Research Brief

Web-Based Student Processes at Community Colleges

Removing Barriers to Access

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Introduction

The Internet has become an integral part of our society. Web-based technology can open doors to education for students with disabilities, but inaccessible web sites can pose significant barriers to people who are blind or visually impaired, people who are deaf, people who have mobility impairments that limit their use of a mouse, and people with some types of learning disabilities or other cognitive impairments.

Community colleges are vital and committed providers of post-secondary education for students with disabilities and a crucial link to better employment opportunities. According to the American Association of Community Colleges (AACC), the 1,195 U.S. community colleges enroll 11.5 million students—accounting for 46% of all U.S. undergraduates. According to the National Center for Education Statistics, approximately 12.4% of public community college students report having a disability - in fact, six out of ten students with disabilities who enroll in public postsecondary institutions attend two-year colleges.

Colleges and universities are making extensive use of the Internet for collecting admission and financial aid applications. Benefits from online application services are enjoyed by both the educational institution and the prospective student who applies online. It is vital that these sites are accessible to persons with disabilities.

Web pages that do not meet accessibility guidelines can create a significant and often insurmountable barrier to students with disabilities. Inaccessible web pages greatly increase the potential for discrimination against students with disabilities in situations where college admission and financial aid depend on student access to this function. It is imperative that web sites offering these services be made accessible so that students with disabilities are afforded the same benefits of online applications as their non-disabled peers.

Cornell University's Employment and Disability Institute, in collaboration with the Institute for Community College Development, was funded by the U.S. Department of Education's National Institute on Disability and Rehabilitation Research (NIDRR) to conduct a project with the following three objectives: 1) survey student services professionals at community colleges to examine the extent of use of the internet for providing services and the awareness of internet accessibility issues, 2) evaluate a sample of community college websites for accessibility and usability by students with and without disabilities, and 3) develop a toolkit for improving access to internet-based services at community colleges.

Internet Use by Community Colleges and Accessibility: A Student Services Survey

In June 2006 a survey was conducted of top Student Services personnel in 885 public and private 2-year degree-granting institutions. A total of 696 valid responses were received – an overall 79% response rate. The purpose of the survey was to collect information about college policies and practices regarding web accessibility and online student services.

The survey covered topics including the colleges' use of the internet for providing 7 types of student services, awareness of web accessibility issues for students with disabilities, the existence of college policies and/or guidelines regarding web page design and accessibility, enrollment of students with and without disabilities, institutional barriers to creating accessible web sites, and resources that would be most helpful in addressing web accessibility issues at their college.
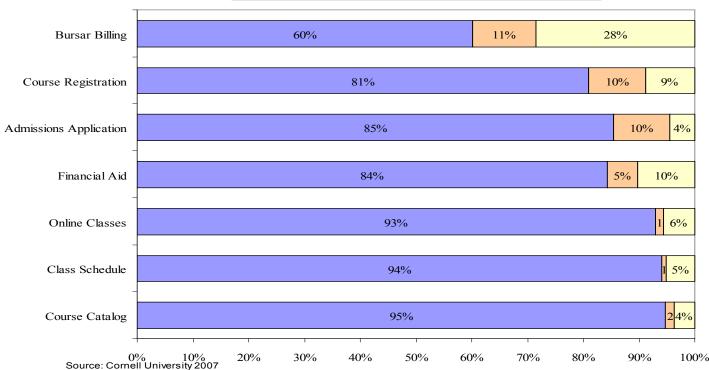
Approximately 93% of the responding colleges were public, with the remainder being private institutions. The student enrollment numbers of participating colleges varied in size, with 36% having less than 3,000 students, 44% having 3,000-9,999 students, and the remaining 20% being large colleges with more than 10,000 students enrolled. Slightly over half of the schools (57%) had a student diversity plan and about half (48%) of those with a plan included students with disabilities in the plan.

The number of students with disabilities served by the college was 335 on average, ranging to upwards of 5,000 credit students in one of the larger colleges surveyed. On average, approximately 5% of the students enrolled in the responding colleges had a disability.

Job roles of respondents varied somewhat, with approximately a third of survey respondents describing themselves as a Director or Coordinator, a quarter were deans, another quarter were Presidents/Vice Presidents, Provosts or Vice Chancellors, about 4% were officers, managers, registrars, administrators and the remaining 13% were in other

Figure 1. Online Services Offered by Community Colleges

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Legend: ☐ Currently Online ☐ Planned within 2 years ☐ No plans/don't know

Service	Currently Online	Planned within 2 years	No plans/don't know
Bursar Billing	60%	11%	28%
Course Registration	81%	10%	9%
Admissions Application	85%	10%	4%
Financial Aid	84%	5%	10%
Online Classes	93%	1	6%
Class Schedule	94%	1	5%
Course Catalog	95%	2	4%

Source: Cornell University 2007

Student Services offered online by Community Colleges

As can be seen in Figure 1, the vast majority of community colleges are taking advantage of the Internet to provide some of the most important student services. Virtually all (99%) of the participating colleges provided at least one type of student service online. Over 90% of the colleges surveyed currently offer online access to course catalogs, class schedules and online courses. Between 80 and 90% also offer financial aid applications, admissions applications for the college, and course registration online. Six out of ten offered bursar billing services online. Many of the colleges that didn't currently offer a specific student service online planned to do so within the next two years.

Respondents were asked if any of the online offerings of their college were only available online. Of the colleges that currently offered these services online:

- 11% offered course registration exclusively online
- 9% offered financial aid applications only online
- 5% made course catalogs available only online
- 5% had only online class schedules

Web Policies/Guidelines

The majority of respondents (72%) said that their college had guidelines governing web design. Of those who didn't currently have guidelines in place, 70% were planning to implement some guidelines within the next year. Approximately half (51%) reported that their college had requirements regarding web accessibility. Approximately half of those who didn't have an accessibility policy currently in place said that the college had plans to implement one within the next year.

The colleges that had some type of web accessibility requirement were asked what types of pages were covered by that requirement. Seven out of ten colleges (71%) with requirements said that all the college pages were covered. Most said that the Student Services pages were covered (84%). Three quarters of responding colleges said that faculty course pages and distance learning pages were

covered and two thirds (66%) said that department and faculty pages were covered. Six out of ten colleges said that the college webmaster or someone else actually checks the student services website for accessibility to persons with disabilities.

Perception of Barriers to Web Accessibility

Colleges were asked about three specific potential barriers to creating accessible websites for their college. As can be seen in Figure 2, all three barriers were seen as an issue on their campus by about half of the participants. Although lack of knowledge and concerns about cost and time were slightly more likely to be seen as a barrier, no single issue clearly stood out from the others.

Accessibility and Usability of Community College Websites

To evaluate the accessibility and usability of online student services, tasks and processes were selected that prospective students are likely to perform, noting the need for institutions to make the experience positive for prospective students if this is to be a key tool for recruiting students as well as providing important services to enrolled students.

The goal of the evaluations was to identify potential barriers to accessibility and usability for all users. Usability tests were specifically focused on getting an in-depth look at the barriers encountered by the target group — people with visual disabilities and reading-related learning disabilities.

The four methods used to evaluate a sample of community college websites were:
- Automated (software-based) Section 508 Evaluation
- Manual Section 508 Evaluation
- Target Group Usability Testing
- Simulated Target Group Usability Testing

Thirty community college websites were initially evaluated for compliance with the web accessibility standards found in Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d). Ten of those sites were selected for Simulated Target Group usability testing, and two of those ten were tested for usability by individuals with visual impairments, individuals with reading-related learning disabilities (LD), as well as a control group of individuals without disabilities.
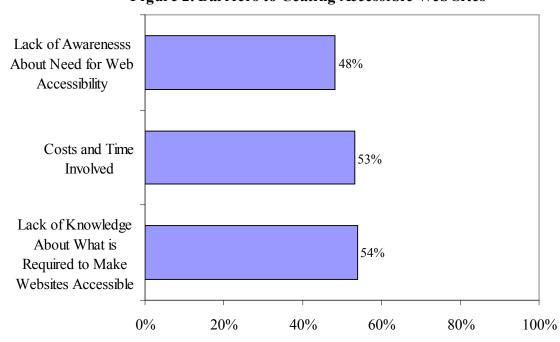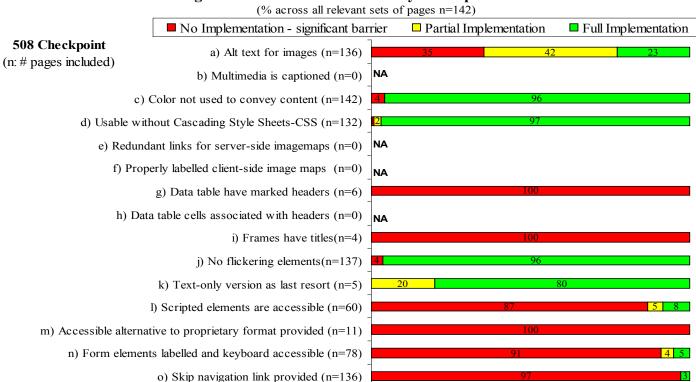
Figure 2. Barriers to Ceating Accessible Web Sites

Source: Cornell University 2007

Figure 3. Section 508 Accessibility Checkpoint Review
(% across all relevant sets of pages n=142)

Legend: ■ No Implementation - significant barrier ■ Partial Implementation ■ Full Implementation

508 Checkpoint
(n: # pages included)

Checkpoint	No Implementation	Partial Implementation	Full Implementation
a) Alt text for images (n=136)	35	42	23
b) Multimedia is captioned (n=0)	NA		
c) Color not used to convey content (n=142)	4		96
d) Usable without Cascading Style Sheets-CSS (n=132)		2	97
e) Redundant links for server-side imagemaps (n=0)	NA		
f) Properly labelled client-side image maps (n=0)	NA		
g) Data table have marked headers (n=6)	100		
h) Data table cells associated with headers (n=0)	NA		
i) Frames have titles(n=4)	100		
j) No flickering elements(n=137)	4		96
k) Text-only version as last resort (n=5)		20	80
l) Scripted elements are accessible (n=60)	87	5	8
m) Accessible alternative to proprietary format provided (n=11)	100		
n) Form elements labelled and keyboard accessible (n=78)	91	4	5
o) Skip navigation link provided (n=136)	97		3
p) Timed response requirements can be modified by user (n=1)	100		

(x-axis: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%)

Note: Based on the 30 community colleges selected for this review.
Pages evaluated included: home page, Student Disability Services, online application, Financial Aid Information page, and the Academic Programs information.
Source: Cornell University, 2007.

The specific pages evaluated on each site included the college home page, the Student Disability Services page, the online admissions application page(s), the Financial Aid information page, the Academic Programs information page (for automated and manual Section 508 review), and the Class Schedule (for usability testing).

Section 508 Accessibility Evaluation - Results

Figure 3 shows the results of the Section 508 evaluation. None of the 30 colleges' home pages, financial aid pages, academic programs pages, or disability services pages complied with all the Section 508 Accessibility Standards when evaluated using the Manual Section 508 evaluation procedures. The admissions application pages fared only slightly better; 91% of the 78 pages containing on-line forms failed to meet one or more criteria for accessibility.
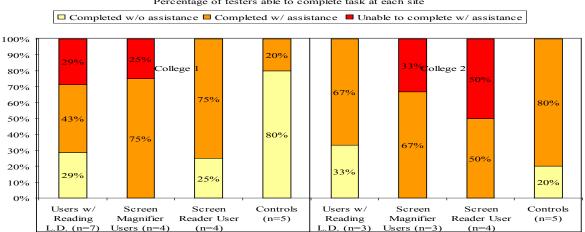
Usability testing

Usability testers included individuals who were blind and using screen reader software to access web content, individuals with low vision who used some type of software-based screen magnification, individuals with reading-related learning disabilities using no assistive technology and non-disabled individuals. Testers were asked to perform four tasks on each of two Community College websites:

- Task 1: Finding Contact Information for the Disability Student Services Office (DSS)
- Task 2: Finding Meeting Times for a Specific Class
- Task 3: Completing the Online Admissions Application form
- Task 4 : Finding the link to the Federal Financial Aid Form (FAFSA)

Across all tasks, visually impaired persons using either screen magnifiers or screen readers were more likely to have difficulties on both colleges' websites than users with LD or

Figure 4: Completing Online Application Form:
Percentage of testers able to complete task at each site

□ Completed w/o assistance ■ Completed w/ assistance ■ Unable to complete w/ assistance

Source: Cornell University 2007

the control group. Practically all users, including those without disabilities, encountered some difficulties accomplishing certain tasks. Finding the link to the Federal Financial Aid Form was fairly straightforward for most users. Finding the meeting times for a specified class was difficult for testers in all four test groups, with individuals in each group requiring assistance to complete the task.

Completing the online admissions form was by far the most difficult task for all users (see Figure 4). Nearly all of the testers with disabilities required assistance in completing the task, as did the majority of control group (without disablilities) on the College 2 website. Nearly all of the screen magnifier and screen reader users, as well as a sizable majority of the LD testers required assistance, and several were unable to complete the task even with assistance.

Major Usability Issues

All of the testers, regardless of disability type, encountered similar usability obstacles. Figure 5 shows the major issues and the percentage of those who encountered each issue. Control subjects are included in this figure as well, since they encountered the same problems as the target tester groups.

Participants using screen readers were impacted most significantly by accessibility problems such as unlabelled form fields, missing alternative text, and auto-refreshing form fields. However, the majority of the problems participants experienced during testing were usability issues, not accessibility problems. Usability issues, such as the use of unfamiliar terminology, unintuitive navigation schemes,

unclear content headings, link text and instructions, large quantities of unorganized data, and the use of hard to read design elements such as low contrast colors (e.g. gray text) and small type, were found across all tester groups, including the control group.
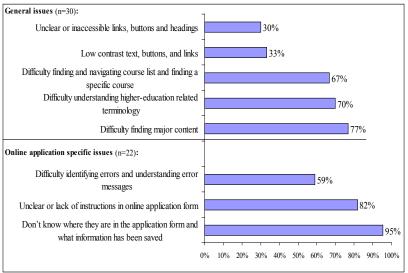
These issues reveal a systemic problem with website design. Many colleges appear to use the institution's existing administrative and academic structure to inform the website's design. Unfortunately, this structure is not intuitive to a naïve user who has never interacted with the college before and may likely be new to the postsecondary environment. Since in general, community colleges cater to students directly out of high school, adults seeking continuing education and individuals with disabilities who do not necessarily have experience with higher education, these results reinforce the recommendation that user testing is a critical first step in creating websites and design based on actual user perspectives, rather than institutional perspective.

Conclusion and Next Steps

The survey of community colleges clearly points out the extensive use of the Internet for providing student services. A number of colleges have even made some of these services available *only* on the web. This fact has serious implications for students with disabilities who will encounter barriers if web pages are not designed in an accessible and usable way, as was frequently illustrated in the project's accessibility and usability testing phase.

The survey identified several positive signs regarding

Figure 5: Major Usability Issues Encountered

General issues (n=30):
- Unclear or inaccessible links, buttons and headings — 30%
- Low contrast text, buttons, and links — 33%
- Difficulty finding and navigating course list and finding a specific course — 67%
- Difficulty understanding higher-education related terminology — 70%
- Difficulty finding major content — 77%

Online application specific issues (n=22):
- Difficulty identifying errors and understanding error messages — 59%
- Unclear or lack of instructions in online application form — 82%
- Don't know where they are in the application form and what information has been saved — 95%

Source: Cornell University 2007

web accessibility:

- High participation rate in survey shows interest in the topic.
- Most decision makers are aware of accessibility issues.
- Half of the colleges surveyed currently had some type of web accessibility requirements and half of those that didn't planned to within the next year.
- Many of the colleges check web accessibility of their student services sites.

However, there is clearly more work to be done regarding web accessibility as is evidenced by the results of the accessibility and usability evaluations of community college websites. Virtually all of the Community colleges' websites examined performed poorly on both the Section 508 accessibility evaluations and the usability testing. Accessibility barriers existed on many college websites that may well have prevented users from being able to even complete an admissions application. Additionally, usability issues were frequently encountered not only by testers with disabilities, but also by many of the control group testers as well.

Although awareness of web accessibility issues and a web accessibility policy are clearly a step in the right direction, accurate testing and thorough understanding of the challenges created by inaccessible and unusable content are needed to create truly accessible web pages. Our usability testing illustrates how critical user testing is in web design for all users, not just users with disabilities.

The Web Access Toolkit (www.webaccesstoolkit.org) provides community colleges with resources and a process for achieving long-term accessibility and enhanced usability of their college's website. Because an abundance of resources already exist to address the technical aspects of accessible and usable web design, the toolkit is designed to meet the needs of college administrators and staff members who have responsibility for oversight of web content who wish to address the broader campus issues of web accessibility. The major components of the Toolkit are:

- Getting Started - basic information regarding accessibility and our research findings
- 6 Steps to Accessibility
- and extensive Annotated resource database
- Straightforward procedure for examining the accessibility and usability of web pages
- Quality indicators addressing five primary areas: Raising awareness, Identifying stakeholders, Evaluating web content for accessibility and usability, Developing a policy, and Providing training and support
- Sample forms for documenting your process and progress

Please visit www.webaccesstoolkit.org to access the free toolkit and more information.

For further information on Section 508, Accessibility, and Education:

Section 508 of the Rehabilitation Act as amended in 1998; Electronic and Information Technology Standards
www.Section508.gov

W3C Web Accessibility Initiative
http://www.w3.org/WAI/

AccessIT (National Center on Accessible Information Technology in Education)
www.washington.edu/accessit

WebAIM (Web Accessibility in Mind)
www.webaim.org

EASI (Equal Access to Software and Information)
www.rit.edu/~easi

NCAM (National Center for Accessible Media), a project of WGBH
ncam.wgbh.org/index.html

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