ITS units:

- Academic Services and Emerging Technologies (ASET)
- Administrative Information Services (AIS)
- Consulting and Support Services (CSS)
- Digital Library Technologies (DLT)
- Security Operations and Services (SOS)
- Teaching and Learning with Technology (TLT)
- Telecommunications and Networking Services (TNS)

Are You Reaching Your Audience Online?

Penn State offers resources for more accessible, effective Web design

By Jo Nutter and Jenny Thrasher

Access to the Web is especially critical at institutions like Penn State, where the Internet is used extensively to share academic and other important information with students, faculty, and staff. Unfortunately, part of that audience is often prevented from obtaining online information because of practices and elements in Web design that make sites inaccessible to individuals with certain disabilities.

The good news is that accessible (also called universal) design techniques are not very different from the best practices of effective Web design. Building accessible Web sites requires that designers know their audience and that they present content in ways that gives the largest numbers of users the easiest access possible—strategies savvy designers use anyway. Accessible design is likely to benefit all visitors to a site, since it presents different options for accessing online information.

Know Your Audience

At the University Park campus alone, 900 students have registered with the Office of Disability Services (ODS) to disclose a disability. With all Penn State locations combined, that number rises to 1,600 and it may be even larger, since it does not include staff, and because registration with ODS for both students and staff is voluntary.

ODS classifies disabilities into four main categories.

Learning Disabilities

Users with learning disabilities may have difficulty reading text online and navigating poorly organized Web sites. To more easily comprehend online information, this audience may use screen reader software that reads out loud the text on pages and applications.

Visual Impairments

Users with partial or no sight may use any combination of extra large screens, screen magnification software, screen readers, and voice recognition software to access the Web. Users who have color blindness may have difficulty distinguishing between similar color shades and may not be able to recognize symbolic use of color.

Hearing Impairments

Users with partial or no hearing may not be able to access information presented in audio clips or by sound cues.

Mobility Impairments

If using a mouse or trackball to navigate Web pages is not an option, users with upper body mobility impairments may employ their keyboards by using assistive tools such as a mouth stick, head wand, or breath-controlled device that emulates keyboard functionality, or may use voice recognition software.

Accessible Design Resources

At Penn State, a free Information Technology Services (ITS) seminar is offered on designing accessible Web sites, and faculty can receive consultation on accessibility and test screen reader software. Many other resources are available on the Web to help designers learn the practical, and often simple, steps they can take to ensure adequate accessibility to online information.

In Person

- The seminar "Creating Accessible Web Sites" includes an overview of the main categories of disabilities

You Can Understand the Weather: an Introduction to Meteo 101

By Kate Strauss

Meteorology 101 is one of the latest course offerings that uses educational technology to enrich learning not only for students here at University Park, but also for students at branch campus locations. This course, Understanding Weather Forecasting, is taught completely online using course materials posted on "ANGEL," Penn State's new course management system. In Spring 2002, the course's inaugural launch, Meteorology 101 enrolled over 250 students at seven campuses who studied with faculty members at University Park through the Campus Course Exchange.

A primary design goal of Meteorology 101 is providing students with quality course materials and instructor interaction, while allowing students flexibility to incorporate the class into their individual schedules. Of this new scheduling flexibility, John Harwood, senior director for Teaching and Learning with Technology, says, "I would like to see more courses delivered this way. It's a very good way for students to access the courses they want . . . students have access to a fabulous amount of information."

Co-creators of the course, Lee Grenci and David Babb, capitalized on the opportunities that Web instruction affords by packing each tutorial with links, Flash animations, video clips, simulators, and interactive tools that both foster student engagement and enhance real time understanding of weather. For example, the principle of Coriolis force is illustrated through an animated football diagram of game play during a pocket pass vs. during a rollout pass.

Course links include, among others, current surface weather maps, the World Meteorological Association, the Naval Research Center, and NASA's real-time shuttle tracking page. Web links and materials are provided not only to teach the fundamentals of meteorology, but also to provide students with a library of Web weather resources for future use. "We wish we would have had the same tools when we learned meteorology–we would have figured it out a lot sooner," Babb says of the technology he and Grenci have incorporated into class lessons. Although the online format prevents face to face meeting with instructors, students in the course have daily access to instructors, peer tutors, and other students through message boards, course e-mail, and Instant Messaging. "The access to professors is very adequate and probably even higher than a traditional course because the instructors are very prompt and enthusiastic to answer any questions through e-mail," says Amy Stalnecker, a student in the course.

Meteorology 101 teaches students basic weather forecasting. Course folders for each week present a video introduction by Grenci of the week's topics, a preliminary quiz to test students' knowledge and introduce important concepts, and approximately seven to ten pages of text and interactive content. Students begin as novice apprentice weather forecasters and advance in rank as they pass weekly quizzes. Quizzes account for 30% of the course grade and are reflective of students' ability to apply the concepts that they have learned, not recitation of course facts. Grenci explains "this course requires critical thinking . . . writing and organizing thoughts . . . not parroting back information."

Four course message boards provide the meat of course members' and instructors' communication with each other. Each student is expected to post at least one message per week on the boards, and this participation counts for another 30% of the course grade. Approximately 400 messages are posted per week.

Babb and Grenci encourage students to engage each other, to answer other students' questions, and comment on current discussion topics. However, the instructors also contribute to the boards, keeping the conversation rolling by offering observations and posing questions. Overall, Babb says, communication among students and between students and instructors is much greater than is found in a standard classroom course. "I have ten times the interaction with students than I would have teaching a large section of a natural science general education course," he says.

The final 40% of the course grade is based on three projects and assignments spaced throughout the semester, including a final project. These projects are designed to help students assimilate their understanding of course topics with real-world data and hands-on experiences in weather forecasting. Knowledge of course materials and interactive tools found on the site is integral to successful completion of these projects. Babb says that spending time at the site, poking around and "figuring out about the classroom . . . clicking buttons, figuring out what's going on" leads to better understanding and better grades as students master and employ the materials provided in the course.

According to Grenci, "apprentice weather forecasters who are well on the road to success in Meteorology 101 spend four to five hours on line each week studying the material and participating in discussion boards." Grenci knows how much time students spend because ANGEL

allows instructors to track each student's activities for the week, displaying charts for when students log on, how much time they spend on the course site, and which pages and boards they are viewing. Knowing which content students are viewing and how much time they are viewing it for shows instructors how individual students can improve their grades by changing their study skills and how much time successful students are spending on the coursework.

Student success in an online format seems to be comprised of several different elements. One of the most important elements may be the characteristics of the individual student. Remarking on his experiences instructing the course, David Babb says, "we're discovering that online education is not for everybody . . . some students you turn loose, they wander around aimlessly . . . some need a very structured classroom experience."

The traditional classroom course is structured by meeting time and space constraints, whereas the ANGEL format doesn't regulate these things. Aaron Null, a student in the course, remarks that "the format required a new level of responsibility out of me because I had to schedule time to do lessons and read the material . . . I thought of it as an important discipline experience." Renee Petrina offers another perspective on the personal responsibility for scheduling course time: "The online format made it much easier to fit the class into my schedule. There are so many computer labs around campus that I could go to one and check the Meteorology 101 site while I had time to spare between meetings or other activities. I actually think it required less responsibility . . . You could basically not "skip" this class."

Other students also felt that the course didn't require more responsibility from them than a standard natural science general education course would. Paula Gevin comments that the course was "convenient to her schedule and she liked being able to work at it when she had the time to put in." Discussing these issues of student responsibility for completing course materials on their own schedules, Babb says "students have to learn what to expect from an online course, and we have to learn what to expect from online students."

Technology at Work: How Penn State Professionals Use Technology

By Ylce Irizarry

If you've ever ventured into a computer lab on any Penn State campus, odds are you would see mostly students using it. Perhaps that's because 97% of the staff responding to the "Staff Technology Survey" indicated that they had access to and used a computer in their own work environments at Penn State. This survey, conducted in Fall 2001, offers some interesting perspectives about how Penn State's professional staff utilize technology and training opportunities. The Statistical Consulting Center conducted the survey and gathered responses from staff in the following areas: Administrative or Executive, Manager or Director, other Exempt staff, Non-exempt staff, and Technical Services. A total of 1,026 surveys were completed by staff with a range of experience working in the Penn State system, from less than one year to beyond 15 years.

The Staff Technology Survey provides the Information Technology Services (formerly Computer and Information Services) at Penn State with satisfying answers to the question "what is the role of technology in a staff member's employment?" First, a significant percentage of respondents–84%–indicated that their computer skills were adequate to their job's duties. Second, very high percentages of respondents indicated that they knew where and how they could access technology training. For example, 93% indicated that they were aware of the computer training services available through the Penn State system, 84% indicated that their supervisors supported professional development activities and provided release time for them to take advantage of training opportunities, and 72% indicated that their unit provides financial support to participate in that training. These results suggest that the university's various technology service groups and work units are coordinating well to help staff access and improve technology skills.

The survey also addresses the question, "what technology skills do staff members want to develop?" Generally, staff members who were already using certain kinds of technology, such as database, presentation, and web authoring software, wanted to learn more about those specific kinds of software (43%; 30%; 35% respectively). Moreover, even staff members who were not using these particular software packages wanted to learn about them (38%; 31%, 32%). The survey reported that over 90% of staff members were already using Web browsing, email, spreadsheet, and word processing software. A very low percentage–20%–reported using other services such as centralized server back-up, web authoring tools, Data Warehouse, and enterprise information systems. This statistical relationship is very important: it illustrates that a large portion of Penn State staff use many basic technologies but want to increase their proficiency in more advanced technologies. It also indicates that even if they are not using specific software packages, staff members are aware of which packages would be most beneficial for them to learn.

Another portion of the survey helps us to understand the gap between the technologies staff members use and what they hope to use more often. Almost half of the respondents (46%) reported that they use the Web, between 1 and 5 hours per week, for job related activities. However, only 6% reported that they were hired for jobs that listed Web development expertise as part of the job duties. Thus, as staff members are increasingly asked to use the Web for programming and information dissemination for their respective units, they are also developing specific training needs. As noted above, 84% of respondents indicated their current skills were adequate for their job; yet a close 82% reported that additional training would improve their efficiency at work. 82% of respondents also reported that their highest preferred method of receiving technology training is learning by using it at work. This suggests that staff members wish to immediately apply the technology training available to their work environment. Some barriers to training were reported including a lack of replacement staff (26%) and a related inconvenience of training schedules (25%).

Overall, the survey illustrates that staff members are well aware of, and interested in, Penn State's technology training opportunities. As Information Technology Services @ Penn State reviews these findings, it can adopt changes that help staff obtain immediately useful training and continue to provide high quality services to our education community.