New Options for Usability Testing Projects in Business Communication Courses

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Abstract

The increasing availability of recording technologies makes it easier to include usability testing projects in business communication courses. Usability testing is a method of discovering whether people can navigate, read, and understand a print or electronic communication well enough to achieve a particular purpose in a reasonable time frame. Usability projects increase students' knowledge and motivation by forcing them to experience the audience's frustrations with poorly written and designed communications. By following the suggestions and examples provided, faculty can develop effective usability project materials and capitalize on new technologies for data collection and sharing.

Keywords

usability testing, audience awareness, student motivation, think-aloud protocols, instructional technology

The increasingly widespread availability of recording technologies, such as webcams and web conferencing services, creates new opportunities for business communication faculty to incorporate usability testing projects into their courses. Usability testing is a research method that determines whether intended users of print and electronic communications can navigate, read, and understand them well enough to achieve a particular purpose in a reasonable amount of time. In the past, researchers often conducted usability tests in laboratory settings with special recording equipment; but today students can do similar studies using their own computers or smartphones. This change

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makes it possible for faculty to incorporate usability projects more easily in business communication courses.

Why would faculty want to do so? Usability testing allows students to experience directly how unclear writing, illogical organization, and inappropriate design choices make it hard for readers to find important ideas, understand them quickly, and use the information to make business decisions. This process increases students' motivation as well as their knowledge. Though the computer industry has been most active in usability research, many other industries, such financial services, manufacturing, and health care, have found it valuable. For this reason, knowledge of usability testing is relevant no matter what career path students follow.

This article explains in more detail what usability testing is, why usability projects benefit business communication courses, and how faculty can incorporate such projects into the business communication curriculum, capitalizing on the new technology.

What Is Usability Testing?

When communicating with customers, clients, employees, investors, other stakeholders, and the general public, companies want to know whether their communications will be successful. To evaluate print or electronic communications, especially in their draft versions, companies can choose among several approaches: Heuristic testing concerns what experts think; usability testing concerns what users do. With *heuristic testing*, experts examine the document, website, or other communication to determine how well it complies with a set of established principles and standards. An example of such standards is the *Research-Based Web Design & Usability Guidelines* developed by the U.S. Department of Health & Human Services (2006). Though valuable, heuristic testing does not measure how actual users interact with the communication. In contrast, *usability testing* explores how people actually use the document or website for a particular purpose (Barnum, 2011). For instance, a usability test might explore whether investors can find sufficient information within a corporate financial report to make investment decisions, how long travelers take to compare options and book hotel reservations online, why Internal Revenue Service instructions confuse taxpayers, or which elements of a retail website most influence consumers' purchase decisions. By observing and recording data about the interaction between users and a document or website, a researcher can learn whether users achieved their purpose and, if so, in how much time, through what pathway, and with what level of satisfaction (Sherman, 2006). If users do not succeed in finding information and making decisions, the researcher can identify where the barriers occurred. Examples of barriers include an annual report's inadequate content, a brochure's out-of-date facts, a PDF document's illogical organization, or an interactive website's broken links.

Usability is a broader concept than readability, which measures the difficulty level of written texts (Stevens, Stevens, & Stevens, 1992). Readability studies consider language features inherent in the text, such as word and sentence length, but do not evaluate how people actually use the text.[1] Usability testing, however, goes beyond the

sentence level to consider structure, layout, linking, and other design factors that may make a print or electronic document difficult to understand. Usability studies include observations of people actually using the print or electronic documents.

Usability testing arose from the need to learn how people adapt to new technologies. Precursors of this testing approach in the 1950s were industrial designers' observational studies of how people behaved in new environments, such as airline cabins (Dreyfuss, 1955). The rise of the computer industry in the 1960s created a need for user manuals, and by the late 1970s the U.S. government funded the Document Design Center, which researched how people used all types of functional documents, from tax forms to software documentation (Redish, 2010). When personal computers became available in the 1980s, IBM, Hewlett-Packard, Intuit, and other firms established usability labs where they could test how people interacted with computers and what training materials worked best. After the World Wide Web opened in the early 1990s, usability studies began to focus more on how people read, navigate, and use webpages. In the past decade, as mobile devices have proliferated, usability studies have explored how people use them. Recent innovations in usability testing methods include eyetracking, which measures where and for how long users look at different parts of documents shown on computer screens, and remote testing via web conferencing services, which makes it easier to conduct studies in natural settings rather than laboratories (Redish, 2012).

Although usability testing developed primarily in the computer engineering and software design industries, it has been applied in many others, including manufacturing, retail, hospitality, health care, and financial services. Recent studies have explored varied questions such as how health care workers use electronic health records (Lowry et al., 2012), how disabled citizens use web-based voting systems (Fuglerud & Røssvoll, 2012), how well homeowners of different ages understand instructions for programmable thermostats (Combe, Harrison, Craig, & Young, 2012), how students read electronic textbooks (Lim, Song, & Lee, 2012), how children collaborate on wikis (Hadjerrouit, 2012), and how drivers can best use in-vehicle information systems (Harvey, Stanton, Pickering, McDonald, & Zheng, 2011).

Usability testing typically involves a small number of testers chosen because they have characteristics of some target audience. Developers of this methodology have argued that using as few as 5 testers identifies most problems and using more than 15 testers rarely identifies any additional problems (Nielsen, 2000, 2012). Many studies use 8 to 10 testers, hoping to identify about 85% of the problems. Some studies have testers work in pairs (van den Haak, de Jong, & Schellens, 2006). Users receive a scenario: a description of a situation and their purpose in consulting the document, website, instruction manual, or other type of communication. They may be seeking to answer a specific factual question (e.g., How profitable has Company X been in each of the past 10 years?), to learn how to do something (e.g., How can I make a mortgage amortization table?), or to gather information relevant to a broader business decision (e.g., Should I invest in Company Z?). Then the users try to accomplish the purpose set forth in the scenario. It is important to remember that the print or electronic document is being tested, not the users.

Data about the test can be collected in several ways. Given the small number of testers, it is feasible for researchers to observe testers directly and take notes about their processes. Video recording provides a way to capture the observations and can focus on the computer screen or the testers' facial expressions. Audio recording is necessary if testers are asked to think aloud when conducting the test; this think-aloud protocol method provides insight into the testers' reactions to the document and reasons for choosing particular reading strategies (Cooke, 2010). Usability studies of websites or hyperlinked documents can record electronic pathways, that is, the sequence of pages visited, through the history feature of the search engine. Another data collection method is eyetracking technology, which records what images and text users focus on, in what order, and for how long (Nielsen & Pernice, 2010). In addition to all of these methods, usability studies often include questionnaires and debriefing interviews.

In the past, usability studies were often done in laboratory settings, but the increasing availability of recording technologies makes it easier to incorporate such projects into business communication courses. Webcams are built in to new laptop computers and available to add to desktop computers at a relatively low cost. Mobile phones also have the capability of recording audio and video. So in many cases, students in business communication courses have technology readily available to make audio and video recordings of usability tests. Using course management systems, such as Blackboard, or external platforms, such as YouTube private channels, students can share their results with classmates. In this way student teams can assemble data from the five or more testers needed for credible results. The recording technology does not depend on the availability of a computer classroom and is as readily available for distance and hybrid courses as for traditional ones.

Why Include Usability Projects in Business Communication Courses?

Including a usability project in a business communication course offers benefits in terms of both students' increased motivation and knowledge.

Increasing Students' Motivation

The most important benefit is that such projects increase students' motivation by forcing them to adopt the audience's perspective rather than the writer's. By doing so, they directly experience the frustration and annoyance that result from unclear phrasing, illogical structure, missing information, broken links, and other problems. Conversely, they experience the pleasure and satisfaction of finding needed information easily and quickly in a well-written and well-designed document. These contrasting emotions help students understand and appreciate the audience's perspective.

The inability to imagine, appreciate, and adapt to audience concerns is a major problem in professional communication. One study of report writing in a consulting company, for instance, documented why writers found it difficult to envision the

audience, take the audience's perspective, and adapt the discourse accordingly; the business situation created multiple possible audiences, each with competing values and interests (Huettman, 1996). A study of writing in technology companies showed that newcomers often did not think of audience considerations and resisted the belief that their writing involved a negotiation of meaning between themselves and their readers (Winsor, 1996).

Studies of how people learn to write suggest that audience awareness depends on observation and metacognition, both of which usability projects promote. A study that explored how new members of an organization learned to become successful business writers concluded that a key to adjustment was close observation of other writers and their documents (Beaufort, 2000). Because usability studies are structured ways of observing the details of a document, these projects offer significant benefits. Furthermore, students gain a new audience-centered perspective when they conduct usability projects because the close examination of the document, website, or other type of communication increases their metacognition, that is, thinking about the way something is written not just what it says. Metacognition is a powerful means of increasing writers' abilities to base decision making on audience perspectives, as shown in longitudinal studies of writers' development (Negretti, 2012). Usability projects make students think about and verbalize their experiences as readers. They record their reactions to the linguistic, rhetorical, and design choices of the document. Including a usability study in a business communication course thus helps students develop habits of thinking in terms of audience perspectives.

Why would a usability project be more effective in motivating audience awareness than traditional instruction, such as reading a textbook chapter about audience analysis or discussing the concept in class? The answer lies in the power of the *see-for-yourself* principle, or what Heath and Heath (2007) call having *testable credentials*. Ideas become more credible when people are able to test them directly rather than simply being told they are true, even by a recognized leader or acknowledged expert (Grant & Hofmann, 2011). A related concept in educational psychology is active learning, and research supports its efficacy in a variety of contexts (Michael, 2006). Usability projects, which constitute one form of active learning, motivate students by inviting them to see for themselves how easy or difficult it is to read, navigate, comprehend, and use business communications.

Increasing Students' Knowledge

Including a usability project in business communication courses does more than affect motivation, though. Another benefit is that such projects increase students' substantive knowledge of the variety of ways in which people process different business genres and the factors that affect their approaches to this process. To learn to write well, one must first study how people read.

Reading approaches vary by genre. One does not read a novel in the same way as one reads an accounting report. One does not use a travel website in the same way one uses a software instruction website. Approaches also differ by situation—for instance,

the amount of time pressure. Students often assume that their writing is so compelling that everyone will read all the words in the exact sequence in which they were written. However, except when reading literature, people usually do not read linearly, starting with the first word and continuing word by word through an entire communication. Instead they skim parts, skip parts, and backtrack to reread key points. Hypertext documents with links explicitly encourage this resequencing, but it also occurs with traditional print documents, such as business reports. How many investors receive a company's annual report and read it cover-to-cover, page-by-page, word-by-word? By conducting a usability study, students gain insights into the reader's power to resequence the content, adjust the time spent on each section, ignore passages that seem irrelevant, and move back and forth between visuals, text, and addenda.

Studies of how writers adapt when they move from academic to workplace settings show that learning new genre conventions, options, and strategies is a critical step (Anson & Forsberg, 1990; Beaufort, 2000; Winsor, 1996). One study even emphasized that learning how to learn new genres was the key to becoming an effective business writer (Freedman & Adam, 1996). Conducting a usability study not only allows students to figure out how people use a critical genre for the particular profession or organization but also teaches them how to learn about new genres they will encounter in the future.

Research done at Carnegie Mellon University's Center for the Study of Writing demonstrated how usability testing helped writers understand and adapt to their audiences (Schriver, 1990, 1991, 1992). In these studies, users recorded think-aloud protocols as they read documents. Writers then used the transcripts to guide their revisions of the documents. The studies concluded that the protocol-aided revision significantly improved writers' abilities to predict and address problems. By incorporating usability projects into business communication courses, faculty can reap similar benefits for their students.

The knowledge gained from conducting usability projects will serve students well after they graduate because despite widespread efforts to increase the quality of business communications, satisfaction remains low. Although the U.S. Securities and Exchange Commission issued a *Plain English Handbook* in 1998, companies have continued to produce reports and disclosure statements that confuse investors (Cox, 2006). After the recent housing crisis revealed the difficulty of understanding banks' mortgage terms, the U.S. Consumer Financial Protection Bureau in 2012 proposed new requirements for loan documents. Studies of the effectiveness of corporate websites have documented similar problems (Law & Ngai, 2005; Vrontis, Ktoridou, & Melanthiou, 2007). One usability study identified over 300 problems with a well-known hotel's website (Molich & Dumas, 2008). A study of 500 major corporations' websites found that on average they had only half of the features that make websites most usable (Cappel & Huang, 2007). By becoming familiar with the principles and process of usability testing, students will have the knowledge and skills that will give them a competitive edge in their career progression.

How Can Faculty Incorporate Usability Projects Into Business Communication Courses?

Incorporating a usability project into a business communication course is not difficult but requires some advance planning to develop project materials, choose data collection methods, and arrange logistics. The following discussion provides examples and options based on usability projects I have included in management communication courses at Cornell University.

Developing Project Materials

Usability projects require two types of materials: a print or electronic communication for students to test and a scenario that explains the context and goal of testing.

Start by choosing a communication to test. Several business communication genres work well:

- Corporate reports, such as annual financial reports, environmental responsibility reports, and other investor relations communications
- Promotional brochures, advertising, and websites for consumer products, travel destinations, real estate, sports teams, educational institutions, professional organizations, and so on
- Shopping websites, catalogs, and other direct sales communications
- Instructional materials, such as procedure manuals, policy guidelines, and interactive training websites

Some of these choices are available in print, some as downloaded PDFs, some as websites, and some as interactive electronic documents. The increased availability of electronic documents makes it easier to include usability projects in business communication courses than in the past when it was necessary to obtain print copies for each student.

Next, write a scenario that tells students what business concern necessitates the test, what role they are playing, and what their specific task is. Sometimes the scenario arises from a business problem, such as the following:

- A human resources manager frequently fields questions from employees who seem unfamiliar with their health benefits. Usability testing could reveal whether employees can find information quickly and easily on the benefits website and how long they will search before giving up.
- A pharmaceutical company manager wants a product brochure to provide enough scientific information without overwhelming patients. Usability testing could determine whether patients understand the brochure and which types of information are most important to them.
- A hotel sales manager is concerned because the number of conventions held at the property has declined steadily. Usability testing of the company website

could identify to what extent its content and organization meet convention planners' needs.
- An engineering company executive wants to allay people's fears about the dangers of a new technology, which have been highlighted in recent news reports. Usability testing could document what words and images in company advertising increase or decrease people's fears about the technology.

In other cases, the scenario arises not from a problem but from a desire for expansion into new business markets, as in the following situations:

- A restaurant owner hopes to book more wedding receptions but is unsure whether the website provides sufficient information about wedding menus, prices, and services. Usability testing could show which details are of greatest interest to brides and how long they spend on one site before moving on to a competitor's.
- A real estate brokerage firm wants to represent more clients in sales of mixed-use commercial properties. Usability testing could help the firm discover whether its traditional offering memoranda documents meet the needs of this clientele.
- A retail manager wants to target professionals ages 25 to 35 for a new product line offered on the company's online shopping website. Usability testing could document how such potential customers interact with the website and how fast they make decisions about their level of interest in such products.
- A manufacturing company manager wants to recruit new factory employees by getting them to apply online rather than showing up in person. Usability testing could indicate what barriers cause potential employees not to complete online applications.

The scenario needs to be detailed enough to help students have the right frame of mind when conducting the test, and this is especially important if they are asked to play a role. For example, a usability test of a corporate social responsibility report could ask students to find the factual information needed to write their own paper for a college course or, instead, to play the role of a financial adviser gathering information for a presentation to clients. The test of a tourism website could ask students to find information needed to plan their own spring break trip or, instead, to play the role of a trade association executive researching potential sites for an industry convention. The usability test of a real estate website could ask students to identify an apartment where they'd like to live after graduation or, instead, to play the role of a business owner who wants to lease office space that meets certain criteria. It is easier for students to conduct usability tests from their own perspective, but having them play the roles of business persons increases the perceived relevance of the assignment. In either case a good scenario concisely describes the context, the perspective, and the specific task. Pretest the scenario to ensure that it is unambiguous. Appendix A provides one example of a scenario I have used in management communication courses.

Choosing Data Collection Methods

Several methods of data collection are appropriate for usability projects done in business communication courses. Professional usability researchers rely on direct observation and note taking, believing that this approach is indispensible (Redish, 2012). Pairs of students can easily use this method by reversing roles as tester and observer.

Another commonly used method of recording findings is a questionnaire. Students can use the questionnaire to record time, note the problems encountered, give satisfaction ratings, and make suggestions for how to improve the document or website. Students can compile and share their data in a spreadsheet or database program; alternatively, the faculty member can distribute the questionnaire and compile results electronically by using the survey feature of course management sites (e.g., Blackboard) or survey tools (e.g., Qualtrics) that many universities support. Appendix B provides an example of a questionnaire that accompanied the Appendix A scenario in my management communication classes.

It is helpful to know what pages of a document or website testers looked at, in what order, and for how long. If a website is being tested, the history feature of many search engines will document the electronic pathway—that is, the sequence of pages viewed and time spent on each. If a PDF or print document is being tested, the observer notes or audio/video recording can include the sequence of pages.

Because audio and video recording features are increasingly available, business communication students can easily use a data collection method common in professional usability studies: the think-aloud protocol method. No special laboratory is needed because laptop computers now have built in webcams, desktop computers can have webcams added at a low cost, and most mobile phones have similar features. Several variants of this method are feasible for college projects. In the *concurrent think-aloud* (CTA) protocol, the tester verbalizes his/her thoughts, concerns, and ideas at the same time as attempting to achieve the goal set forth in the scenario. For instance, using the scenario presented in Appendix A and playing the role of a business meeting planner, the tester would talk while concurrently exploring a hotel website to determine whether the property had the facilities and services needed to meet the criteria for a series of planned business events. An audio or audio/video recording would document what happened. In the *retrospective think-aloud* (RTA) protocol, the tester would talk about the test immediately after completing it and, typically, while reviewing a video recording of the test. The tester would reflect on how he/she approached the task and what difficulties if any were encountered.

A third variant of the think-aloud protocol method that business communication faculty might consider involves a dialogue instead of the monologues of CTA and RTA. In this method, called *constructive interaction* (CI), two testers work together to achieve the goal set forth in the scenario. As they collaborate on the task, their conversation is audio/video recorded. Advocates of this method assert that testers find it easier because it is more natural to engage in a dialogue than a monologue (van den Haak et al., 2006). Studies that compare CTA, RTA, and CI conclude that although each has specific strengths, they are equally successful overall (van den Haak, de Jong, & Schellens, 2007).

These methods of data collection, either alone or in combination, are suitable for usability projects in business communication courses. Some require more use of technology, but all are feasible.

Arranging Project Logistics

Faculty who want to incorporate usability projects into business communication courses have several logistics options. These relate to emphases on individual versus group work.

The easiest approach is to have each student test the usability of one print or electronic communication and then sum up findings, conclusions, and recommendations in a written or oral report. Although this approach is much more limited than professional practice, it would nevertheless achieve the educational goal of having students better understand readers' perspectives. This option would allow usability testing to be a minor assignment or in-class activity rather than a major project.

To mirror professional practice, small groups of students can collaborate on usability projects. It is best to have at least five students test the same print or electronic communication (Nielsen, 2012). Group members can share their test notes, audio/video recordings, and other findings on course management software (e.g., Blackboard), web conferencing services (e.g., WebEx), team collaboration wikis (e.g., Confluence), private YouTube channels, or other technologies. Many universities now make such technologies available to students and faculty at no cost. Then either individually or as a team, students can analyze the results, draw conclusions, and present findings. Because the test materials are shared electronically, this type of project is feasible for online as well as traditional courses.

The assignment illustrated in Appendices A and B used this approach. Each student tested five or more hotel websites, and each website was tested by at least eight students. Findings were compiled and shared on the course management site. Each student then analyzed the consolidated findings for one website, drew conclusions, developed recommendations, and summarized the project in a written report. I have used other usability projects that evaluated print documents, such as corporate annual reports, and that used other data collection methods, such as observation and audio recording.

A more complicated option is to have students conduct a usability test not with classmates but with outsiders. Each student or student team would recruit five or more outsiders, such as friends or family, to test a print or electronic document. The students would observe, take notes, compile data, analyze the results, and present the findings in a written or oral report. If the testers were in distant locations, students could observe the tests via a free voice-over-Internet-protocol service (e.g., Skype) or testers could record the tests via webcam. This remote testing approach is increasingly being used by professional usability testing services.

One advantage of the external tester approach in a business communication course is that the communication to be tested could be a draft document that students themselves had written. They could then use the test results as the basis for revising the

document. Repeated more than once, this iterative approach would be similar to that used by many companies.

A final logistics question is whether to have students share results with the creators or owners of the print or electronic document tested. The closer the project methods are to professional practice, the more appropriate it is to encourage students to share their findings. To do so, students should present findings clearly and offer practical suggestions. For instance, they could categorize and illustrate the types of problems they identified in the particular print or electronic communication:

- Catastrophic problems that prevented users from completing the task
- Serious problems that slowed users down significantly but did not prevent them from completing the task
- Cosmetic problems that delayed or annoyed users slightly

Students could then provide suggestions and examples of how to resolve these problems. Many businesses appreciate receiving student research reports of this kind.

Closing

Faculty who want to know more about usability testing will find two websites helpful: www.usability.gov, by the U.S. federal government, and www.nngroup.com, by the Nielsen Norman consulting group. Both offer practical advice and good resources about usability studies.

Whether included as an in-class activity or a major out-of-class assignment, usability testing projects can add a new dimension to business communication courses. Students experience the difficulty readers encounter when they try to make sense of complex documents, navigate confusing websites, or follow complicated instructions. Through the emotional experience, students gain empathy and motivation that can help them move forward on their path to becoming successful business writers.

Appendix A

Sample Scenario for a Usability Project

Note

In this project, each student conducted usability tests on several hotel websites from a list that the instructor provided. Each website was tested independently by eight or more students.

Scenario

Imagine that your company is planning to hold regional meetings for your most important clients in different parts of the United States. You are researching hotels where these meetings could be held. Your group will need about 25 hotel rooms of different

sizes and types, as well as one function room where the group of up to 25 people can meet during the day. You want the hotel's catering department to prepare most meals for the group.

Each of the hotels whose website you will look at has an acceptable location in one of the regions, so you need not consider that. You will be holding meetings in every region of the United States, so you are not comparing hotels with one another directly.

Task

Explore each website in order to determine whether the hotel seems like a good place for one of the regional meetings. Your goal is to make a well-informed decision in which you have confidence, not necessarily to make a fast decision. If you decide "yes," this means that you will keep the hotel on the list of possibilities and your assistant will contact the hotel for further information, such as group pricing.

Appendix B

Sample Questionnaire for a Usability Project

Note: These questions accompanied the scenario in Appendix A.

1. How long did you take to make a well-informed decision?
   Start time: _____
   End time: _____
   Elapsed time in minutes: _____
2. How many screens did you look at? _____. To see your list of screens, view your browser's history "by order visited today." Print the list.
3. Referring to the test scenario, what is your decision?

   Yes, based on the website information, this hotel seems like a good place for one of the regional meetings, and I want to keep it on the list of possibilities.

   No, based on the website information, this hotel does not seem like a good place for one of the regional meetings, and I want to eliminate it from the list of possibilities.

   Rate the quality of this hotel as a place for your company's meetings based on the website information. The scale is 1 to 10, with 1 = totally unacceptable and 10 = excellent.
4. What elements *of the hotel website* most influenced your decision about this hotel?
5. How easy to use was the website? Circle your answer and add an explanation:
   1 = Very easy
   2 = Moderately easy
   3 = Neutral
   4 = Moderately difficult or frustrating
   5 = Very difficult or frustrating

Explanation:

6. How much information did the website give you? Circle your answer and add an explanation:
   1 = Not enough
   2 = Less than I wanted
   3 = Just the right amount
   4 = More than I wanted
   5 = Too much

Explanation:

7. From the user's perspective, what are your positive comments about the website?
8. From the user's perspective, what are your negative comments about the website?
9. What specific suggestions would you make to improve the website?

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Note

1. For a humorous example of the limitations of readability measures, see Raymond, D. H. (1979, October). Putting Flesch to the test. *The Actuary, 13*(8), 1, 8. Retrieved from http://www.soa.org/library/newsletters/the-actuary/1979/october/act-1979-vol13-iss08-raymond.aspx

References

Anson, C. M., & Forsberg, L. L. (1990). Moving beyond the academic community: Transitional stages in professional writing. *Written Communication*, *7*, 200-231. doi:10.1177/0741088390007002002

Barnum, C. M. (2011). *Usability testing and research*. New York, NY: Morgan Kaufmann.

Beaufort, A. (2000). Learning the trade: A social apprenticeship model for gaining writing expertise. *Written Communication*, *17*, 185-223. doi:10.1177/0741088300017002002

Cappel, J. J., & Huang, A. (2007). A usability analysis of company websites. *Journal of Computer Information Systems*, *48*, 117-123.

Combe, N., Harrison, D., Craig, S., & Young, M. S. (2012). An investigation into usability and exclusivity issues of digital programmable thermostats. *Journal of Engineering Design*, *23*, 401-417. doi:10.1080/09544828.2011.599027

Cooke, L. (2010). Assessing concurrent think-aloud protocol as a usability test method: A technical communication approach. *IEEE Transactions on Professional Communication*, *53*, 202-215. doi:10.1109/TPC.2010.2052859

Cox, C. (2006, May 3). *Testimony before a hearing of the House of Representatives, Committee on Financial Services*. Washington, DC: U.S. Government Printing Office. Retrieved from http://www.sec.gov/news/testimony/ts050306cc.htm

Dreyfuss, H. (1955). *Designing for people*. New York, NY: Simon & Schuster.

Freedman, A., & Adam, C. (1996). Learning to write professionally: "Situated Learning" and the transition from university to professional discourse. *Journal of Business and Technical Communication*, *10*, 395-427. doi:10.1177/1050651996010004001

Fuglerud, K. S., & Røssvoll, T. H. (2012). An evaluation of web-based voting usability and accessibility. *Universal Access in the Information Society*, *11*, 359-373. doi:10.1007/s10209-011-0253-9

Grant, A. M., & Hofmann, D. A. (2011). Outsourcing inspiration: The performance effects of ideological messages from leaders and beneficiaries. *Organizational Behavior and Human Decision Processes*, *116*, 173-187. doi:10.1016/j.obhdp.2011.06.005

Hadjerrouit, S. (2012). Investigating technical and pedagogical usability issues of collaborative learning with wikis. *Informatics in Education*, *11*, 45-64. Retrieved from http://www.mii.lt/informatics_in_education/pdf/INFE200.pdf

Harvey, C., Stanton, N. A., Pickering, C. A., McDonald, M., & Zheng, P. (2011). To twist or poke? A method for identifying usability issues with the rotary controller and touch screen for control of in-vehicle information systems. *Ergonomics*, *54*, 609-625. doi:10.1080/00140139.2011.586063

Heath, C., & Heath, D. (2007). *Made to stick: Why some ideas die and others survive*. New York, NY: Random House.

Huettman, E. (1996). Writing for multiple audiences: An examination of audience concerns in a hospitality consulting firm. *Journal of Business Communication*, *33*, 257-273. doi:10.1177/002194369603300303

Law, R., & Ngai, C. (2005). Usability of travel websites: A case study of the perceptions of Hong Kong travelers. *Journal of Hospitality & Leisure Marketing*, *13*, 19-31. doi:10.1300/J150v13n02_03

Lim, C., Song, H.-D., & Lee, Y. (2012). Improving the usability of the user interface for a digital textbook platform for elementary-school students. *Educational Technology, Research and Development*, *60*, 159-173. doi:10.1007/s11423-011-9222-5

Lowry, S. Z., Quinn, M. T., Ramaiah, M., Schumacher, R. M., Patterson, E. S., North, R., & Abbott, P. (2012). *Technical evaluation, testing, and validation of the usability of electronic health records*. Washington, DC: U.S. National Institute of Standards and Technology.

Michael, J. (2006). Where's the evidence that active learning works? *Advances in Physiology Education*, *30*, 159-167. doi:10.1152/advan.00053.2006

Molich, R., & Dumas, J. S. (2008). Comparative usability evaluation (CUE-4). *Behaviour & Information Technology*, *27*, 263-281. doi:10.1080/01449290600959062

Negretti, R. (2012). Metacognition in student academic writing: A longitudinal study of metacognitive awareness and its relation to task perception, self-regulation, and evaluation of performance. *Written Communication*, *29*, 142-179. doi:10.1177/0741088312438529

Nielsen, J. (2000, March 19). Why you only need to test with five users. *Alertbox*. Retrieved http://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/

Nielsen, J. (2012, June 4). How many test users in a usability study? *Alertbox*. Retrieved from http://www.nngroup.com/articles/how-many-test-users/

Nielsen, J., & Pernice, K. (2010). *Eyetracking web usability*. Berkeley, CA: New Riders.

Redish, J. (2010). Technical communication and usability: Intertwined strands and mutual influences. *IEEE Transactions on Professional Communication*, *53*, 191-201. doi:10.1109/TPC.2010.2052861

Redish, J. (2012). *Letting go of the words: Writing web content that works* (2nd ed.). Amsterdam, Netherlands: Elsevier.

Schriver, K. A. (1990). *Evaluating text quality: The continuum from text-focused to reader-focused methods* (Technical Report No. 41). Washington, DC: Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED318009)

Schriver, K. A. (1991). *Plain language for expert or lay audiences: Designing text using protocol-aided revision* (Technical Report No. 46). Washington, DC: Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED334583)

Schriver, K. A. (1992). Teaching writers to anticipate readers' needs: A classroom-evaluated pedagogy. *Written Communication*, *9*, 179-208. doi:10.1177/0741088392009002001

Sherman, P. (2006). *Usability success stories: How organizations improve by making easier-to-use software and web sites*. Aldershot, England: Gower.

Stevens, K. T., Stevens, K. C., & Stevens, W. P. (1992). Measuring the readability of business writing: The Cloze procedure versus readability formulas. *Journal of Business Communication*, *29*, 367-382. doi:10.1177/002194369202900404

U.S. Consumer Financial Protection Bureau. (2012). Integrated Mortgage Disclosures Under the Real Estate Settlement Procedures Act (Regulation X) and the Truth In Lending Act (Regulation Z): Proposed rule, 77 Fed. Reg. 51116-51457 (to be codified at 12 C.F.R. pts. 1024 & 1026).

U.S. Department of Health & Human Services. (2006). *Research-based web design & usability guidelines* (enlarged/expanded ed.). Washington, DC: U.S. Government Printing Office.

U.S. Securities and Exchange Commission. (1998). *A plain English handbook: How to create clear SEC disclosure documents*. Washington, DC: Author.

van den Haak, M. J., de Jong, M. D. T., & Schellens, P. J. (2006). Constructive interaction: An analysis of verbal interaction in a usability setting. *IEEE Transactions on Professional Communication*, *49*, 311-324. doi:10.1109/TPC.2006.885865

van den Haak, M. J., de Jong, M. D. T., & Schellens, P. J. (2007). Evaluation of an informational web site: Three variants of the think-aloud method compared. *Technical Communication*, *54*, 58-71.

Vrontis, D., Ktoridou, D., & Melanthiou, T. (2007). Website design and development as an effective and efficient promotional tool: A case study in the hotel industry in Cyprus. *Journal of Website Promotion*, *2*, 125-139. doi:10.1080/15533610802174995

Winsor, D. A. (1996). *Writing like an engineer: A rhetorical education*. Hillsdale, NJ: Erlbaum.

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