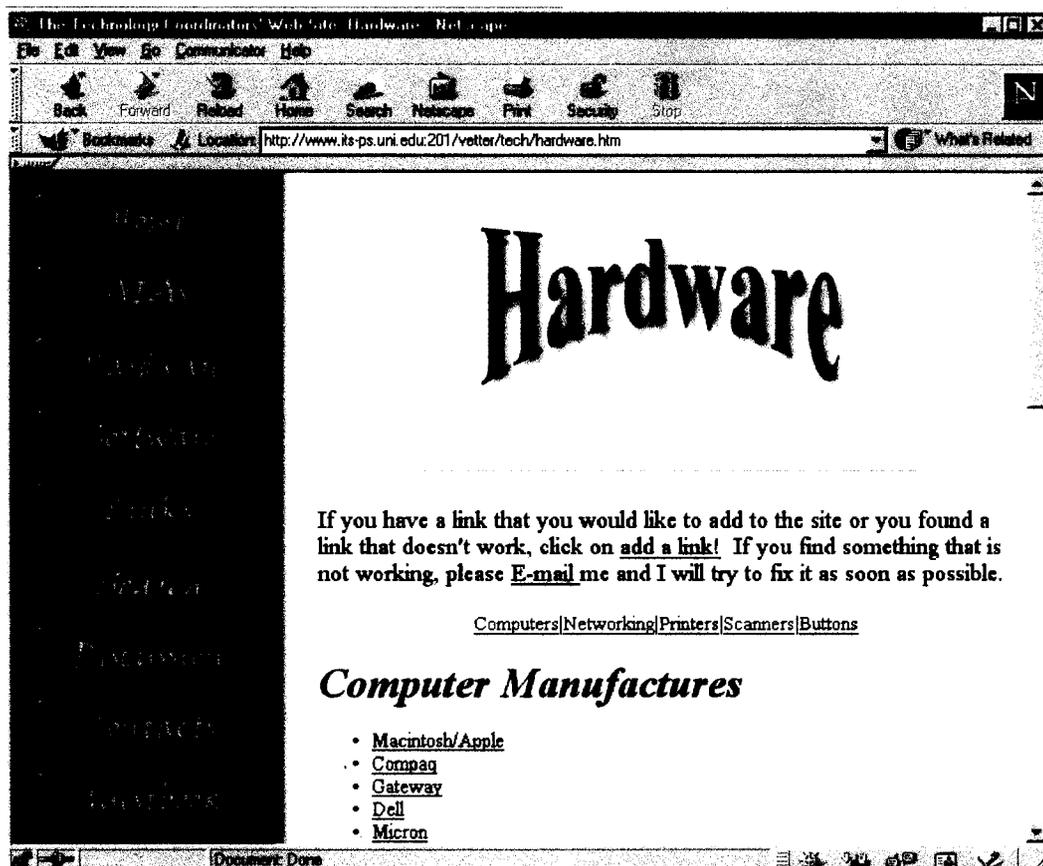


Figure 4

The hardware page will give technology coordinators a resource to find the latest in new technologies. This is where major manufactures of equipment web sites will be listed. This can save coordinators time when they are looking for the latest driver for a scanner, or need to find information about a networking hub. By having the major companies listed, it saves time from trying to guess or look up URLs to those manufactures.

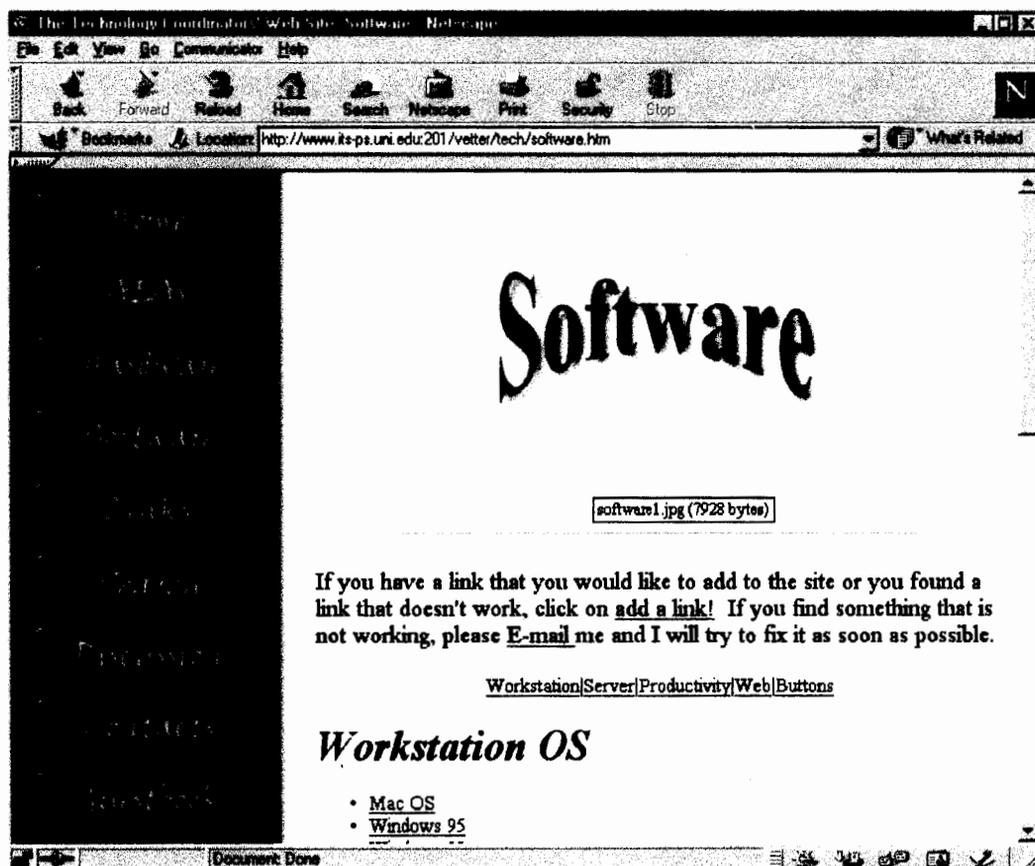


Figure 5

The Software page will do the same thing that the Hardware page does but for software. It lists web sites to server and workstation operating systems as well as links to productivity software sites. The technology coordinator could open up multiple windows to look at the different software and compare features when making decisions on what to buy for the district. By having links to the different operating systems coordinators can quickly get OS updates and apply them to their systems.

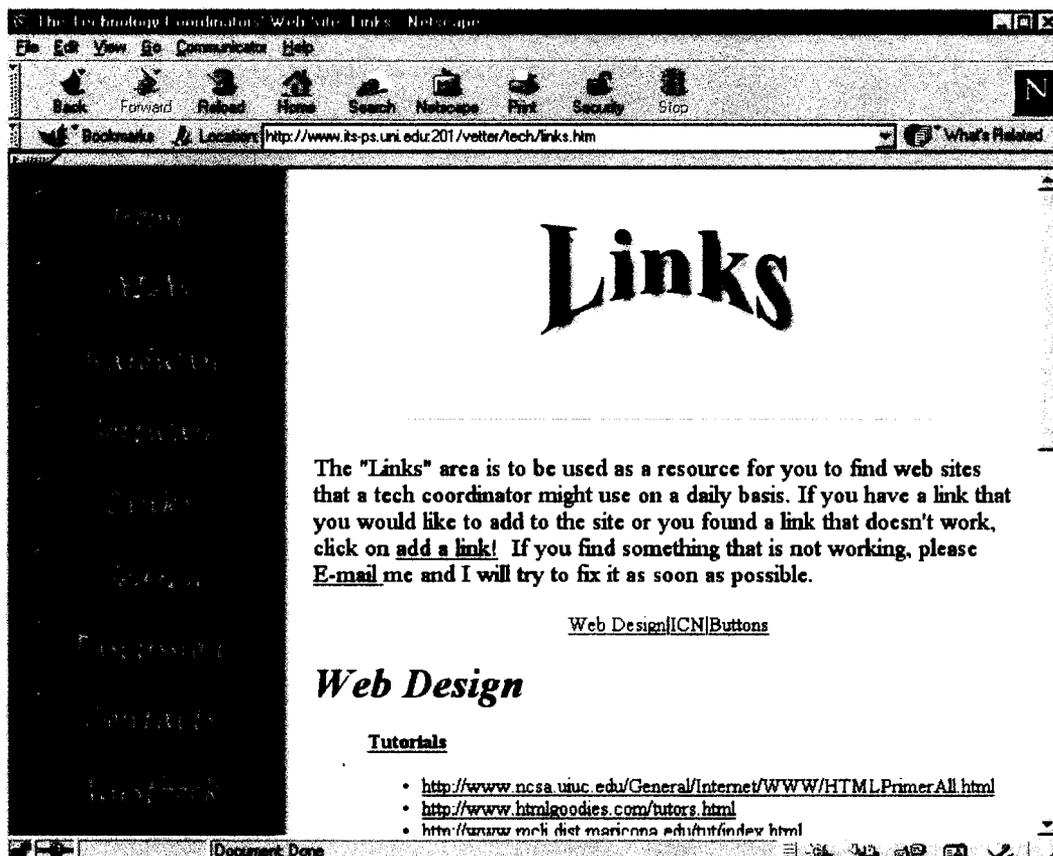


Figure 6

The Links page will give links for sites like web design, application help sites, and links to sites that assist in creating workshop material. Technology Coordinators are often the ones who do a lot of the training for the district. This means time finding and sorting through training materials. The links page is there to cut down this time spent searching and give them more time to do other aspects of their position.

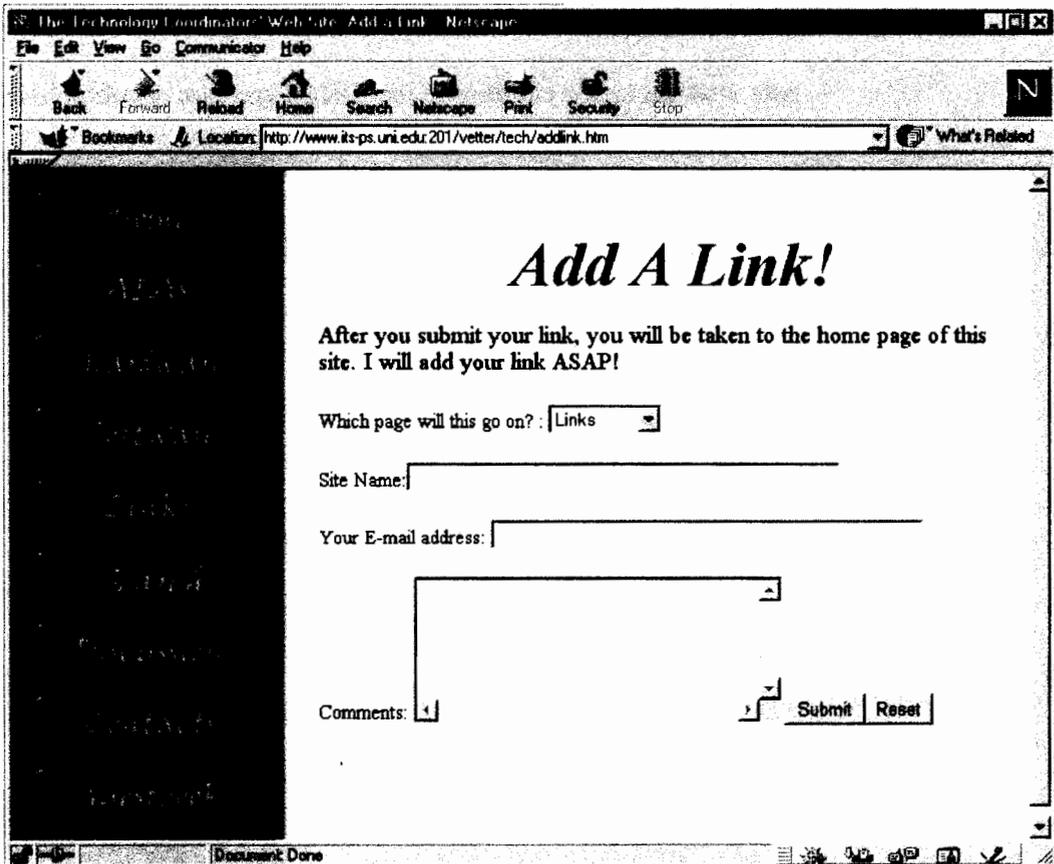


Figure 7

The Add a Link form page will give technology coordinators input to which useful web sites that are available on the site. It is available from the Hardware, Software, and Links page as well as the home page. When a site is submitted it automatically is sent to the site's e-mail address and also is recorded to a private page of the web site. The site designer then reviews the link and a decision is made whether to add the link to the site. When submitting a site the person must include where they think that the link should go within the technology

coordinators' site, the name of the site that they want added, the coordinator's e-mail address, and any additional comments about the new site.

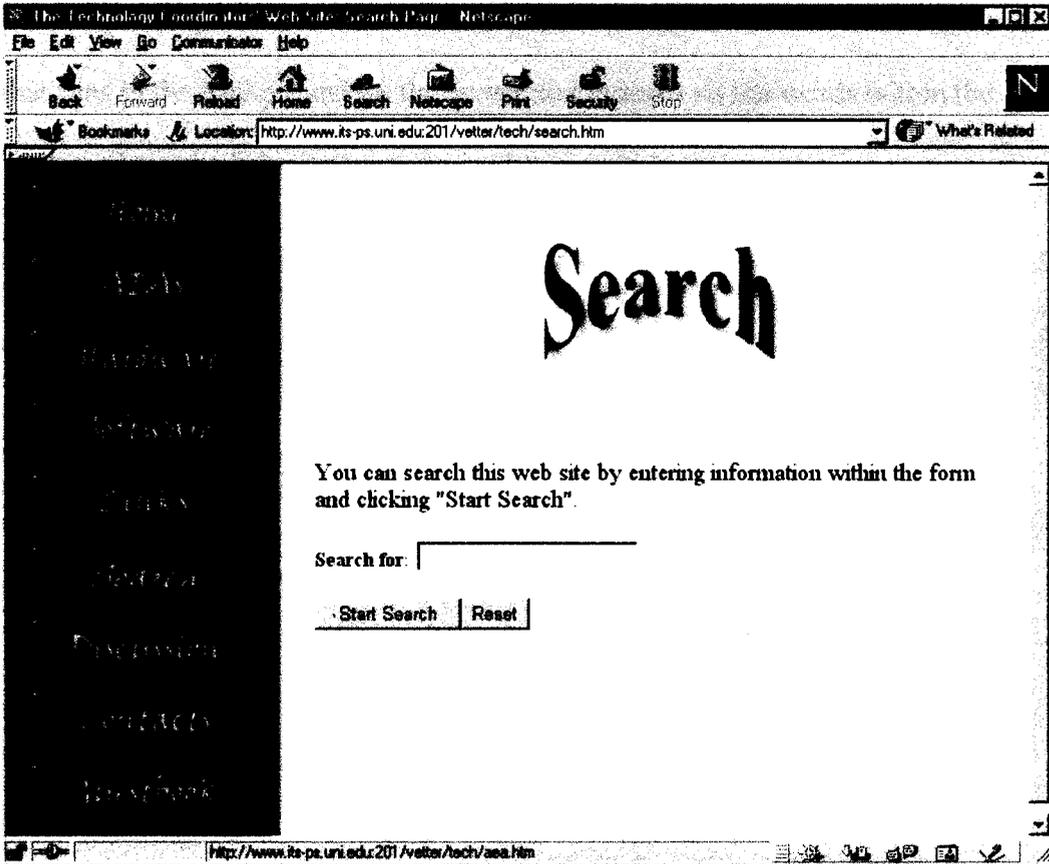


Figure 8

Technology coordinators often do not have time to search for materials on the web because of their busy schedules. Even though the information available in this site is condensed, it seemed necessary to add a search component to the site to cut down on the search time. It also seemed necessary because of the potential growing nature of this site. When a search is completed, the information given includes the page the information is on within the site as well as a “score” or

ranking for the search. The higher the number the higher the probability they will find the information they are looking for. The search page was created using a FrontPage component called a search “WebBot”. This “WebBot” is a program that runs in the background on the server and indexes all the words within the site. That is where the information is derived from within the search.

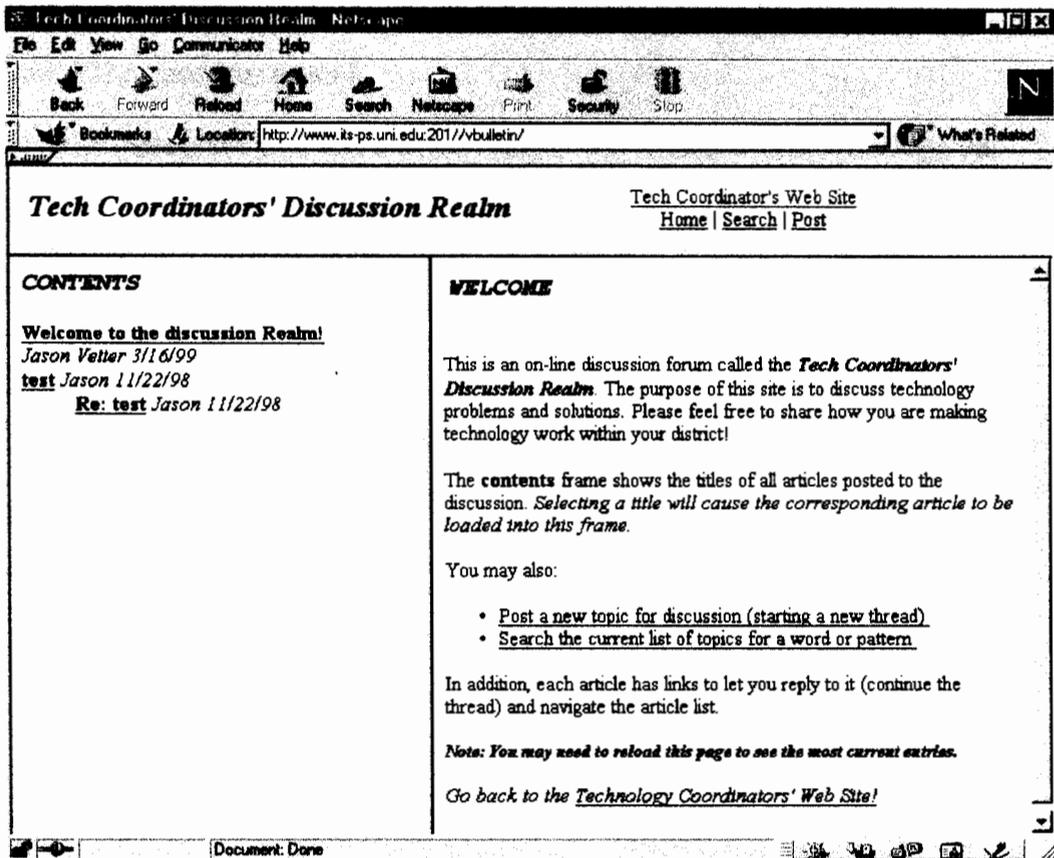


Figure 9

The discussion page will serve as a space where technology coordinators can discuss and post questions about topics that affect their districts. This part should promote the sense of community by the sharing of ideas and knowledge. It gives

them a place to go and read and comment about things, but does not force them to go through mail that might not interest them like mail from a listserv does. The questions are posted with different subject groups (general, hardware, software, operating systems, networking, web, curriculum and policy) to help them to better discriminate what they want to read. The messages are threaded and anyone can post a new thread. They also can search the messages looking for key phrases within the messages posted.

The discussion area was created using a web wizard within FrontPage 98. Because the way FrontPage helps create this area it needs to be a separate site on the server. The pages are created dynamically using a different "WebBot" form page than the search "WebBot". The page that lists the topics as well as the messages themselves are updated automatically as new discussions and threaded messages are formed.

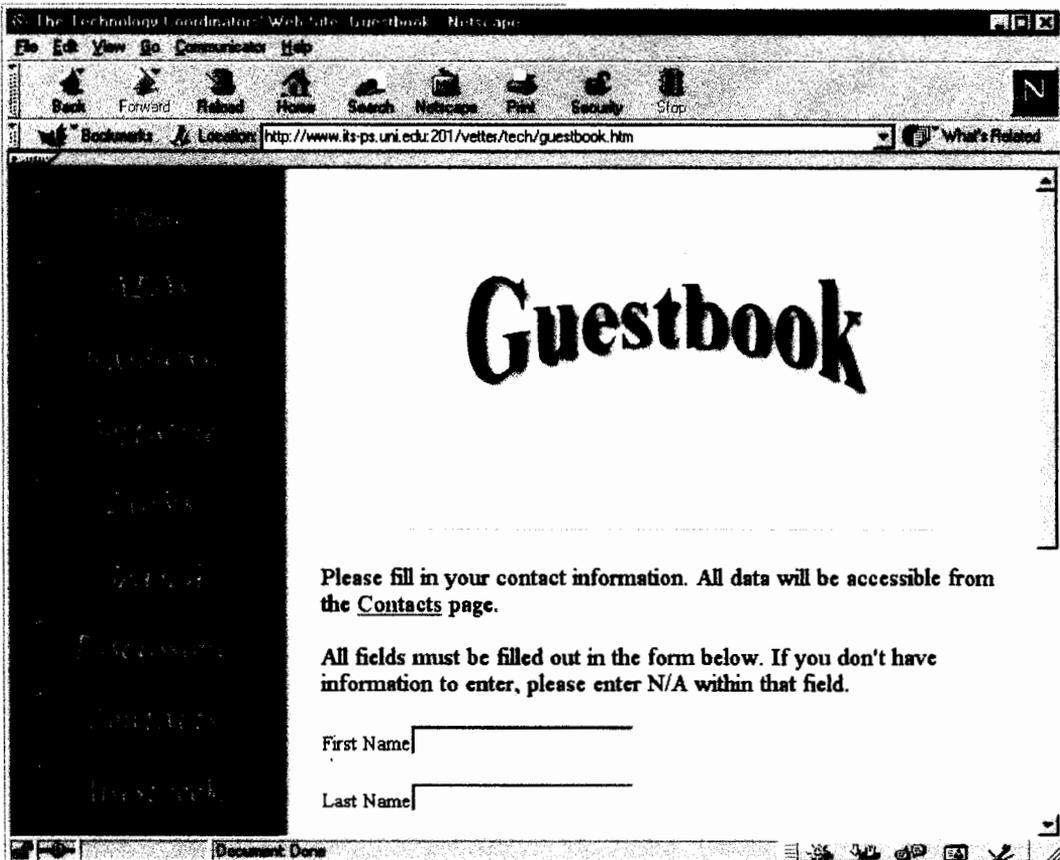


Figure 10

The last two pages are somewhat intertwined. The guest book will be used to submit contact data from technology coordinators around the state. This information will include their name, title, district or university, work address, phone number, fax number E-mail address, and the AEA to which they belong. The information will then go into an on-line database. There, technology coordinators will be able to find other coordinators and colleagues around the state via the Contacts page. The development of this part is further discussed in greater detail within Phase I of the project.

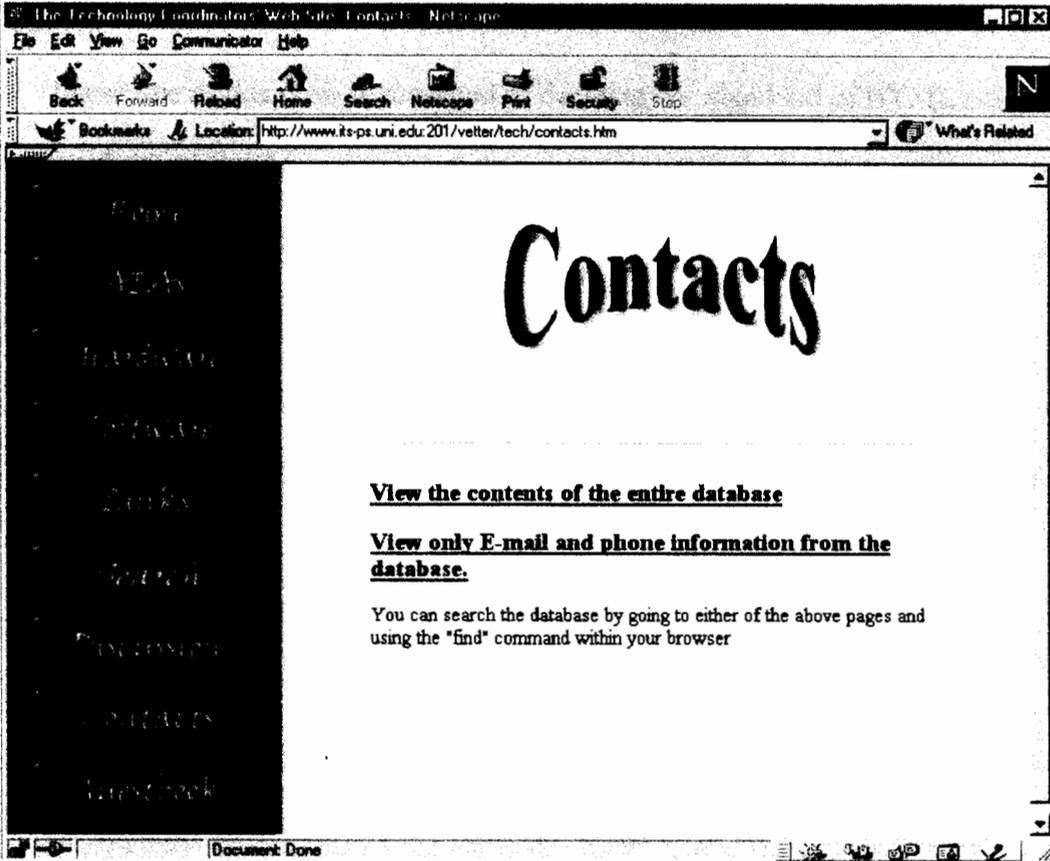


Figure 11

## Phase 1

Phase one of this project consisted of deciding on what kind of HTML editor to use, finding a server to house the site, and completing the basic design/layout of the web site. After serious consideration, FrontPage 98 was chosen as the editor for the project. It was chosen mainly because of its web site management capabilities and image composer program. Along with its HTML editor and complete database integration capabilities, it was a complete package to build web sites.

In order to use the full capabilities of FrontPage 98, a server with the FrontPage extensions was needed. The University of Northern Iowa's ITS-Production Services (ITS-PS) has an NT web server and was looking for sites that would use more of the aspects of FrontPage to test on it. ITS-PS also agreed to house the site indefinitely or at least until a more suitable server was found that had the FrontPage extensions on it.

Using the image composer program and HTML editor, three layouts were designed. Out of the three, one was chosen and the template for all the pages was designed. The template included a page that was laid out within a table. A navigational bar would be on the upper left-hand side of the page and the content of the pages would be in the other 75% of the page. Instead of using plain words as links to navigate throughout the site, buttons were created for the navigation

bar. A background graphic that also divided the page was used to focus the user's attention to the content of the page (See figure 12).

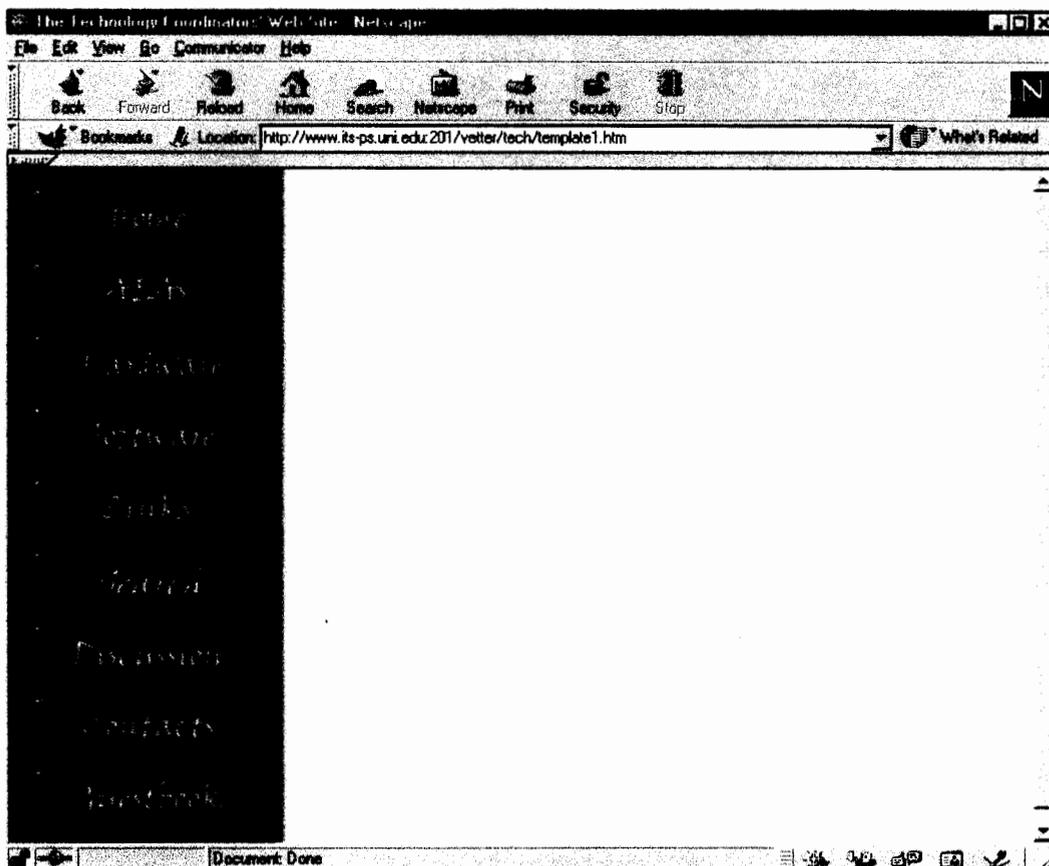


Figure 12

The main pages that would stem from the first are: AEAs; Hardware; Software; Search; Links; Discussion; Contacts; and Guest book (See figure 13). Each of these pages would have the same navigational bar to easily travel between each of the pages. Each page was also put at the same directory level as the index page of the site (See figure 14). This made it easier to use one images

folder and to use one navigation bar layout to copy and paste to each page for future updates.

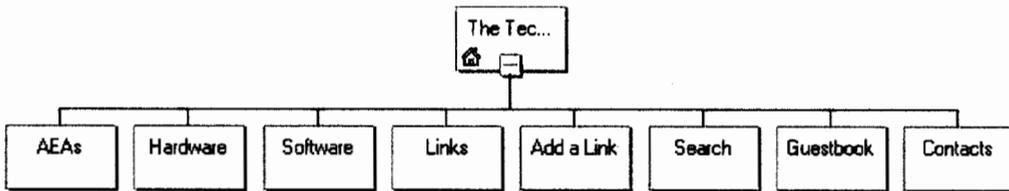


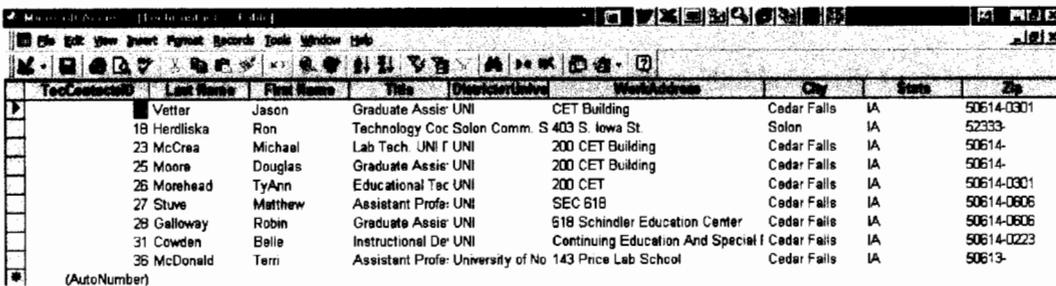
Figure 13

Contents of 'tech'		
Name	Title	Size
asp		
images		
addlink.htm	The Technology Coordinators' Web Site: Add a Link	7KB
aea.htm	The Technology Coordinators' Web Site: AEA's	3KB
contacts.htm	The Technology Coordinators' Web Site: Contacts	2KB
guestbook.htm	The Technology Coordinators' Web Site: Guestbook	20KB
hardware.htm	The Technology Coordinators' Web Site: Hardware	6KB
index.htm	The Technology Coordinators' Web Site	3KB
links.htm	The Technology Coordinators' Web Site: Links	6KB
search.htm	The Technology Coordinators' Web Site: Search Page	3KB
software.htm	The Technology Coordinators' Web Site: Software	5KB
template.htm	The Technology Coordinators' Web Site	2KB
template1.htm	The Technology Coordinators' Web Site	2KB

Figure 14

After completing this task, the discussion page, guest book, and the contacts page were developed. Getting the form page (figure 10) to communicate with the Microsoft Access <sup>TM</sup> database took some research into Server Query Language (SQL). First, it was necessary to create an Access <sup>TM</sup> database that would store the information (See figure 15). On Microsoft's web site there are resources to help link a database to a web site. First a page must be developed that will include a

form that matches each field in the database. The Guestbook page (figure 10) handled this. An active server page (ASP) was then developed that would insert the data into the database and also confirmed the entry. Once the information is in the database, then it was necessary to design a page that would dynamically create and organize the database and let the user view all or part of its information. This calls on knowledge of SQL language to post this information within an ASP page. The SQL language tells the ASP how the information will be displayed on the page. In this case the information was organized alphabetically by last name. Once these few steps are completed, the server had to be configured to allow the ASPs to work. Rigorous testing was then conducted to ensure that the database is fully functional. This took quite a few hours on the web designer's part, but once the database was working, it basically ran itself.



The screenshot shows a Microsoft Access window displaying a table with the following data:

AutoNumber	Last Name	First Name	Title	Director/Office	WorkAddress	City	State	Zip
1	Vetter	Jason	Graduate Assis	UNI	CET Building	Cedar Falls	IA	50614-0301
18	Herdlika	Ron	Technology Coc	Solen Comm. S	403 S. Iowa St.	Solon	IA	52333-
23	McCrea	Michael	Lab Tech	UNI (	200 CET Building	Cedar Falls	IA	50614-
25	Moore	Douglas	Graduate Assis	UNI	200 CET Building	Cedar Falls	IA	50614-
26	Morehead	TyAnn	Educational Tec	UNI	200 CET	Cedar Falls	IA	50614-0301
27	Stuve	Matthew	Assistant Prof:	UNI	SEC B1B	Cedar Falls	IA	50614-0606
28	Galloway	Robin	Graduate Assis	UNI	618 Schindler Education Center	Cedar Falls	IA	50614-0606
31	Cowden	Belle	Instructional De	UNI	Continuing Education And Special I	Cedar Falls	IA	50614-0223
36	McDonald	Terr	Assistant Prof:	University of No	143 Price Lab School	Cedar Falls	IA	50613-

Figure 15

## Phase 2

Phase two consisted of gathering up information about sites that could be used within the hardware, software and links pages of the web site. It also included the development of the AEA page with the links to the different AEAs and their

resources. Most of the information was gathered with colleagues who are currently technology coordinators at schools, professors at UNI, and other members of UNI's ITS department.

### Phase 3

As with all web pages, this site will never be fully completed. Because of the changing nature of the web, sites must be constantly updated in order to stay current. Phase three consists of this constant update of the site to make it even more useful. Organizations that deal with technology have also been contacted to advertise the web site. This will help to hopefully place it in front of as many technology coordinators as possible. During this phase, it will also be necessary to find someone to continue updating the site if the developer is not able to do so in his future employment. UNI's College of Education has indicated interest in keeping the site current. Iowa Technology Education Connection (ITEC) has also shown some interest. If this phase is successful, the added help will keep the site a useful tool for years to come.

## Conclusion

The Technology Coordinators' Web Site is a site that will aid technology coordinators with several aspects of their jobs. It will bring information to technology coordinators faster and more efficiently. This in turn will give them more time to focus their attention on making technology more accessible to students, faculty and staff members to enrich their lives with technology. Saving districts and tech coordinators not only time and money, but also making technology coordinators better able to do their tasks.

With the use of the discussion area and the database of technology coordinators, this web site can also bring members of this field together to discuss issues within technology and hopefully solutions to these issues. This community of technology coordinators could help each other to refine the way technology is being used within the schools. They could also serve as a support group and database of information dealing with technology and education. This will in turn improve technology usage within their school and in education in general.

Many aspects about creating web pages have been learned in this project. In order to create effective pages it is important to know the audience and develop the site around them. By doing research, it is possible to help the end-user get the information needed. As a web designer, it is essential to explore the many layouts and options available and design a site to best suit its intended purpose. As for the

site itself, it was designed to bring together technology coordinators and help them to better serve their school and education.

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Available: <http://info.med.yale.edu/caim/manual/>
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