

**USABILITY STUDY SHOWS MU EXTENSION STYLE GUIDE WEBSITE  
IS USABLE AND HIGHLY LEARNABLE**

by

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MAY 2014

## DEDICATION

To my parents, H. Dean Adkins and Judy Fay Rager Adkins, who have always believed in education and in me. Dad, I couldn't have done this without you. And Mom, even though I lost you in March of 2014, just before graduating, I know you know I finished.

Other family members who have provided special support along the way include my partner, Stacy Vincent, my sister, Belynda Miller, and my brother, Karlon Adkins. Many others have also been there for me through the years I've been finishing my degree. Special friends I'd like to thank include Sarabeth Rhodes, Renee Martin-Kratzer and Kim Townlain as well as my undergraduate adviser and colleague Sharon Wood-Turley.

Because my project related to my work, George Laur, my long-time supervisor and mentor, provided much support and input. John Myers spent many hours patiently programming and reprogramming the code to make the style guide work the way usability testing showed it would work best. Several co-workers also helped along the way, many as guinea pigs for testing my ideas. Joe Vale, Victoria Knapp and Karissa Scott, thank you for your time and your input.

Thanks to my committee members, Jen Rowe, Jan Colbert and Sanda Erdelez, and to my four co-workers who volunteered to be my usability subjects — obviously I couldn't have done this without you. And many thanks to Martha Pickens in the journalism graduate office for moving everything along.

My five nieces and my 22-month-old daughter, Teryn Adkins, inspired me to finish. May Teryn someday understand why I spent so much time in front of my computer and learn to appreciate education as well.

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## Chapter 1: Introduction

This project encompassed designing, building, evaluating, and improving an online editorial style and usage guide for MU Extension. The professional component included gathering and writing style guidelines, developing prototypes for the style database, implementing changes in the guide after usability testing, and populating the guide. The research component, which included usability testing of MU Extension employees, informed the project work by showing what did and didn't work in the first attempt at building a comprehensive database.

I have worked as an editor and Web developer at MU Extension for about nine years this time around. I also worked for MU Extension for five years early in my editing career. In this office, we often come across style and usage questions that are not answered using Associated Press style, which we consult first, or *The Chicago Manual of Style*, which we consult for issues such as references and citations that Associated Press style doesn't cover.

Both times I've worked for MU Extension, I've wanted to develop a house style guide to answer the style and usage questions that are specific to the organization. The guide could be used by both professional editors and writers and others in the organization who are responsible for producing print and digital products. While our editors are responsible for editing and updating our more than 2,000 official printed publications, our main website and two apps, our 114 county offices and many campus offices also regularly produce reports, newsletters, Web pages, Moodle courses, blogs, and brochures. In such a large organization, professional communicators and editors can't look at all of these communications pieces before they are published. So that our readers

see more consistent, cleaner information, it is important that we give all employees the tools, including a house style and usage guide and training on what they will find in this guide, to help them produce consistent information.

Over the years, I saved style decisions and, in 2010, developed a basic style guide page that was targeted mostly toward staff located in the 114 counties of the state and campus-based administrative staff who are responsible for Web page content, which would be an audience of approximately 300 people. I also kept style guidelines that are generated in our editorial office electronically alongside our online Associated Press style subscription, which is primarily used by our own editors and editors and writers in a few other extension units.

Although I knew it would be helpful for our communications group as well as employees throughout the organization to have a more useful, searchable database-driven house style guide, I could never find time in my work schedule to build it. I had also completed the coursework for my master's degree several years ago but hadn't finished a thesis or project. George Laur, publications coordinator, agreed to supervise a professional project that would allow me to both finish my academic requirements for a journalism master's degree and build a style database that will help me and my co-workers. A combination of my previous coursework, my teaching assistant and adjunct positions in journalism, which included the magazine editing course and work on *Vox* magazine, all helped focus my desire for a comprehensive house style guide and direct me toward successful completion of the guide.

To help inform the database design and ensure that the guide will be useful to our faculty and staff, I conducted usability testing, which my office has begun using

extensively for Web restructuring and redesigning. I learned about usability testing through a course I took from the School of Information Science and Learning Technologies a few years ago as well as extensive self-study on usability for my job.

This project will be a useful addition to our staff resources and a help to editors and other staff alike. For me, as an editor and senior communications professional in MU Extension, this style guide helps establish my authority — and that of my office — as a resource for style and usage answers.

## Chapter 2: Project Activities/Field Notes

My project was carried out over a number of months due to other commitments, such as a full-time job, during the time I was working on the project. Rather than turn in field notes every week as I would have with a more typical one-semester project, I submitted field notes when a “reportable” amount of work had been completed and tracked the project hours completed between submissions.

**June 8, 2012**

**Hours.** 40

**Progress.**

- Solicited style guides from other state extension communications offices and related colleges. Received six guides and other interesting information about the style these offices follow. Some of them, like us, use AP Style online and keep their house style entries in the password-protected AP Style database, so I am unable to see those.
- I will go through each of these guides and the MU guide to look for relevant entries, but from a more cursory look, some decisions I need to make with staff in this office are whether or not to add more design-related entries to our guide.
- Went through our current style guide to assess how the entries could better reflect print decisions as well as Web decisions and made changes accordingly.
- Discussed with the database programmer some of the needs of the database interface we will use to make style guide entries.

**Analysis.** The style guide thus far has been primarily written to help people writing for the Web. I have changed this in some of the existing entries and will continue

to make sure entries reflect both issues on the Web and in print. In such a large organization, we have many people with no communications training both writing and designing print pieces that they hand out to the public. I need to be sure this guide is considered relevant to them and is not too large or complicated but covers the issues they have and the decisions they need to make when they are trying to communicate through print or the Web to their clientele.

**Research project.** As of now, I'm not doing much on the research component until the database is better formed and I can start to see what kind of tasks I can ask the participants to perform. We are considering adding an eye-tracking device to our usability testing setup, and I need to research the options there. It would be interesting to add that component to the usability testing in this project.

**August 5, 2012**

**Hours.** 30

**Progress.**

- Went through style guides from other state extension communications offices and related colleges (i.e., The University of Maine, University of Nebraska, New Mexico State University, Kansas State University Research and Extension, University of California Division of Agriculture and Natural Resources and the California Agriculture journal) looking for additions for our style guide, getting an idea of how other units have structured their style guides and learning the types of things other units think are important. Several had more design-related entries than we currently do. Of the ones I've looked at so far, only Kansas State University has a fairly robust

online version. The University of Nebraska guide is in a Wiki, and several of the others are online PDFs. Next step is to form all of the ones I'm considering into entries for our guide that I can run by the other editors for comment.

- Began collecting other style decisions from others in the department (looking at what we have in our AP online stylebook and style decisions from projects such as the Making Money Count curriculum).

**Analysis.** While researching style guides from other institutions will be extremely useful for fleshing out and structuring our guide, many of their entries are institution-specific. However, even these entries are giving me ideas for adding items to our guide, but many of them will need to be formed through discussion among editors in our office. I am also now considering forming a “style committee” that will include a couple of editors from our office as well as editors from other communications groups in extension to help ensure that this guide will be used across the organization.

**Research project.** I am still not doing much on the research component until the database is better formed and I can start to see what kind of tasks I can ask the participants to perform. I still need to research eye-tracking devices for usability testing as well.

**October 12, 2012**

**Hours.** 30

**Progress.**

- Formed a style committee with three members of Extension and Agricultural Information (including me), one member of the Cooperative Media Group, and one

editor from the HES editorial group. Plan to set a couple of meetings with the group to go over additions to the style guide then plan to do individual additions using email notes and discussion. I will also form a larger email group, which will include all those involved in MU Extension's official editorial functions to discuss style and usage issues that are a bit more controversial. In addition, I will form an email list to send out notices similar to that of AP Style indicating when a style has been added or modified.

- Signed up for a free 9-week Human Computer Interaction course taught by a computer science professor from Stanford through Coursera.org. This course has been very useful thus far in helping me focus my thoughts and determine the needs for the online database portion of this project. The lectures are interesting and informative, and I am using the online style guide as the project for my assignments. Thus far, I have performed a needfinding assignment that allowed me to brainstorm many ideas for the database. This week's assignment is to turn in a storyboard and a prototype of the application I am building. Unfortunately, a side effect of the needfinding assignment is that I discovered that several of our styles are written or paraphrased from AP style in a manner that assumes the user knows something about style guides. I did a needfinding exercise with one editor, one administrative assistant and one person outside of extension. Only the first one easily read and understood some of the styles. So, a new task for me is to clear up some language in our existing styles so the guide will be clearer for employees who rarely use style guides.

**Research project.** The HCI course I am taking uses more peer assessment than instructor/teaching assistant assessment. Next week, we will use heuristic evaluation to

do peer assessments. We are using the same Jakob Nielsen heuristics that I proposed using to develop the database in my project proposal, so the course and the master's project are dovetailing nicely.

## **November 1, 2012**

**Hours.** 60

**Progress.**

- I have really been immersed in the Human Computer Interaction course for the past three weeks. The lectures are interesting and informative although some of them are a refresher on design courses I've taken before and on the usability course I took from Dr. Erdelez. I'm using the online style guide I'm developing as the project for my assignments. Since the needfinding assignment in my last progress report, I have turned in two storyboards and two basic, high-fidelity prototypes as well as the beginnings of an interactive prototype. The peer assessments, while quite time-consuming, have allowed me to see many different ideas from fellow students around the world. They have also encouraged me to think about a way to make this style database a mobile site as well. We are working on several mobile sites at work, and with a little bit of change, I think this one could be usable on a phone or tablet as well.
- The course also required a development plan/timeline, and when the course is completed, I plan to put together a similar timeline for the rest of my project.

**Analysis.** I am really struggling with the best way to sort the styles in the online database. I have several ways to sort that don't really go together. I have looked at the

new AP stylebook online and considered the different ways we want to sort our information. Hopefully before I finish my interactive prototype this weekend, I will have a better plan for how to set up the sorting. Today I will meet with a co-worker for his advice, and I will plan a meeting with our database programmer who will actually be setting up this database for me.

**Research project.** In the HCI course, we used the same Jakob Nielsen heuristics that I am using to develop this database to evaluate our peers' assignments. While I didn't receive much heuristic evaluation from my peers, one of the course TAs gave some really useful evaluation and advice. She liked the same prototype I did, and she suggested some additional ways to sort the information that I had considered before but hadn't added to my prototype. After we finish the interactive prototype, we are supposed to test three users in the system. I'll use this as a preliminary to the final test for my research component, which will involve testing a working database.

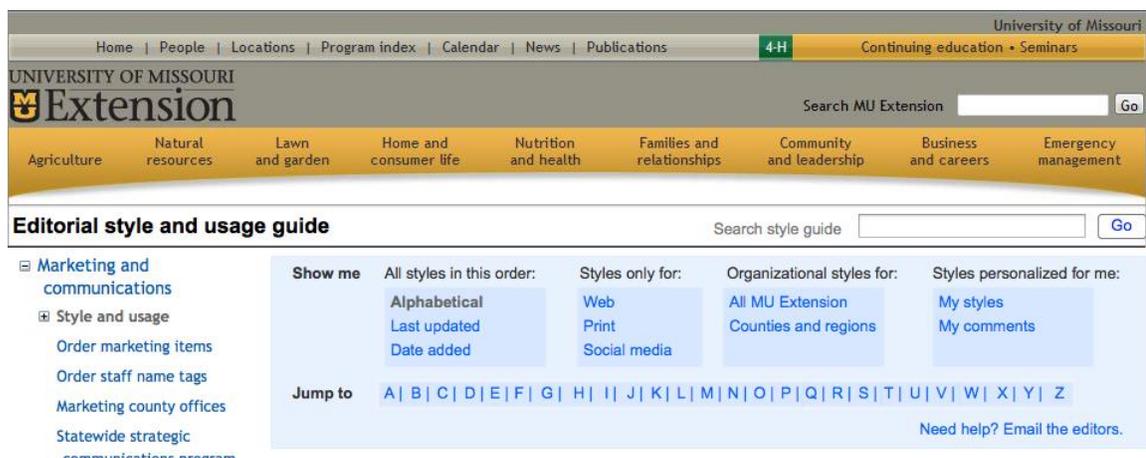
**November 14, 2012**

**Hours.** 35

**Progress.**

- I am still working on the Human Computer Interaction course. I have developed an interactive prototype that I will test with three people before this Sunday. I added a concept I call "My comments" for users to comment on a style (add examples, etc.) and a concept called "My styles" where users will make their own list of frequently needed styles.

- I mentioned in my last progress notes that I was struggling with the best ways to have users sort the styles. I sat down last week with one of our senior editors, Joe Vale, to brainstorm the ways users might want to sort the style guide before finishing the prototype that I will test this week. I am still not completely happy with the ways I've prototyped sorting (see example below), but I am happier than I was before. Hopefully I will learn more from the usability tests I'll do for class.
- Before testing the concepts for "My styles" and "My comments," I wanted to be sure these features were actually something we could do on our website. I met with John Myers, director of Extension Technology and Computer Services. John has agreed to build the style database. I was extremely happy to find that he thought we could execute all of the features I've prototyped thus far.
- Another perk to taking this course has been exposure to high- and low-fidelity mockup and prototyping software. I really liked the ease of Balsamiq Mockups to help me work through ideas, and I have learned a lot about prototyping using Axure RP Pro.
- Search/sort prototype:



- **Analysis.** This course has really helped me think through the pieces of the style database. I am excited for John to build the back end of the database so I can start adding current styles and then more styles as needed. The needfinding exercise and the peer evaluations have made me realize that some of my styles are written with writers and editors in mind while many of our users will not be that familiar with grammar and usage language. I will work on adding additional examples and ensuring that the style wording is appropriate for people other than communications professionals.

**Research project.** In the HCI course, we are testing our prototypes with actual users. I wrote my evaluation plan for the course to match the usability tests in my project proposal, including the one-question evaluations after each scenario and the SUS survey after the test. Therefore, the prototype and the usability tests should serve as a pretest for the usability tests of the actual working database and Web pages.

**November 18, 2012**

**Hours.** 25

**Progress.**

- A lot has happened in the past week. In addition to the prototype I built in Axure RP Pro, John began building a prototype in .NET where we made a major change from the previous prototype by making checkboxes next to the sorting options. We spent a lot of time working on the sorting and searching functions.
- I almost didn't test the prototypes for the HCI course, but I pushed through and tested with three editors in our office. I tested my original prototype

(<http://share.axure.com/WLPLNO>) and showed the control panel of the prototype I'm working on with John as a comparative at the end of each session. I was able to pull all three editors into the conference room to discuss the database after all three completed testing. Even though it was a somewhat frustrating process, it's good that I ran the tests. I guess the phrase "back to the drawing board" was created for a reason. Of course, the part of the database structure I have been struggling with most, the sorting, is the area that was the most confusing. It turns out the users were not clear about the sorting features I had in the middle two columns of the prototype, and apparently, in the prototype I worked up with John that added checkboxes, it was unclear if you were adding to or taking away from the search by clicking on the checkboxes. I realized that I mainly wanted the middle two columns to help people who want to print the style guide. I wanted to be able to give them a smaller version to print if they only work in certain media or in a certain area. Therefore, I'm going to try a link to a printing screen where you either print all styles or remove specific styles that you don't want in your personalized style guide.

- The concepts for "My styles" and "My comments" seem to be solid. However, I have changed it to "My selections" as a couple of people I showed the concepts to suggested that "My styles" indicated that they could write their own styles rather than choose which styles they most often wanted to see or needed to use.
- I discovered an extremely useful online discussion board, StackExchange's User Experience community (<http://ux.stackexchange.com/>). It will be helpful with this project as well as with future projects.

**Analysis.** Changes that I plan to try in the next iteration of the database include:

- Change 1: Put the search box in the blue box with all of the other navigational links and sorting options. Explanation: In the initial design, search function was hard to find. It was much easier for users to see in the redesign.
- Changes 2 and 3: Remove the middle two columns from the page. Add a link in the blue box that says something like “Print your style guide.” On the page that pulls up from that link, show all styles, then allow them to narrow their styles by REMOVING Web, Print, Social media, and/or Counties and regions styles. Explanation for changes 2 and 3: Testers were confused by the sorting options in the middle two columns. There was also confusion about whether choosing them expanded or refined their search. I realized they were mainly to reduce the number of styles for printing.
- Change 4: Make sure “see also” tags and synonyms marked in the administrative end of the database are comprehensive enough. This may require much user testing and user suggestions. Explanation: Testers tended to “go to” the alphabetical listing, and the letter they go to may not be the letter of the first word of the style entry. The hardest challenge on the entry end will be making sure to not bring up more styles than are helpful in a search.
- Change 5: Change “Need help? Email the editors” to “Comments, suggestions or questions? Email the editors.” Explanation: I would like to convey that users can contact me for more than just help.
- Change 6: Remove “Date added” from the sort options. Explanation: If last updated and date added are mixed in the last updated sort, is the date added sort really needed?

**Research project.** I think the prototype and usability tests in the HCI course were a great pretest for the final usability tests. They will also help me answer the IRB questions I need to answer soon.

**December 3, 2012**

**Hours.** 18

**Progress.**

- I finished the HCI course through Coursera.org with a 95% and received the certificate for the studio track. The course was immensely helpful in guiding my thinking for the style database.
- After testing the prototype of the database for the HCI course, I have worked with John on another revision that puts what the editors found confusing in an “advanced search” area where it no longer confuses the simple search functions. John has now put the database in a place where I can access it and add data to it. After I’ve edited the wording and search panel design and added a sufficient number of styles (I’ve added several but need to add more) to make the Web page comprehensive enough for testing, I’ll start the testing for my project.

**Analysis.** As many times as I’ve done user testing in my job, I still am amazed when others can’t see what I think is completely obvious. I am anxious to test users who are less experienced with online style databases.

**Research project.** I will follow up on the IRB changes and additions I need to make before testing. As mentioned above, I’m getting close to testing the database for the research component of my project.

## **January 28, 2013**

**Hours.** 30

### **Progress.**

- I have been working on adding styles to the database to be sure I have everything in there that the usability test participants will need to complete the tasks in the usability tests.
- I have been working through changes that need to be made to the search area before the usability tests. I will need to have John implement these changes, and he won't be able to do that for a few weeks as his office is moving. In the meantime, I will keep adding styles to the database in preparation.

**Research project.** I have resubmitted the IRB application and am awaiting approval to start the usability tests.

## **February 19, 2013**

**Hours.** 30

### **Progress.**

- I have added all of the styles from the existing style page to the new database. This should be sufficient for the usability tasks I submitted to IRB.
- John and I have implemented many changes to the interface, and I am excited about how it is working. He was even able to determine how to make the "see also" references link up to the correct styles, which was tricky because of the complications of the search functions.

- We have decided the database will be placed as an iFrame in an MU Extension Web page and in the CMS our IT people built, so I will test the database as a standalone page without the navigation, headers, etc., on the page.

**Analysis.** I am curious to see what users will have difficulty with in this interface. As I have seen many times during usability tests, it is difficult to predict what will be readily apparent to users and what will trip them up. Often it's the most obvious thing to the people who designed it that is the hardest thing for an unfamiliar user to see. While the interface isn't perfect, I am pleased with how far we've come. The interface has come a long way from my first iteration.

**Research project.** I am awaiting approval to start the usability tests. In the meantime, I will continue to add styles and prepare for a style committee meeting.

### **March 17, 2013**

**Hours.** 40

**Progress.**

- While awaiting IRB approval, I tested the system a little further. A co-worker tested it as well, and we identified a few bugs that would have made it difficult for users to complete the usability tests. I believe the bugs were added when we changed another part of the database. John fixed those bugs, and I changed the tagging system a little bit to add the "Frequently needed" styles to the tags area of the advanced search.
- I started the list of styles that I think we should add to the style guide that I will take to the first meeting of the style committee. I will call this meeting when I have

completed the list. I am taking this list from the style guides shared with me by other states' extension units and colleges.

- I went through the usability tasks again to ensure there is a way to complete each task with the data in the style database.
- I added many tags (frequently needed, Web, print, counties and regions) to the database to prepare for testing.

**Analysis.** Test and test again — before officially testing. I knew this, but it is interesting how often you find something each time you test a system. Also, after running one test, I am, as usual, surprised by some findings.

**Research project.** Of course, once I had IRB approval, I decided to change one of my tasks slightly and add another task. These were both related to the “Frequently needed” tag. I resubmitted them for approval, and approval was granted. I did one usability test with a county secretary and am preparing to test two more people. As usual, what I thought would be obvious was not necessarily obvious, and some of the concepts I thought might be difficult were readily apparent to the tester. I look forward to reviewing her usability test further to find things we might fix. I will test all three users with the same database then make changes based on those tests before sending out a survey to a much larger group.

**March 25, 2013**

**Hours.** 15

**Progress.**

- Tested two users.
- Continued adding to my list of possible styles from other counties.
- Noted changes that should be made to the system after the first two usability tests.

**Analysis.** I actually realized before starting the usability tests that the system needs a faster way than scrolling to return to the top of the page from the entry screens. However, there was not time to fix that before the first scheduled test. I think just that change will make a big difference. In the first usability test, the subject commented that if she had some time to use the system alone, she would likely figure it out. She also said that she would become more comfortable with it as she uses it. The second usability test was with an editor who is used to style guides. She appreciated many of the more advanced features.

**Research project.** Two usability tests completed, and one scheduled. It is taking a lot to not make changes before the third one, but I will not. I am anxious to make changes before sending out the survey version, however. I am setting up the survey version now.

**April 16, 2013**

**Hours.** 30

**Progress.**

- Completed testing of four users, but I will only use three for the results. One of the users kept accidentally ending the task when she re-read instructions, so I don't have good time-on-task data for her. Also, she did complete the three tasks she ended early at the end of her session, but the recording had stopped. I will, however, take her test into account when determining changes to make.
- Analyzed results for changes that need to be made. I have a long list of possible changes to discuss with John.
- I also made a list of the positive results for my report.

**Analysis.** I am encouraged after the usability tests that this will be a more helpful system than the style page we currently have. Overall, comments were positive. As mentioned, I have several possible changes to discuss with John and have set up a meeting with him tomorrow.

**Research project.** Usability tests are complete. I need to write up a report of the results. The surveymonkey.com survey is ready to be sent out after the changes are made. I am debating simplifying the second task before sending out the survey as it is long and most of the test participants stumbled over it. However, that would involve approval of the change from IRB.

**September 29, 2013**

**Hours.** 50

**Progress.**

- Have made many of the changes that resulted from issues during the usability tests. Some things could not be “fixed,” which I am trying to live with.
- Moved the database into a page in our CMS and adjusted things from there. Sent programmer additional changes, which he made. Will soon move the database into “production” rather than “test” so it can go live. At that time, I will need to change all of the style “added” and “modified” dates to match when they were actually developed and added.
- Moved styles from our organizational AP Stylebook to the style database.

**Analysis.** Because I’ve spent so much time on this project, I think I’m more anxious about the reception of the style database than I’ve been about any project in the past, including complete site redesigns. However, the feedback from the usability testers was encouraging.

**Research project.** Almost finished with the report of the usability tests. As I work on the report, I keep thinking of things to adjust in the database, which is more fun than writing the report!

**November 3, 2013**

**Hours.** 30

**Progress.**

- Updated all of the created and modified dates of the styles to match when they were actually created and modified.
- Moved the database from “test” to “production.”
- Launched the new style page with the database version in the staff Communications and marketing pages.
- Adjusted a few more things in the database after writing the usability report and planning a presentation using the new database-driven style guide.
- Prepared presentation then presented on style using the new style database at our fall program conference to more than 100 participants.
- Proposed a regular “style of the newsletter” for MU Extension’s internal newsletter.

**Analysis.** I’ve wanted to put together a comprehensive style guide for MU Extension since the first time I worked here. It feels good to have a style guide put together that is useful and comprehensive. I look forward to working with my style committee to keep adding entries and features to the style guide.

**Research project.** Turned in the usability test report and am awaiting feedback.

### **Chapter 3: Project Evaluation**

The style guide I developed with the help of a database programmer in Extension Technology and Computing Services (ETCS) is a vast improvement over the previous style listing. Styles can now be searched by words in the title and aliases, personalized, linked to other related styles, and tagged.

Ultimately, a database-driven Web page is useful only if it works for the end-user. As you can see from the physical evidence shown in Chapter 4 of this project report, the concept of how the database would work changed dramatically during my time in the Human Computer Interaction course and while building the test database with John Myers in ETCS.

Jakob Nielsen's 10 usability heuristics and the usability testing performed during this project greatly influenced the design as well. I am pleased with the success of the combination of design by heuristics and subsequent usability evaluation. It is unusual for someone with training in a field such as journalism to also attempt a research method that is typically from another field, in this case information science. This model consisted of bringing my training as a journalist and editor to the table, then adding what I learned in coursework in usability testing and day-to-day experience with usability testing at my job. The model described could be valuable for others as a way to add usability evaluation on top of informational website or application development in their area of expertise.

In this case, I hope that developing an obviously specialized database application for the style guide will help indicate to faculty and staff that it is important to follow. The

entire organization is working on an internal “One MU Extension” campaign that follows the University of Missouri’s “One Mizzou” campaign, and this project is an obvious fit.

After we replaced the previous style page with the style database in October 2013, I announced the change and showed the database during a session on communications at MU Extension’s fall program conference. Since then, I’ve received several positive comments about the new format. Unfortunately, I also received a comment that one of our regional directors was trying to use it at 5 a.m. one day and couldn’t get it to load on her home laptop or iPad. We still aren’t sure why as I could load it on my iPhone at 6 a.m. when I received her email.

I plan to feature the new guide in an upcoming issue of the MU Extension *Insider* internal newsletter so people who weren’t at the fall conference or who haven’t already seen it can learn more about it. However, I have been waiting until I am prepared to begin a “Style of the month” article in the newsletter following the announcement. In the meantime, it is available on the staff pages of the website and has replaced the previous style page for those who used that page.

Of course the database design is not perfect, and it is missing some features I would like to incorporate in the future. First, the database is embedded in the staff pages using an iFrame. Therefore, the text in the guide is not searchable when you search the staff pages. Second, it is not possible to send someone directly to a specific style entry in the guide. Instead, you have to tell them what to search for. Third, 4-H, which is a well-known program in extension, is not searchable in the database because of the “stop” words in the database search. This is unfortunate because we have several styles specific to that program. This, however, would be difficult to remedy in any search design.

The best part of this project was the excitement exhibited by the usability study participants about the personalization features of the style guide. I am happy to offer a useful guide that allows users to personalize it to better help them do their jobs. That should increase use and increase the probability that our print and online products will be more consistent.

Overall, the product developed is a great improvement, and this project has helped me develop and hone many professional skills. I learned a lot about database development, usability testing, and developing a style guide through the process. Learning how to think through database projects and develop prototypes through the HCI course was a particularly useful addition to my skill set and will serve me well as MU Extension changes its website storefront in the coming months. Additionally, the style committee formed during this project will be an asset in the future as styles are added to the database.

## Onsite supervisor evaluation



### MU Extension Communications

4 Whitten Hall  
Columbia, MO 65211

PHONE 573-882-2487

E-MAIL [laurg@missouri.edu](mailto:laurg@missouri.edu)

WEBSITE [extension.missouri.edu](http://extension.missouri.edu)

December 24, 2013

Prof. Jennifer Rowe  
208 Lee Hills Hall  
Missouri School of Journalism  
University of Missouri  
Columbia, MO 65211

Dear Prof. Rowe:

DeeAnna Adkins has been a member of my staff for many years. Her primary responsibility is information architecture and Web development; however, she is a highly qualified editor and keenly aware of the need for consistent editorial style throughout an organization. I was therefore delighted when DeeAnna decided to create a style guide and online database for her journalism master's project outside the normal duties of her position.

DeeAnna has worked for several years with other editors to collect lists of style issues unique to MU Extension and has frequently provided style training for faculty and staff. Being aware of the culture of the organization, she had a perfect vision of how an online style guide could be designed to improve editorial style throughout the organization.

As part of her regular duties, DeeAnna has an excellent working relationship with John Myers, director of Extension Technology and Computer Services, and she worked closely with him to complete the programming of the online guide.

DeeAnna performed usability testing throughout the development of the style guide to ensure that it was a tool that targeted users would quickly adapt. We have found that usability testing is essential to all quality Web development.

With completion of this project, DeeAnna has created a tool that will be used by MU Extension for a long time to improve the editorial quality of its content.

Sincerely,

A handwritten signature in cursive script that reads 'George Laur'.

George Laur  
Consultant/Retired Director of Publishing

University of Missouri, Lincoln University, U.S. Department of Agriculture and Local Extension Councils Cooperating

EQUAL OPPORTUNITY/ADA INSTITUTIONS

## **Chapter 4: Physical Evidence of Work**

As I developed the style guide over several months, I took extensive notes and saved versions of many prototypes and iterations of the database. The Human Computer Interaction course and usability testing resulted in many additional versions and changes. This chapter and the multimedia folder include a small sample that shows specifically how the programmer and I developed the database and website.

Original MU Extension Style and Usage Guide (one page included here and the full pdf included as original-style-guide.pdf in the multimedia folder)

University of Missouri  
Home | People | Locations | Program index | Calendar | News | Publications | 4-H | Continuing education • Seminars

UNIVERSITY OF MISSOURI Extension Search MU Extension

Agriculture Natural resources Lawn and garden Home and consumer life Nutrition and health Families and relationships Community and leadership Business and careers Emergency management

## For staff

home > staff > marketing and communications > **style and usage**

[Expand All](#) | [Collapse All](#)

- Human resources
- Fiscal/accounting
- Program integration
- Build public value
- Stakeholder relations
- Program development tools
- Professional development
- Nondiscrimination and accessibility
- Marketing and communications
  - Style and usage
    - Identity guidelines
    - Graphic standards
    - Order marketing items
    - Order staff name tags
    - Marketing county offices
  - Media relations
    - Statewide strategic communications program
    - Document and publication templates
    - Copyright, fair use

## MU Extension editorial style and usage guide

To quickly search this page, use your browser's find feature (Control + F on the PC and Command + F on the Mac).

### Why have a style and usage guide?

Style is not about right and wrong; it's about consistency and efficiency. While many elements of grammar can be debated, style is a publisher's collection of decisions about grammar, punctuation and design. Consistent style makes our pages more credible, usable and readable. Style allows us to concentrate on content rather than style decisions.

On the Web and in print, MU Extension primarily follows Associated Press style. As an MU employee, you may access this style guide using your pawprint and password at <http://proxy.mui.missouri.edu:2048/login?url=http://www.apstylebook.com/missouri/>. MU Extension's house style, found on this page, overrules the AP Stylebook when there is a difference.

For questions and to suggest additions to our ever-evolving style guide, contact DeeAnna Adkins at [adkinsdk@missouri.edu](mailto:adkinsdk@missouri.edu).

### Style and usage entries

#### University of Missouri Extension

The formal name for the systemwide function that represents the extension mission of the University of Missouri. MU Extension is the preferred second reference for programs based on the Columbia campus and at county extension centers and may be used as a first reference when space is limited. Example: A complete list of seminar sites is available on the MU Extension website at [extension.missouri.edu](http://extension.missouri.edu). UMKC Extension, Missouri S&T Extension and UM-St. Louis Extension are the preferred second references for programs based on these campuses. Capitalize the word "Extension" when it is used as part of a formal name, such as "University of Missouri Extension Association;" lowercase in all other instances, such as "the extension program." Do not form acronyms by using "E" for Extension, such as MUE or UME, in external or internal communications. The preferred way to show our Web address is: [extension.missouri.edu](http://extension.missouri.edu)

#### abbreviations and acronyms

Avoid abbreviations and acronyms when possible. Spell out

#### Frequently needed entries

- file format and linking to documents
- capitalization in headings, publication titles
- spelling of the word email
- when to capitalize the word extension
- exclamation points

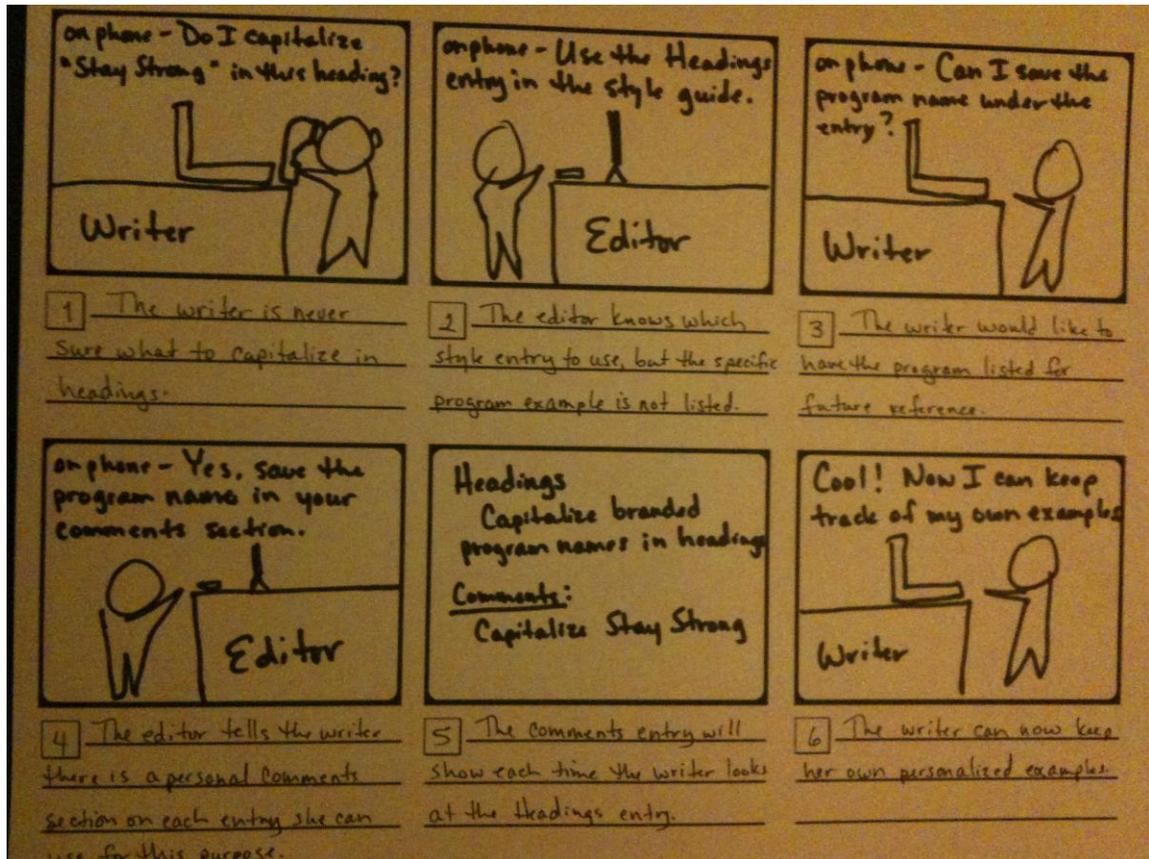
#### Summary of the "don'ts"

In general, don't use the following:

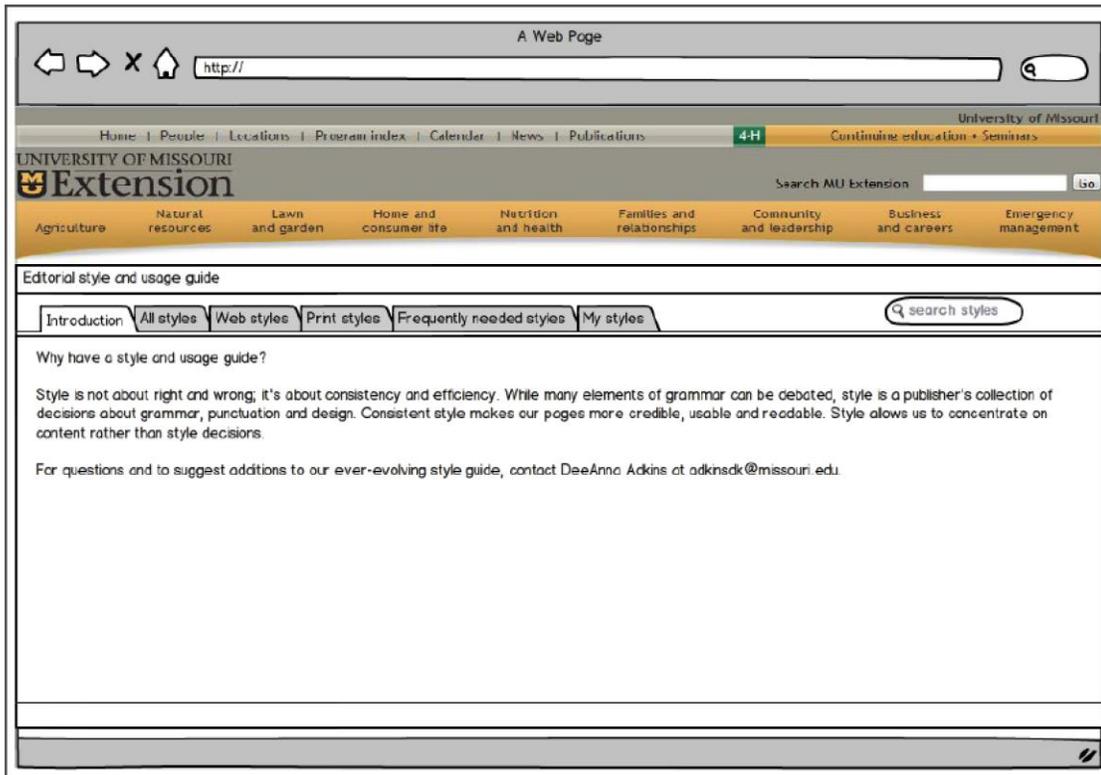
- ALL CAPS

# Prototypes and plans from the Human Computer Interaction (HCI) Course I took online

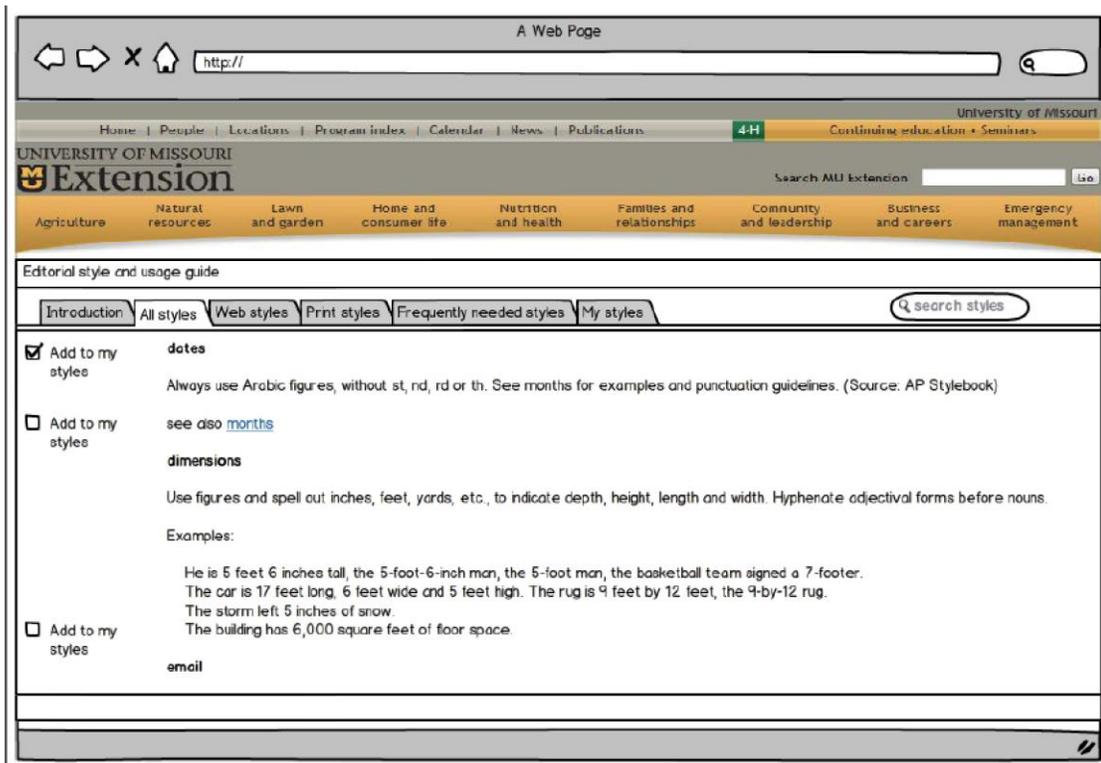
HCI prototypes: Storyboard indicates the need for a searchable style guide



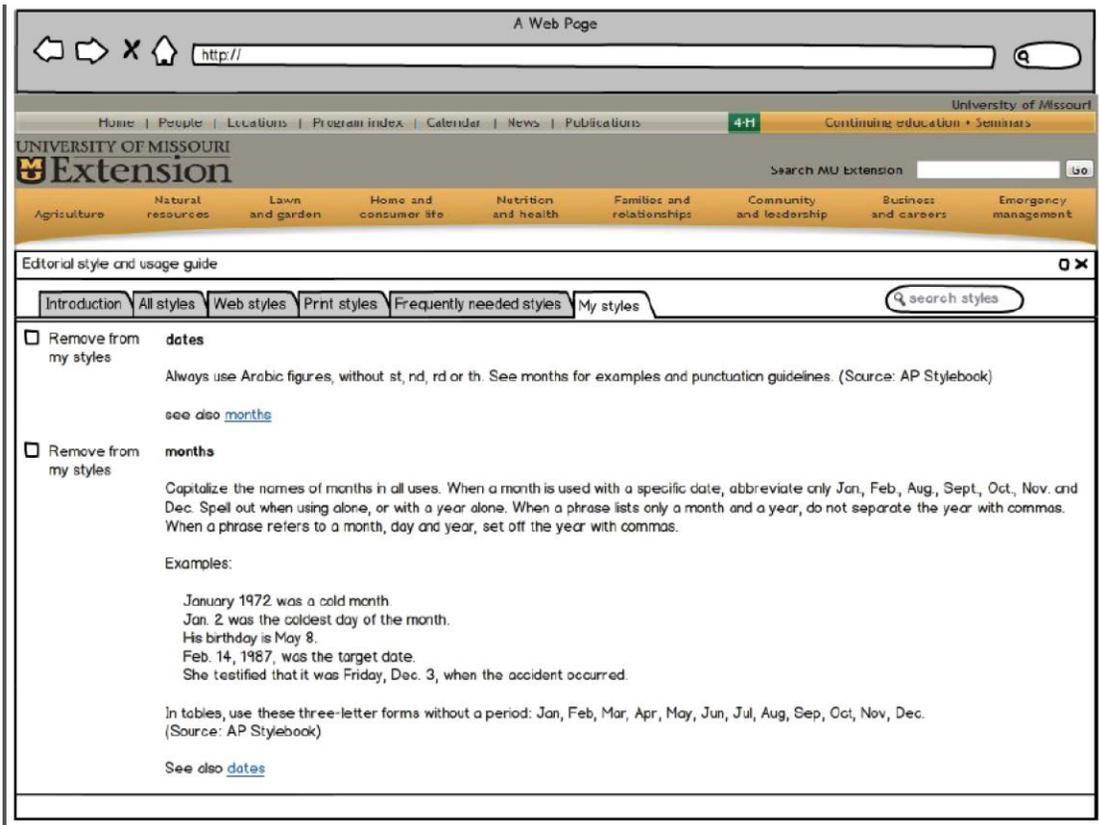
## HCI prototypes: First prototype for intro screen



## HCI prototypes: First prototype for "All styles" screen



## HCI prototypes: First prototype for “My styles” screen



## HCI prototypes: Second prototype for intro screen that includes all styles

University of Missouri Extension

Home | People | Locations | Program index | Calendar | News | Publications | 4-H | Continuing education | Seminars

Search MU Extension

Agriculture | Natural resources | Lawn and garden | Home and consumer info | Nutrition and health | Families and relationships | Community and leadership | Business and careers | Emergency management

### Editorial style and usage guide

Sort styles by: [All styles](#) | [Web styles](#) | [Print styles](#) | [Frequently needed styles](#) | [My styles](#)

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#)

#### Why have a style and usage guide?

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For questions and to suggest additions to our ever-evolving style guide, contact DeeAnna Adkins at [adkinsdk@missouri.edu](mailto:adkinsdk@missouri.edu).

#### dates

Always use Arabic figures, without st, nd, rd or th. See months for examples and punctuation guidelines. (Source: AP Stylebook)

see also [months](#)

Add to "My styles"

#### dimensions

Use figures and spell out inches, feet, yards, etc., to indicate depth, height, length and width. Hyphenate adjectival forms before nouns.

Examples:

He is 5 feet 6 inches tall, the 5-foot-6-inch man, the 5-foot man, the basketball team signed a 7-footer.  
The car is 17 feet long, 6 feet wide and 5 feet high. The rug is 9 feet by 12 feet, the 9-by-12 rug.  
The storm left 5 inches of snow.  
The building has 6,000 square feet of floor space.

Add to "My styles"

#### email

Added March 21, 2010

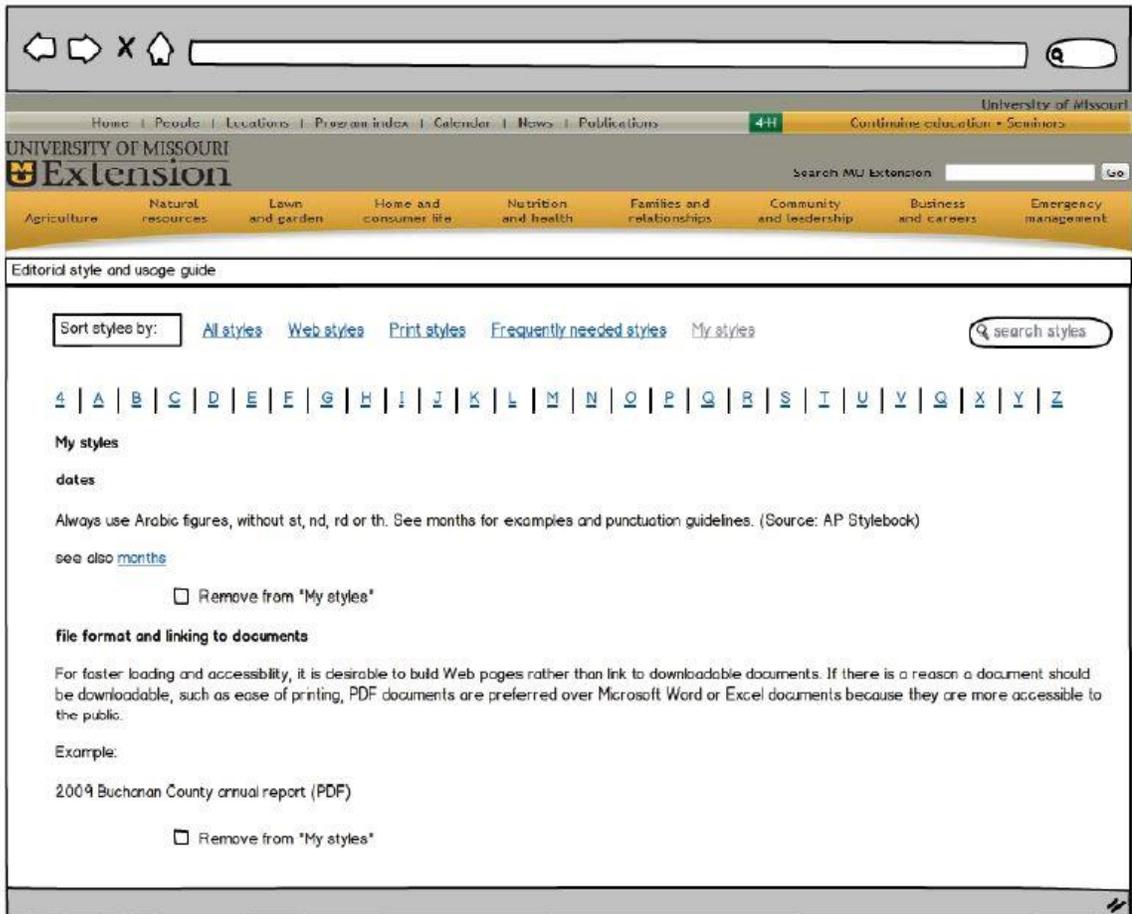
Acceptable in all references for electronic mail. (Source: AP Stylebook)

#### months

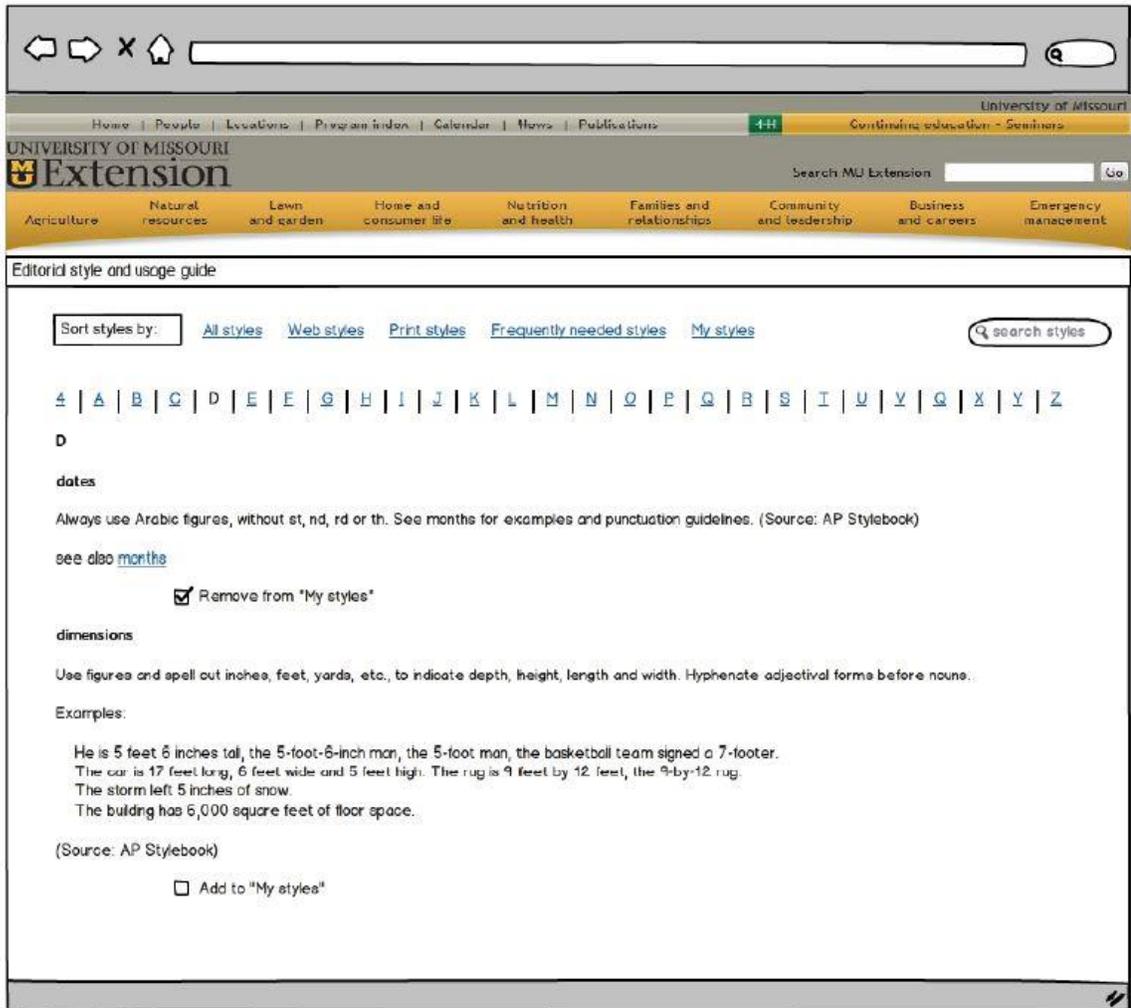
Capitalize the names of months in all uses. When a month is used with a specific date, abbreviate only Jan, Feb, Aug, Sept, Oct, Nov, and Dec. Spell out when using alone, or with a year alone. When a phrase lists only a month and a year, do not separate the year with commas. When a phrase refers to a month, day and year, set off the year with commas.

Examples:

## HCI prototypes: Second prototype for “My styles” screen



HCI prototypes: Second prototype showing alpha sorting screen



## HCI prototypes: Third prototype for sorting and intro screen

University of Missouri  
Home | People | Locations | Program index | Calendar | News | Publications 4-H Continuing education • Seminars

UNIVERSITY OF MISSOURI Extension Search MU Extension Go

Agriculture Natural resources Lawn and garden Home and consumer life Nutrition and health Families and relationships Community and leadership Business and careers Emergency management

**Editorial style and usage guide** Search style guide Go

Sort styles by: **All styles** Web only Print only Organizational Frequently needed My favorites Last updated Most recently added Source

A B C D E F G H I etc. Ask the editor ...

### Why have a style and usage guide?

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For questions and to suggest additions to our ever-evolving style guide, contact DeeAnna Adkins at [adkinsdk@missouri.edu](mailto:adkinsdk@missouri.edu).

### dates

Always use Arabic figures, without st, nd, rd or th. See months for examples and punctuation guidelines. (Source: AP Stylebook)

see also [months]  
 Add to My favorites

### dimensions

Use figures and spell out inches, feet, yards, etc., to indicate depth, height, length and width. Hyphenate adjectival forms before nouns.

Examples:

He is 5 feet 6 inches tall, the 5-foot-6-inch man, the 5-foot man, the basketball team signed a 7-footer.  
The car is 17 feet long, 6 feet wide and 5 feet high. The rug is 9 feet by 12 feet, the 9-by-12 rug.  
The storm left 5 inches of snow.  
The building has 10,000 square feet of floor space.

### email

Added March 21, 2010

Acceptable in all references for electronic mail. (Source: AP Stylebook)

months

Capitalize the names of months in all uses. When a month is used with a specific date, abbreviate only Jan., Feb., Aug., Sept., Oct., Nov. and Dec. Spell out when using alone, or with a year alone. When a phrase lists only a month and a year, do not separate the year with commas. When a phrase refers to a month

# HCI prototypes: Fourth prototype for sorting and intro screen

University of Missouri  
Home | People | Locations | Program index | Calendar | News | Publications 4-H Continuing education • Seminars

UNIVERSITY OF MISSOURI Extension Search MU Extension Go

Agriculture Natural resources Lawn and garden Home and consumer life Nutrition and health Families and relationships Community and leadership Business and careers Emergency management

Editorial style and usage guide Search style guide Go

Marketing and communications  
Style and usage  
Order marketing items  
Order staff name tags  
Marketing county offices  
Statewide strategic communications program  
Document and publication templates  
Copyright, fair use and privacy information  
Photo release forms  
Writing well  
Website support  
Communication and marketing contacts

Show me All styles in this order: Styles only for: Organizational styles for: Styles personalized for me:  
Alphabetical Web All MU Extension My styles  
Last updated Print Counties and regions My comments  
Date added Social media

Jump to A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z  
Need help? Email the editors.

### Why have a style and usage guide?

Style is not about right and wrong; it's about consistency and efficiency. While many elements of grammar can be debated, style is a publisher's collection of decisions about grammar, punctuation and design. Consistent style makes our pages more credible, usable and readable. Style allows us to concentrate on content rather than style decisions.

For questions and to suggest additions to our ever-evolving style guide, contact DeeAnna Adkins at [adkinsdk@missouri.edu](mailto:adkinsdk@missouri.edu).

### Style and usage entries

#### dates

Add to My styles [Add a comment to this style](#)

Always use Arabic figures, without st, nd, rd or th. See months for examples and punctuation guidelines. (Source: AP Stylebook)

see also [months]

#### dimensions

Add to My styles [Add a comment to this style](#)

Use figures and spell out inches, feet, yards, etc., to indicate depth, height, length and width. Hyphenate adjectival forms before nouns.

Examples:  
He is 5 feet 6 inches tall, the 5-foot-6-inch man, the 5-foot man, the basketball team signed a 7-footer.  
The car is 17 feet long, 6 feet wide and 5 feet high. The rug is 9 feet by 12 feet, the 9-by-12 rug.  
The storm left 5 inches of snow.  
The building has 6,000 square feet of floor space.

### Frequently needed entries

- file format and linking to documents
- capitalization in headings, publication titles
- spelling of the word email
- when to capitalize the word extension
- exclamation points

### Summary of the "don'ts"

In general, don't use the following:

- ALL CAPS
- ampersands
- underline
- centered text
- abbreviations
- acronyms that users won't

Working prototypes: First working search screen prototype

**Show me** Styles in this order:  Alphabetical  Last updated  Date added

Styles only for:  Print  Social media  Web

Organizational styles for:  All MU Extension  Counties and regions

Styles personalized for me:  My selections  My comments

**Jump to** [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

**Search style guide**   [Need help? Email the editors.](#)

Working prototypes: Second working search screen prototype

**Search all style guides**   [Comments or questions? Email the editors.](#)

**Show me** Styles in this order:  Alphabetical  Last updated

Styles personalized for me:  My selections  My comments

[Show advanced search options](#)

**Jump to** [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

Working prototypes: Second working search screen prototype with advanced options showing

**Search all style guides**   [Comments or questions? Email the editors.](#)

**Show me** Styles in this order:  Alphabetical  Last updated

Styles personalized for me:  My selections  My comments

[Hide advanced search options](#)

Show styles that are tagged:

All MU Extension  Counties and regions  Print  Social media  Web

Show styles that contains **any** of the selections above

Show styles that contains **all** of the selections above

Show styles that apply to all uses

**Jump to** [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

The testing site used in the usability tests (one page included here and the full pdf included as usability-test-version.pdf in the multimedia folder)

**Search all styles** [Comments or questions? Email the editors.](#)

**Show me** Styles in this order: [Alphabetical](#) [Last updated](#)

Styles personalized for me: [My selections](#) [My comments](#)

[Show advanced search options](#)

**Jump to** [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

### 4-H clubs and project clubs

*Added Jan. 15, 2013; modified Feb. 19, 2013*

Use the following format to concisely and consistently list your county's 4-H clubs and project clubs along with their meeting times, meeting places, leaders and contact information. Remember to use "time, date, place" (TDP) to consistently order information about events.

**Trinity 4-H Club** meets at 7 p.m. on the fourth Monday of every month at the extension center in Columbia. Club leaders: Donna Johnson, 573-999-9999, or Jane Doe, 573-999-1234 or [janedoe@hotmail.com](mailto:janedoe@hotmail.com)

**Tagged as:** Counties and regions

### abbreviations and acronyms

*Added Nov. 26, 2012; modified Feb. 24, 2013*

Avoid abbreviations and acronyms when possible. Spell out program names — the public is not as familiar with most of our program names as we are.

If the name will be mentioned multiple times on the page, then spell out the program name on first reference then put the acronym in parentheses after the spelled-out version. Example: The United States Department of Agriculture (USDA) has set guidelines for .... (This is no longer AP style, but we still follow this rule.)

Spell out all words such as "through" and "with."

### academic degrees

*Added Nov. 26, 2012*

If mention of degrees is necessary to establish someone's credentials, the preferred form is to avoid an abbreviation and use instead a phrase such as Sally Ray, who has a bachelor's degree, master's degree or doctorate in English.

- Use an apostrophe in bachelor's, master's.
- Use such abbreviations as BA, MA and PhD only when the need to identify many individuals by degree on first reference would make the preferred form cumbersome.
- The exception: When identifying MU alumni in a profile or story about them, use this form, set off by commas, after the person's name: Bill Doe, BS '95, and Sally Ray, MA '04. When they have multiple degrees from different years, use this form: Sally Ray, BS '78, MS '81. For multiple degrees in the same year, use this form: Bill Doe, BA, BJ '92.
- When used after a name, an academic abbreviation is set off by commas: Bill Doe, PhD, spoke to the class.
- Do not precede a name with a courtesy title for an academic degree and follow the name with the abbreviation for the degree in the same reference, as in Dr. Bill Doe, MD.

# New style database after inclusion in the staff pages

The screenshot shows the University of Missouri Extension website. The top navigation bar includes links for Home, People, Locations, Program index, Calendar, News, and Publications. A secondary bar features '4-H' and 'Continuing education • Seminars'. The main header displays the 'UNIVERSITY OF MISSOURI Extension' logo and a search bar for MU Extension. Below the header is a menu with categories: Agriculture, Natural resources, Lawn and garden, Home and consumer life, Nutrition and health, Families and relationships, Community and leadership, Business and careers, and Emergency management.

The main content area is titled 'Style and usage' and is part of a breadcrumb trail: 'mu extension > communications and marketing > diy communications > style and usage'. On the left, there is a search box for faculty and staff pages, a 'Search' button, and a list of expandable categories. The 'DIY communications' category is expanded, showing sub-items like 'Style and usage', 'Developing communications products', 'Copyright law, fair use and photo usage', 'Templates and logos', 'Marketing', and 'Media relations'.

The 'Style and usage' section contains a paragraph explaining that style is about consistency and efficiency. Below this is a search interface for styles, including a search box, a 'Go' button, and options to sort styles (Alphabetical, Last updated) and filter them (My selections, My comments). A 'Login' button is also present.

Two articles are listed:

- 4-H clubs and project clubs**  
Added Oct. 31, 2010; modified Feb. 21, 2011  
Use the following format to concisely and consistently list your county's 4-H clubs and project clubs along with their meeting times, meeting places, leaders and contact information. Remember to use "time, date, place" (TDP) to consistently order information about events.  
**Trinity 4-H Club** meets at 7 p.m. on the fourth Monday of every month at the extension center in Columbia. Club leaders: Donna Johnson, 573-999-9999 ☎, or Jane Doe, 573-999-1234 ☎ or janedoe@hotmail.com  
Tagged as: Counties and regions
- 4-H name and emblem**  
Added June 20, 2009; modified Sept. 23, 2013  
The National 4-H Headquarters has published federally mandated policies regarding the use of the 4-H emblem and logo. See the policies on the Web at: [http://www.csrees.usda.gov/nea/family/res/youthdev\\_res\\_emblem.html](http://www.csrees.usda.gov/nea/family/res/youthdev_res_emblem.html).  
Source: National 4-H Headquarters  
Tagged as: Identity guidelines

New style database after inclusion in the staff pages with advanced options open

University of Missouri  
 Home | People | Locations | Program index | Calendar | News | Publications | 4-H | Continuing education • Seminars

UNIVERSITY OF MISSOURI Extension Search MU Extension Go

Agriculture Natural resources Lawn and garden Home and consumer life Nutrition and health Families and relationships Community and leadership Business and careers Emergency management

mu extension > communications and marketing > diy communications > style and usage

Search faculty and staff pages  
 Google™ Custom Search Search

Expand All | Collapse All

- Human resources
- Fiscal/accounting
- Program integration
- Build public value
- Stakeholder relations
- Donor education
- Program development tools
- Professional development
- Nondiscrimination and accessibility
- Communications and marketing
  - Contacts and offices
  - Available services
  - Ordering information
  - DIY communications
    - Style and usage
    - Developing communications products
    - Copyright law, fair use and photo usage
    - Templates and logos
    - Marketing
    - Media relations

## Style and usage

Style is not about right and wrong; it's about consistency and efficiency. While grammar can sometimes be debated, style is a publisher's collection of decisions about grammar, punctuation and design. Consistent style makes our pages more credible, usable and readable and lets us focus on content rather than style decisions. Follow our house style below, then Associated Press style. For access to the AP Stylebook online and our list of preferred references, see [Style and usage references](#).

Search all styles Go Comments or questions? Email the editors.

Show me Styles in this order:  Alphabetical  Last updated Clear selections

Styles personalized for me:  My selections  My comments Print selected styles

Hide advanced search options Login

Show styles that are tagged:  
 Frequently needed  Counties and regions  Identity guidelines  Spelling

Show styles that contain **any** of the selections above  
 Show styles that contain **all** of the selections above

Jump to A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

### 4-H clubs and project clubs

Added Oct. 31, 2010; modified Feb. 21, 2011 top

Use the following format to concisely and consistently list your county's 4-H clubs and project clubs along with their meeting times, meeting places, leaders and contact information. Remember to use "time, date, place" (TDP) to consistently order information about events.

**Trinity 4-H Club** meets at 7 p.m. on the fourth Monday of every month at the extension center in Columbia. Club leaders: Donna Johnson, 573-999-9999 ☎, or Jane Doe, 573-999-1234 ☎ or [janedoe@hotmail.com](mailto:janedoe@hotmail.com)

Tagged as: Counties and regions

### 4-H name and emblem

Added June 20, 2009; modified Sept. 23, 2013 top

The National 4-H Headquarters has published federally mandated policies regarding the use of the 4-H emblem and

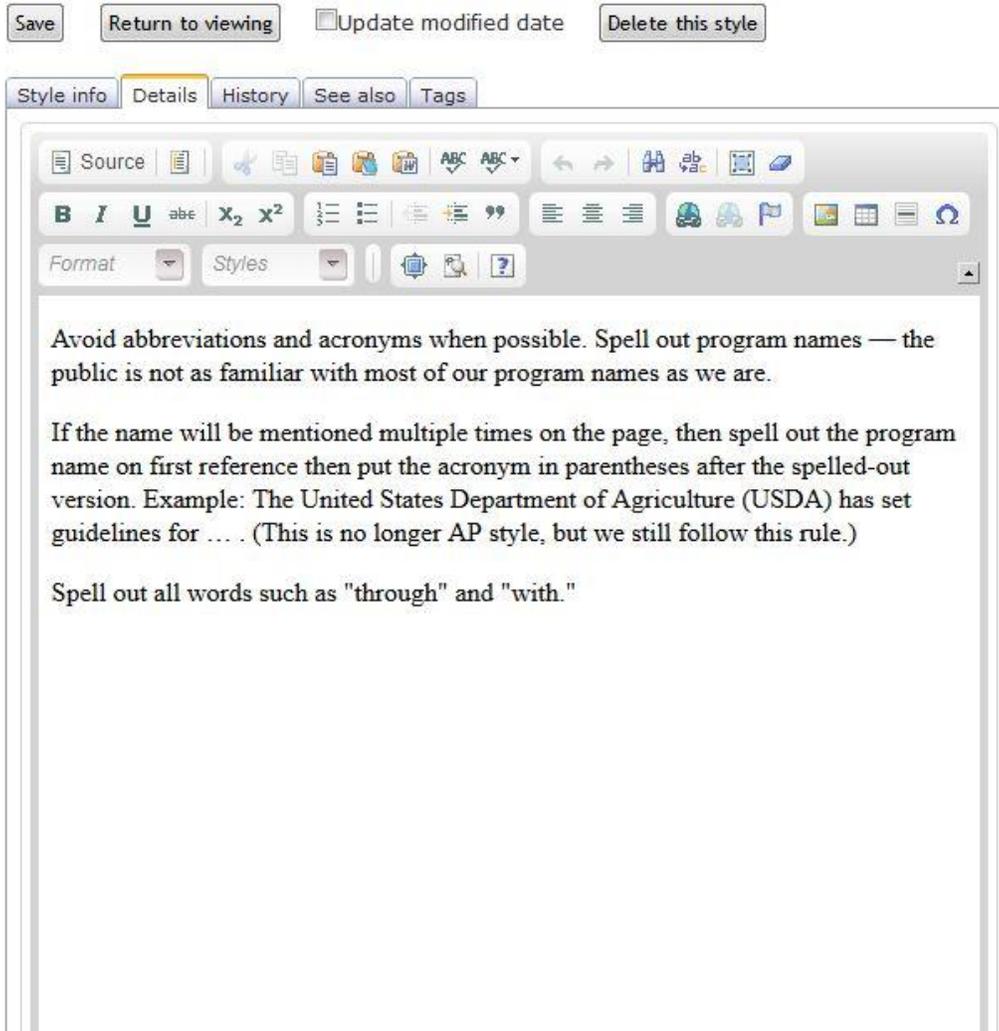
## Sample editing screen for style entries in the new style database

### Style and usage

Style is not about right and wrong; it's about consistency and efficiency. While grammar can sometimes be debated, style is a publisher's collection of decisions about grammar, punctuation and design. Consistent style makes our pages more credible, usable and readable and lets us focus on content rather than style decisions. Follow our house style below, then Associated Press style. For access to the AP Stylebook online and our list of preferred references, see [Style and usage references](#).

Save    Return to viewing     Update modified date    Delete this style

Style info    Details    History    See also    Tags



The screenshot shows a rich text editor interface. At the top, there are four buttons: 'Save', 'Return to viewing', ' Update modified date', and 'Delete this style'. Below these buttons is a navigation bar with tabs: 'Style info', 'Details', 'History', 'See also', and 'Tags'. The 'Details' tab is selected. The main editing area contains a toolbar with various icons for text formatting (bold, italic, underline, text color, background color, font size, font face, bulleted list, numbered list, indent, outdent, link, unlink, insert link, insert image, insert video, insert audio, insert table, insert code, undo, redo) and a 'Source' button. Below the toolbar, the text of the style entry is displayed in a clean, sans-serif font. The text reads: 'Avoid abbreviations and acronyms when possible. Spell out program names — the public is not as familiar with most of our program names as we are.' followed by 'If the name will be mentioned multiple times on the page, then spell out the program name on first reference then put the acronym in parentheses after the spelled-out version. Example: The United States Department of Agriculture (USDA) has set guidelines for ... . (This is no longer AP style, but we still follow this rule.)' and finally 'Spell out all words such as "through" and "with."'.

Avoid abbreviations and acronyms when possible. Spell out program names — the public is not as familiar with most of our program names as we are.

If the name will be mentioned multiple times on the page, then spell out the program name on first reference then put the acronym in parentheses after the spelled-out version. Example: The United States Department of Agriculture (USDA) has set guidelines for ... . (This is no longer AP style, but we still follow this rule.)

Spell out all words such as "through" and "with."

New style database with all entries (one page included here and the full pdf included as new-style-database.pdf in the multimedia folder)

#### Editorial style and usage guide

**Search all styles** [Comments or questions? Email the editors.](#)

**Show me** Styles in this order: [Alphabetical](#) [Last updated](#)

Styles personalized for me: [My selections](#) [My comments](#)

[Show advanced search options](#)

**Jump to** [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

### 4-H clubs and project clubs

*Added Oct. 31, 2010; modified Feb. 21, 2011*

[top](#)

Use the following format to concisely and consistently list your county's 4-H clubs and project clubs along with their meeting times, meeting places, leaders and contact information. Remember to use "time, date, place" (TDP) to consistently order information about events.

**Trinity 4-H Club** meets at 7 p.m. on the fourth Monday of every month at the extension center in Columbia. Club leaders: Donna Johnson, 573-999-9999 ([☎](#)), or Jane Doe, 573-999-1234 ([☎](#)) or [janedoe@hotmail.com](mailto:janedoe@hotmail.com)

**Tagged as:** Counties and regions

### 4-H name and emblem

*Added June 20, 2009; modified Sept. 23, 2013*

[top](#)

The National 4-H Headquarters has published federally mandated policies regarding the use of the 4-H emblem and logo. See the policies on the Web at: [http://www.csrees.usda.gov/nea/family/res/youthdev\\_res\\_emblem.html](http://www.csrees.usda.gov/nea/family/res/youthdev_res_emblem.html).

**Source:** National 4-H Headquarters

**Tagged as:** Identity guidelines

### abbreviations and acronyms

*Added June 20, 2009*

[top](#)

Avoid abbreviations and acronyms when possible. Spell out program names — the public is not as familiar with most of our program names as we are.

If the name will be mentioned multiple times on the page, then spell out the program name on first reference then put the acronym in parentheses after the spelled-out version. Example: The United States Department of Agriculture (USDA) has set guidelines for .... (This is no longer AP style, but we still follow this rule.)

Spell out all words such as "through" and "with."

**See also:** [state names](#)

**Tagged as:** Frequently needed

### academic degrees

*Added June 20, 2009; modified Oct. 24, 2013*

[top](#)

<http://extensionapps.missouri.edu/styles/style.aspx>[12/24/2013 9:16:54 AM]

## Chapter 5: Research Component Report

### Introduction

MU Extension has more than 1,200 active employees housed on the University of Missouri campus, other campuses around the state, and in almost every county in the state. We ask these faculty and staff members to use the house editorial style and usage guide to keep all communications, including Web pages and publications, consistent. More than 200 employees have been trained to use the style guide, and more than 200 others have seen demonstrations of the guide. Previously, the style page I developed was on the Web and was simply a long list of all of our styles in an html document that was only searchable using the browser's page search function (e.g., Ctrl+F on a PC).

As we explain to people who are not trained in communications work, style guides are about consistency and efficiency. Having style choices already decided lets the writer and editor concentrate on the content. In my current position as Web coordinator for MU Extension Communications and Marketing, my staff and I coordinate Web pages that are maintained by people all across extension. To maintain some consistency across these, I developed a house style guide for use in MU Extension.

For my master's project, I took that guide, expanded it, and developed a database-driven version that is searchable and customizable. Then I needed answers to some questions: Is the site any better than it was before? Can people use the site in the ways I intended? Have I allowed for users who think differently than I do to easily use the functions of the site? These are questions all communicators, journalists and news organizations should ask about websites and online applications such as this database-

driven style guide to be sure users are able to take advantage of the intended functionality.

I planned to evaluate the learnability and usability of the new style guide with the usability testing method, which I have found useful in my work and have been trained to do with a graduate course in usability.

For the research component, I conducted the usability test of the new database-driven version of the MU Extension editorial style and usage guide with three users to measure their experience with the style guide. Krug (2014) stated that three participants is the ideal number for a round of testing that is intended to “improve what you’re building by identifying and fixing usability problems.” All of the users work for MU Extension and use the current style guide for parts of their jobs. The tests were to determine if users had problems finding the information they need using the style guide and if the guide is usable and learnable. I developed nine tasks for participants that allowed me to examine the following research question: How usable and learnable is the navigation and search function of the MU Extension online style and usage guide?

## **Literature Review**

During a major redesign and reorganization of the MU Extension website that started in late 2006, the MU Extension Web team made a conscious decision to base decisions on usability testing with customers and internal staff rather than opinions of the team or other staff. Members of the Web team and a group of researchers from the Information Experience Lab at the University of Missouri School of Information Science and Learning Technologies used heuristic evaluation, focus group interviews and

surveys, think-aloud interviewing, and multiple-user simultaneous testing to evaluate the website (Wang et al., 2010). The researchers found that understanding users' problems, wants, and needs can change how Web designers make decisions and can make a website more usable and useful for both their customers and internal users.

### **Purpose and value of a house style guide.**

MacKay (1997), in an article that is often cited in later literature on style guides, defined a style guide as “a rule-driven document that sets the parameters for consistency and acceptability for all written materials produced by an individual or group. A house style guide is one that is produced for an organization's internal use and is specifically tailored for its specific writing contexts” (p. 244). He further noted that there is an assumption that consistent style and form in publications adds to a company's credibility while inconsistencies detract from the company image.

Almost two decades ago, Allen (1995) suggested four good reasons to develop a corporate, or house, style guide: to create consistency in documents, to promote a professional image, to train newly hired employees, and to define how to generate documents. He also suggested that decreasing costs, which he said would happen as a result of the four reasons above, is the main reason corporations should develop style guides.

Having a house style guide to work from can settle disputes among editors, writers, and subject-matter specialists in an organization (Allen, 1995). Although many answers to style questions can be correct, Bright (2005) stated that “organizations wishing to present a consistent and coherent message must choose one of the correct

answers and reject all other options” (p. 42). As MacKay (1997) concluded, “A style guide’s purpose is to provide ground rules, with both the organization and the audience in mind” (p. 250).

The role of the house style guide has changed with the addition of digital content that portrays a company’s image. Additional sections are needed for items such as organizational identity guidelines and terminology and other styles specific to the type of media where the document resides (Bright, 2005). Racine (2008) recommended that Web style guides, in particular, should include both editorial and technical standards. For instance, in our case, the way an MU Extension publication is referenced and/or linked is different depending on whether the content resides in a print publication, a Web page to be viewed on a desktop, a Web page to be viewed on a tablet or mobile phone, or a mobile app.

Many of the more recent articles that discuss style guides are talking more about setting technical standards than about editorial standards.

### **Evaluation of style guides.**

Although there are several journal articles about the value of style guides and about the steps for developing effective style guides, there is little concrete research from a user perspective on what works and doesn’t work in style guides (MacKay, 1997). McKay said that evaluation of the final product should involve “getting reactions, through a variety of techniques, from users of the style guide” (p. 248) to determine if it is clear, comprehensive, easy to use, attractive, and easy to maintain (Washington, 1993).

Allen (1996) researched user attitudes toward corporate style guides using a survey. His sample included 200 randomly selected attendees of the 40th Society for Technical Communications conference, so his respondents were primarily writers and editors. Of the 69 respondents who use a corporate style guide, 92.8% said their organization's guide helps them fulfill work responsibilities. Allen concluded that respondents perceived that style guide usage "allows the corporate writer to produce more professional, user-friendly documents in less time without conflict" (p. 238). He stated that his survey reveals benefits of style guide usage such as consistency among documents and time saved on document generation, which validates the reasons given in previous articles that talk about the value of style guides but don't back the conclusions with empirical research.

#### **Usability testing of online databases.**

To define usability, Rubin and Chisnell (2008) stated, "When a product or service is truly usable, the user can do what he or she wants to do the way he or she expects to be able to do it, without hindrance, hesitation, or questions" (p. 4). Nielsen (1993) defined usability as multi-dimensional properties of a user interface that are normally associated with the following five attributes: learnability, efficiency, memorability, errors and satisfaction.

I was not able to find usability studies on style guides. However, I was able to find usability tests on some more complex websites with online databases. Many of their usability issues and evaluation techniques are applicable to this project, and the results of two of these studies are discussed below.

The Georgia Tech Library website was first redesigned using information architecture principles for organization then redesigned to accommodate what was discovered in subsequent usability tests (King and Jannick, 2005). Think-aloud usability tests with inexperienced patrons showed mainly that users didn't know which search interface (e.g., catalog, databases, and e-journals) to use to find what they needed. They also used the Quick Catalog Search like a Google search, so it was removed. The redesign featured ways to guide the user through navigational choices to attempt to reach the correct search.

PENUMAT, which stands for Personal Nutrition Management Tool, is an interactive, Web-based database that includes nutrition management information and screening tools (Bozkurt, et al., 2011). To usability test the database, the researchers used a multi-method approach that included protocol analysis, interviews, and a System Usability Scale survey with a sample of 10 healthy volunteers. Usability problems from think-aloud sessions were sorted by content analysis and grouped into Nielsen's (1993) 10 usability heuristic categories. Each heuristic was found to be violated at least once. The authors concluded that although the SUS scores, which ranged between 77.5 and 100, with a median of 88.7, were acceptable, the multi-method approach was necessary because both the think-aloud sessions and the interviews found usability problems with the website that the SUS scores didn't indicate.

### **Post-task question.**

Directly after a user finishes a task during a usability study can be an opportunity to collect information about the user's experience with that task. Tullis and Albert (2008)

listed several different ways to ask a user to evaluate a task that has been completed, including measuring ease of use, using the three-question After-Scenario Questionnaire, and using an expectation measure that compares how easy or difficult the participant thought the task would be compared to how easy or difficult he or she thought it was going to be before attempting the task.

Tedesco and Tullis (2006) compared five methods, including those above, and determined that measuring ease of use with one simple question (e.g., “This task was easy to complete” with a five-point Likert scale from “strongly agree” to “strongly disagree”) was the most reliable measure, especially with the small sample sizes often found in usability tests.

### **System Usability Scale (SUS).**

The System Usability Scale (Brooke, 1996) was developed as a cost-effective and practical way to test the usability of and user satisfaction with industrial systems. One of its advantages is the ability to compare the scores of multiple systems or to compare successive iterations of one system. Brooke constructed the scale by assembling 50 potential questionnaire items and testing them on two examples of software systems, one considered easy to use and the other considered very difficult to use. Items that elicited the most extreme responses were selected. Half the statements are positive, and half the statements are negative. Brooke suggested that the scale be used after the product has been used by the respondent but before the respondent is engaged in any discussion about the product.

Bangor, Kortum, and Miller (2008) listed four reasons the SUS is a good choice for usability practitioners. First, it is flexible enough to be used for a range of products, websites, and systems. Second, it is fast and easy to use. Third, the SUS score is easy to understand. And fourth, the survey is free for all to use. Sauro (2011) suggested that data he has analyzed from more than 5,000 SUS surveys across 500 different evaluations have shown that SUS is a reliable and valid measure of perceived usability.

While Brooke (1996) reported that his System Usability Scale measures general usability, Lewis and Sauro (2009) performed a factor analysis on the scale using two independent data sets: a set of theirs that included 324 complete SUS questionnaires and a set of Bangor, Kortum, and Miller's (2008) that included 2,324 SUS questionnaires).

Lewis and Sauro (2009) found a two-factor solution. Items 1, 2, 3, 5, 6, 7, 8, and 9 aligned with a factor they named usability, and items 4 and 10 aligned with a factor they called learnability. They then tested the reliability of the scales. For the overall SUS (all items included), their coefficient alpha was .92 (consistent with Bangor, Kortum, and Miller's finding of a coefficient alpha of .91). For the new usability scale, the coefficient alpha was .91, and for the new learnability scale, it was .70. They concluded that all scales met the minimum standard of .70; therefore, the SUS could be used to determine scores for overall usability, usability, and learnability. They considered the eight-question usability score to be a cleaner estimate of usability than the overall usability score but recommended keeping the two learnability items in the scale for the additional measure of learnability.

### **Learnability of websites.**

Nielsen (1993) called learnability of a system the most fundamental usability attribute because in general, a system needs to be easy to learn and because learning to use the system is usually the user's first experience with it. Rubin and Chisnell (2008) stated that learnability can also refer to a user's ability to relearn a system that he or she uses infrequently.

Lewis and Sauro found that two items in the System Usability Scale, 4 ("I think that I would need the support of a technical person to be able to use this website.") and 10 ("I needed to learn a lot of things before I could get going with this website."), aligned with a factor they called "learnability" because the commonality in the two items is about the ease or difficulty of learning to use the website.

### **Theoretical Framework**

In the field of human-computer interaction, which includes interaction design and interface design, prescriptive theories are considered to be guidelines for system design (Knudtzon, 2002). Sharp, Rogers, and Preece (2007) referred to these guidelines as frameworks that offer advice to designers as they develop and design the user experience. While they said the frameworks are generally based on human behavior theories, they commonly are also formed from the results of user studies and other findings in design evaluation.

Shneiderman and Plaisant (2004) referred to these prescriptive theories as principles that guide the design of the human-computer interface and considered them

more widely applicable and enduring than, for example, guidelines documents developed by software development companies.

One set of prescriptive theories, or principles, that designers find useful when developing human-computer interfaces are Nielsen's (1993) 10 usability heuristics.

### **Nielsen's 10 heuristics.**

Nielsen's (1994, p. 30) 10 usability heuristics, which I used as guidelines when developing the interface of the database-driven version of the MU Extension style and usage guide, are listed below with a brief summary of each heuristic. These heuristics are revised from Nielsen's 1993 version after a factor analysis of 249 usability problems. Although they were written almost two decades ago, these heuristics are still used as a standard for design development and heuristic evaluation of interfaces as shown by the study of a Web-based nutrition database conducted by Bozkurt, et al., in 2011. I also list which heuristics were met and which were violated based on the results of the study in the Conclusion and Recommendations section.

1. "Visibility of system status." Users should always know what is going on in the system through appropriate feedback.

2. "Match between system and the real world." Terminology used in the system should be familiar to the user rather than system-oriented. Information should be presented in a natural, logical order.

3. "User control and freedom." Wherever the user ends up in the system, the way back to the previous state should be clearly visible.

4. “Consistency and standards.” Information should be presented consistently so users don’t have to wonder if different terms or actions mean the same thing, and industry standards should be followed when possible.

5. “Error prevention.” Use careful design to keep errors from happening.

6. “Recognition rather than recall.” Users should not be expected to remember things from one part of the site to another. Help and instructions should be available whenever needed.

7. “Flexibility and efficiency of use.” The system should be designed for efficient use by both expert and novice users.

8. “Aesthetic and minimalist design.” Designers should include only relevant information in the interface design.

9. “Help users recognize, diagnose, and recover from errors.” Error messages should be precise, clear, and polite and help the user solve the problem.

10. “Help and documentation.” While a system is better if users don’t need documentation, any necessary help information should be easy to search, be focused on users’ tasks, be concise, and list concrete steps for the user to follow.

## **Method**

### **Purpose and objectives.**

I designed the new database-driven interface using the 10 Nielsen heuristics listed above with the assistance of project design prototypes made while taking a Coursera.org course on Human-Computer Interaction completed while doing my project work. After this, I evaluated the usability and learnability of the new database-driven style and usage

guide website with three users in usability tests with tasks written to approximate the breadth of what they can do using the interface. The usability tests included observation of the users as they perform the tasks, a one-question, post-scenario survey after each task (Tedesco and Tullis, 2006; Tullis and Albert, 2008), and a post-test System Usability Scale (SUS) (Brooke, 1996) survey (modified for websites) to evaluate the style guide's overall usability, usability and learnability (Lewis and Sauro, 2009).

### **Research question.**

I examined the following research question: How usable and learnable is the navigation and search function of the MU Extension online style and usage guide?

### **Participants.**

I selected participants from a pool of MU Extension employees who have been introduced to the current style page and asked to use it for their work. One was in a northeast Missouri county, and the other two work on the MU campus. The three participants have the following demographic characteristics and Web and style guide usage levels:

- Age: One between 20 and 29; two between 50 and 59
- Gender: All female
- Highest education level completed: One, some college; two, master's degrees
- Comfort with online technology: All use the Web every day
- General style guide usage: Two use a style guide every day; one uses a style guide once a month

- MU Extension Style Guide usage: One uses the guide every other day; one uses it once a week; one uses it once a month

### **Test environment.**

The studies took place in March and April 2013. I conducted two studies in the University of Missouri Agriculture Building, in the offices of MU Extension and Agricultural Information. I conducted a third study in a county office in northeast Missouri. Participants used a Windows PC laptop running the Firefox browser with a high-speed connection to the Internet and a Web camera and microphone attached. The Web camera captured the participants' faces, the microphone captured the participants' voices, and the Morae software recorded what happened on the screen. I had some issues with audio quality during two of the sessions. However, while the participants were asked to think aloud, they made few comments. I had captured the meaningful comments in my notes as I sat next to them during the tests, and I was able to easily match them to the video in Morae.

I conducted three individual usability test sessions. Before the test, participants reviewed and signed a video release form. I used a few minutes at the beginning of each session to explain the testing process to the participant and a few minutes at the end of each session for a post-test debriefing interview. I acted as the moderator during the tests and watched the recordings after to match my notes to the recordings using markers in Morae. During the middle of the session, participants performed the nine tasks found in Table 1. I used Morae's autopilot feature to present a demographic questionnaire at the start of the test, the post-task question after each task, and a System Usability Scale

survey (see Appendix A for the survey questions) at the end as well as to log the start and end of tasks.

**Table 1**  
*Tasks used in this usability test and the criteria for successful completion of each task*

<b>Task</b>	<b>Description</b>	<b>Success criteria</b>
1	You will need to sign in to the style guide with your pawprint and password to use all of the guide’s features. Can you find how to sign in?	Find the login in button, choose the correct domain, and enter username and password.
2	One of your Web pages has links to several specialists’ email addresses. Sometimes the link is on the person’s name, and sometimes the link is after the name on the written-out email address. You want to change these to all be consistent and to follow style. How would you look for MU Extension’s style in this case?	Find style entry called “contact information.”
3	When editing your documents for the MU Extension style guide, you can never remember if the correct spelling is Web site, website or web site. How would you find MU Extension’s style for this?	Find style entry called “website.”
4	The style guide includes examples for some styles, but you keep running across a date format that isn’t listed in the examples. Is there a way you can add this example to the style guide so you can remember it in the future?	Must be logged in. Use “Add a comment to this style” link (found under the term of each style) to add an example in the comments.
5	If you would like to ask someone to add the date format example to the style guide so everyone, not just you, can see it, how would you proceed?	Use the mailto: link at the top that says “Comments or questions? Email the editors.”
6	You are writing a story about Jane Doe. After you’ve mentioned her full name	Find the style entry called “courtesy titles and name on

<b>Task</b>	<b>Description</b>	<b>Success criteria</b>
	once, what do you call her throughout the rest of the article? Jane, Jane Doe, Doe, Ms. Doe? How would you find out what to call her in the style guide?	second reference.”
7	You are writing about the Livestock Symposium that is held in Kirksville every year. You are never sure when the word Missouri should be abbreviated or how it should be punctuated. How would you find MU Extension’s style for this?	Find the style entry called “state names.”
8	The editors have noticed that many extension materials include the same style mistakes, so they made a way to view often-misused styles. Can you find how to view the list?	Choose “Show advanced search options” then check “Frequently needed” under “Show styles that are tagged.”
9	Although the editors can mark what they consider frequently needed styles, there are other styles you often need to look up. Is there a way for you to keep track of your own frequently needed styles?	Must be logged in. Use “Add to My selections” link (found under the term of each style) to add to the user’s list of frequently needed styles.

The SUS survey I used in this study is modified slightly from Brooke’s (1996) original survey with the recommended adjustments from Bangor, Kortum, and Miller (2008) and Tullis and Stetson (2004). Specifically, throughout the survey, the word “system” was changed to “website” in each statement to better describe the Web-based interface (Tullis and Stetson, 2004). Statement 5 was modified from “I found the various functions in this website were well integrated” to “I found the various search and sorting functions in this website were well integrated” to fit this particular style and usage guide website based on Jarrett’s (2011) suggestion to minimize user questions by modifying the statements to fit the interface being tested. In statement 8, the term “cumbersome” was

changed to “awkward” based on Bangor, Kortum, and Miller’s (2008) experience with respondents’ lack of understanding of the word cumbersome.

### **Data collected.**

I collected performance and preference data using markers in Morae and notes from observing the sessions as well as answers to demographic questions, a post-task question and an overall System Usability Scale survey that was modified for websites.

#### *Performance data.*

- Time to complete each task (time on task)
- Count of incorrect navigation choices
- Number of times participant was prompted
- Number of tasks completed with and without assistance

#### *Preference data:*

- Ease of use overall (measured with system usability scale, called SUS)
- Learnability (measured using SUS items 1, 2, 3, 5, 6, 7, 8, and 9)
- Usability (measured using SUS items 4 and 10)
- Ease of task completion (measured with post-task question)

### **Results and Discussion of Findings**

Overall, the qualitative and quantitative performance and preference results show that tasks 4 and 8 were the most difficult for participants to complete. Task 2 was also difficult for the participant who was least familiar with style guides.

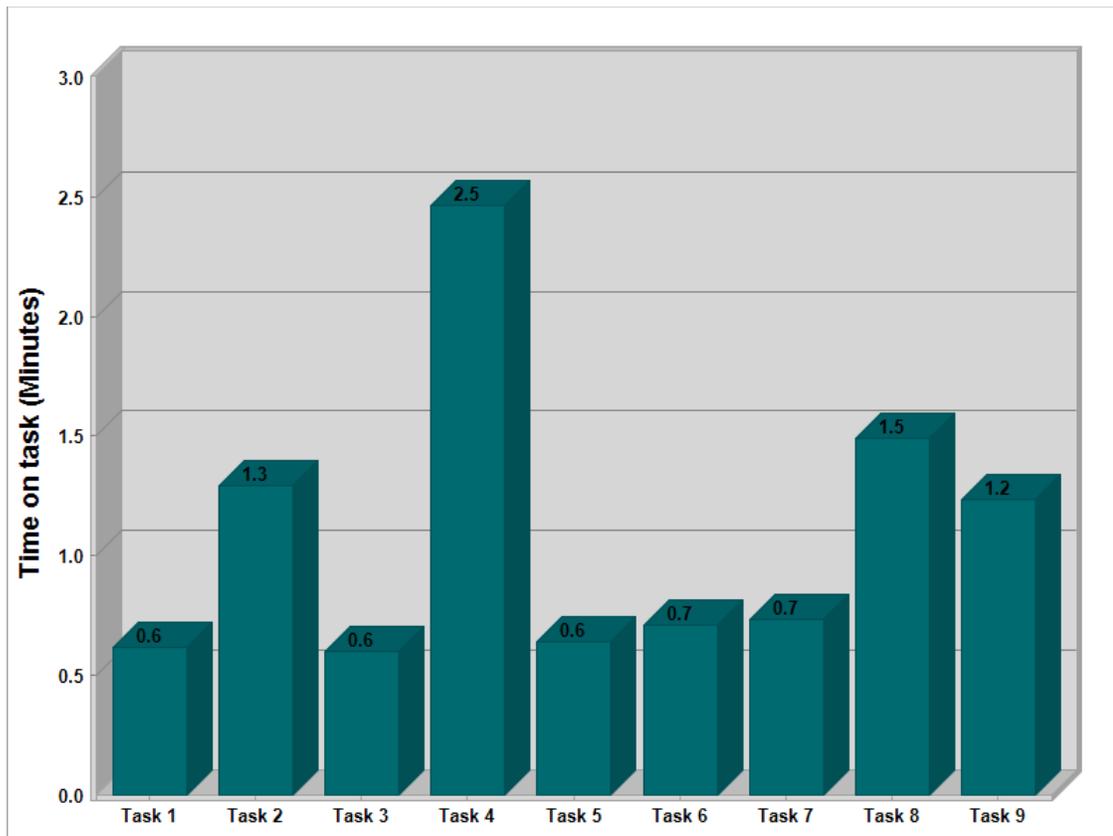
**Performance data.**

*Time to complete each task.*

Time to complete all tasks was generally less than a minute and a half as shown in

Figure 1. All participants completed five of the tasks in less than a minute per task.

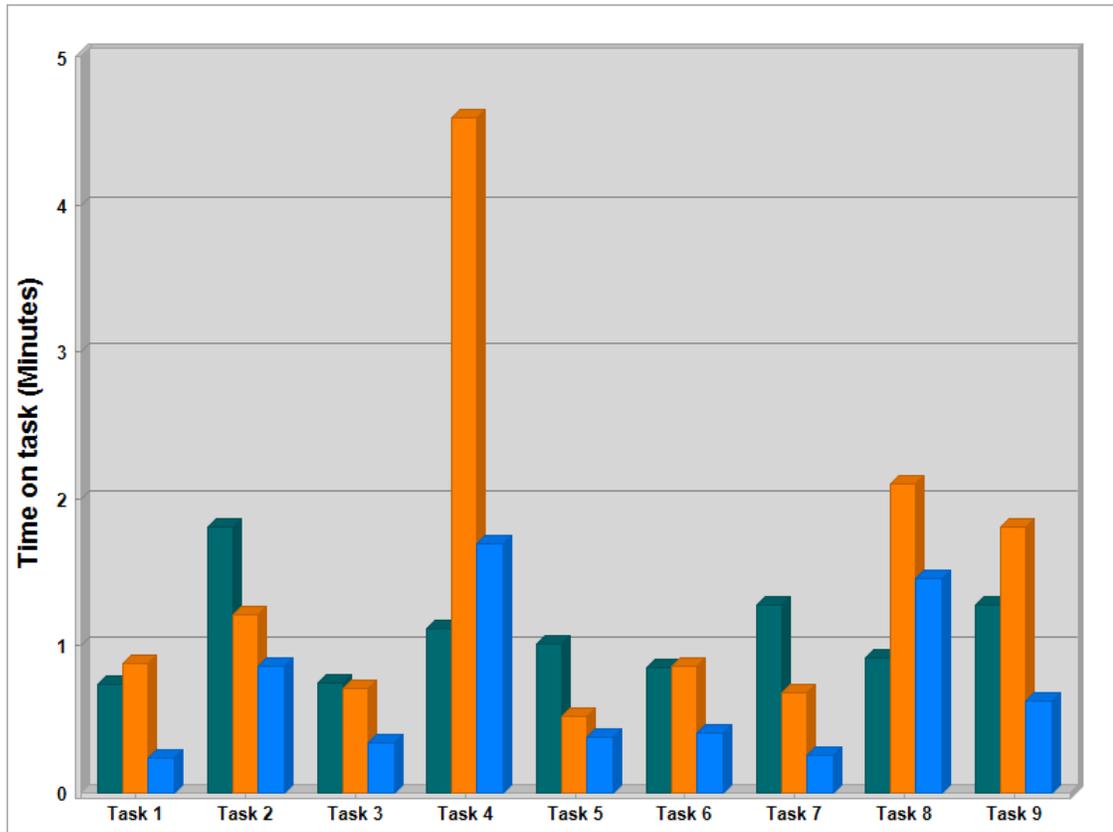
**Figure 1**  
*Average time on task by task*



Task 4, however, required four and a half minutes for one participant as shown in Figure 2. She thought clicking the “Styles personalized for me: My selections” checkbox completed the task when she actually needed to find the function “Add a comment to this style” to complete the task. It took her awhile to learn how to clear her selections using

the “Clear all” button, which led to the recommendation to make that button say “Clear all selections.”

**Figure 2**  
*Time on task, by participant*



Because I was using autopilot in Morae, one participant, represented by the teal bar in Figure 2, accidentally “ended” task 8 early, so her time on task is not accurate for task 8.

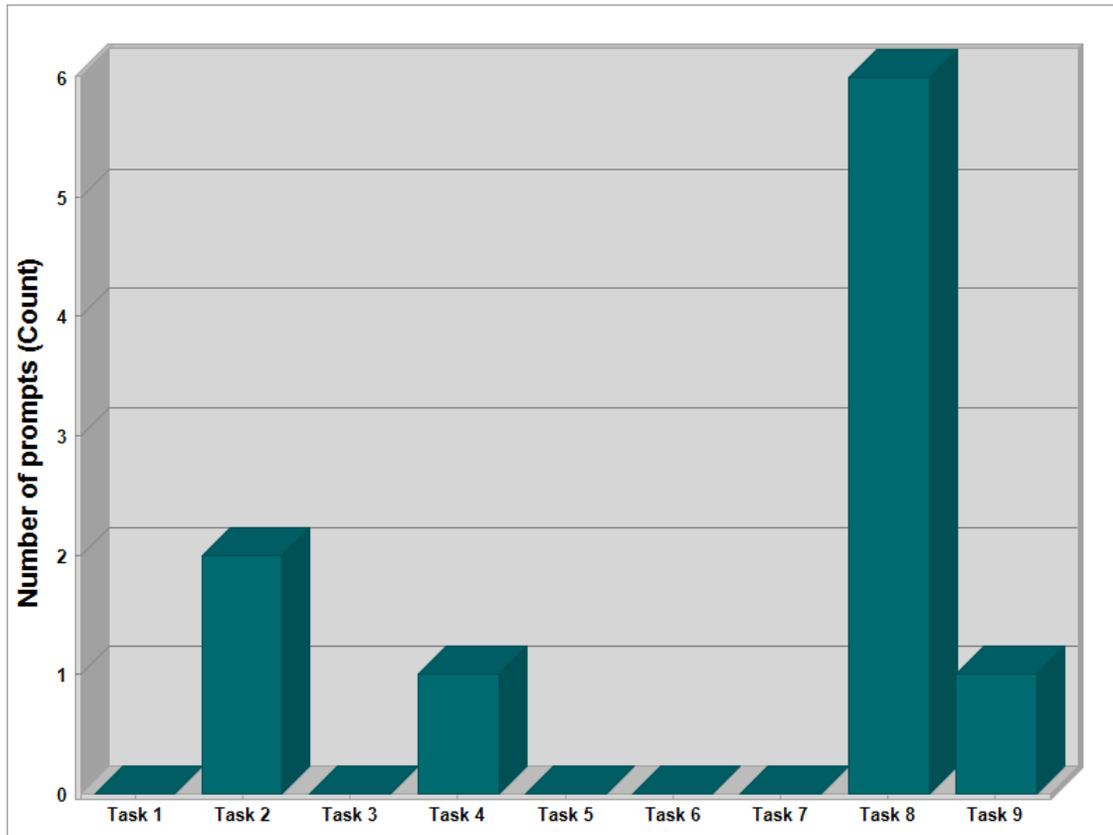
***Count of incorrect navigation choices.*** An incorrect navigation choice in this study is defined as when the participant thought she had finished the task but had not found the correct style or database function that completed the task. Two participants made incorrect navigation choices, one in task 2 and one in task 4. Both times, the

participants were prompted to look somewhere else and then found the desired style or function. The participant who made the incorrect navigation choice in task 2 thought she found the correct way to style specialists' email addresses under the "contact information" entry when the information was actually under the "email addresses on the Web."

The participant who made an incorrect navigation choice in task 4 thought clicking the "Styles personalized for me: My selections" checkbox completed the task when she actually needed to find the function "Add a comment to this style" to complete the task.

*Number of times participant was prompted by the moderator.* Figure 3 shows participants were prompted most in task 8 (each participant was prompted twice during this task). Two issues arose during this task. First, participants overlooked the link that said "Show advanced search options." Second, after watching the participants attempt to complete the task, I believe the difficulty in this task was exacerbated by the verbiage in the task. The task read: "The editors have noticed that many extension materials include the same style mistakes, so they made a way to view often-misused styles. Can you find how to view the list?" A challenge in writing tasks is trying not to lead a participant directly to the thing he or she is trying to find by using the actual words on the screen. However, this can backfire when a participant decides she must find exactly the words used in the task. The participants were looking for "often-misused styles" which didn't easily translate in their minds to "frequently needed," which is the terminology of the database tag. Also, there was nothing to indicate this might be an advanced search option.

**Figure 3**  
*Number of times a participant was prompted by the moderator*

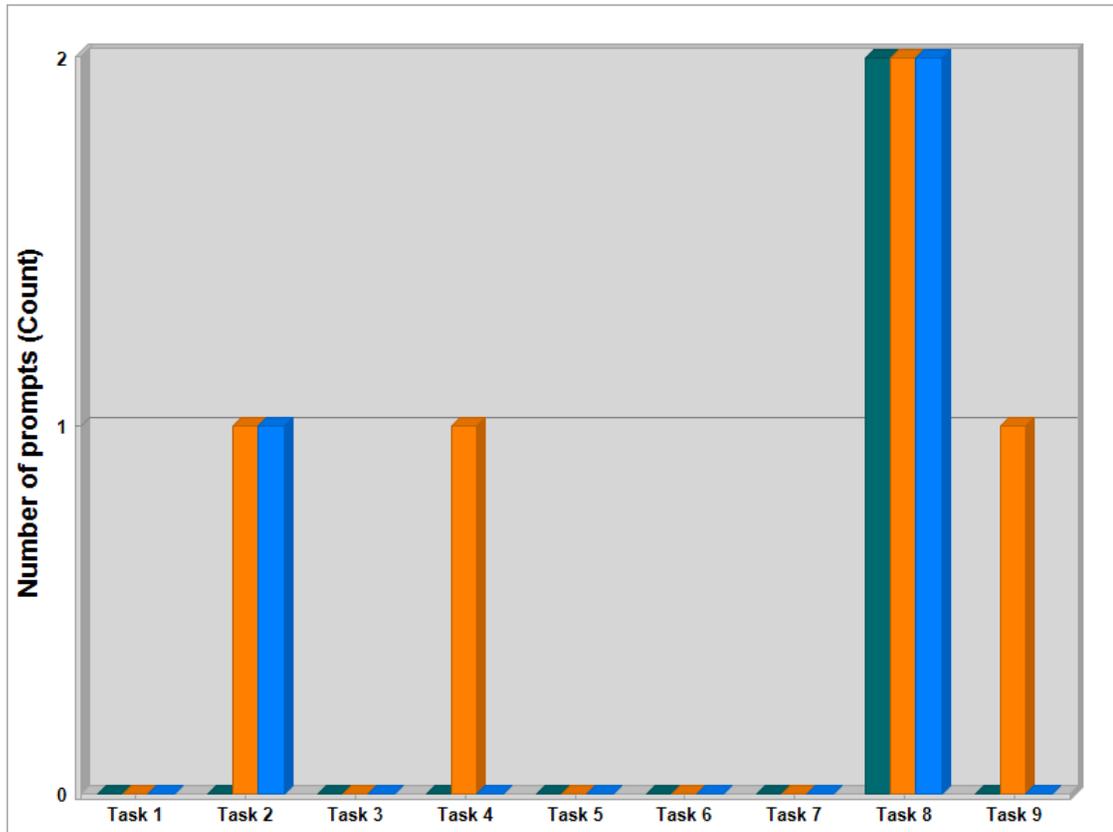


Two different participants were prompted during task 2, as shown in Figure 4. One participant asked questions about the meaning of the task. I prompted the other participant after she thought she found the correct way to style specialists' email addresses under the "contact information" entry when the information was actually under the "email addresses on the Web." I asked her if she might look somewhere else for the information.

During task 4, one participant thought she had completed the task, and I prompted her by asking if she was sure she had found the database function that would allow her to add a comment to a style. The same participant was prompted during task 9 when she

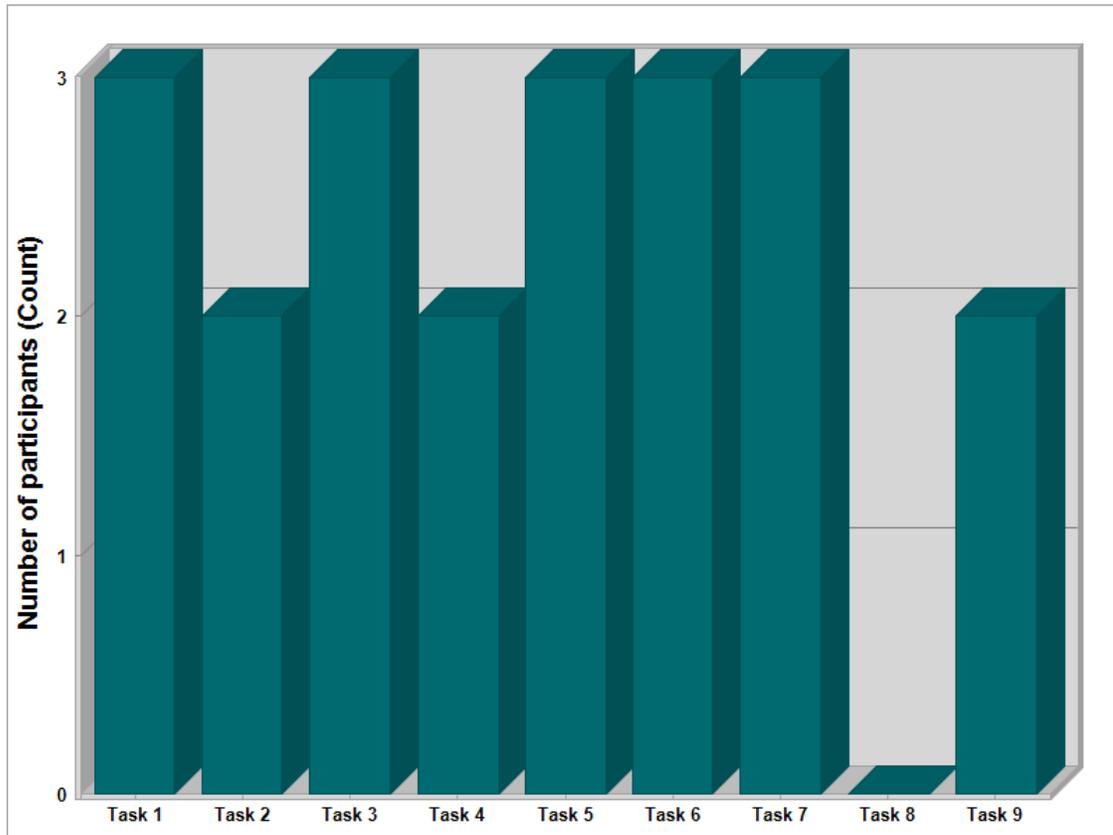
didn't clear her selections. As mentioned before, the confusion during task 9 contributed to the recommendation to change the "Clear all" button to say "Clear all selections."

**Figure 4**  
*Number of times a participant was prompted by the moderator, by participant*



*Number of tasks completed with and without assistance.* The number of tasks completed without assistance directly relates to the previous section, "Number of times participant was prompted." Figure 5 shows that five of the nine tasks, tasks 1, 3, 5, 6, and 7, were completed by all participants without prompting. Only one participant needed assistance for tasks 2, 4, and 9. All participants needed assistance twice during task 8.

**Figure 5**  
*Tasks completed without assistance*



**Preference data.**

*Ease of task completion.* After each task, participants were asked to respond to this statement: “This task was easy to complete.” As Table 2 shows, all participants strongly agreed that tasks 1, 6, and 7 were easy to complete and agreed that tasks 5 and 9 were easy to complete. No participant strongly disagreed or disagreed with the statement for any of the tasks. Only one participant each marked tasks 4 and 8 at the mid-point between strongly agree and strongly disagree. This corresponds with previous data that showed tasks 4 and 8 as the most difficult to complete correctly and without assistance.

**Table 2**

*Number of participant responses to the post-task question “This task was easy to complete” for each task*

<b>Task</b>	<b>Strongly agree</b>				<b>Strongly disagree</b>
1	3	-	-	-	-
2	1	2	-	-	-
3	2	1	-	-	-
4	1	1	1	-	-
5	-	3	-	-	-
6	3	-	-	-	-
7	3	-	-	-	-
8 <sup>1</sup>	-	1	1	-	-
9	-	3	-	-	-

<sup>1</sup>One participant accidentally “ended” task 8 early and did not answer the post-task question.

***Ease of use overall.*** After completing the nine tasks, participants were asked to take the 10-question SUS survey, which included an open-ended comment box. The overall average SUS score for the site was 78.33; the highest score possible is 100. Tullis and Albert (2008) equated the scores to percentages for ease of interpretation, and they said an average SUS score under 60 percent is relatively poor while a SUS score of more than 80 percent is considered pretty good. Sauro (2011) conversely said SUS scores are not percentages and used a process called normalizing to convert SUS scores to percentages and, subsequently, letter grades that are easy to use to describe a website’s score. He said a SUS score of 68 is considered “average,” and according to his blog, the score of 78 in this usability test would normalize to a letter grade of B+. The 78 would also be close to a high, “pretty good” score according to Tullis and Albert.

Only one participant chose to use the comment box, and she wrote: “Overall, this website was intuitive and easy to use.”

***Learnability and usability factors.*** Lewis and Sauro (2009) furthered divided the SUS survey into two scales: learnability and usability. Calculated using their formula, the average SUS usability score of the style and usage guide is 75. The SUS learnability score is 91.67. Thus, using Sauro’s (2011) normalized letter grades, the style and usage database as presented to these participants scored a letter grade of B for usability and an A+ for learnability. This was encouraging, and these scores should only increase with improvements to the interface.

## **Conclusion and Recommendations**

The MU Extension style and usage website was designed and evaluated using Jakob Nielsen’s (1994, p. 30) 10 usability heuristics, which are listed in the Theoretical Framework section above, as guidelines. I will match which Nielsen heuristics are met or violated with the findings from the usability study. Table 3 shows how many times I considered each heuristic to be met or violated based on the usability results. Specific recommendations to improve the site follow each of the findings.

**Table 3**

*Number of Jakob Nielsen's 10 usability heuristics considered met and violated during the evaluation*

<b>Heuristic</b>	<b>Number of times heuristic was met</b>	<b>Number of times heuristic was violated</b>
Visibility of system status	1	3
Match between system and the real world	1	2
User control and freedom	1	4
Consistency and standards	3	0
Error prevention	0	2
Recognition rather than recall	1	0
Flexibility and efficiency of use	2	0
Aesthetic and minimalist design	0	1
Help users recognize, diagnose, and recover from errors	0	2
Help and documentation	0	1

**Positive findings.**

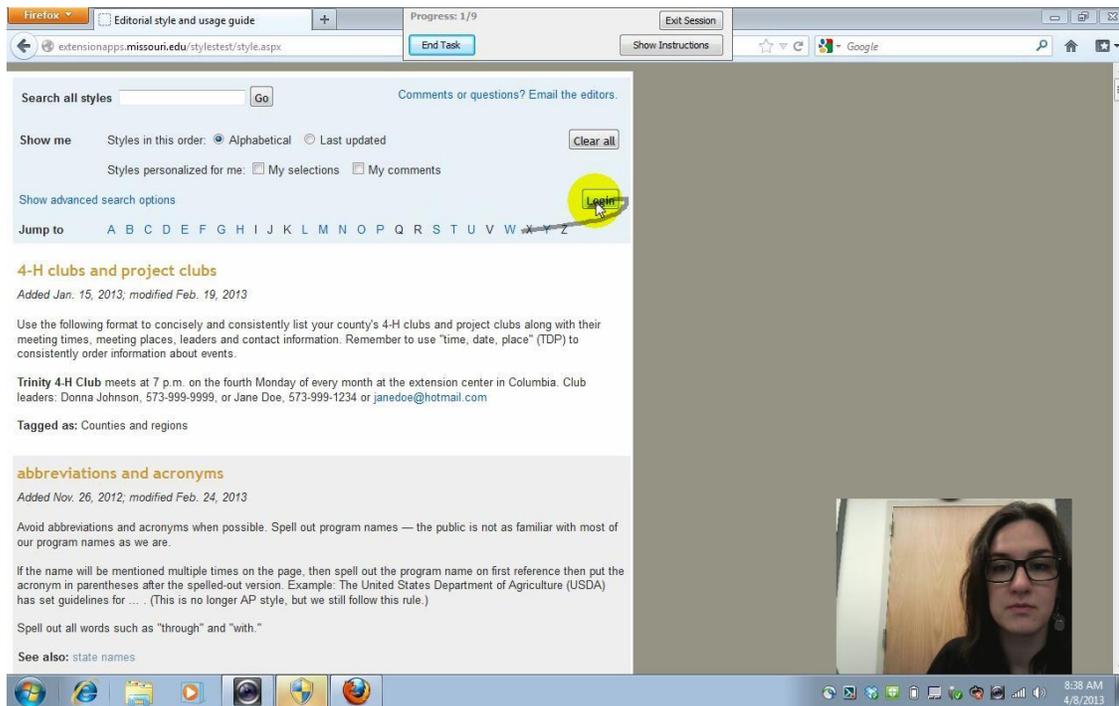
1. The style guide had a very high score for learnability (A+), a B+ for overall usability, and a B for usability. Any improvements should increase those numbers, which are already “good” grades.
2. Participants were able to complete most of the tasks without assistance.
3. Participants liked the ability to search the database rather than always needing to scroll through the page. One participant commented, “It’s interesting that I’m using the search function every time and not clicking down here.” She was pointing to the “Jump to” alphabetical line as she made the comment.

*Nielsen heuristics met.* Flexibility and efficiency of use; Consistency and standards

4. Participants could easily see how to log in to the database. Figure 6 shows one participant starting the login process. She saw the “Login” button within a few seconds of starting the task.

*Nielsen heuristics met.* Visibility of system status; Match between system and the real world; User control and freedom; Consistency and standards; Recognition rather than recall

**Figure 6**  
*A participant successfully finds the “Login” button to complete task 1*

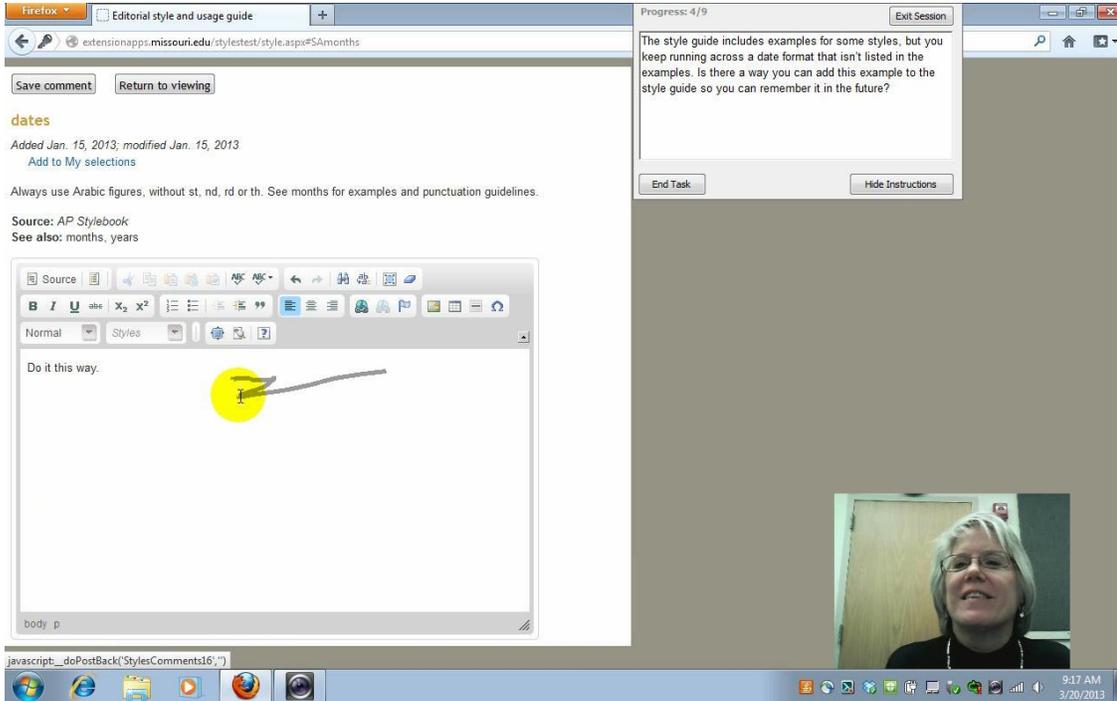


5. Participants, especially the two who were more familiar with style guides, liked the personalization features. One participant said about the ability to mark styles as “My selections” in the database: “That would be a really good way for a ... quick reference, I guess, to the things that I can’t remember.” Another, pictured in Figure 7, when she was able to add a comment to the database, said, “That’s cool.”

*Nielsen heuristics met.* Flexibility and efficiency of use; Consistency and standards

**Figure 7**

***A participant successfully added a comment to the database during task 4***



### **Users' difficulties and recommended solutions.**

The potential solutions to the following difficulties would provide the greatest improvement to the function of the new database-driven MU Extension editorial style and usage guide based on this usability study.

1. It is hard to scroll back to the top of the database after using the "Jump to" alphabetical links. As she scrolled to the top of the page, one participant said, "The only way to get to the top is to scroll."

*Nielsen heuristics met.* User control and freedom

**Possible solution.** Add links to each style that return the user to the top.

2. The advanced search options link is not obvious to users.

**Nielsen heuristics met.** Help and documentation; Aesthetic and minimalist design

**Possible solution.** After considerable thought and some discussion with other editors, I decided to recommend leaving this alone rather than putting the advanced information on the main screen because the advanced search options are ones only potential “power users” might use often. Also, the task to find this, task 8, had some issues with verbiage and understandability. Therefore, in keeping with the Nielsen heuristic “Aesthetic and minimalist design,” I recommend keeping the options under the advanced search link off of the main screen. Because the style guide was shown to be highly learnable by the learnability SUS score, the advanced features could be shown in a small user guide on the Web and during style trainings.

3. The “Show styles that apply to all uses” button under the advanced search options didn’t make sense to users.

**Nielsen heuristics met.** Match between system and the real world

**Possible solution.** The idea behind this was to show styles that applied to all media.

Upon further thought, I recommend removing the wording altogether as it is more difficult on the data-entry end than I previously thought to decide when a style applies to only one medium.

4. “Clear all” button is not obvious to users.

**Nielsen heuristics met.** Visibility of system status; User control and freedom

**Possible solution.** Make the button say “Clear all selections.”

5. Add a way to know you have to log in to use the “My selections” and “My comments” features.

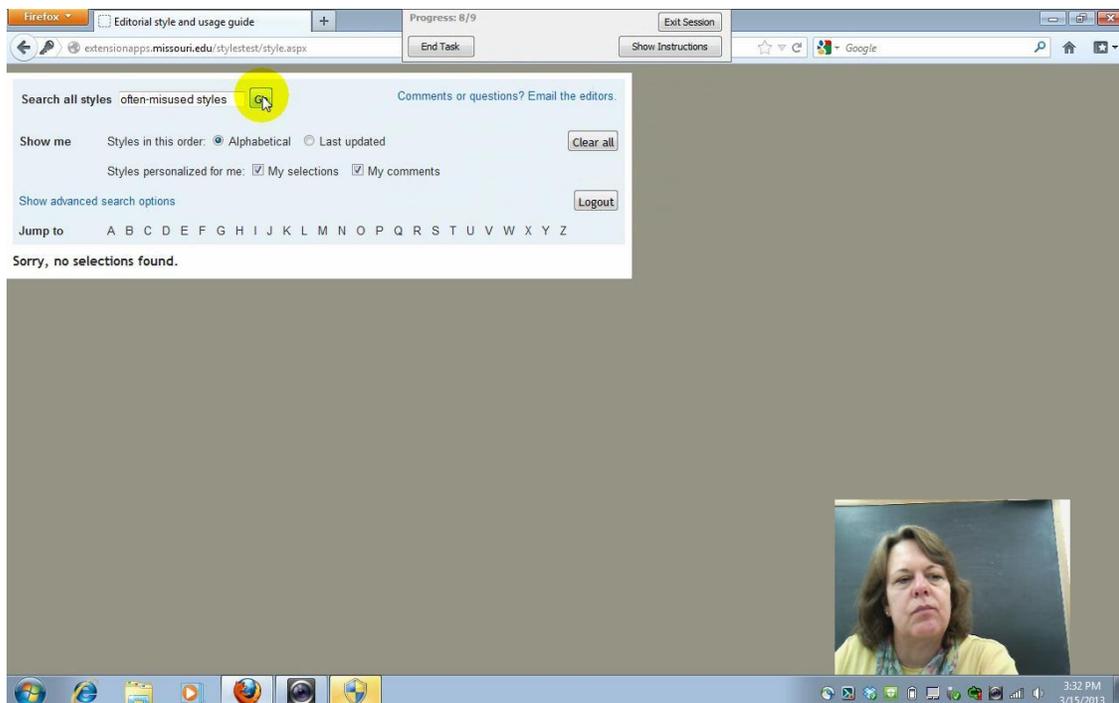
*Nielsen heuristics met.* Visibility of system status; User control and freedom; Error prevention; Help users recognize, diagnose, and recover from errors

*Possible solutions.* Add a parenthetical statement under the personalization line that says “(You must log in to use personalization feature.)” and/or add information to the error message that says they must be logged in to use the features.

6. Add a way to know that when you are searching by “My selections” or “My comments,” you must have previously marked some styles as your selections or added comments to a style. In Figure 8, a participant is frustrated when checking both the “My selections” and “My comments” boxes yielded no results even though she had not previously made any selections or added any comments.

### Figure 8

*A participant is confused when checking both “My selections” and “My comments” yields no results during task 8*



*Nielsen heuristics met.* Visibility of system status; User control and freedom; Error prevention; Help users recognize, diagnose, and recover from errors

*Possible solution.* Make the error message clear that you must add a selection or comment to be able to search using those attributes.

7. Users with less style guide experience don't realize that when they use a style guide, just like when they use a dictionary, often the term itself is the indication of how the term should be used or spelled. For instance, the "website" entry didn't have further details in it because the term "website" at the top of the entry was meant to indicate that website is spelled as one word. This is a data issue rather than a database or interface design issue and can easily be addressed.

*Nielsen heuristics met.* Match between system and the real world

*Possible solutions.* Add the words "always used as one word" in the style description or write out something such as "The word website is always one word and lowercased."

## **Implications**

This study was a somewhat unique combination of using heuristics, or the eye of the expert, to guide the initial database development and usability testing, or the eye of the user, to evaluate the product and implement changes based on the results. Usually, only one of these two methods is used on a product. In this case, the professional project component was to build a practical application and, as a journalist, I used my knowledge of style guides and editing as well as Nielsen's heuristics to design a database application that made sense to me and fit the organization.

Every time I have conducted or observed usability testing, I have found both that some things are easier to do on the site than I would have thought and that other things are not as intuitive as I had imagined. This research was no exception. It is easy to add your own bias and knowledge to the design of a database or website.

After designing the database, I needed to evaluate how others could navigate the database as many of our employees are not trained editors or journalists. The usability testing for the research component added sufficiently rigorous, somewhat ethnographic, research for efficient practical evaluation of the editorial style and usage guide.

In this study, the finding that was most surprising to me was when a user didn't realize the term as written defined how it was to be used. From my perspective and training in use of style guides, that was something I never would have considered to be an issue. However, many members of the intended audience for this guide might have never used a style guide before. It is important to keep in mind that a small number of users can show many usability successes and failures.

The goal of news and informational websites, much like the MU Extension site, is to reach users and allow them to use the functionality of the site to get information and interact with the organization. To be helpful, usability evaluation does not have to involve a large study with many participants. Any organization can add the "human-size" usability testing described here to determine if a site that has changed is improved and more usable or learnable and if users can use the functions and features as the developer intended.

## References

- Allen, P. R. (1995). Save money with a corporate style guide. *Technical Communication*, 42, 284-289.
- Bright, M. R. (2005). Creating, implementing, and maintaining corporate style guides in an age of technology. *Technical Communication*, 52, 42-51.
- Bangor, A., Kortum, P. T., & Miller, J. T. (2008). An empirical evaluation of the system usability scale. *International Journal of Human-Computer Interaction*, 24, 574-594.
- Bozkurt, S., Zayim, N., Gulkesen, K. H., Samur, M. K., Karaagaoglu, N., & Saka, O. (2011). Usability of a web-based personal nutrition management tool. *Informatics for Health and Social Care*, 36, 190-205.
- Brooke, J. (1996). SUS: A quick and dirty usability scale. In P. W. Jordan, B. Thomas, B. A. Weerdmeester, & I. L. McClelland (Eds.), *Usability evaluation in industry*. London: Taylor & Francis.
- Jarrett, C. (2011, February 3). SUS: a good enough usability questionnaire [Web log message]. Retrieved from [http://www.rosenfeldmedia.com/books/survey-design/blog/sus\\_a\\_good\\_enough\\_usability\\_qu/](http://www.rosenfeldmedia.com/books/survey-design/blog/sus_a_good_enough_usability_qu/)
- King, H. J., & Jannick, C. M. (2005). Redesigning for usability: Information architecture and usability testing for Georgia Tec Library's website. *OCLC Systems & Services*, 21, 235-243.
- Knudtzon, K. (2002). *Theories in computer human interaction: Prescriptive theories*. Retrieved March 17, 2012, from <http://www.cs.umd.edu/class/fall2002/cmsc838s/tichi/prescriptive.html>
- Krug, S. (2014). *Don't make me think, revisited: A common sense approach to Web and mobile usability*. New Riders.
- Lewis, J. R., & Sauro, J. (2009). The factor structure of the system usability scale. *Proceedings of the Human Computer Interaction International Conference (HCII 2009)*. San Diego CA, USA.
- MacKay, P. D. (1997). Establishing a corporate style guide: A bibliographic essay. *Technical Communication*, 44, 244-251.
- Nielsen, J. (1993). *Usability engineering*. San Francisco: Morgan Kaufmann Publishers Inc.
- Nielsen, J., & Mack, R. L. (1994). *Usability inspection methods*. New York: Wiley.

- Racine, J. (2008). Creating a college Web style guide: Defining value, process, and content (Master's thesis). Retrieved from <http://www.racinewebworks.com/RacineThesisFinal.pdf>
- Rubin, J., & Chisnell, D. (2008). *Handbook of usability testing: How to plan, design, and conduct effective tests* (2nd ed.). Wiley.
- Sharp, H., Rogers, Y., & Preece, J. (2007). *Interaction design: Beyond human-computer interaction* (2nd ed.). Wiley.
- Shneiderman, B., & Plaisant, C. (2010). *Designing the user interface: Strategies for effective human-computer interaction* (5th ed.). Boston: Addison-Wesley.
- Tedesco, D. P., & Tullis, T. S. (2006). A comparison of methods for eliciting post-task subjective ratings in usability testing. *Usability Professionals Association Conference*, June 12-16, Broomfield, CO.
- Tullis, T. S., & Albert, B. (2008). *Measuring the user experience: Collecting, analyzing, and presenting usability metrics*. Amsterdam: Elsevier/Morgan Kaufmann.
- Tullis, T. S., and Stetson, J. N. (2004). A comparison of questionnaires for assessing website usability. *Usability Professional Association Conference*, June 7-11, Minneapolis. Retrieved March 29, 2012, from <http://home.comcast.net/%7Etomtullis/publications/UPA2004TullisStetson.pdf>
- Wang, X. C., Yadamsuren, B., Paul, A., Adkins, D., Laur, G., Tawfik, A., & Erdelez, S. (2010). Iterative usability evaluation for an online educational web portal. *International Journal of Multimedia Data Engineering and Management (IJMDEM)*, 1(4), 31-49. doi:10.4018/jmdem.2010100103
- Washington, D. A. (1993). Creating the corporate style guide: Process and product. *Technical Communication*, 40, 505-510.

## Appendix A: Research Component Surveys

### Pre-study demographics questionnaire

1. What is your age?

- 19-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79

2. What is your gender?

- Male
- Female
- Prefer not to answer

3. What is the highest level of education you have completed?

- High school
- Some college
- 2-year college degree
- 4-year college degree
- Some graduate work
- Master's degree
- Professional degree
- Doctoral degree

4. Which of the following best characterizes your Web usage?

- I use the Web every day.
- I use the Web every other day.
- I use the Web once a week.
- I use the Web once a month.
- I never use the Web.

5. Which of the following best characterizes your use of all style guides, both printed copies and online guides?

- I use a style guide every day.
- I use a style guide every other day.
- I use a style guide once a week.
- I use a style guide once a month.
- I never use a style guide.

6. Which of the following best characterizes your use of the MU Extension Editorial Style and Usage Guide, which is found on the MU Extension website?

I use the style guide every day.  
I use the style guide every other day.  
I use the style guide once a week.  
I use the style guide once a month.  
I never use the style guide.

**Post-task question (asked after each of the nine tasks)**

- Scale for all questions: Strongly agree 1 2 3 4 5 Strongly disagree

This task was easy to complete.

**Post-study questionnaire (System Usability Scale)**

- Scale for all questions: Strongly agree 1 2 3 4 5 Strongly disagree

I think that I would like to use this website frequently.  
I found the website unnecessarily complex.  
I thought the website was easy to use.  
I think that I would need the support of a technical person to be able to use this website.  
I found the searching and sorting functions in this website were well-integrated.  
I thought there was too much inconsistency in this website.  
I would imagine that most people would learn to use this website very quickly.  
I found the website awkward to use.  
I felt confident using the website.  
I needed to learn a lot of things before I could get going with this website.

Please add any comments or suggestions you have for the MU Extension Editorial Style and Usage Guide. (open-ended with comment box)

## **Appendix B: Project Proposal**

### **Change to Original Project Proposal: Research Component Change**

I originally proposed a two-phase study for my research component. First, four MU Extension employees were asked to do a think-aloud usability study to inform the design of the MU Extension style guide's online interface (only three of the participants' studies will be used). Second, a survey was to be sent to MU Extension employees who are asked to use the style guide in their work to determine the usability and learnability of the online interface.

My committee agreed that the Phase 1 usability study is sufficient for the research component of my project, so I removed Phase 2 from the project completely. Upon further thought, I felt the method of sending multiple tasks to respondents and asking them to complete the survey is not a good way to introduce people to the style website and could negatively affect their future use of the style guide.

## **Introduction**

While I already had an appreciation for style from my undergraduate degree in agricultural journalism and six years as a professional communicator, when I returned as a graduate student in journalism, I gained an even greater appreciation for house style. As a graduate student, I took a wide range of courses, including magazine courses, what were then called “new media” courses, and a particularly useful media management course called Media Management and Leadership.

All of these courses have been useful in my current position in Extension and Agricultural Information, which is the part of University of Missouri Extension (MU Extension) that concentrates on print and Web publishing. Particularly useful as well have been the graduate teaching assistantship positions I held in the Magazine Editing course with Professor Don Ranly and as the *Vox* magazine managing editor. I also had the opportunity to teach the *Vox* magazine course as an adjunct instructor one summer.

My interest in usability testing was piqued when our office worked with the Information Experience Lab in the School of Information Science and Learning Technologies to test our Web redesign and reorganization. I then took a usability testing course to help us do some of our own testing in-house.

At MU Extension, we often come across style and usage questions that are not answered using Associated Press style, which we consult first, or *The Chicago Manual of Style*, which we consult for issues such as references and citations that Associated Press style doesn't cover.

It has been my dream both times I've worked here, from 1992 to 1997 and again from 2004 to the present, to develop a house style guide that can be used by both

professional editors and writers and others in the organization who are responsible for producing print publications and Web pages. In such a large organization, professional communicators and editors can't possibly look at all reports, brochures, and Web pages before they are published. So that our customers see more consistent, cleaner information, it is important to give all employees the tools, including a house style and usage guide and training on what they will find in this guide, to help them produce consistent information.

In the past two years, I've begun to develop a style guide that is targeted mostly toward staff located in all 114 counties of the state and campus-based administrative staff who are responsible for Web page content, which would be an audience of approximately 300 people. I also keep style guidelines that are generated in our editorial office electronically alongside our online Associated Press style subscription, which is primarily used by our own editors and editors and writers in a few other extension units.

### **Professional Skills Component**

For my professional skills component, I will work in Extension and Agricultural Information expanding the current style and usage guide and developing an online interface. I will also evaluate the interface using usability testing techniques, and I will then further refine the interface based on the findings.

As I work full-time, this project will be carried out over several months. I plan to work around 20 hours per week on the project. I will submit weekly field notes to my committee members. The three committee members are Jennifer Rowe and Jan Colbert,

professors in the School of Journalism, and Sanda Erdelez, a usability testing expert from the School of Information Science and Learning Technologies.

The director of Extension and Agricultural Information, George Laur, will act as the on-site supervisor and will also receive the records of my progress that I will send to my committee.

My project will be to expand the MU Extension style and usage guide to include the current online style guide, the guidelines I keep for the editorial staff, and much more. The current style page is a long list of items sorted in alphabetical order. The only way to search the page is to use the “Find” feature in the browser. I will also design a new Web interface for the style guide, which will be database-driven and will allow (a) tagging of items that will make them sortable and printable by type of style (e.g., spelling, punctuation) or purpose of style (e.g., print only, Web only, county only), (b) synonyms that are searchable (i.e., a search for “cell phone” will pull up the style for “cellphone”), and (c) sorting by the date the style entry was added or revised.

The result of this design, which I will carry out by following Nielsen’s (1993) 10 usability heuristics as guidelines, will hopefully be a more usable, searchable, and sortable Web interface. For my research component of this project, I plan to test and evaluate a first draft of the user interface using usability testing and a survey instrument.

The work will be disseminated as database-driven Web pages. To show physical evidence for the project in the final report, I will include screen shots of the main final pages as well as drafts that show the development and stages of the project.

## **Analysis Component**

After developing the style guide and designing and implementing the interface as my professional skills component, my analysis component will focus on measuring the user's experience with the style guide. The style guide is only useful as an aide to MU Extension employees if it is easy to use and learn and they see it as a help to completing their publishing tasks.

Research question: How usable and learnable is the navigation and search function of the MU Extension online style and usage guide?

### **Theoretical framework.**

In the field of human-computer interaction, which includes interaction design and interface design, prescriptive theories are considered to be guidelines for system design (Knudtzon, 2002). Sharp, Rogers, and Preece (2007) refer to these guidelines as frameworks that offer advice to designers as they develop and design the user experience. While they say the frameworks are generally based on human behavior theories, they commonly are also formed from the results of user studies and other findings in design evaluation.

Shneiderman and Plaisant (2004) refer to these prescriptive theories as principles that guide the design of the human-computer interface and consider them more widely applicable and enduring than, for example, guidelines documents developed by software development companies.

One set of prescriptive theories, or principles, that designers find useful when developing human-computer interfaces are Nielsen's (1993) 10 usability heuristics.

*Nielsen's 10 heuristics.* Nielsen's (1994, p. 30) 10 usability heuristics, which I will use as guidelines when developing the interface of the MU Extension style and usage guide, are listed below with a brief summary of each heuristic. These heuristics are revised from Nielsen's 1993 version after a factor analysis of 249 usability problems. Although they were written almost two decades ago, these heuristics are still used as a standard for design development and heuristic evaluation of interfaces as shown by the study of a Web-based nutrition database conducted by Bozkurt, et al., in 2011.

1. "Visibility of system status." Users should always know what is going on in the system through appropriate feedback.
2. "Match between system and the real world." Terminology used in the system should be familiar to the user rather than system-oriented. Information should be presented in a natural, logical order.
3. "User control and freedom." Wherever the user ends up in the system, the way back to the previous state should be clearly visible.
4. "Consistency and standards." Information should be presented consistently so users don't have to wonder if different terms or actions mean the same thing, and industry standards should be followed when possible.
5. "Error prevention." Use careful design to keep errors from happening.
6. "Recognition rather than recall." Users should not be expected to remember things from one part of the site to another. Help and instructions should be available whenever needed.
7. "Flexibility and efficiency of use." The system should be designed for efficient use by both expert and novice users.

8. “Aesthetic and minimalist design.” Designers should include only relevant information in the interface design.
9. “Help users recognize, diagnose, and recover from errors.” Error messages should be precise, clear, and polite and help the user solve the problem.
10. “Help and documentation.” While a system is better if users don’t need documentation, any necessary help information should be easy to search, be focused on users’ tasks, be concise, and list concrete steps for the user to follow.

### **Methods.**

After designing the interface using the 10 heuristics listed above, I will evaluate the usability of the style and usage guide website with two to three users in a think-aloud usability test with tasks written to approximate the breadth of what they can do using the interface. The think-aloud usability tests will include observation of the users as they perform the tasks, a one-question, post-scenario survey after each task (Tedesco and Tullis, 2006; Tullis and Albert, 2008), and a System Usability Scale (SUS) (Brooke, 1996) survey (modified for websites) after completion that will evaluate the style guide’s overall usability, usability and learnability (Lewis and Sauro, 2009).

After making any changes that are indicated by the usability tests, I will then ask MU Extension faculty and staff who are aware that the organization has a style guide and have been trained to use the current guide to carry out the same tasks. These users are located across the state, so they will be asked to complete the tasks on their own. After they complete the tasks, I will ask them to complete the SUS survey to evaluate if

developing the system using the heuristics made a usable and learnable interface for the MU Extension users.

*Usability test.* I will begin evaluation of the usability of the style and usage guide website by conducting a think-aloud usability test with two to three users. I will write six to 10 scenario-type tasks after the website has been completed that will indicate the types of tasks users will perform on these Web pages on a regular basis.

An example task might be: “One of your Web pages has links to several specialists’ email addresses. Sometimes the link is on the person’s name, and sometimes the link is after the name on the written-out email address. You want to change these to all be consistent and to follow style. What is MU Extension’s style in this case?”

Users will be selected from a pool of MU Extension employees who have been introduced to the current version of the style guide during the training to use the content management system MU Extension uses for Web development. These users will be chosen from employees who have completed the training who either work on the University of Missouri campus or work close enough to drive to Columbia to partake in a usability test.

The study will be held in the MU Agriculture Building, in the offices of Extension and Agricultural Information. A Web camera will capture the participants’ faces while they are performing the tasks, a microphone will capture their voices as they are directed to “think aloud” during the tests, and Morae usability testing software will record their mouse movements and page changes as they use the website.

I will act as the moderator during the exercise. Therefore, I will need to watch the recordings at a later time to take more comprehensive notes that will help me adjust the

interface design. I will also collect some performance data such as counts of incorrect choices by the user, time to complete each task, negative comments or mannerisms, and number of tasks completed without assistance. These numbers will help me determine if changes need to be made to the interface before conducting the SUS survey with a larger population.

The Morae software will be set to auto pilot so that the one-question, post-scenario survey question that will indicate ease of each task will be onscreen after the participant indicates that he or she has completed each task. The post-task question asked will be: “This task was easy to complete.” The question will be measured using a five-point Likert scale from “strongly agree” to “strongly disagree.”

After each participant completes the last task, the System Usability Scale survey (modified for websites) and an additional open-ended comment/suggestion box will be onscreen.

***Post-task question.*** Directly after a user finishes a task during a usability study is an opportunity to collect diagnostic information about the website and to add a measure of user satisfaction with the website. Tullis and Albert (2008) listed several different ways to ask a user to evaluate a task that has been completed, including measuring ease of use, using the three-question After-Scenario Questionnaire, and using an expectation measure that compares how easy or difficult the participant thought the task would be compared to how easy or difficult he or she thought it was going to be before attempting the task.

Tedesco and Tullis (2006) compared five methods, including those above, and determined that measuring ease of use with one simple question (e.g., “This task was

easy to complete” with a five-point Likert scale from “strongly agree” to “strongly disagree”) was the most reliable measure, especially with the small sample sizes often found in usability tests.

***System Usability Scale.*** The System Usability Scale (SUS) (Brooke, 1996) was developed as a cost-effective and practical way to test the usability of and user satisfaction with industrial systems. One of its advantages is the ability to compare the scores of multiple systems or to compare successive iterations of one system. Brooke constructed the scale by assembling 50 potential questionnaire items and testing them on two examples of software systems, one considered easy to use and the other considered very difficult to use. Items that elicited the most extreme responses were selected. Half the statements are positive, and half the statements are negative. Brooke suggests that the scale be used after the product has been used by the respondent but before the respondent is engaged in any discussion about the product.

Bangor, Kortum, and Miller (2008) listed four reasons the SUS is a good choice for usability practitioners. First, it is flexible enough to be used for a range of products, websites, and systems. Second, it is fast and easy to use. Third, the SUS score is easy to understand. And fourth, the survey is free for all to use.

While Brooke (1996) reported that his System Usability Scale measures general usability, Lewis and Sauro (2009) performed a factor analysis on the scale using two independent data sets: a set of theirs that included 324 complete SUS questionnaires and a set of Bangor, Kortum, and Miller’s (2008) that included 2,324 SUS questionnaires).

Lewis and Sauro (2009) found a two-factor solution. Items 1, 2, 3, 5, 6, 7, 8, and 9 aligned with a factor they named usability, and items 4 and 10 aligned with a factor they

called learnability. They then tested the reliability of the scales. For the overall SUS (all items included), their coefficient alpha was .92 (consistent with Bangor, Kortum, and Miller's finding of a coefficient alpha of .91). For the new usability scale, the coefficient alpha was .91, and for the new learnability scale, it was .70. They concluded that all scales met the minimum standard of .70; therefore, the SUS could be used to determine scores for overall usability, usability, and learnability. They considered the eight-question usability score to be a cleaner estimate of usability than the overall usability score but suggested keeping the two learnability items in the scale for the additional measure of learnability.

After making any changes that are indicated by the usability tests, I will then ask both MU Extension faculty and staff who have completed the Web training and selected other staff, such as editors and writers, who are aware that the organization has a style guide to carry out the same tasks at their own office computers. I will send the survey to the entire trained population (at this time, approximately 120) and to the editors who also use the style guide. These users are located across the state, so they will be asked to complete the tasks on their own via email. After they complete the tasks, I will ask them to link to a Survey Monkey questionnaire to complete the SUS survey online. This survey will include a question at the beginning to collect the participant's job title and an open-ended comment/suggestion question after the SUS survey.

With the recommended adjustments from Bangor, Kortum, and Miller (2008) and Tullis and Stetson (2004), the cross-sectional survey used in this study will be the System Usability Scale found in Table 1, which is modified slightly from Brooke's (1996) original survey.

**Table 1**  
*System usability scale survey*

**Original SUS statements**

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.

**Modified SUS statements**

1. I think that I would like to use this website frequently.
2. I found the website unnecessarily complex.
3. I thought the website was easy to use.
4. I think that I would need the support of a technical person to be able to use this website.
5. I found the searching and sorting functions in this website were well-integrated.
6. I thought there was too much inconsistency in this website.
7. I would imagine that most people would learn to use this website very quickly.
8. I found the website awkward to use.
9. I felt confident using the website.
10. I needed to learn a lot of things before I could get going with this website.

Specifically, throughout the survey, the word “system” was changed to “website” in each statement to better describe the interface I will be building (Tullis and Stetson, 2004). Statement 5 was modified from “I found the various functions in this website were well integrated” to “I found the various search and sorting functions in this website were well integrated” to fit this particular style and usage guide website based on Jarrett’s (2011) suggestion to minimize user questions by modifying the statements to fit the interface being tested. In statement 8, the term “cumbersome” was changed to “awkward” based on Bangor, Kortum, and Miller’s (2008) experience with respondents’ lack of understanding of the word cumbersome.

The scale used for the SUS will be a five-point Likert scale ranging from “strongly agree” to “strongly disagree.” I will add an open-ended comments/suggestions box to elicit additional comments about the website at the end of the survey.

For this study, I will determine an overall usability score using all of the SUS items, then break the scores down into the two factors, learnability and usability (Lewis and Sauro, 2009).

To calculate the SUS score (Brooke, 1996), you first sum the scores from each survey item, which will range from 0 to 4. For items 1, 3, 5, 7, and 9, the score contribution is the scale position minus 1. For items 2, 4, 6, 8, and 10, the contribution is 5 minus the scale position. To obtain the overall value of system usability, multiply the sum of the scores by 2.5. The SUS score ranges from 0 to 100.

To calculate scores for the usability and learnability scales (Lewis and Sauro, 2009) and make them compatible with the overall SUS score, multiply the summed score of the usability items by 3.125 and the learnability items by 12.5.

To evaluate if a SUS score is “good” or “bad,” Tullis and Albert (2008) reviewed 50 studies that reported SUS scores across 129 different conditions. They concluded that the numbers they found (average SUS score was 66 percent, median was 69 percent, 25th percentile was 57 percent, and 75th percentile was 77 percent) indicated that an average SUS score under 60 percent is relatively poor while a SUS score of more than 80 percent could be considered pretty good.

### **Literature review.**

During a major redesign and reorganization of the MU Extension website that started in late 2006, the MU Extension Web team made a conscious decision to base decisions on usability testing with customers and internal staff rather than opinions of the team or other staff. Members of the Web team and a group of researchers from the Information Experience Lab at the University of Missouri School of Information Science and Learning Technologies used heuristic evaluation, focus group interviews and surveys, think-aloud interviewing, and multiple-user simultaneous testing to evaluate the website (Wang et al., 2010). The researchers found that understanding users’ problems, wants, and needs can change how Web designers make decisions and can make a website more usable and useful for both their customers and internal users.

*Purpose and value of a house style guide.* MacKay (1997), in an article that is often cited in later literature on style guides, defines a style guide as “a rule-driven document that sets the parameters for consistency and acceptability for all written materials produced by an individual or group. A house style guide is one that is produced for an organization’s internal use and is specifically tailored for its specific writing

contexts” (p. 244). He further notes that there is an assumption that consistent style and form in publications adds to a company’s credibility while inconsistencies detract from the company image.

Almost two decades ago, Allen (1995) suggests four good reasons to develop a corporate, or house, style guide: to create consistency in documents, to promote a professional image, to train newly hired employees, and to define how to generate documents. He also suggests that decreasing costs, which he says will happen as a result of the four reasons above, is the main reason corporations should develop style guides.

Having a house style guide to work from can settle disputes among editors, writers, and subject-matter specialists in an organization (Allen, 1995). Although many answers to style questions can be correct, Bright (2005) states that “organizations wishing to present a consistent and coherent message must choose one of the correct answers and reject all other options” (p. 42). As MacKay (1997) concludes, “A style guide’s purpose is to provide ground rules, with both the organization and the audience in mind” (p. 250).

The role of the house style guide has changed with the addition of Web pages that portray a company’s image. Additional sections are needed for items such as organizational identity guidelines and terminology and other styles specific to the type of media where the document resides (Bright, 2005). Racine (2008) recommends that Web style guides, in particular, should include both editorial and technical standards.

Many of the more recent articles that discuss style guides are talking more about setting technical standards than about editorial standards.

*Evaluation of style guides.* Although there are several journal articles about the value of style guides and about the steps for developing effective style guides, there is

little concrete research from a user perspective on what works and doesn't work in style guides (MacKay, 1997). He says that evaluation of the final product should involve "getting reactions, through a variety of techniques, from users of the style guide" (p. 248) to determine if it is clear, comprehensive, easy to use, attractive, and easy to maintain (Washington, 1993).

Allen (1996) researched user attitudes toward corporate style guides using a survey. His sample included 200 randomly selected attendees of the 40th Society for Technical Communications conference, so his respondents were primarily writers and editors. Of the 69 respondents who use a corporate style guide, 92.8% say their organization's guide helps them fulfill work responsibilities. Allen concludes that respondents perceived that style guide usage "allows the corporate writer to produce more professional, user-friendly documents in less time without conflict" (p. 238). He states that his survey reveals benefits of style guide usage such as consistency among documents and time saved on document generation, which validates the reasons given in previous articles that talk about the value of style guides but don't back the conclusions with empirical research.

*Usability testing of online databases.* To define usability, Rubin and Chisnell (2008) state, "When a product or service is truly usable, the user can do what he or she wants to do the way he or she expects to be able to do it, without hindrance, hesitation, or questions" (p. 4).

Nielsen (1993) defines usability as multi-dimensional properties of a user interface that are normally associated with the following five attributes: learnability, efficiency, memorability, errors and satisfaction.

This researcher was not able to find usability studies on style guides. However, she was able to find usability tests on some more complex websites with online databases. Many of their usability issues and evaluation techniques are applicable to this project, and the results of two of these studies are discussed below.

The Georgia Tech Library website was first redesigned using information architecture principles for organization then redesigned to accommodate what was discovered in subsequent usability tests (King and Jannick, 2005). Think-aloud usability tests with inexperienced patrons showed mainly that users didn't know which search interface (e.g., catalog, databases, and e-journals) to use to find what they needed. They also used the Quick Catalog Search like a Google search, so it was removed. The redesign featured ways to guide the user through navigational choices to attempt to reach the correct search.

PENUMAT, which stands for Personal Nutrition Management Tool, is an interactive, Web-based database that includes nutrition management information and screening tools (Bozkurt, et al., 2011). To usability test the database, the researchers used a multi-method approach that included protocol analysis, interviews, and a System Usability Scale survey with a sample of 10 healthy volunteers. Usability problems from think-aloud sessions were sorted by content analysis and grouped into Nielsen's (1993) 10 usability heuristic categories. Each heuristic was found to be violated at least once. The authors concluded that although the SUS scores, which ranged between 77.5 and 100, with a median of 88.7, were acceptable, the multi-method approach was necessary because both the think-aloud sessions and the interviews found usability problems with the website that the SUS scores didn't indicate.

***Learnability of websites.*** Nielsen (1993) called learnability of a system the most fundamental usability attribute because in general, a system needs to be easy to learn and because learning to use the system is usually the user's first experience with it. Rubin and Chisnell (2008) stated that learnability can also refer to a user's ability to relearn a system that he or she uses infrequently.

Lewis and Sauro found that two items in the System Usability Scale, 4 ("I think that I would need the support of a technical person to be able to use this website.") and 10 ("I needed to learn a lot of things before I could get going with this website."), aligned with a factor they called "learnability" because of the commonality in the two items is about the ease or difficulty of learning to use the website.

## References

- Allen, P. R. (1995). Save money with a corporate style guide. *Technical Communication*, 42, 284-289.
- Bright, M. R. (2005). Creating, implementing, and maintaining corporate style guides in an age of technology. *Technical Communication*, 52, 42-51.
- Bangor, A., Kortum, P. T., & Miller, J. T. (2008). An empirical evaluation of the system usability scale. *International Journal of Human-Computer Interaction*, 24, 574-594.
- Bozkurt, S., Zayim, N., Gulkesen, K. H., Samur, M. K., Karaagaoglu, N., & Saka, O. (2011). Usability of a web-based personal nutrition management tool. *Informatics for Health and Social Care*, 36, 190-205.
- Brooke, J. (1996). SUS: A quick and dirty usability scale. In P. W. Jordan, B. Thomas, B. A. Weerdmeester, & I. L. McClelland (Eds.), *Usability evaluation in industry*. London: Taylor & Francis.
- Jarrett, C. (2011, February 3). SUS: a good enough usability questionnaire [Web log message]. Retrieved from [http://www.rosenfeldmedia.com/books/survey-design/blog/sus\\_a\\_good\\_enough\\_usability\\_qu/](http://www.rosenfeldmedia.com/books/survey-design/blog/sus_a_good_enough_usability_qu/)

- King, H. J., & Jannick, C. M. (2005). Redesigning for usability: Information architecture and usability testing for Georgia Tec Library's website. *OCLC Systems & Services*, 21, 235-243.
- Knudtson, K. (2002). *Theories in computer human interaction: Prescriptive theories*. Retrieved March 17, 2012, from <http://www.cs.umd.edu/class/fall2002/cmsc838s/tichi/prescriptive.html>
- Lewis, J. R., & Sauro, J. (2009). The factor structure of the system usability scale. *Proceedings of the Human Computer Interaction International Conference (HCII 2009)*. San Diego CA, USA.
- MacKay, P. D. (1997). Establishing a corporate style guide: A bibliographic essay. *Technical Communication*, 44, 244-251.
- Nielsen, J. (1993). *Usability engineering*. San Francisco: Morgan Kaufmann Publishers Inc.
- Nielsen, J., & Mack, R. L. (1994). *Usability inspection methods*. New York: Wiley.
- Racine, J. (2008). Creating a college Web style guide: Defining value, process, and content (Master's thesis). Retrieved from <http://www.racinewebworks.com/RacineThesisFinal.pdf>
- Rubin, J., & Chisnell, D. (2008). *Handbook of usability testing: How to plan, design, and conduct effective tests* (2nd ed.). Wiley.
- Sharp, H., Rogers, Y., & Preece, J. (2007). *Interaction design: Beyond human-computer interaction* (2nd ed.). Wiley.
- Shneiderman, B., & Plaisant, C. (2010). *Designing the user interface: Strategies for effective human-computer interaction* (5th ed.). Boston: Addison-Wesley.
- Tedesco, D. P., & Tullis, T. S. (2006). A comparison of methods for eliciting post-task subjective ratings in usability testing. *Usability Professionals Association Conference*, June 12-16, Broomfield, CO.
- Tullis, T. S., & Albert, B. (2008). *Measuring the user experience: Collecting, analyzing, and presenting usability metrics*. Amsterdam: Elsevier/Morgan Kaufmann.
- Tullis, T. S., and Stetson, J. N. (2004). A comparison of questionnaires for assessing website usability. *Usability Professional Association Conference*, June 7-11, Minneapolis. Retrieved March 29, 2012, from <http://home.comcast.net/%7Etomtullis/publications/UPA2004TullisStetson.pdf>
- Wang, X. C., Yadamsuren, B., Paul, A., Adkins, D., Laur, G., Tawfik, A., & Erdelez, S. (2010). Iterative usability evaluation for an online educational web portal.

*International Journal of Multimedia Data Engineering and Management (IJMDEM)*, 1(4), 31-49. doi:10.4018/jmdem.2010100103

Washington, D. A. (1993). Creating the corporate style guide: Process and product. *Technical Communication*, 40, 505-510.