Chapter 4: MAKE A PAPER PROTOTYPE OF THE WEB SITE

What Is a Paper Prototype?

A paper prototype of your Web site is simply a paper representation of your proposed design for the site. One or more pages of paper represent each of the electronic “pages” in the top levels of your site and some of the lower level pages that users would see if they followed links all the way to a final destination.

We recommend creating rapid, holistic prototypes. A holistic prototype represents the entire structure of your Web site, not just one or two representative pages. You make such prototypes quickly so that you can try them out with real users early in the design process and find out where they need to be changed in order to be effective.

Why Should I Make a Paper Prototype?

If you want to build a Web site on the computer, it would seem to make sense that you should create your first prototype for that site on the computer. In this case, though, paper prototyping turns out to offer benefits that prototyping on the computer does not (Rettig, 1994).

Paper Is “Hands On”

When you create a paper prototype you put your hands on the structure of your site – literally. After the needs analysis was done for the Indiana University Bloomington site, members of the team sat together at a computer; one read items from index cards while the other typed up the pages of the prototype. Team members assembled the pages into prototype notebooks, labeled the pages, and checked that all the labels matched all the links. By the time the prototypes were tested, everyone was thoroughly familiar with the content, which meant that they were better able to spot and diagnose design problems later than they would have been otherwise.

Paper Is Familiar
No matter how little experience your users have with computers, they are probably familiar with paper. Using a paper prototype for the early tests of your site design can reduce the anxiety that computer novices among your test subjects might experience in facing a computer prototype.

**Paper Is Portable**

Paper prototypes can be used just about anywhere that you can sit down together with another person. Since they don’t require computers, the time and location of sessions can often be more flexible than for electronic prototypes.

**Paper Looks like a Draft**

Users are more likely to believe that your prototype is open to revision when it appears on paper instead of on the computer screen, and they’re even more likely to believe they’re seeing a draft when there are corrections marked on it. You might even introduce a typographical error or two into a paper draft, which gives you a golden opportunity to reinforce users for spotting a mistake.
Paper Is Easy to Change

During test sessions you can make corrections directly on a paper draft if necessary – and you don't have to “take the mouse away” from the user to do so. More significantly, you can scrap large portions of a paper prototype – even the whole thing – with somewhat less psychological impact on the design team than there would be if you threw away a complete set of HTML files.

Do I Have to Write out the Screens by Hand? Ugh.

No. We use a word processor, print the pages out, and conduct tests using the paper pages. But be careful that your pages actually look different from Web pages on a computer screen. Experienced users will recognize the “look” of pages printed directly from the Web or from a word processor that converts text to HTML automatically, and you will have lost the “draft quality” of your prototype, an important psychological benefit of using paper in the first place.

What about the Benefits of Prototyping on the Computer?

The primary argument for creating a computer prototype of your Web site very early in the design process is that you will already have some of the work done once the tests are over. How true is this? In our experience, conscientious testing generally leads to at least one major revision of a design – and even minor revisions can lead to scrapping electronic files that are easier to recreate than to revise.

The second argument in favor of computer prototypes is that they are more realistic than paper prototypes, and therefore the data you get from usability test will be true to the real problems people will face with the site. Later in the design process this argument will be absolutely correct. At the earliest stages, though, you are still grappling with the structure of your site's contents and the kind of access people will have to those contents. Don't distract yourself, or the users, with computers and mice and browsers and HTML tags. You can make, test, and revise paper prototypes quickly now to save yourself time later, and you will get perfectly good information from them.
2. Services and Departments

* Department Directory *

1. Animal Control
2. Clerk / Council
3. Community and Family Resources
4. Controller
5. Employee Services
6. Engineering
7. Fire Department
8. Fleet
9. Housing Authority
10. Human Rights Commission
11. Information Services/Showers
12. Legal Department
13. Mayor's Office
14. Parking Enforcement
15. Parks and Recreation
16. Planning
17. Police Department
18. Public Works
19. Risk
20. Street Department
21. Transit
22. Utilities

21. City and County Parks
   Park locations; available

22. Employment
   City jobs; employee benefits
Getting Started

Start from the data you gathered about your needs and those of your audience. By the time you start building a prototype, this information should be in the form of categorized items to appear in your Web site. For your earliest prototype your team should take the “topmost” categories, or the most inclusive ones, and start with them to create the main page of your site. The subcategories relating to each of these topmost categories will form secondary pages, and so on.


Choices

On the Web you are basically arranging choices for your users. In the most straightforward design you arrange these choices as text in the form of a menu, or a vertical list. You can also embed the choices in a paragraph of text. In either case, when users click on a link (the underlined text representing a choice), they see another page or see another location on the same page.

You can use much fancier options than lists and embedded links to represent choices, but these are the most universal and the simplest. Start with them.

Represent choices in the users’ own words. Look at the data you gathered while you were determining the needs for this site. When you were interviewing users and information providers, you wrote items down in their words, not your own. Use those words now. Maybe you wrote down that people in your organization want to know “How many vacation days do I have coming?” or “What’s for lunch in the cafeteria this week?” Don’t name these choices “Calculation of Employee Leave” and “Food Service Info.” Name them “Vacation Days” and “Cafeteria Lunch Menu.” If you have the room, you can also name these choices with the very questions that the users asked. Nothing is more immediate that echoing the question that the user already has in mind.

Explain choices in terms of their results. The choices you create on your pages should communicate as clearly as possible about what’s going to happen when someone selects them. People using computers like to feel that they're in control, that they know what's happening. They can be very uncomfortable when they don't know what's going to happen next.

You can reduce your users' anxiety by explaining the choices on your page in terms of what will happen when they're chosen. The simplest way to do this is to name the link and the page to which it refers with exactly the same words. Don't offer the choice to “Click here for more about the U.S. Constitution,” or “See what Joe has to say about how our constitution was drafted.” Present the choice as “Greentown High School U.S. Constitution Home Page,” or “Read about how the U.S. Constitution was drafted on Joe's Government Page.” In both cases, the names of the links tell users where they're going because it names the exact title of the page they will see when they choose that link.
Context

In addition to the choices you present on each page, you should provide users with a context. The context of your page tells users what the site is, what section of the site they're in, and what person or organization is responsible for this site. You may have noticed on existing Web pages that the context information is often provided through graphics; logos and other identity images or graphical title bars for different sections of a site. These are effective devices when they are used within some Web-specific constraints, but you don't have to create them for your paper prototype. If you plan a graphically-intensive site and you have someone available who is skilled in rapid visualization, include graphics in the paper prototype. Otherwise, stick with text titles to establish context on your pages for now.

Content

The choices on your pages are part of the content, but for this prototype you will also be creating some pages representing the information, or content, that users will come to your site looking for. These pages are typically a combination of text and pictures, either plain or with links directly to other pages. Structure these pages as the logical destinations of links suggested by your analysis of people's questions and needs for information. For now, don't worry whether or not this content is currently available all in one place in your organization, or whether you usually divide it up this way. Your analysis might suggest that people in your organization need start-to-finish records regarding the assembly of a widget. Don't make them run back and forth between the Preproduction, Production Line, and Packout pages on the Web just because they might have to contact three separate people for the information now. Put the information in your prototype where people tell you that they need it.

Navigation

Moving from one page to another, getting back, and finding a page you saw several minutes ago are all examples of “navigation,” or getting around on the Web. Since your prototype is on paper, not on the computer, users will navigate it by selecting a link and turning pages to get to the destination of that link. Their actions in using the paper prototype will tell you a lot about how they understand the information structure you're presenting, but not so much about how they will actually navigate through the site when it exists on the computer. Don't spend a lot of time creating navigation features like buttons and image maps at this stage of development because you will be able to test them much more effectively when you build your computer prototype.
What Should Be Included in the Prototype?

Your prototype has to provide you with a realistic opportunity to observe how users behave with the information structure you are creating. It has to exhibit the level of complexity users will encounter as they access the site initially, and it has to allow them to navigate deeply into the site looking for specific information. You have to represent both the breadth and the depth of the site, and do so rapidly enough that you actually have time to conduct the tests that will lead to improvements in your design.

Capture the Breadth of the Site

Develop the “top-level” structure to provide access all the major subsections that you currently envision being included in your site. Major subsections are those in which the pages are made up primarily of choices, making them part of the site's overall “access structure.” You may find it convenient to define the top level as all pages that will be maintained centrally on behalf of the organization instead of being maintained by individual departments or offices.

Choose Strands to Represent the Depth of the Site

Develop several “strands,” or series of pages that will allow users to follow links all the way to the specific items within the site. How many strands? That depends partly on the diversity of the information in your site and the diversity of tasks you have chosen as representative ones during the analysis of your users' needs. Always develop a strand that represents the deepest part of the site; this is the strand that requires the most “clicks” for users to get from the top page to a page containing the specific information they seek. You may also choose to develop a strand for information people seek frequently, or several strands for information that can be found more than one way.
What Should Not Be Included in the Prototype?

Don't include everything. If you try to do it all you may spend so much time making the prototype that the benefits of testing it are diminished. It will take too much time and too much work, and your team may be reluctant to make major changes to it once so much effort has gone into creating it.

Don't create finished graphics for the sake of the paper prototype. If you already have polished graphics for some of your content pages you might go ahead and include them, but it's better to use sketches or placeholders for the graphics you absolutely have to have. Graphics that look finished destroy the “draft” quality of your paper prototype since they imply that rest of the content is in its final form also.

Make a Notebook of Pages

Create one paper page for each of the Web pages your prototype will include. If the content you have identified for a page runs over a single sheet of paper, simply make a second sheet to hold it. The simplest way to create your prototype is to punch these pages and put them into a three-ring binder with dividers between the sheets representing each Web page.

The design team for the IUB site worked directly from their sorted data cards; one team member read the items out loud while another one typed them onto pages using a word processor. They used underlining to simulate the Web convention for text links, but they didn't worry a lot about simulating the “look” of the Web.

Assign a code to each link on each page and type the code next to the link large enough that the observer will be able to see it during test sessions, but not so large that it is distracting. Use short codes (e.g., A1, A2, B1, B2) that will be easy to record during observation.

Repeat the code for each link on a tab attached to the destination page – the page that the link leads to. Use write-on tabs or glue the label inserts into your tabs so that you don't have little code labels fluttering out of the notebook as users turn the pages.
Make an Observation Sheet to Use During Testing

Prepare an observation sheet that team members will use to record users' actions during the prototype tests. Provide spaces for team members to record specific observations you have decided to make. These are likely to include at least:

- team member's name
- identification of the test subject
- task given to the subject
- choices selected by the subject
- total time required for the subject to complete a task (or give up on it)
- comments made by the subject while thinking aloud
- additional observations made by the team member.

Observation sheets reduce the amount of work each team member has to do while conducting a prototype test. They also help to ensure that the observations from multiple team members will be uniform and thorough.
Get an Expert Review of the Prototype

Once you have a whole prototype in hand, it's a good idea to get an expert review from someone with Web design experience. You want to test the best prototype you can so that your usability tests uncover problems specific to your audience and their context, not problems that could have been avoided by applying some expertise to the design.

Ask the expert reviewer to note the ways in which your prototype does or does not conform to general principles of good information design. Even if you have considerable experience with Web design yourself, it's worth having a “fresh eye” look at the prototype just before you test it.

Test the Prototype Yourself

Team members should test the prototype to be sure that all the pages are there, no unintentional typographical errors appear, and all the tab labels correspond to the correct links. If you make multiple copies of the prototype, check them all. Don't bog down the process by testing a prototype with technical problems. Users will stumble on those problems and you won't get the best data that you could.

You may find usability problems while you are checking the notebooks for technical accuracy. If these problems seem critical and you can see a ready solution, change the prototype now — don't wait for your users to “prove” there's a problem that you can see for yourself. On the other hand, if you aren't sure whether something is a problem or not, leave it. Presumably you've made the best decisions you can based on experience, guidelines, and good process. Now you need data to help you figure out where you should spend your design effort. It's time to test.
Summary Information
Organization: Andersen Consulting, LLP
Project: Internal Multimedia Business Simulation
Type of usability activities conducted: Expert review, Low fidelity, high fidelity
Focus of case study: Low fidelity usability testing

Background
In the summer of 1998, I was part of a team designing and developing a multimedia business simulation for internal use at Andersen Consulting. Because a business simulation is primarily a learning application (not a transaction system), the focus and rigor required from usability testing were critical to project success. During detailed design, we began planning for usability testing of the application’s interface, content, and activities.

Herein lies our major challenge. With limited time and budget available for testing with the user population - and the high opportunity cost of bringing members of the target audience (line consultants working on client projects) - we needed to test three aspects of the application with our users:

- Interface – how well users can navigate through and manipulate the overall application interface as well as the widgets used in each task?
- Content – can our learners understand the content required to complete the simulated activities?
- Activity – are the actions required by the learners in each activity/task clear and understandable?

All three were worthy of their own testing activities, but again due to time & budget, we had to schedule one formal round of testing.

What Happened…
The focus of this case is the testing of our low-fidelity prototyping of the simulation. This describes the planning, execution, analysis, implementation, and follow-up testing that occurred.

Planning
I was responsible for coordinating low-fidelity usability testing. From my previous experiences, I knew that most usability testing errors are made (or the seeds are planted) during the planning phase. Most planning was completed by a small subset of the team – me, the design team manager, and our media coordinator (who was also responsible for overall interface consistency). To make most efficient use of designer time, I created usability test packets for each subteam that contained shells of scripts, generic debrief questions, and preparation instructions. The packets also included guidelines for observers & facilitators, as well as general do’s and don’ts for successful usability testing. All of these materials – including the plan – were the cumulative result of my lessons learned over a variety of usability testing experiences.
Execution
The day prior to the test, each team began sketching their low-fidelity prototypes for the test. Like most enthusiastic professionals, some subteams developed prototypes that went well beyond the scope of a low-fidelity prototype. And while these prototypes were very polished and professional-looking, this turned out to be an inefficient use of time, as the interface and many of the task interaction screens changes significantly following the test.

Four users from our target audience (line consultants with 1-3 years experience) were brought to the project site for a day of testing each of three on-line activities. The users varied in technical and content knowledge, and each had different reactions to the simulation interface, activities, and content. For each activity, one team member served as a facilitator, one as “the computer” (acting as the interface when the user clicked on the paper “screen”), and one as a full-time observer.

Analysis
Following the day of testing, each subteam produced a preliminary report which captured their major observations, conclusions, and recommendations. These recommendations were further divided into items that were global (referring to the overall interface design) or activity-specific. The subteams met individually with the design manager to discuss activity-specific recommendations, then the entire design team met to report activity-specific changes and discuss/finalize any global changes related to the low-fidelity test. At the end of the day, the team had a concise list of all changes which would be immediately incorporated into the design.

Implementing the changes
Since coding had not begun, changes were immediately implemented to the design documents. New interface elements were rendered and existing elements were revised accordingly. One of the real benefits we derived from low-fi testing was the ability to make changes quickly and inexpensively, before coding or even technical design had begun.

Follow-up testing
One activity in the simulation – one which utilized an entirely new interaction type – required follow-up testing of its drag & drop interface. Since it was still early in the simulation design cycle, we scheduled two unstaffed line consultants to come to the project site for one more low-fidelity test of this activity. Based on the results of this additional round of low-fidelity testing, we were able to solidify the design for this activity as programming began.

Summary
Benefits
Overall, the benefit we realized from low-fidelity testing was the ability to quickly and inexpensively test and iterate the design of our simulation.

Key Lessons Learned
The primary “lesson learned” from our experience were typical of my experiences with usability testing:

- Keep low-fidelity prototypes in low fidelity mode. There is no need to prove the team’s ability to create polished, aesthetically pleasing slides at this point in the development process – and there will be plenty of opportunities for that later in the project.
- Expect to find problems in your design during low-fidelity testing. This is normal – and much cheaper to discover and fix at this early stage in the development process.
- Never underestimate the time needed for planning and analysis.
- Take advantage of the real power of low-fidelity testing – iterate and re-test if you think it’s necessary. Again, it’s much easier to find/fix problems on paper-based prototypes.
Context

Habitat for Humanity-Monroe County, Indiana (Habitat-MC) is a local affiliate of Habitat for Humanity International, a not-for-profit organization that builds houses for low-income families. The Monroe County affiliate is a small chapter that usually builds two houses each year and is run by volunteers and two part-time staff.

As part of a larger effort to improve their effectiveness in the community, Habitat felt that a web site would help them achieve a number of goals:

- Reduce the amount of time required to volunteer with Habitat (the organization's greatest deterrent to recruiting volunteers),
- Increase communication between committees (the greatest problem among current volunteers), and
- Improve public relations efforts.

After conducting an analysis to help define the needs and content of the web site, our team built a paper prototype to test the proposed information structure and preliminary content. Here is what we learned.

Constructing the Paper Prototype

The paper prototype was a quick and effective way to begin gathering valuable data about our design before we had a finished version of the site. We were interested in rapidly creating and testing our paper prototype, which meant it was necessary for us to include only a portion of the information that would be contained in the final version of the site.

Sometimes items were intentionally left out of the paper prototype. For example, we made a conscious decision not to include images in the paper prototype for three main reasons. First, we were interested in rapidly creating a prototype to test. Collecting and modifying images for the paper prototype would have slowed down this process. Second, we planned to use the paper prototype to test the site’s information structure and preliminary
text, neither of which would be impacted by the images. And finally, we were still uncertain how much Habitat-MC would be able to pay for their site. Site hosting was dependent on how large the site was, and we knew graphics would add the most file size to the site. We wanted to be sure the site design wasn’t dependent on graphics that would raise the cost of the site.

Sometimes time constraints caused us to leave information out of the paper prototype. For example, content for the site was not always readily available, so we often had to gather it ourselves by referring to flyers and pamphlets and consulting with volunteers. Because this process was so time consuming, we were only able to include a limited amount of text in the paper prototype.

Even though the paper prototype was not a complete version of the site, it enabled us to quickly test and gather useful information about the site’s information structure and preliminary text.

Creating Authentic Tasks for the Usability Test

The paper prototype also allowed us to find solutions to two problems that we encountered: some information was difficult to categorize, and certain terminology was potentially unfamiliar to users. Both of these problems were resolved by using “authentic tasks” during our prototype testing.

Content looking for a home
We used our needs analysis to identify the type of information that users would look for on the web site. We were able to group most of this information into categories, which became the main sections of the prototype. However, there were two types of information that were difficult to place within the site’s structure: broad information that could be placed in many sections of the site, and unique information that did not seem to fit into any of the sections. In order to resolve these two issues, we relied on usability tests.

It was critical that the usability tests reflected the authentic tasks of the user. To create authentic tasks, we used information we had gathered from our needs analysis. By using authentic tasks during the usability tests, we were able to gather accurate data about where users were most likely to look for the information that had been difficult to categorize.

Say what?
It was important for the site to use words and phrases that users were familiar with, but sometimes different groups of users used different terminology. For example, the families who own Habitat-MC homes are known as “partner families.” People within the organization use this term, but people outside the organization do not. We ending up using this term as a category title in the paper prototype and paid particular attention during usability tests to whether users readily understood the phrase or were confused by it.

We were also careful how we worded our usability test questions so that they accurately reflected the user’s tasks and not the “insider” terminology. For example, when we asked potential partner families what the requirements are to become a partner family, we worded the task as, “How would you find out if you qualify for a Habitat house?” instead of “How would you find out if you can be a partner family?” Just a few word changes made the task more authentic for multiple user groups. It also allowed us to test the category page "Partner Families" for understanding across user groups as mentioned above.

Conducting the usability tests

Because there were three of us conducting independent usability tests, it was critical that we establish a consistent process so we could gather accurate data. Two things helped us achieve this: we conducted a “practice” usability test with an authentic user with all of us present, and we redesigned our data collection forms.
Practice makes perfect
The “practice” usability test helped us identify and correct the following problems:

- We had to make decisions about what we wanted to track. Initially, we were collecting data about everything we could – time to answer a question, paths, every comment, and so on. After the practice test, we realized that we couldn’t spread our attention to everything and still collect accurate data between us. We decided not to track time. Instead, we tracked paths through the site. Doing this made it just as obvious what tasks people had problems with (longer paths meant more problems), and it gave us the additional information of the path they took. With the path information, we were able to decide where to better place a page.

- We identified tasks that needed to be revised because of poor wording. There were a number of questions that were confusing to the test subject or just didn’t sound right when they were spoken in the testing situation. In fact, during our practice test we were “ad libbing” some of the questions. Imagine how inconsistent our data would be if we were all making up our questions on the fly! We were able to revise these questions and also identify questions that needed to be carefully monitored during the tests because of potential difficulty.

- We constructed a sturdier prototype. After our practice test, we could see that the prototype wouldn’t stand up to repeated flipping and pulling. We changed the tabs on the paper prototype to be sturdier and stick to the paper better.

Data collection forms
Because of a fairly short timeline, it was important that our forms made it easy to:

- Collect consistent data, and
- Analyze the data.

After the practice test, we were able to redesign our forms to allow more structured space for gathering path information (our priority) and eliminate space to track time. We created discrete spaces for each task so that we could then cut the forms during analysis and group same tasks together. This made it simple to identify similar paths, ease of finding the information, etc.

Summary
The paper prototype allowed us a fast and inexpensive way to gather valuable data about our web site design. We were able to make improvements to the prototype and create a better paper prototype process that also made our online testing more effective. For us, the keys to success were using authentic tasks -- which allowed us to gather "real" data -- and knowing what information we needed to find from the paper prototype process.
I. Context
Bethel College is a small, four-year liberal arts college in the Mid-West. It has an enrollment of approximately 1,500 students, which is three times what it had only 10 years ago. It is located in a city of about 200,000 people. The school was founded in 1947 and has an affiliation with an evangelical church denomination which strongly influences its purpose and mission. The technological advances on campus have been rather slow and inconsistent. The original web site was started by the IS staff and was a conglomeration of efforts by those people as they had some time to work on it.

In 1997, we began the process of overhauling the web site. The first hurdle in the process was trying to educate a rather conservative administration on the potential of the WWW. Staffing was going to be an issue, and on the whole, few administrators understood what it would take for the kind of results some people were seeking. Initial staffing discussions concluded with only a part time “webmaster” and a part time technician/developer, appointed to originate the process. One advantage with these choices was that both of us knew the college very well and knew that the structure of the site would not need to be large compared to many sites on the web today.

The goal of development was to prepare a site that presented a collegiate atmosphere, with user centered structure and design. Information for potential students, current students, faculty, staff, parents and alumni would be critical components. The original site was not even a good public relations tool. Many of the pages contained out-dated information and the appearance was essentially text on a variety of MS FrontPage backgrounds. The old site simply was not meeting the needs of information seekers nor providing for future education and informational possibilities.

Assessment of the needs of potential users was performed with two major steps. Concurrently, meetings were held with department heads and staff leaders on campus to initiate conversations about what should be contained on the site while a questionnaire was sent to all of the “contact people” on campus. That included secretaries, phone and mail staff and anyone who was in a position to be receiving off campus requests for information. From these responses, an initial structure was developed giving priority to the information that our users were requesting most. When this initial process was completed, which took approximately two months, we began to prepare the first version of the paper prototype in a simple MSWord document.

II. Prototype Process
A low fidelity paper prototype of the web site structure was developed for the purpose of multiple user testing opportunities with the potential for quick, simple editing procedures. The prototype was put in a three ring binder with each major category of the new site structure, hidden behind a tabbed divider. Then, within each major category, pages were cut to expose further levels which users could flip to within that area. These pages were very easy to create, and re-create. The features of the structure which were edited several times, were the categories, their descriptions, and the order of choices.
The initial structure resulted from the study of the information gatekeepers and college staff responses. It included six main “home page” categories: Academics, Activities, Administration, Admissions, Alumni, and Athletics. (Fig. 1) There was no original intention to find categories which all started with the same letter. That result was a coincidental by-product of the information testing process.

First Round Testing
User testing began on campus. Several users were tested in each of the categories of students, faculty and staff. The user was introduced to the process, given an example of how they could use the prototype by flipping through it and then given a series of ten independent pieces of information they needed to find, or questions they needed to answer. The questions were drawn from the responses that were gathered from our information gatekeepers about what types of information most users are looking for when they contact the college. The ten questions were given to them in a list and they were asked to talk through their thinking process as they searched for the information. Then they were observed as to how they searched through the prototype. Movements through the prototype, as well as the verbal comments, were recorded in order to provide as much feedback as possible about the structure.

During the first round of user testing, some changes and corrections were made immediately. There did not seem to be any reason to continue to find the same flaws with proceeding users, and due to the opportunity to edit so easily on a paper prototype, the corrections were very fast and simple. The first major correction was to add another category. Few of our users could find information about the location of the campus, buildings on campus, people on campus and how to contact them. So, we took that information out of the various categories it was in, and collected it in an “Addresses” category with the descriptors, “People and Places.” This seemed to work immediately as many more of the user tests demonstrated.

Another concern expressed by our campus people was that our Music department was not visible on the first/home page. We accommodated that request by adding it as the first descriptor for the Activities category. Music can be a difficult area for our environment because it is both an academic department as well as an activity/performance area. Music as a degree program is contained on the next level of the Academic category.
Second Round Testing
The second round of user testing on the paper prototype was done off campus with area high school students and parents. As two large potential user groups, we felt the input from these tests was critical. The process was very similar and the advantage of having a low fidelity paper prototype was that it was very portable. We felt another strength of testing with this format was that the design and color elements of the web were not distractions for our users. Because of the web's graphic capabilities, many people seem to focus much more on those elements, than the important structure and content issues.

This testing went well with most users seeming to fall in to one of two categories. Either they had a rather substantial success rate finding their information, or they seemed to not really know anything at all about the college environment. Those users which did not seem to know anything about the college environment simply were not familiar with the basic terminology. They did not even have enough familiarity to allow them to understand what the information was that they were looking for.

Another need that became obvious from these users however, was the lack of a general information category on the home page. We decided to go back to the structure again and add one more link which we called “About Bethel.” This would provide the general information that many users new to the school may be interested in such as its mission, history and affiliations. Again because of the ease of changing the paper prototype, this addition, and some restructuring to go along with it, were accomplished quickly for some final tests before the first digital version of the site was developed.

III. Results
With each new iteration of the paper prototype, more user testing seemed to positively confirm changes being made. Users were much more successful with the additional categories that were added, as well as the more minor changes in descriptions. While this paper prototype did not test appearance, page design and other digital features, it was a very profitable step for developing a sound menu structure for the site. It allowed the development of the digital site to proceed with confidence.

Creating and recreating the paper prototype was very easy, especially in relation to the value added to the development process. When a developer takes the time to test their own thinking, what seems logical to them, it is not surprising to find out that many times they are matching the thoughts of their users, and many times they are not. A low fidelity prototype was an excellent, efficient way for the development process to originate and improve through significant user testing.

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