RESEARCH PROJECT

CACTE WEB SITE USABILITY EVALUATION

Submitted by

Adam Gibbs

Department of Journalism & Technical Communication

In partial fulfillment of the requirements

For the Degree of Master of Science

Colorado State University

Fort Collins, Colorado

Spring 2008

COLORADO STATE UNIVERSITY

April 8, 2008

WE HEREBY RECOMMEND THAT THE RESEARCH PROJECT PREPARED UNDER OUR SUPERVISION BY ADAM GIBBS ENTITLED CACTE WEB SITE USABILITY EVALUATION BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE.

Committee on Graduate Work

(*Please print name under signature*)

Jamie Switzer
Jamie Switzer
Adviser

Greg Luft
Committee Member

Dawn Mallette
Dawn Mallette
Outside Committee Member

Greg Luft
Department Chair/Director

ABSTRACT

CACTE WEB SITE USABILITY EVALUATION

As the Internet continues to become an increasingly dominant source of information, it is ever more important for Web sites to maintain proper usability with regard to navigation. A usability evaluation of the Colorado Association for Career and Technical Education Web site was performed in order to assess the level of ease and use of the site's navigation.

Key issues of the study involved usability, usability testing, Web site navigation, Schema theory, computer experience, and previous experience with the CACTE Web site.

Participants in the study included members of CACTE and Colorado State University students enrolled in the School of Education. The participants performed a set of 15 tasks on the CACTE Web site designed to reproduce the steps needed to gather relevant information.

Results of the usability evaluation were based upon task-time completion as well as open-ended responses provided by participants. Recommendations were created for the CACTE Web site based on the outcome of results and after consultation of the National Cancer Institute's Research-Based Web Design & Usability Guidelines.

Adam Thomas Gibbs
Department of Journalism & Technical Communication
Colorado State University
Fort Collins, CO 80523
Spring 2008

TABLE OF CONTENTS

CHAPTER I - INTRODUCTION

The purpose of this project was to conduct a usability evaluation of the Colorado Association for Career and Technical Education (CACTE) Web site.

CACTE is the state professional association for Career and Technical educators. Since 1917, CACTE has been the largest state organization supporting career and technical educators in their efforts to prepare students for career and life success (CACTE, 2004).

CACTE is affiliated with the Association for Career and Technical Education (ACTE), the national organization for Career and Technical Education (CACTE, 2004).

The CACTE Web site contains pertinent information and resources for its members as well as students who will soon be career-technical educators. The CACTE Web site serves as host to member contact information, meeting schedules, conference information, policies and procedures, committee duties, divisions, membership applications, relevant legislation, awards, newsletters, and student organization and state links.

Intended Audience

The primary audience of the CACTE Web site is members of CACTE, including teachers, administrators, teacher educators, career counselors, teacher candidates, business partners and other career tech professionals.

CHAPTER II - LITERATURE REVIEW

In the 1960's, the United States Department of Defense created a computer network as a form of communication that would survive a disaster such as a nuclear attack. This network of computers was known as ARPANET and has since evolved into the present Internet (Master the Basics: Birth of the Net, 2006).

What began as a military experiment has now become a part of everyday life for most individuals. People use the World Wide Web to connect to the Internet to communicate, buy and sell products, research information, and find entertainment (Foust, 2004).

Whether surfing for information, communicating, or purchasing a special product, users of the Internet are always navigating Web sites. Current research shows that usability of a Web site can have tremendous effects on a user's experience (National Cancer Institute, 2006). Usability expert Jakob Nielsen says that:

> Studies of user behavior on the Web find a low tolerance for difficult designs or slow sites. People don't want to wait. And they don't want to learn how to use a home page. There's no such thing as a training class or a manual for a Web site. People have to be able to grasp the functioning of the site immediately after scanning the home page — for a few seconds at most (National Cancer Institute, 2006).

Usability can be defined as a measurement of the quality of a user's experience when interacting with a Web site, product, or system. Usability includes a combination of items that affect the user's experience such as, ease of learning, efficiency of use, memorability, error frequency and severity, and subjective satisfaction (National Cancer Institute, 2006).

Usability testing includes various methods of having users experiment with a Web site or system. Most usability tests involve participants performing a variety of tasks on a

Web site or system, while observers record what the participants say and do. Usability testing includes gathering data on what the users do, the errors that they make, when they become confused, and how long they take to perform tasks. The goal of this testing process is to find out what problems users will have so that those problems can be fixed (National Cancer Institute, 2006).

One major issue common to all Web sites and usability evaluations is navigation. Navigational actions make up 90 percent of all recorded Web site actions. Hence, navigation plays a critical role in Web site design (Ling & Schaik, 2002).

Web Site Navigation

The Internet can be thought of as a large navigational system. When you are browsing the Internet you usually begin by looking around on one site. From that one site, however, it is likely that you will encounter numerous hyperlinks branching out to different parts of the site as well as other sites on the Internet. Hyperlinks allow users to travel within sites as well as into other sites (May, Sundar, & Williams, 1997). Imagine a spider's web where everything is connected and where each strand flows to the next. Without proper navigation users can become trapped within Web sites like flies in a spider's web.

Due to the complexity and enormity of some Web sites, navigation can be very difficult. Information retrieval has subsequently decreased in efficiency (Otsuka, Hiraishi, & Mizoguchi, 2001). Because of this Jakob Nielsen suggests that navigational devices should help users to answer the following three questions (Nielsen, 2000):

1. Where am I?
2. Where have I been?
3. Where can I go?

These three questions provide a good outline of Web site navigation relating to links.

Where am I?

Assessing where the user is on a Web site is the most important of the three questions, due to the fact that users will not be able to understand a Web page's layout if they do not understand where they are (Nielsen, 2000).

The user's location in a Web site should be visible at two areas. The first area is the user's location in proportion to the Web site as a whole. All Web pages are very similar from the user's point of view. They are downloaded from the Internet, they have similar layouts, and they share interaction strategies. Because of this, a Web site needs to make sure it identifies itself on all of its pages. The Web as a whole presents dominance over the user because users typically view no more than four to five pages at a time at any one site. It is for this reason that a Web site should display a logo on every page. The logo needs to be placed in the same area on each page within the site. The Web site's logo should also serve as a link to the site's home page so that a user can return to the main page from any other page (Nielsen, 2000).

The second area of the user's location on a Web site is relative to the site's structure. A site's structure is normally displayed by means of a table of contents or site map (Nielsen, 2000). The site map on a Web site is an overview of the ordered listing of pages in the site (Nielsen, 2002). Another important aspect for site structure is labeling each individual page within a site with a headline or blurb describing what that page or section is about. A final component for site structure is the title displayed in the upper left hand corner of the Web browser. This is accomplished by means of the title tag in

the HTML code used to produce the Web page. The title here should give a clear idea of what the page is about so that the user can bookmark that page effectively (Nielsen, 2000).

Where have I been?

Nielsen's second question is in regard to where the user has been after visiting different hyperlinks. Before looking at this question, however, one must take into account the main types of hyperlinks.

The hyperlink is a vital part of navigation. By designing effective links, the navigation of a site will be improved (Palmer, 2002). There are three major types of links that users will encounter on a Web page. These include embedded links, structural links, and associative links (Nielsen, 2000).

Embedded links are viewed as underlined text on a Web page. These links are usually preceded or followed by information relevant to the user that will prompt them to click the link in order to gather the needed information. Embedded links can also be completely surrounded by text (Nielsen, 2000).

Structural links are links within a Web site that take the user to other sections or sub-sites of the site. These are commonly seen as navigational links for a site. The "home" button on a Web page would be a good example of the structural link. Navigation within a Web site needs to be easily understandable and findable. Structural links such as the navigational menu should be displayed on all pages within a Web site so that the user will know where they are and where they can go within the site (Nielsen, 2000).

Associative links are incorporated to give users further knowledge about what is being discussed on a Web page. These are typically seen as one or two words that are linked to a page within or outside of the site that provides relevant information about the linked word (Nielsen, 2000).

Although there are different types of links they all serve the basic function of taking the user to a new page. In order to effectively guide the user, the color of the link can play an important role. This is also a component of Nielsen's second question of where the user has been.

When navigating through a Web site, a user will be clicking different links to get to their desired location. In most cases, hypertext links are shown in a different color of what they were before the user clicked on them. A Web site should keep the standard link colors of blue being an unvisited link and purple being a visited link (Nielsen, 2000). The purpose of the variations in link color are for assisting users in distinguishing links that they have and have not visited (Halverson & Hornof, 2004). Users have been tested on many sites using nontraditional colors for links. This resulted in users that were confused as to where they had been throughout the site. Understanding which links have been clicked on and visited is vital. This helps users learn the site structure and keeps the users from spending too much time going to the same page over and over again (Nielsen, 2000).

Blue is the default color for hyperlinks. Although blue is typically seen as the most widely used color for hyperlinks, other colors can be used. Schaik and Ling (2003) performed a research study examining the results of participants using an intranet system with blue links versus black links.

In the Schaik and Ling study, results for searching with blue links on a white background were compared to those with black links on a white background. The blue color for links was chosen as it is the default color for links. The black color for links was selected because black has the highest contrast with the default background color of white (Schaik & Ling, 2003).

The study showed that link color affected both accuracy and perceived display quality. The blue links had better outcomes than the black links. This also exhibited that maximizing contrast, by using black links, does not maximize the user's interaction with the site. This result also shows that users may be more familiar with blue links because of the schema theory (Schaik & Ling, 2003).

According to Graber, (1988) a schema is a cognitive structure for storing and retrieving information about people and situations. While Graber's research involved schemas relating to news stories, newspapers, and news broadcasts, the theory is applicable to Web site navigation. According to the schema theory, users of the Internet should have schemas from prior Internet use about the way that navigational hyperlinks look on Web sites.

The conclusion of the Schaik and Ling, (2003) study was that users performed better with blue links and that Web designers should design links according to Web site users' schema of links being blue in color.

Halverson and Hornof, (2004) conducted a study that looked at the effect of comparing visited and unvisited links based on color. The participants were asked to find target words that would always appear as blue in color. Their eye movements where recorded using an LC Technologies Eyegaze System. The study found that when

searching for a specific word between blue and red words, the search time increased with the greater number of blue words. Thus if a user is on a page and trying to figure out what links they have visited, the difference in link color will allow for faster navigation (Halverson & Hornof, 2004).

Although the colors blue, purple, and red are used most widely for links on Web sites, these colors may not be the best in terms of how the human eye processes color. It is impossible for the eye to obtain a sharp blue image because the wavelength of light that creates blue can never be brought into focus. This is true for people of all ages, however, older people have an even harder time processing the color blue because of age-related difficulty in visual focusing. Red is also a troublesome color for the eye. The cones in the eye sensitive to the color red make up about 64 percent of all cones. However, there is only a small amount of these cones in the periphery, so red is not easily seen there. Blue, however, is easily detected in the periphery because of a larger number of cones towards the edge of the retina. Although these colors are not the best choices, the periphery of each one allows for links to work fairly well in terms of blue being seen first and red second (Pearson & Schaik, 2003).

Hyperlink color obviously has effects on users pertaining to Web sites. Color, however, is not the only formatting that can be applied to hyperlinks. Two other popular formats are underlining and using bold text for hyperlinks (Ling & Schaik, 2004).

Ling and Schaik, (2004) conducted a study that investigated the effect of link format on visual search of Web pages. The study looked at links in the content area, such as links surrounded by text in the content portion of the page, and links in the navigational menu section of the page. Bold-underlined links had the most successful

rates for accuracy than both plain and bold links in the content area. In the navigational section of the site, both bold and plain formatted links were perceived the fastest. The study's main conclusion was that links need to be formatted differently for the navigational and content areas of a Web site. In the navigational area, the links do not need to be formatted to stick out because they are in proximity to other links only. The content area on the other hand should feature links that are formatted in either bold, underlined, or a combination of both since they are surrounded by text (Ling & Schaik, 2004).

Where can I go?

After looking at link color and formatting, Nielsen's third question of "Where can I go?" appears to be appropriate. Once users know what links on a Web site should look like, they will need to know which ones they ought to visit.

Users need to be able to know where they can go within a Web site. In order for this to be accomplished, the user needs to able to see the navigational structure or menu on all pages within a site (Nielsen, 2000).

There is a debate, however, as to where the navigational structure should be placed on a Web site. Eye fixation studies have revealed that the first area people look at on a display is the upper left portion (Pearson & Schaik, 2003). IBM design guidelines dictate that the navigational structure should be placed in the upper left region of the screen (McCarthy, Sasse, & Riegelsberger, n.d.).

On the other hand, the National Cancer Institute Guidelines advise putting the navigational structure on the right side of the page. The Communication Technologies Branch of the National Cancer Institute created the Research-Based Web Design and

Usability Guidelines to help in the creation of more usable Web sites (National Cancer Institute, 2006). Their research has shown that users are more efficient with clicking links on the right side of the page versus the left side because of the menu proximity to the scroll bar. Since the scroll bar is on the right side of the page, having the site navigational menu here allows for faster movement between the scroll bar and links (National Cancer Institute, 2000). Nielsen agrees with the right sided menu as well. In his opinion users are checking a Web site for content first. In Western cultures people read from left to right, thus it would make sense in placing the content of the page on the left side while positioning the menu on the right side (Pearson & Schaik, 2003). The Stanford Poynter Project also found that content was first looked at by users on sites. The study examined news Web sites, and found that text was the first item looked at for the majority of users (Pan, Hembrooke, Gay, Granka, Feusner, & Newman 2004).

McCarthy et al., (n.d.) performed research relating to the placement of navigational menus. The main hypothesis of the study was that search performance was best while using left side navigational menus. Eye tracking equipment was used as participants performed tasks on sites. The eye tracking data recorded that people looked mostly to the middle region of the sites first. The study showed that the navigational menu placement did not affect search performance overall. However, the study did find that left menu placement resulted in higher performance relating to page visits (McCarthy et al., n.d.).

Kalbach and Bosenick, (2003) looked at the results of user testing on a Web site based on left-hand navigation versus right-hand navigation. The study hypothesized that the left-hand navigational site would outperform the right-hand navigational site. The

outcome of the study showed that there was not a significant difference in time completion between the left-hand navigation and right-hand navigation.

Once users understand the navigational aspects of the site, they must understand the descriptiveness of the links in the navigational menu as well in order to find the information that they need. This brings about the concept of high-scent links.

When people search Web sites, their actions are similar to an animal tracking a scent. Users search or, in the case of the animal, smell for the scent of the information they are looking for on a Web site. If they do not catch the scent, they move on to another Web site (Zimmerman, Yohon, & Warcup, 2004). Scent cues on a Web site consist primarily of links and text that provide users with specific information about content (Pirolli, n.d.). This idea of comparing animal scent to Web site searching is grounded in information foraging theory. This theory draws its sources from animal ecology and anthropology (Olston & Chi, 2003). Web researchers have concluded from this research that high-scent links are those that provide adequate descriptions for users to follow (Zimmerman et al., 2004).

Zimmerman et al., (2004) offers three suggestions for creating high-scent links. Each Web site has its own audience with different needs and questions. Web designers need to account first for what the audience is expecting from the Web site (Zimmerman, et al., 1997). When designing a high-scent link, the background of the target audience must be taken into consideration. Secondly, the proper descriptive terminology must be used in order to give clues for the sites branching off of the link. Finally, the link should utilize elaborations giving more information than just the text used in the link (Zimmerman et al., 2004).

In accordance with the Zimmerman, et al., (1997) suggestions, Katz and Bryne, (2003) found that when navigating e-commerce Web sites, search behavior seemed to be dependent upon site characteristics as well as those of the user. The study also found that high-scent menu links were especially important in whether the menu links were used at all.

Saward, Hall, & Barker, (2004) conducted a study using Internet shopping applications to investigate usability and information scent. The study looked at two measures for perceived scent. For the first measurement, participants were asked to find a product on the Web site. The second measurement assessed participants' static perception of scent by means of a written exercise. This consisted of participants answering a questionnaire which was designed to find their perceived scent for a particular task. The research found that perceived scent can be measured via user expectation of information location and by user confidence of information location. The measurement of user expectation of information locations was the result of direct user experience on the site.

Conclusion

The topic of Web site navigation is like viewing an assembled jigsaw puzzle. There are many pieces influencing how a user navigates a site. Links are just one piece of the puzzle. It is apparent from the research that link color, format, location, and descriptiveness all play an important role in how users navigate a Web site.

CHAPTER III - RESEARCH QUESTIONS

The goal of the usability evaluation was to explore what problem areas users may encounter while navigating the CACTE Web site. The following research questions guided the study:

- RQ1: What tasks do users encounter the most problems with while using the site?
- RQ2: What tasks do users encounter the least problems with while using the site?
- RQ3: What do users enjoy most about the site?
- RQ4: What do users like least about the site?
- RQ5: How close does the design and format of the CACTE Web site adhere to the NCI guidelines?

CHAPTER IV - METHODOLOGY

Usability testing was performed to assess the users' experience of the CACTE Web site. The CACTE Web site functions as host to items of importance to CACTE members such as member contact information, meeting schedules, conference information, policies and procedures, committee duties, divisions, membership applications, relevant legislation, awards, newsletters, and student organization and state links. The CACTE Web site also serves as a resource center for students who will eventually be technical educators.

The National Cancer Institute's Research-Based Web Design & Usability Guidelines were also utilized for the assessment. The National Cancer Institute's Research-Based Web Design & Usability Guidelines were created to assist Web developers in creating and maintaining more usable Web sites (National Cancer Institute, 2006).

The guidelines put forth by the National Cancer Institute are a valuable source of information for both practitioners and researchers. Contributors to the guidelines had the task of foraging through the research literature on design guidelines. Relevant research items used to create the guidelines include menu design, screen layout, response time, and navigation. The guidelines intended audiences are Web designers, managers, and others involved in creating Web sites (National Cancer Institute, 2006).

To conduct a successful usability examination of the CACTE Web site, I concluded that incorporating the methodologies mentioned above would result in a thorough and complete usability overview.

Usability Testing

Ten CACTE members and 10 Colorado State University students in the School of Education career and technical education methods classes were recruited for usability testing of the Web site. The CACTE members were recruited at the CACTE Summer Conference, July 24 - July 27, 2006 in Fort Collins, Colorado and via e-mail. A flyer (*Appendix A*) was created that asked CACTE members to make the CACTE site more user friendly by volunteering to perform in a usability study. The students were recruited in class beginning in the fall semester of 2006. Students received a flyer (*Appendix B*) asking them to be involved in a usability study.

Participants were given a set of 15 tasks to perform on the Web site (*Appendix C*). The tasks were set up to replicate those that CACTE members as well as students entering the career-technical education field would do on the Web site. Important tasks included finding member contact information, information on professional development grants, meeting schedules, CACTE policies and procedures, relevant legislative information, links to various student organizations, and downloading conference membership and award forms. By watching and taking notes on users performing these tasks, I was able to observe if the CACTE site provides easy navigation and successful hyperlink descriptiveness. Participants were asked to talk aloud as they went through each task so that problems encountered could be easily recorded. Having participants speak or think aloud as they perform tasks is typical of a usability study. Talking aloud allows the administrator of the session to take notes on what the participants are saying (National Cancer Institute, 2006). When the participants verbally addressed a problem they were having, I noted that exact problem. Participants filled out a form (*Appendix D*)

as they completed each task that asked on a scale of 1 -7, one being easy, seven being difficult, how hard each task was. The participants were observed, and timed on each task performed via a stopwatch while completing the usability test (*Appendix E*). Timing each task allowed me to see what tasks took longer and which gave users the most trouble.

After completing the usability test, participants were given a questionnaire (*Appendix F*). The usability questionnaire consisted of three sections. Section One of the questionnaire sought participant's assessment of the Web site. Section Two enquired about participants' past experience with the CACTE Web site. This helped to see if previous CACTE site users had better task performances than participants who had not used the CACTE site. Section Three asked participants about their past experience using a personal computer, the Internet, and downloading Adobe software and Adobe PDF files. Assessing participants' past experience with computers, the Internet, and downloading Adobe software and Adobe PDF files helped to determine if successful task performance on the CACTE site was related to past technology experience. After completing the usability questionnaire (*Appendix G*), CACTE member participants received a $10 gift card to Barnes & Noble supplied from my personal funds. CSU School of Education methods students did not receive any compensation.

CHAPTER V - RESULTS

The CACTE usability study consisted of N=20 participants. The participants included 10 CACTE members and 10 CSU School of Education methods students.

Scenario Task Completion

The overall average task completion time was very fast for all participants (Table 1). Additionally, average task time completion was very similar when looking at the participants as two separate groups, one being CACTE Members and the other being CSU students (Table 2 & Table 3). On average, participants completed nine of the 15 tasks in less than 25 seconds. Twelve of the participants finished the entire set of tasks in less than 10 minutes. The longest total time for completing all tasks was 15 minutes, 22 seconds.

Tasks which were most problematic for users included Tasks 2, 5, 6, 7, 8, 11, 13, 14, and 15.

Task 2 asked for participants to find what policies CACTE follows for filing state and federal forms. The answer to this questions resided on an extremely long page that required a lot of scrolling to find the solution.

Task 5 asked participants to find information regarding the 2005-2006 CCCS Career and Technical Education Regional Workshops. Participants who struggled with this task searched mostly through the drop-down links under the Resources link. The correct information for this task could be found by clicking the CCCS drop-down link under the Resources link.

Task 6 asked participants to find information about the student-based organization DECA in Colorado. The majority of participants searched for this information within the

drop-down links under the Leadership link. The correct page for this task was accessible by clicking the Student Organizations drop-down link located under the Resources link.

Task 7 asked participants to search for the CACTE Executive Director's contact information. This information could be found by clicking the Board Membership drop-down link located under the Leadership link. Users instead clicked the CACTE Committees drop-down link under the Leadership link and also the drop-down links under the Membership and Resources links.

Task 8 asked participants to download CACTE's brochure. Most participants who had difficulty with this task searched for the brochure in Publications drop-down link under the Resources link. The brochure could be found by clicking the Brochure drop-down link under the Membership link.

Task 11 asked participants to find information on Professional Development grants and download the Professional Development form. The Professional Development Grants link was listed as a drop-down link from the Membership link. Users did not associate this as being a Membership related link.

Task 13 asked participants to look for what the CACTE Communications Committee duties include. This task presented the most issues with the students involved in the study. Nearly all students searched for this information in the drop-down links under the Membership link. The correct information was obtainable by clicking the CACTE Committees drop-down link under the Leadership link.

Task 14 asked participants to find what qualifications are needed to nominate a CACTE member for the Hall of Fame award. After finding the necessary information, users were asked to download the CACTE Hall of Fame Nominee Rating Form. Users

had trouble finding the form because it was located at the bottom of the general Awards page, rather than being on the Hall of Fame page where all of the necessary information was.

Task 15 asked participants to search for the most current meeting CACTE will be holding. The meetings schedule was posted as a drop-down link under the Leadership link. Users did not associate a meetings schedule as being related to the Leadership link. When users did find the meetings schedule, most automatically chose the top meeting date. The most current dates were actually listed at the bottom of the page and the older dates were listed towards the top of the page.

Tasks which were easiest for users included Tasks 1, 3, 9, and 12. All of these tasks appeared to have faster time results due to the information scent, or descriptiveness, provided by the link names.

Task 1 asked participants to look up information on the 2006 CACTE Summer Conference and download the 2006 CACTE Summer Conference Registration form. The "Summer Conference 2006" drop-down link was located under the "Conference" navigational link.

Task 3 asked participants to find out how to join CACTE and download the membership form. For this task, the drop-down link "Join" was located under the "Membership" navigational link.

Task 9 asked participants to look for information on the No Child Left Behind Act of 2001. The "No Child Left Behind" link was found on the legislative page which was accessible via the "Legislation" navigational link.

Task 12 asked participants to find links to the state-based organizations CCCS, CSU Continuing Education, and Colorado Credentialing. This information was accessible by clicking the “State Links” drop-down link under the “Resources” navigational link.

Table 1
Average Time to Complete the Task in minutes by all participants.
(N = 20)

Tasks	Task Number	Average Time (Minutes)
1. Look up information on the 2006 CACTE Summer Conference and download the "2006 CACTE Summer Conference Registration Form."	Task 1	0:14
2. Find out what policies CACTE follows for filing state and federal forms.	Task 2	2:12
3. Find out how to join CACTE and download the "Membership Form."	Task 3	0:09
4. Search for the CACTE "Legislative Update" and find information on senate bill number 69.	Task 4	0:21
5. Find information regarding the 2005-2006 CCCS Career and Technical Education Regional Workshops.	Task 5	0:25
6. Find information about the student-based association DECA in Colorado.	Task 6	0:46
7. Search for the CACTE Executive Director's contact information.	Task 7	0:55
8. Download CACTE's brochure.	Task 8	0:23
9. Look for information on the No Child Left Behind Act of 2001.	Task 9	0:06
10. Download the Edutopia presentation from the 2005 CACTE Summer Conference.	Task 10	0:25
11. Find information on Professional Development grants and download the "Professional Development form."	Task 11	1:01
12. Find links to the state-based organizations CCCS, CSU Continuing Education, and Colorado Credentialing.	Task 12	0:20
13. Look for what the CACTE Communications Committee duties include.	Task 13	0:25
14. Find what qualifications are needed to nominate a CACTE member for the Hall of Fame award. After you have found this information, download the "CACTE Hall of Fame Nominee Rating Form."	Task 14	1:00
15. Search for the most current meeting CACTE will be holding.	Task 15	1:00

Table 2
Average Time to Complete the Task in minutes by CACTE Members.
(N = 10)

Tasks	Task Number	Average Time (Minutes)
1. Look up information on the 2006 CACTE Summer Conference and download the "2006 CACTE Summer Conference Registration Form."	Task 1	0:13
2. Find out what policies CACTE follows for filing state and federal forms.	Task 2	2:05
3. Find out how to join CACTE and download the "Membership Form."	Task 3	0:11
4. Search for the CACTE "Legislative Update" and find information on senate bill number 69.	Task 4	0:28
5. Find information regarding the 2005-2006 CCCS Career and Technical Education Regional Workshops.	Task 5	0:43
6. Find information about the student-based association DECA in Colorado.	Task 6	0:43
7. Search for the CACTE Executive Director's contact information.	Task 7	0:47
8. Download CACTE's brochure.	Task 8	0:28
9. Look for information on the No Child Left Behind Act of 2001.	Task 9	0:04
10. Download the Edutopia presentation from the 2005 CACTE Summer Conference.	Task 10	0:23
11. Find information on Professional Development grants and download the "Professional Development form."	Task 11	0:49
12. Find links to the state-based organizations CCCS, CSU Continuing Education, and Colorado Credentialing.	Task 12	0:32
13. Look for what the CACTE Communications Committee duties include.	Task 13	0:21
14. Find what qualifications are needed to nominate a CACTE member for the Hall of Fame award. After you have found this information, download the "CACTE Hall of Fame Nominee Rating Form."	Task 14	0:56
15. Search for the most current meeting CACTE will be holding.	Task 15	0:11

Table 3
Average Time to Complete the Task in minutes by CSU School of Education methods students. (N = 10)

Tasks	Task Number	Average Time (Minutes)
1. Look up information on the 2006 CACTE Summer Conference and download the "2006 CACTE Summer Conference Registration Form."	Task 1	0:15
2. Find out what policies CACTE follows for filing state and federal forms.	Task 2	2:20
3. Find out how to join CACTE and download the "Membership Form."	Task 3	0:07
4. Search for the CACTE "Legislative Update" and find information on senate bill number 69.	Task 4	0:14
5. Find information regarding the 2005-2006 CCCS Career and Technical Education Regional Workshops.	Task 5	0:07
6. Find information about the student-based association DECA in Colorado.	Task 6	0:50
7. Search for the CACTE Executive Director's contact information.	Task 7	1:02
8. Download CACTE's brochure.	Task 8	0:17
9. Look for information on the No Child Left Behind Act of 2001.	Task 9	0:08
10. Download the Edutopia presentation from the 2005 CACTE Summer Conference.	Task 10	0:26
11. Find information on Professional Development grants and download the "Professional Development form."	Task 11	1:13
12. Find links to the state-based organizations CCCS, CSU Continuing Education, and Colorado Credentialing.	Task 12	0:09
13. Look for what the CACTE Communications Committee duties include.	Task 13	0:30
14. Find what qualifications are needed to nominate a CACTE member for the Hall of Fame award. After you have found this information, download the "CACTE Hall of Fame Nominee Rating Form."	Task 14	1:05
15. Search for the most current meeting CACTE will be holding.	Task 15	0:49

Usability Questionnaire

After completing the 15 tasks, participants were given a questionnaire (*Appendix F*). The usability questionnaire consisted of three sections. Section One of the questionnaire sought participant's assessment of the Web site. Section Two enquired about participants' past experience with the CACTE Web site. Section Three asked participants about their past experience using a personal computer, the Internet, and downloading Adobe software and Adobe PDF files.

Section I: Usability Questionnaire Highlights

1. What did you like best about the CACTE Web site?

Participants liked the general layout and look of the CACTE Web site. Items that users particularly liked were the colors and the left-side navigational menu. Users commented on the pages being easy to read and they found the site useful with the amount of relevant resources and information.

2. What were your least favorite aspects of the CACTE Web site?

The least favorite aspect of the CACTE site appeared to be the naming convention of the main navigational links which when clicked, offered sub-links. Users did not associate the names of the main links with a lot of the information that they were searching for. The Leadership link appeared to cause the most confusion with users. Users also disliked the fact that there was no search option or site map available for the site.

3. What was the most difficult part of using the CACTE Web site?

Users found some of the information hard to find due to the navigational menu's naming convention of links. Students in particular stated that you needed to be somewhat familiar with the organization's terminology in order to successfully navigate the site. Users also complained about having to really dig for information, particularly on the Policies & Procedures page.

4. Were you able to complete all 15 tasks?

4a. If no, why do you feel you were unable to complete the tasks?

A total of 11 participants could not complete all 15 tasks and gave up due to frustration. These participants included four CACTE members and seven CSU School of Education methods students (Table 4 & Table 5). The tasks that users gave up on included tasks 2, 5, 6, 7, 8, 11, 13, 14, 15.

Table 4
Tasks that CACTE Members could not complete.
(N = 4)

Task Number	Participant	Gave Up at this Time (Minutes)
2. Find out what policies CACTE follows for filing state and federal forms.	Participant 3	3:49
	Participant 7	0:52
	Participant 9	0:42
5. Find information regarding the 2005-2006 CCCS Career and Technical Education Regional Workshops.	Participant 3	2:55
	Participant 7	1:23
	Participant 9	1:28
6. Find information about the student-based association DECA in Colorado.	Participant 6	1:01
	Participant 9	2:10
7. Search for the CACTE Executive Director's contact information.	Participant 7	1:55
8. Download CACTE's brochure.	Participant 6	1:11
11. Find information on Professional Development grants and download the "Professional Development form."	Participant 9	1:04
15. Search for the most current meeting CACTE will be holding.	Participant 3	1:16
	Participant 9	3:19

Table 5
Tasks that CSU School of Education methods students could not complete.
(N = 7)

Task Number	Participant	Gave Up at this Time (Minutes)
2. Find out what policies CACTE follows for filing state and federal forms.	Participant 11	1:45
	Participant 14	4:21
	Participant 15	2:48
	Participant 17	2:07
	Participant 18	1:30
	Participant 19	1:59
	Participant 20	1:43
7. Search for the CACTE Executive Director's contact information.	Participant 14	1:41
	Participant 19	2:29
	Participant 20	1:35
11. Find information on Professional Development grants and download the "Professional Development form."	Participant 14	2:55
13. Look for what the CACTE Communications Committee duties include.	Participant 17	1:04
14. Find what qualifications are needed to nominate a CACTE member for the Hall of Fame award. After you have found this information, download the "CACTE Hall of Fame Nominee Rating Form."	Participant 17	2:17

5. What would make the CACTE Web site better?

Participants expressed most interest in there being more main navigational links with better naming conventions. Participants especially wanted a link solely for "Contact Us." Users also requested that there be a search function, site map and more graphics.

Section II. Past Experience with the CACTE Web Site

1. How frequently have you used the CACTE Web site in the past? Please circle your response. Rate your past level of use of the CACTE Web site on a scale of one to seven, with one being "not at all" to seven being "frequently".

CACTE members reported a medium to high frequency of past use with the site (Table 6). All student participants with the exception of one had no previous experience with the site. The one student who had past experience with the site claimed to have had little experience. Although the CACTE members did have more experience with the site, the students' finishing task times were very similar to those of the CACTE members. In several of the task scenarios, student times were even better than those of CACTE members. A plausible explanation for this would be that the students have grown up in the age of information and technology and are very comfortable navigating Web sites. The study also showed that both CACTE members and students reported a high level of computer-related experience and expertise which could account for this as well.

Table 6
How frequently participants have used the CACTE site in the past.
(N = 20)

Participant Type	Participant	* CACTE Site Past Level of Use
CACTE member	Participant 1	5
	Participant 2	6
	Participant 3	1
	Participant 4	5
	Participant 5	5
	Participant 6	4
	Participant 7	4
	Participant 8	3
	Participant 9	1
	Participant 10	3
CSU School of Education methods students	Participant 11	1
	Participant 12	1
	Participant 13	1
	Participant 14	2
	Participant 15	1
	Participant 16	1
	Participant 17	1
	Participant 18	1
	Participant 19	1
	Participant 20	1

*1 = not at all, 7 = frequently

2. Have you been on the CACTE board within the last two years? Please check yes or no.

Six of the ten CACTE members had served on the CACTE board within the last two years (Table 7). None of the student participants had served on the CACTE board.

Table 7
CACTE board membership in the past two years.
(N = 20)

Participant Type	Participant	CACTE Board Member in Past 2 Years
CACTE member	Participant 1	Yes
	Participant 2	Yes
	Participant 3	No
	Participant 4	Yes
	Participant 5	No
	Participant 6	No
	Participant 7	No
	Participant 8	Yes
	Participant 9	Yes
	Participant 10	Yes
CSU School of Education methods students	Participants 11-20	No

3. Have you been on your division's board within the last two years? Please check yes or no.

Five of the ten CACTE members had served on their CACTE division's board within the last two years (Table 8). None of the student participants had served on a CACTE divisional board.

Table 8
CACTE division board membership in the past two years.
(N = 20)

Participant Type	Participant	CACTE Board Division Member in Past 2 Years
CACTE member	Participant 1	Yes
	Participant 2	Yes
	Participant 3	No
	Participant 4	Yes
	Participant 5	No
	Participant 6	No
	Participant 7	No
	Participant 8	Yes
	Participant 9	No
	Participant 10	Yes
CSU School of Education methods students	Participants 11-20	No

4. Are you a CACTE member? Please check yes or no.

All 10 CACTE participants were members of CACTE (Table 9). None of the student participants were members of CACTE.

Table 9
CACTE board member.
(N = 20)

Participant Type	Participant	CACTE Board Member
CACTE member	Participants 1-10	Yes
CSU School of Education methods students	Participants 11-20	No

Section III. Computer Experience

1. In column A, please enter the number of years of experience you have had with each item. In Column B, please indicate your expertise for that item using a 1 to 7 scale where 1 = none and 7 = a great deal. Please circle your responses.

Participants were asked to estimate the number of years they had been using a personal computer, the Internet, downloading Adobe Acrobat software, and downloading Adobe PDF files (Table 10). Overall, CACTE members and CSU students rated a high number of years experience with computers, the Internet, and Adobe software. All participants also rated themselves as having a high level of expertise with computers, the Internet, and Adobe software. Due to the similarly fast finishing times and results between the CACTE members and CSU students, it appears that both groups have a comfortable skill level with computers, the Internet, and Adobe software.

Table 10
Years of Experience and Expertise Level of Various Technology Skills
(N=20)

Technology	Mean Number of Years	S.D.	*Mean Level of Expertise	S.D.
Personal Computer	16.1	± 5.86	6.10	± 0.91
Internet	9.85	± 2.60	5.95	± 0.99
Downloading Adobe Acrobat	6.30	± 3.10	5.05	± 1.70
Downloading PDF files	6.05	± 3.08	5.00	± 1.71

* Level of expertise where 1 = None to 7 = High

CHAPTER VI - DISCUSSION & RECOMMENDATIONS

Based upon the users' reactions and comments, I have created the following recommendations for the CACTE Web site after conducting the usability tests and consulting the National Cancer Institute's Research-Based Web Design & Usability Guidelines (National Cancer Institute, 2006).

NCI Guidelines 6:10 Set Appropriate Page Lengths
7:3 Use a Clickable 'List of Contents' on Long Pages
8:5 Scroll Fewer Screenfuls

The majority of participants gave up on task 2 which involved looking for a specific section on the Policies & Procedures page. This is a very lengthy page outlining many different areas regarding CACTE's policies and procedures. This page could be improved one of several ways. My first suggestion would be to add an index of anchor links at the top of the page that would take the user to the desired section of the page. Another method would be to break the page up into multiple pages using links to navigate back and forth.

NCI Guidelines 17:2 Design Search Engines to Search the Entire Site
17:4 Provide a Search Option on Each Page
7:10 Use Site Maps

On the open ended responses from the questionnaire (*Appendix G*), many users commented on the site needing a search function as well as a site map feature. I would recommend customizing a search engine specifically for the CACTE site. Google currently offers free customization and installation of search engines for education-based sites. The search engine should be placed on each page throughout the site and kept in the same place. A site map would also be useful for the CACTE site. This should be accessible as a link on the main navigational menu.

NCI Guidelines 10:1 Use Meaningful Link Labels
12:1 Order Elements to Maximize User Performance
12:2 Place Important Items at Top of the List
16:1 Organize Information Clearly

The majority of all complaints from users on the questionnaire (*Appendix G*) were in regard to the naming and organization of the navigational menu links. Almost all of the participants said they wouldn't expect to find most of the drop-down links under their respective main navigational link. The main navigational link that gave users the most trouble was the *Leadership* link. For this area, I would recommend that the CACTE board members look carefully at the different areas of the site and come up with better naming conventions as well as organization for the CACTE site's navigational menu.

NCI Guidelines 14:3 Ensure that Images Do Not Slow Downloads
14:9 Limit the Use of Images

Several users commented in the questionnaire on the site needing more images (*Appendix G*). The CACTE site could enhance its look by using more images, but I would recommend doing so sparingly. Images do slow down page load time and using a lot of images can make a site's download time crawl to exceedingly slow times. I would recommend adding only the necessary amount of new images and using and image editor such as Adobe Photoshop to constrain the image file sizes.

CHAPTER VII - LIMITATIONS

The main limitations faced when conducting the study included participant recruitment, sample size, and the CACTE Web site being redesigned.

Recruitment of participants for the CACTE Web site usability evaluation greatly extended the length of the study. Colorado State University students enrolled in the School of Education were recruited and completed the study within two weeks. Members of CACTE, however, took over a year to recruit and complete the study.

The participant sample size also inhibited the study from having a thorough statistical analysis. Due to budget and time constraints, only 10 CACTE members and 10 Colorado State University students enrolled in the School of Education were involved in the study.

A final obstacle involved the CACTE Web site being redesigned midway through the study. To account for this, the original site used was uploaded to the AdamGibbs.net Web site in order to complete the study.

CHAPTER VIII - CONCLUSIONS

The CACTE Web site as a whole provides fair usability for users. The stand-out area for improvement would be a different naming and organizing convention regarding the site's navigational menu. It would be in the best interest of CACTE members to determine what words and terms are best identifiable by users of the CACTE site with regard to the site's navigational menu. The site could also greatly benefit from implementing a search engine as well as using a site map.

Regarding the site's navigational structure, participants appeared to be comfortable with the left-side style of navigation. Participants also reported no difficulty in navigating the site based upon using the drop-down links or by the purple and green colors used for the links. In fact, many users reported liking the drop-down links and also the purple and green color scheme for the links.

Surprisingly, past use of the CACTE site did not appear to play a role in how quickly tasks were completed. CACTE members reported a medium to high frequency of past use with the site, while students reported having little to no experience with the site. The finishing task times between the two groups were very similar and in some cases the students finishing times were faster than those of the CACTE members.

While past experience with the CACTE site was not a major influence in task time completion, the past level of experience and expertise reported by participants with computers, the Internet, and Adobe software seems to explain the similar finishing task times between the two groups. Both groups of participants reported having a high level of expertise and experience with computers, the Internet, and Adobe software.

For future research, I think that the topic of user experience on the Web should be looked at in relation to Web site navigation and hyperlinks. With regard to schema theory, do experienced Internet users have trouble locating information due to varied link color, formatting, descriptiveness, and navigational menu placement? Additionally, how are new users of the Web affected by the differences in navigational structures and hyperlinks?

REFERENCES

CACTE, (2004). Retrieved May, 8, 2006, from http://www.cacte.org

Foust, J. (2004). *Communication Technology Update*. Burlington, MA: Focal Press.

Graber, D.A. (1988). *Processing the news: How people tame the information tide*, 2nd ed. New York: Longman.

Halverson, T., & Hornof, A. (2004). Link colors guide a search. *Computer-Human Interaction, 24*(29) 1367-1370.

Kalbach, J., & Bosenick, T. (2003). Web page layout: A comparison between left- and right-justified site navigation menus. *Journal of Digital Information, 4*(1).

Katz, M., & Bryne, D. (2003). Effect of scent and breadth on use of site-specific search on e-commerce web sites. *ACM Transactions on Computer-Human Interaction, 10*(3), 198-220.

Ling, J., & Schaik, P. (2002). The effect of text and background colour on visual search of Web pages. *Elsevier Science B.V., 5*(1) 223-230.

Ling, J., & Schaik, P. (2004). The effects of link format and screen location on visual search of web pages. *Ergonomics, 47*(8), 907-921.

Master the Basics: Birth of the Net. (2006). Retrieved February 23, 2006, from http://www.learnthenet.com/english/html/01birth.htm

May, M., Sundar, S., & Williams, R. (1997). The effects of hyperlinks and site maps on the memorability and enjoyment of web content. *47th Annual Conference of the International Communication Association*. Retrieved March 15, 2006, from http://www.doublefeature.com/mdm/icaPaper4Distribution.pdf

McCarthy, J., Sasse, M., & Riegelsberger, J. (n.d.) Could I have the menu please? An eye tracking study of design conventions. Retrieved March 15, 2006, from http://www.cs.ucl.ac.uk/research/higherview/mccarthy_menu.pdf

NCI (2005). *Usability.* Usability.gov National Cancer Institute's Usability. http://www.usability.gov

Conduct the usability test (n.d.) Retrieved July, 20, 2006, from http://www.usability.gov/refine/usabilitytest.html

Navigation: Place navigation on right. (2000). Retrieved March, 15, 2006, from http://usability.gov/guidelines/navigation.html#four

Research-based web design & usability guidelines. (2006). Retrieved July 20, 2006 from http://usability.gov/pdfs/guidelines_book.pdf

Nielsen, J. (January 6, 2002). Site Map Usability. Retrieved March 10, 2006, from http://www.useit.com/alertbox/20020106.html

Nielsen, J. (2000). *Designing web usability the practice of simplicity*. Indianapolis, IN: New Riders Publishing.

Olston, C., & Chi, Ed. (2003). ScentTrails: Integrating browsing and searching on the web. *ACM Transactions on Computer-Human Interaction, 10*(3), 177-197.

Otsuka, N., Hiraishi, H., & Mizoguchi, F. (2001). KAGAMI: Web Rating Agent Based on Hyperlink Structure. *IFSA World Congress and 20th NAFIPS International Conference*, *5*, 2659-2664.

Palmer, J. (2002). Web site usability, design, and performance metrics. *Information Systems Research, 13*(2), 151-167.

Pan, B., Hembrooke, H., Gay, G., Granka, L., Feusner, M., & Newman, J. (2004) *Eye Tracking Research & Application* NY, ACM Press.

Pearson, R., & Schaik, P. (2003). The effect of spatial layout of and link colour in web pages on performance in a visual search task and an interactive search task. *Int. J. Human-Computer Studies 59*, 327-353.

Pirolli, P. (n.d.) The use of proximal information scent to forage for distal content on the world wide web. Retrieved March 11, 2006, from http://act-r.psy.cmu.edu/papers/515/uir-2004-07-pirolli.pdf

Saward, G., Hall, T., & Barker, T. (2004). Assessing usability through perceptions of information scent. Retrieved March 11, 2006, from http://0-ieeexplore.ieee.org.catalog.library.colostate.edu/iel5/9384/29794/01357919.pdf?tp=&arnumber=1357919&isnumber=29794

Schaik, P., & Link, J. (2003). The effect of link colour on information retrieval in educational intranet use. *Computers in Human Behavior, 19*, 553-564.

Zimmerman, D., Muraski, M., Estes, E., & Hallmark, B. (1997). A formative evaluation method for designing www sites. Retrieved March 11, 2006, from http://0-ieeexplore.ieee.org.catalog.library.colostate.edu/iel3/5022/13778/00637049.pdf?tp=&arnumber=637049&isnumber=13778

Zimmerman, D., Yohon, T., & Warcup, S. (2004) Improving web site navigation: Creating high-scent links. Retrieved March 11, 2006, from http://0-ieeexplore.ieee.org.catalog.library.colostate.edu/iel5/9464/30036/01375310.pdf?tp=&arnumber=1375310&isnumber=30036

APPENDIX A: CACTE MEMBER RECRUITMENT FLYER

HELP

Make The CACTE Web Site More User-Friendly!

Adam Gibbs will be conducting a usability evaluation of the CACTE Web site as part of the requirements to graduate with a Master's degree in Technical Communication from Colorado State University.

What is a usability evaluation? A usability evaluation typically consists of observing participants perform tasks on a Web site. The participants are timed on each task and problems completing the tasks are recorded. The recorded data lets the person in charge of the Web site know what is needed to make the site more user-friendly.

The usability evaluation will consist of performing 15 tasks on the CACTE Web site. A short questionnaire will follow the evaluation enquiring about what you liked and did not like about the CACTE site. The estimated time to complete the evaluation is 30 minutes to 1 hour.

What do you get out of all of this? Participants completing the evaluation will receive a $10 Barnes & Noble gift card! Participants will also receive the glory and satisfaction of knowing that they helped to improve the usability of the CACTE Web site!

Directions to Colorado Sate University for Usability Testing

From the Fort Collins Marriott, turn right on JFK Parkway.
At Monroe Dr., turn left.
At College Ave., turn right.

For the Clark Building, C-Wing

After Prospect St., turn left at the next stop light onto Pitkin. Continue on Pitkin until it dead ends. Turn into the parking lot on your right. The Clark Building, C-Wing (has "beehive" style siding) is on the north end of the parking lot, directly east of the Eddy Building. There are entrances on both the east and west ends. Take the stairs up to the 2nd floor and go to room C 252. Room C 252 is in the middle wing of the 2nd floor.

Contact

Adam Gibbs **Or** **Teresa Yohon**
(970) 443-0068 **(970) 217-3672**

See Next Page For Times

Please Return this sheet to Teresa Yohon

If the times on this sheet will not work for you and you would still like to participate, contact Adam Gibbs (970) 443-0068 or Teresa Yohon (970) 217-3672 to set up a time on Tuesday, July 25, Wednesday, July 26, or Thursday, July 27 that is convenient for you.

Tuesday, July 25

2:00 pm _____

3:00 pm _____

4:00 pm _____

5:00 pm _____

Wednesday, July 26

10:00 am _____

11:00 am _____

2:00 pm _____

3:00 pm _____

4:00 pm _____

5:00 pm _____

6:00 pm _____

7:00 pm _____

8:00 pm _____

Thursday, July 27

10:00 am _____

11:00 am _____

2:00 pm _____

3:00 pm _____

4:00 pm _____

5:00 pm _____

6:00 pm _____

7:00 pm _____

8:00 pm _____

APPENDIX B: CSU STUDENT RECRUITMENT FLYER

HELP

Make The CACTE Web Site More User-Friendly!

Adam Gibbs will be conducting a usability evaluation of the CACTE Web site as part of the requirements to graduate with a Master's degree in Technical Communication from Colorado State University.

What is a usability evaluation? A usability evaluation typically consists of observing participants perform tasks on a Web site. The participants are timed on each task and problems completing the tasks are recorded. The recorded data lets the person in charge of the Web site know what is needed to make the site more user-friendly.

The usability evaluation will consist of performing 15 tasks on the CACTE Web site. A short questionnaire will follow the evaluation enquiring about what you liked and did not like about the CACTE site. The estimated time to complete the evaluation is 30 minutes to 1 hour.

What do you get out of all of this? Participants will receive the glory and satisfaction of knowing that they helped to improve the usability of the CACTE Web site!

Contact

Adam Gibbs **Or** **Teresa Yohon**
(970) 443-0068 **(970) 217-3672**

APPENDIX C: CACTE WEB SITE USABILITY TASKS

For each of the tasks completed, use a 1 to 7 scale where **1 = Easy and 7 = Difficult**.
Please circle your responses.

1. Look up information on the 2006 CACTE Summer Conference and download the "2006 CACTE Summer Conference Registration Form."

   Task 1 **Easy** 1 2 3 4 5 6 7 **Difficult**

2. Find out what policies CACTE follows for filing state and federal forms.

   Task 2 **Easy** 1 2 3 4 5 6 7 **Difficult**

3. Find out how to join CACTE and download the "Membership Form."

   Task 3 **Easy** 1 2 3 4 5 6 7 **Difficult**

4. Search for the CACTE "Legislative Update" and find information on senate bill number 69.

   Task 4 **Easy** 1 2 3 4 5 6 7 **Difficult**

5. Find information regarding the 2005-2006 CCCS Career and Technical Education Regional Workshops.

   Task 5 **Easy** 1 2 3 4 5 6 7 **Difficult**

6. Find information about the student-based association DECA in Colorado.

   Task 6 **Easy** 1 2 3 4 5 6 7 **Difficult**

7. Search for the CACTE Executive Director's contact information.

   Task 7 **Easy** 1 2 3 4 5 6 7 **Difficult**

8. Download CACTE's brochure.

   Task 8 **Easy** 1 2 3 4 5 6 7 **Difficult**

9. Look for information on the No Child Left Behind Act of 2001.

   Task 9 **Easy** 1 2 3 4 5 6 7 **Difficult**

10. Download the Edutopia presentation from the 2005 CACTE Summer Conference.

    Task 10 **Easy** 1 2 3 4 5 6 7 **Difficult**

TURN TO NEXT PAGE

For each of the tasks completed, use a 1 to 7 scale where **1 = Easy and 7 = Difficult**.
Please circle your responses.

11. Find information on Professional Development grants and download the "Professional Development form."

    Task 11 **Easy** 1 2 3 4 5 6 7 **Difficult**

12. Find links to the state-based organizations CCCS, CSU Continuing Education, and Colorado Credentialing.

    Task 12 **Easy** 1 2 3 4 5 6 7 **Difficult**

13. Look for what the CACTE Communications Committee duties include.

    Task 13 **Easy** 1 2 3 4 5 6 7 **Difficult**

14. Find what qualifications are needed to nominate a CACTE member for the Hall of Fame award. After you have found this information, download the "CACTE Hall of Fame Nominee Rating Form."

    Task 14 **Easy** 1 2 3 4 5 6 7 **Difficult**

15. Search for the most current meeting CACTE will be holding.

    Task 15 **Easy** 1 2 3 4 5 6 7 **Difficult**

APPENDIX D: CACTE WEB SITE USABILITY TASK DIFFICULTY

		TASK														
	#	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
CACTE MEMBERS	**1**	1	3	1	1	1	2	4	2	1	4	3	1	1	1	2
	2	3	7	1	3	2	1	2	2	2	2	4	1	1	3	5
	3	1	7	1	1	7	2	3	4	1	1	2	3	1	2	3
	4	1	6	1	2	3	5	1	1	1	5	4	4	2	4	3
	5	1	3	1	1	1	1	2	1	1	1	2	3	2	1	3
	6	2	7	2	2	1	7	4	7	1	1	4	1	1	7	1
	7	1	7	1	1	7	3	7	2	1	2	4	2	2	1	4
	8	1	4	1	5	2	6	4	5	2	2	7	1	2	3	3
	9	1	7	1	3	7	7	3	5	1	2	7	3	1	6	6
	10	1	5	1	1	1	2	2	2	1	2	3	1	3	3	3
CSU STUDENTS	**11**	1	7	1	1	1	1	1	2	1	1	6	1	3	1	1
	12	2	5	1	2	2	6	4	2	1	2	3	1	2	2	3
	13	3	6	1	2	1	2	4	3	5	6	3	2	3	4	5
	14	1	7	1	1	1	3	6	1	1	2	5	2	1	5	1
	15	2	7	1	1	4	3	4	4	5	2	4	1	4	6	3
	16	1	5	1	2	1	2	2	5	1	1	2	3	2	2	4
	17	1	7	1	2	2	5	3	1	1	3	4	4	7	5	1
	18	1	4	1	1	2	4	3	2	2	2	3	1	1	1	2
	19	1	7	1	1	2	3	5	2	2	2	4	2	3	2	4
	20	2	7	2	2	2	3	7	2	1	2	6	3	3	5	4

* Task Difficulty
Where 1 = Easy and 7 = Difficult

APPENDIX E: CACTE WEB SITE USABILITY TASK TIMES

		TASK															
	#	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL TIME
CACTE MEMBERS	1	0:00:18	0:01:51	0:00:04	0:00:16	0:00:09	0:00:15	0:01:27	0:00:26	0:00:05	0:00:38	0:00:36	0:00:10	0:00:07	0:00:32	0:00:57	**0:07:51**
	2	0:00:19	0:03:10	0:00:05	0:00:24	0:00:15	0:00:12	0:00:07	0:00:09	0:00:05	0:00:13	0:00:54	0:00:08	0:00:15	0:00:57	0:02:45	**0:09:58**
	3	0:00:10	0:03:49	0:00:15	0:00:14	0:02:55	0:00:53	0:01:02	0:01:26	0:00:04	0:00:08	0:00:33	0:00:49	0:00:24	0:01:24	0:01:16	**0:15:22**
	4	0:00:10	0:01:45	0:00:11	0:00:25	0:00:35	0:00:55	0:00:04	0:00:08	0:00:05	0:00:40	0:00:20	0:00:55	0:00:30	0:00:40	0:00:32	**0:07:55**
	5	0:00:12	0:03:34	0:00:06	0:00:10	0:00:10	0:00:06	0:00:38	0:00:09	0:00:02	0:00:14	0:00:24	0:01:24	0:00:35	0:00:09	0:00:57	**0:08:50**
	6	0:00:23	0:01:36	0:00:43	0:00:55	0:00:05	0:01:01	0:01:57	0:01:11	0:00:06	0:00:44	0:00:36	0:00:50	0:00:25	0:02:00	0:00:10	**0:12:42**
	7	0:00:03	0:00:52	0:00:03	0:00:47	0:01:23	0:00:35	0:01:55	0:00:17	0:00:06	0:00:27	0:01:36	0:00:24	0:00:34	0:00:36	0:01:07	**0:10:45**
	8	0:00:06	0:00:48	0:00:04	0:00:41	0:00:06	0:00:53	0:00:14	0:00:10	0:00:03	0:00:15	0:01:50	0:00:03	0:00:13	0:00:26	0:00:33	**0:06:25**
	9	0:00:20	0:00:42	0:00:08	0:00:35	0:01:28	0:02:10	0:00:23	0:00:33	0:00:05	0:00:13	0:01:04	0:00:28	0:00:12	0:01:57	0:03:19	**0:13:37**
	10	0:00:11	0:02:42	0:00:06	0:00:12	0:00:07	0:00:08	0:00:07	0:00:13	0:00:02	0:00:14	0:00:19	0:00:04	0:00:16	0:00:38	0:00:17	**0:05:36**
CSU STUDENTS	11	0:00:20	0:01:45	0:00:10	0:00:17	0:00:07	0:00:06	0:00:05	0:00:11	0:00:02	0:00:05	0:01:38	0:00:04	0:00:28	0:00:11	0:00:15	**0:05:44**
	12	0:00:17	0:01:51	0:00:06	0:00:15	0:00:06	0:02:04	0:01:01	0:00:05	0:00:02	0:00:12	0:00:24	0:00:05	0:00:18	0:00:26	0:00:34	**0:07:46**
	13	0:00:47	0:02:25	0:00:08	0:00:12	0:00:05	0:00:28	0:01:09	0:00:11	0:00:32	0:02:04	0:00:17	0:00:07	0:00:29	0:00:35	0:00:54	**0:10:23**
	14	0:00:10	0:04:21	0:00:07	0:00:19	0:00:04	0:00:48	0:01:41	0:00:19	0:00:03	0:00:47	0:02:55	0:00:10	0:00:17	0:02:07	0:00:51	**0:14:59**
	15	0:00:05	0:02:48	0:00:05	0:00:05	0:00:16	0:00:12	0:00:46	0:00:21	0:00:24	0:00:09	0:00:25	0:00:03	0:00:18	0:01:20	0:00:20	**0:07:37**
	16	0:00:09	0:02:50	0:00:06	0:00:15	0:00:11	0:00:18	0:00:07	0:01:08	0:00:03	0:00:06	0:00:22	0:00:04	0:00:14	0:00:45	0:01:09	**0:07:47**
	17	0:00:12	0:02:07	0:00:04	0:00:12	0:00:05	0:01:57	0:00:26	0:00:02	0:00:08	0:00:13	0:00:28	0:00:35	0:01:04	0:02:17	0:00:05	**0:09:55**
	18	0:00:11	0:01:30	0:00:11	0:00:16	0:00:03	0:01:07	0:01:00	0:00:10	0:00:05	0:00:21	0:00:18	0:00:05	0:00:26	0:00:34	0:00:47	**0:07:04**
	19	0:00:12	0:01:59	0:00:11	0:00:17	0:00:03	0:00:43	0:02:29	0:00:02	0:00:02	0:00:18	0:02:00	0:00:04	0:01:01	0:00:45	0:02:06	**0:12:12**
	20	0:00:08	0:01:43	0:00:05	0:00:13	0:00:08	0:00:38	0:01:35	0:00:24	0:00:02	0:00:10	0:03:19	0:00:14	0:00:23	0:01:46	0:01:05	**0:11:53**

* times in red = a participant giving up on a task.

APPENDIX F: CACTE WEB SITE USABILITY QUESTIONNAIRE

I. Assessment of the CACTE Web Site (Consider layout, color, font size, link color, etc.)

1. What did you like best about the CACTE Web site?

_____

_____

2. What were your least favorite aspects of the CACTE Web site?

_____

_____

3. What was the most difficult part of using the CACTE Web site?

_____

_____

4. Were you able to complete all 15 tasks?

____ Yes ____ No

4a**.** If no, why do you feel you were unable to complete the tasks?

_____

_____

5. What would make the CACTE Web site better?

_____

_____

II. Past Experience with the CACTE Web Site

1. How frequently have you used the CACTE Web site in the past? Please circle your response. Rate your past level of use of the CACTE website on a scale of one to seven, with one being "not at all" to seven being "frequently".

Not at all 1 2 3 4 5 6 7 **Very frequently**

2. Have you been on the CACTE board within the last two years? Please check yes or no.

___ YES ___NO

3. Have you been on your division's board within the last two years? Please check yes or no.

___ YES ___NO

4. Are you a CACTE member? Please check yes or no.

___ YES ___NO

III. Computer Experience

1. In column A, please enter the number of years of experience you have had with each item. In Column B, please indicate your level of expertise for that item using a 1 to 7 scale where 1 = none and 7 = a great deal. Please circle your responses.

	Column A	**Column B**						
	Years of Experience	**Level of Expertise**						
		None						**A Great Deal**
a. Using a personal computer	___	1	2	3	4	5	6	7
b. Using the Internet	___	1	2	3	4	5	6	7
c. Downloading Adobe Acrobat Reader software	___	1	2	3	4	5	6	7
d. Downloading Adobe .pdf files	___	1	2	3	4	5	6	7

APPENDIX G: CACTE WEB SITE USABILITY QUESTIONNAIRE RESULTS

Section I Assessment of the CACTE Web Site

1. What did you like best about the CACTE Web site?

Participant 1:
"I think it is easy to use, especially if you are familiar with the organization."

Participant 2:
"Clear and easy to read. I like the light background. Side menu makes topics easy to find."

Participant 3:
"Good layout and design."

Participant 4:
"The information that is accessible from the site."

Participant 5:
"Not to cluttered, easy to navigate."

Participant 6:
"Color, text, link colors, professional."

Participant 7:
"The navigation bar was short, and had easy drop-down options functions to the links."

Participant 8:
"Straightforward layout, nice "skin."

Participant 9:
"Not cluttered!"

Participant 10:
"I found the links easy to navigate and find the information I was looking for. Professional looking."

Participant 11:
"Links are relatively easy to follow once you find what you're looking for. Good color."

Participant 12:
"Very simple – not too many links on the home page that would confuse people."

Participant 13:
"The look – the layout is professional and eye appealing."

Participant 14:
"I thought the layout and colors were appealing – i.e. > not distracting and easy to read."

Participant 15:
"Color scheme, easy fonts, easy to read."

Participant 16:
"I used the home link a lot and I liked the drop down menu on the side that stays up."

Participant 17:
"Nice color scheme."

Participant 18:
"Color, links, laid out nicely/organized."

Participant 19:
"It isn't a ton of paragraphs to read, once you find the link you need. It was user friendly."

Participant 20:
"There are a lot of resource links."

2. What were your least favorite aspects of the CACTE Web site?

Participant 1:
"It is pretty text intensive – more graphics/color"

Participant 2:
"A couple of things of links/forms weren't where I looked for them or expected them to be."

Participant 3:
"CACTE vs. ACTE is confusing."

Participant 4:
"Level of titles a bit confusing on some – for example I wouldn't look for CCCS under the Resources."

Participant 5:
"Searching for different topics not familiar with."

Participant 6:
"Pictures would be nice."

Participant 7:
"Some of the information wasn't found under links I would have looked for, such as the way no "Contacts" link for contact info., etc."

Participant 8:
"No site search feature."

Participant 9:
"Needs auto drop down on main links. Need a site map diagram page. Needs a search engine like google in the site."

Participant 10:
"There should be a link to the "Hall of Fame" form on the page describing the award."

Participant 11:
“Too small. If the window is full then all the info is in the left corner.”

Participant 12:
”I often got the Leadership & Membership links confused. They seem similar and I didn’t always know right away which link to use.”

Participant 13:
“Some information I thought would be linked and placed in other areas also a lot of past dates – possibly could have been all linked together.”

Participant 14:
“Sometimes the links were a bit disjointed in regards to what is under that link.”

Participant 15:
“Not user friendly enough. Unclear main headings, no graphics – give me pictures!”

Participant 16:
“Leadership tab – don’t like at all.”

Participant 17:
“Small font, like color should be different.”

Participant 18:
“Everything looked good.”

Participant 19:
“Some of the link titles don’t make sense to me.”

Participant 20:
“The home page is somewhat unwelcoming.”

3. What was the most difficult part of using the CACTE Web site?

Participant 1:
“Things were not always where “I” thought they should be, just a difference in where I might classify items.”

Participant 2:
“You need to be somewhat familiar with terminology of the organization. I am not sure how a first year teacher would recognize where to look for some things.”

Participant 3:
“I thought menu items for training would be under conferences.”

Participant 4:
“Titles don’t necessarily represent the info under them.”

Participant 5:
“Didn’t find anything too difficult.”

Participant 6:
“Finding Things.”

Participant 7:
“See my response on #2 above!”

Participant 8:
“Some information buried.”

Participant 9:
“Determining the correct link and no hope when you dead end.”

Participant 10:
“I really had little difficulty with the site.”

Participant 11:
“Some of the links were confusing, not where I would have picked them to be.”

Participant 12:
“Probably getting the leadership/membership links confused.”

Participant 13:
“Being unaware of what I was looking for (not for personal use – navigating for survey.)”

Participant 14:
“Figuring out what heading something might fall under.”

Participant 15:
“The evaluation form wasn’t with the information for the hall of fame.”

Participant 16:
“Trying to decide which tab the question was under.”

Participant 17:
“Not knowing whats a link and what’s not.”

Participant 18:
“Nothing was too difficult for me to find, everything made sense. Information seemed to be accessible.”

Participant 19:
“Finding the policies.”

Participant 20:
“I had a hard time finding contact information.”

4. Were you able to complete all 15 tasks?

4a. If no, why do you feel you were unable to complete the tasks?

Participant 1:
Yes

Participant 2:
Yes

Participant 3:
No
#2 - “Wasn’t paying attention.” #5 - “Thought it was ACTE not CCCS.” #15 - “Thought it should be under conferences.”

Participant 4:
Yes

Participant 5:
Yes

Participant 6:
No
“Finding forms.”

Participant 7:
No
“There were 2 that I needed help finding.”

Participant 8:
Yes

Participant 9:
No
“Poor site layout and incorrect descriptions. Old age!”

Participant 10:
Yes

Participant 11:
No
“I didn’t know where to find the forms, where they were was not where I would have thought.”

Participant 12:
Yes

Participant 13:
Yes

Participant 14:
No
"If I am not getting something, I get frustrated and don't want to continue searching."

Participant 15:
No
"Policies page, it went on and on with no end in sight. What I wanted was at the bottom."

Participant 16:
Yes

Participant 17:
No
"It wasn't under where I would look for it. There was no search or site directory."

Participant 18:
No
"There was a lot of information on the policy page – I just needed to explore it more."

Participant 19:
No
"Contact info should be separate – since we're used to it on other sites and policies were under leadership the one place I didn't look."

Participant 20:
No
"I would have put board members on a separate link, it was hard to find."

5. What would make the CACTE Web site better?

Participant 1:
"I would just continue to add more resource."

Participant 2:
"Member Calendar of Events. I really like the presentations from conferences on the Web site - it might be fun to add some pictures of award winners."

Participant 3:
"Training under conferences. Take out board meetings, just put meeting or training."

Participant 4:
"Title clarification – more colorful."

Participant 5:
"Have a topic search box."

Participant 6:
"N.A."

Participant 7:
"Though I like "short-but-sweet" navigation bars, there might be some additional links added, which would be more quickly seen by users. These can be the most frequently used pages, for example."

Participant 8:
"Site search feature."

Participant 9:
"Above. Have Board vs. member menus."

Participant 10:
"More graphics – graphics that represent "Colorado" – mountains – etc."

Participant 11:
"More logical placements…"

Participant 12:
"A contact info on the main page, and a member link for students, or for info about important things for students."

Participant 13:
"Being unaware of what I was looking for (not for personal use – navigating for survey.)."

Participant 14:
"Straightforward navigational headings."

Participant 15:
"Make more headings, including current or new info (meetings, upcoming conferences etc.)."

Participant 16:
"Maybe a few more tabs on the side like organizations and meetings."

Participant 17:
"Search box, website outline and grouping similar things."

Participant 18:
"Maybe the font of the info and under the links could be different."

Participant 19:
"The main links are very broad and some have other links under them that don't make sense – reorganize."

Participant 20:
"I would include more links on the left hand side and would make the home page more inviting."

Section II. Past Experience with the CACTE Web Site

1. How frequently have you used the CACTE Web site in the past? Please circle your response. Rate your past level of use of the CACTE website on a scale of one to seven, with one being "not at all" to seven being "frequently".

Participant Type	Participant	* CACTE Site Past Level of Use
CACTE member	Participant 1	5
	Participant 2	6
	Participant 3	1
	Participant 4	5
	Participant 5	5
	Participant 6	4
	Participant 7	4
	Participant 8	3
	Participant 9	1
	Participant 10	3
CSU School of Education methods students	Participant 11	1
	Participant 12	1
	Participant 13	1
	Participant 14	2
	Participant 15	1
	Participant 16	1
	Participant 17	1
	Participant 18	1
	Participant 19	1
	Participant 20	1

*1 = not at all, 7 = frequently

2. Have you been on the CACTE board within the last two years? Please check yes or no.

Participant Type	Participant	CACTE Board Member in Past 2 Years
CACTE member	Participant 1	Yes
	Participant 2	Yes
	Participant 3	No
	Participant 4	Yes
	Participant 5	No
	Participant 6	No
	Participant 7	No
	Participant 8	Yes
	Participant 9	Yes
	Participant 10	Yes
CSU School of Education methods students	Participants 11-20	No

3. Have you been on your division's board within the last two years? Please check yes or no.

Participant Type	Participant	CACTE Division Board Member in Past 2 Years
CACTE member	Participant 1	Yes
	Participant 2	Yes
	Participant 3	No
	Participant 4	Yes
	Participant 5	No
	Participant 6	No
	Participant 7	No
	Participant 8	Yes
	Participant 9	No
	Participant 10	Yes
CSU School of Education methods students	Participants 1 -20	No

4. Are you a CACTE Member? Please check yes or no.

Participant Type	Participant	CACTE Board Member
CACTE member	Participants 1-10	Yes
CSU School of Education methods students	Participant 11-20	No

Section III. Computer Experience

1. In column A, please enter the number of years of experience you have had with each item. In Column B, please indicate your expertise for that item using a 1 to 7 scale where 1 = none and 7 = a great deal. Please circle your responses.

Participant Type	Technology	Number of Years	*Level of Expertise
CACTE Member Participant 1	Personal Computer	25	7
	Internet	10	7
	Downloading Adobe Acrobat	5	7
	Downloading PDF files	5	7
CACTE Member Participant 2	Personal Computer	14	5
	Internet	10	5
	Downloading Adobe Acrobat	10	6
	Downloading PDF files	10	6
CACTE Member Participant 3	Personal Computer	20	7
	Internet	6	5
	Downloading Adobe Acrobat	6	7
	Downloading PDF files	6	7
CACTE Member Participant 4	Personal Computer	20	5
	Internet	10	5
	Downloading Adobe Acrobat	10	5
	Downloading PDF files	10	5
CACTE Member Participant 5	Personal Computer	15	7
	Internet	15	6
	Downloading Adobe Acrobat	15	7
	Downloading PDF files	15	7
CACTE Member Participant 6	Personal Computer	26	7
	Internet	8	7
	Downloading Adobe Acrobat	8	7
	Downloading PDF files	8	7
CACTE Member Participant 7	Personal Computer	20	6
	Internet	15	6
	Downloading Adobe Acrobat	3	2
	Downloading PDF files	3	2
CACTE Member Participant 8	Personal Computer	20	7
	Internet	11	7
	Downloading Adobe Acrobat	8	7
	Downloading PDF files	8	7
CACTE Member Participant 9	Personal Computer	20	7
	Internet	8	7
	Downloading Adobe Acrobat	8	7
	Downloading PDF files	8	7

CACTE Member Participant 10	Personal Computer	15	6
	Internet	13	6
	Downloading Adobe Acrobat	9	4
	Downloading PDF files	7	4
CSU Student Participant 11	Personal Computer	14	5
	Internet	8	5
	Downloading Adobe Acrobat	3	2
	Downloading PDF files	3	2
CSU Student Participant 12	Personal Computer	9	5
	Internet	8	5
	Downloading Adobe Acrobat	4	3
	Downloading PDF files	4	5
CSU Student Participant 13	Personal Computer	12	7
	Internet	10	7
	Downloading Adobe Acrobat	4	4
	Downloading PDF files	4	4
CSU Student Participant 14	Personal Computer	14	7
	Internet	10	7
	Downloading Adobe Acrobat	5	5
	Downloading PDF files	5	5
CSU Student Participant 15	Personal Computer	27	6
	Internet	14	6
	Downloading Adobe Acrobat	7	5
	Downloading PDF files	4	5
CSU Student Participant 16	Personal Computer	10	5
	Internet	8	4
	Downloading Adobe Acrobat	4	4
	Downloading PDF files	4	3
CSU Student Participant 17	Personal Computer	14	5
	Internet	10	5
	Downloading Adobe Acrobat	6	6
	Downloading PDF files	6	6
CSU Student Participant 18	Personal Computer	10	6
	Internet	8	7
	Downloading Adobe Acrobat	3	5
	Downloading PDF files	3	4
CSU Student Participant 19	Personal Computer	7	5
	Internet	7	5
	Downloading Adobe Acrobat	3	3
	Downloading PDF files	3	3
CSU Student Participant 20	Personal Computer	10	7
	Internet	8	7
	Downloading Adobe Acrobat	5	5
	Downloading PDF files	5	4

* Level of expertise where 1 = None to 7 = High