

Web Site Usability Report for Harvard University

Prepared for:
Capella University
TS5140 – System Usability Analysis and Design

Prepared by:
Kenneth R. Pierce
Kenneth@pierce.name

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FINDINGS AND ANALYSIS

Overview and Purpose of Report

The purpose of this report is to provide a comprehensive analysis of the current Harvard University web site (<http://www.harvard.edu>). Through the course of this report, utilization of several analytical methods has determined whether the site successfully fulfills the business goals and objectives of Harvard University.



Figure 1 - Current Harvard University Web Site

An Introduction to Usability

An organization's Web site is a gateway to its information, products and services. As such, it should ideally be a reflection of the needs of the clients it serves. Unfortunately, Web site design and development is often driven by technology or by organizational structure or business objectives, rather than by user needs. In recent years however, Web site owners and developers have gradually begun to acknowledge and address the issue of usability.

The discussion as to what constitutes a "usable" Web interface is ongoing. To a certain degree usability depends upon the purpose and target audience of a particular site. However, there is general agreement that a usable Web interface is one that is accessible, appealing, consistent, clear, simple, navigable and forgiving of user blunders.

Web users are notoriously impatient and fickle - if they are frustrated on a site, they will quickly go somewhere else and likely not return. For commercial sites, this is critical. A

site that is confusing or difficult to use may result in the loss of clients or reduced revenues due to unsuccessful transactions. For informational sites, lack of attention to usability principles may result in users being unable to find the information they need. In recent Web usability studies, users were able to find the correct answers to test questions only 42 percent of the time.

Usability engineering for the Web grew out of the software development discipline of Human Computer Interaction (HCI). However, the Web is different from software, and the nature of the Web poses new challenges to designers and developers who are trying to incorporate usability into their sites.

- Due to the global nature of the Web and the wide ranging demographics of people accessing the Internet, a target audience can be difficult to define.
- Diversity in end user configurations (hardware, software, browsers, connectivity and bandwidth) means that users may have wildly different experiences of the same site.
- Inflated user expectations of Internet technology can be difficult to satisfy.
- The rapidly changing nature of the Web results in short development schedules, making it difficult to incorporate user-centered design techniques.
- Unlike a software package, the user has not made an investment in a particular site, and other options are easily available and accessible.

(George Murray, 1999)

SITE OWNER'S ORGANIZATION AND USERS UNDER STUDY: SCENARIO

Site Owner's Primary Business Needs and Objectives

- To recruit new students to Harvard University
- To recruit new faculty and staff
- To promote community involvement through outreach and university-sponsored athletics

To recruit new students to Harvard University

All higher education institutions are tasked with providing student recruitment and enrollment – Harvard is no exception. As part of this objective, the university is also focused on streamlining the admissions process and making it more efficient.

To recruit new faculty and staff

Universities must have competent staff, and most definitely competent faculty. Harvard is attempting to attract the best faculty and staff, and is competing with other universities to acquire them. This is particularly true in regards to bringing in faculty and their research, which bolsters the income to the university, as well as its credibility and standing.

To promote community involvement through outreach and university-sponsored athletics

A key success factor among most universities is its standing in the community. A university within a community that doesn't support it can be very damaging. As such, Harvard needs to integrate itself as a part of the community (Cambridge, MA) and offer such amenities as arts and culture, community outreach, and athletics. Although not all colleges have a strong athletics presence, Harvard has an Ivy League football team, as well as other teams. These teams require a avid following of fans to sustain themselves.

Specific Web Site Objectives

- Assist the prospective student in acquiring the information and resources necessary, leading to completion of an admissions application
- Create a community for athletics followers, including purchase of tickets to athletic events
- To provide prospective employees (staff and faculty) with job availability and employment information, leading to a submitted employment application
- To further involvement of alumni with the university, including facilitating donations and endowments

COMPETITIVE WEB SITES

As a prestigious university, Harvard has a number of other universities that are competing for the same students, faculty, and staff. As a point of reference, two of the competitor sites (Yale and Princeton) are shown below. Although these sites do not have any significant material value in this report, it is important that readers of this evaluation understand the online trends of all universities, especially those who are competing with Harvard.

Yale University

<http://www.yale.edu>

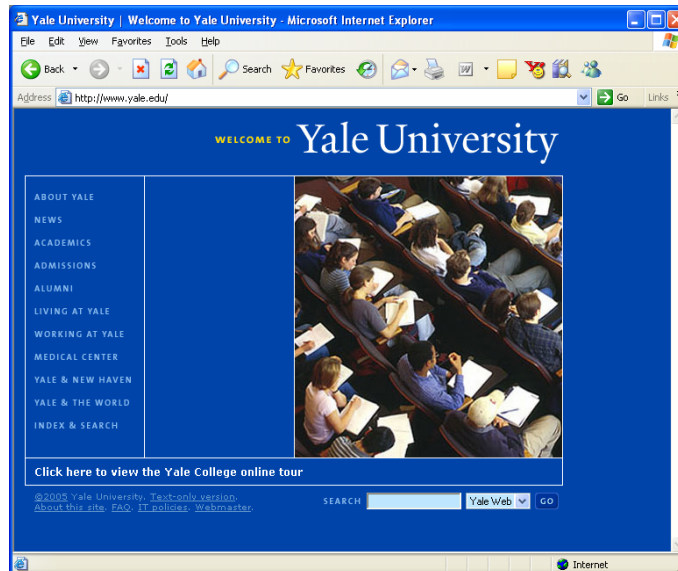


Figure 2 - Web Site of competitor institution (Yale)



Princeton University

<http://www.princeton.edu>

Figure 3 - Web site fo competitor institution (Princeton)

SITE STAKEHOLDERS AND CUSTOMERS (USERS)

The followings lists represent the stakeholders and users of the site. Although some of the stakeholders or users may be both a user and a stakeholder, they have been listed under their primary category.

Stakeholders

- The President of Harvard
- The Administration of Harvard
- Admissions Departments
- Financial Aid and Scholarship Departments
- Athletic Department members
- Harvard University Relations
- Human Resources Department
- Individual College Administration (Deans, etc), in regards to hiring faculty and in student recruitment

Users

- Prospective Students (First Time College Students)
- Prospective Students (Transfer students)
- Prospective Faculty and Staff
- Parents
- Harvard Athletic Fans
- Alumni
- Donors
- The community (neighbors)

SITE USERS AND SCENARIOS (PROFILES)

Target Site Users' (i.e., Audience's) Substantive Needs and Objectives

Prospective Students

Prospective students need to have the information available to make an educated decision about their choices for attending college. Web sites today have become the key source of research for prospective students when considering colleges. The prospective student needs to be able find information on degrees offered, tuition and fee costs, the admissions and application process, entrance requirements, and deadlines for admissions and registration. In addition, the prospective student may need to learn about campus housing, scholarships, and financial aid. For transfer students, understanding the process of transfer to Harvard, as well as documentation requirements and transfer credits is important.

Parents

Since the majority of parents send their children to school (financially), their primary area of interest is financial obligations for tuition, fees, and housing. As Harvard is a very prestigious university, parents are not necessarily concerned with the credentials of the university, the overall impression of its degree programs, or campus crime.

Prospective Faculty and Staff

Prospective Faculty and Staff are primarily interested in job openings and employment opportunities. In addition, their needs are to understand the job application process, the requirements for individual jobs, and the deadlines for submitting applications.

Donors

Universities depend upon donations, gifts, and endowments for many of their operations. Potential donors need to understand the types of donations they can make and how to make them. Contact information on who to contact to discuss donations to the university is also important to potential donors.

Alumni

Alumni (graduates of the university) usually want to stay connected to the university in some manner.

Harvard Sports Fans

Sports fans need to be able to get schedules for sporting events, see the latest in sports news at the university, including team standings, and be able to purchase tickets.

Use Cases

Use Case Number 1 (Prospective Transfer Student)

Craig, a 20-year-old male student attending the University of Texas wants to attend Harvard University (Faculty of Arts and Sciences, or FAS). Craig has been at the University of Texas for 2 years, and is completing their Associates degree requirements in Business. This individual needs to know what will transfer, how to get their application to Harvard, where to send their transcript, and all the other steps to be admitted from the University of Texas.

Use Case Number 2 (Parents)

Jean and John, parents, are interested in Harvard as a possible university for their graduating senior daughter. Their concerns are cost, available student housing (they live in El Paso, TX), and associated costs, crime statistics on campus, and their options for assisting their child in funding their education. In addition, they would like to have information sent to them for review, and want to know more about Cambridge, MA (they have never been there). Their daughter is interested in a degree in Business, but also has an interest in law. She will need to work part time during her education, and therefore campus-related jobs and availability are important to her.

Use Case Number 3 (Prospective Faculty)

Dr. Smith, a 40 year old male is looking for a position at Harvard, and would like to apply. He lives in Dallas, TX with his wife and two children, and is interested in moving to Massachusetts. He is looking to see what jobs are available. Dr. Smith found a position description in the Chronicle of Higher Education for a faculty opening in the Faculty of Arts and Science, I.T. and Management, and would like to apply. Benefits are important since he has a family that requires medical insurance.

Use Case Number 4 (Prospective Freshman Student)

Maria, a 17 year old local High school student, is looking at attending Harvard with an undecided major. Maria has taken the SAT, and is ready to apply to Harvard. She is not aware of the costs to attend Harvard, and knows nothing about the process for enrolling in Harvard, getting accepted, etc. Maria also received literature from Purdue, Villanova, and the University of Florida for consideration. She needs to be able to apply to Harvard, get transcripts to Harvard, and apply for financial aid. Deadlines are also of importance to her for enrolling in the fall semester, 2005.

PAGE DESIGN AND NAVIGATION

Information Architecture

Not all navigation models are created equal. There are different types of web sites that will require a different navigational scheme. For example, some sites may be able to work with a "shallow menu" or a menu with fewer levels; while others will require deeper, more complicated menu structure.

Another consideration is the number of top level menu items required on the site. If there are few, then maybe a horizontal menu would work best, as it uses the least screen real estate. However, if the menu structure will require more top level menus, using a vertical menu may be more appropriate. A good example of a categorized vertical navigation is <http://www.microsoft.com>. The remainder of the navigation is really embedded into the content section of the site, where it doesn't really appear to be a navigation item. In regards to a horizontal navigation, <http://www.bankofamerica.com> is a good representative site. Their key categories of users or services (4 of them) are the main horizontal navigations of the site. Another good example of a horizontal menu is <http://www.wine.com>. It is a clean set of menus at the very top. There are 8 main items, which is probably all that would fit.

And, in more complicated sites, a mixture of the two may be required, but segmentation of the menus must be clear. A good example of a site with a mixed menu is <http://www.infotech.com>. This site has a series of button-style menus across the top, and a series of vertical menus on the upper left. I believe the delineation between the two is that the top menu is more business related, while the left vertical menu is more content related for existing subscribers.

Nowadays, most sites have a more complicated navigational structure that requires more than one navigational scheme on the same page. This makes the designs more challenging, as they need to be organized such that their individual purposes are apparent to the user: easier said than done.

Organization Scheme for Harvard.edu

For an institution of higher education where multiple audiences with multiple needs are served, more complex information architecture is going to be required. For example, many commercial sites exist for the purchase of products. Having a role-based navigational scheme for such a site would not be a good idea, as probably 99% of the visitors are consumers looking to purchase or for product support. A university, in contrast, provides services to many different user roles, and the site must be able to cater to each and every role.

For this project, I am outlining two different information architectures: Role based and Structure based. Each of these navigational elements has its own strengths and weaknesses, and both models can be found on different college web sites.

Scheme 1: Role Based Organization

In this structure, the key navigational elements and site architecture is based first on the role of the user entering the site. In the case of Harvard, the most logical sequence would be:

- Prospective Students
- Prospective Faculty and Staff
- Alumni
- Parents
- Neighbors and Visitors

Although this would not capture 100% of all of the users, it does capture the major users of the site, and could be expanded if necessary.

Scheme 2: Structure Based Organization

In this organizational model, the site is organized around topics a user may be interested in reviewing or researching. In the case of Harvard, this might include:

- About Harvard
- Schools of Harvard
- Administration
- Athletics
- Arts and Museums
- Research

This structure would then break out into subgroups of information, either by the use of submenus or other pages. For example, the “Schools of Harvard” top menu item would break out into something like:

Schools of Harvard

- College/Graduate
- Business
- Continuing Education
- Design
- Divinity
- Education
- Government
- Law
- Dental
- Medical
- Public Health
- Radcliffe Institute

The Hybrid Scheme: Combining the two structures

Due to the complicated nature of a university site, possibly the best information architecture is one that will incorporate both of the aforementioned architectures. This approach would allow the user to decide how they want to navigate the site, and what

navigational scheme would have the most probability of getting them to the information or service they are seeking.

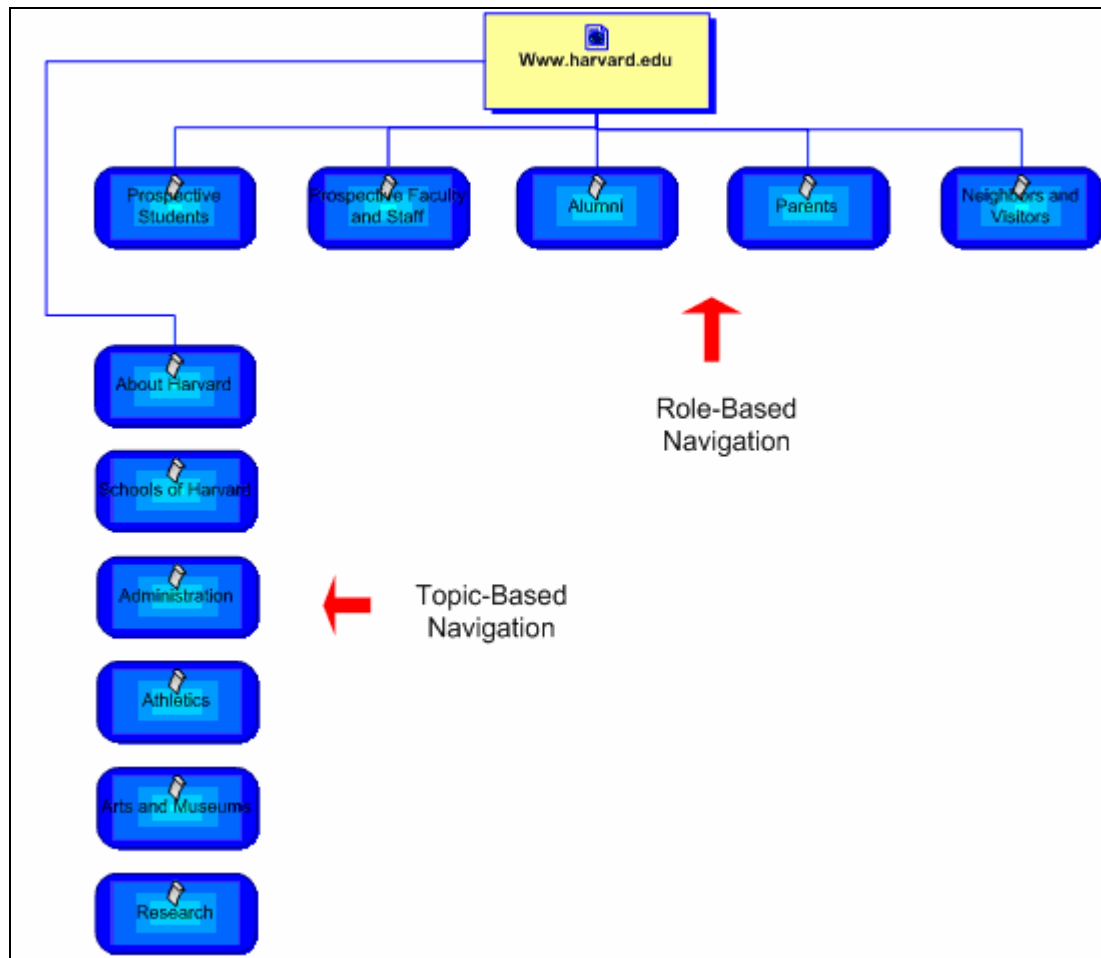


Figure 4 - Recommended Navigation for Harvard Website.

The existing Harvard site

This analysis would not be complete without presenting the current navigational scheme of the Harvard site. In the current site, navigation has been placed in multiple locations. For example, there are two separate horizontal navigation bars on the site, and neither one seems to have a common theme or logical reason for their placement.



Figure 5 - Top Level Menus on the Harvard Website.



Figure 6 - Two Column menu structure.



Figure 7 - Horizontal Menu sitting out on its own.



Figure 8 - Horizontal Menu in the website footer.

As you can see, the site's navigation has been made overly complicated, and could benefit from more consistency. This has been done by creating too many navigational structures.

Writing Quality

As one would expect, the quality of the writing on the Harvard website is extremely professional. None of the users in the exploratory or heuristic evaluations mentioned any negative incidents of poor grammar, spelling, or content that was questionably written.

Appropriateness and Value of Site Contents

Based upon the fact that the Harvard University website must address a wide range of user roles, it is a given that the formulating appropriate content for each of the roles is a very tricky task.

Understanding this, it is difficult to understand the level of importance that Harvard is placing on news bits on the main page of the website. Given the business objectives of the Harvard website, this information actually ranks lowest in the priority scale. For example, as one of Harvard's main objectives is attracting students, there is surprisingly little content related to recruitment on the main page. Although one could argue that the second most important business objective of the site is attracting faculty (who do

research) and that the news clips relate to research done at Harvard, the transition is not obvious. It is the opinion of this evaluator that the amount of screen real estate being used for this type of marketing be significantly reduced and replaced with content more focused towards the objectives of the site and the university.

EXPLORATORY TESTING AND RESULTS

An exploratory test will be performed on the Harvard University web site to gather a foundation of information regarding the design of the site. Since the site's primary user is a prospective student, the exploratory test will focus on prospective students.

The site will be tested for several overall characteristics, including: Performance, aesthetics, accessibility of information, consistency, functionality, and security.

The elements of the Exploratory Test

The following process will be followed in order to conduct the exploratory test:

- Decide what to test (see listing below)
- Create Task List (see Task List below)
- Create Notes pages (See Notes Pages below)
- Select the users for the test (See user listing below)
- Establish the logistics (site, date, time, etc.)
- User Signs consent form (see Consent Form below)
- Testing Script Reviewed with User
- Perform the test
- Post-questionnaire and demographics sheet

The Results of the Exploratory Test

With the use of a working prototype, this informal qualitative test is typically performed in the early stages of web site development. The goal of an early analysis is to test the effectiveness of a preliminary design, but more importantly to understand how and why targeted users manipulate their way through the site. Evaluating how intuitively users navigate through a site, how logically a web page is organized, how adept the interface accommodates each user's skill level, and whether or not the targeted users think the site has value are a few questions that may be examined. Many times during the development process, a design team must make assumptions about the targeted users' thought processes. An exploratory test permits those assumptions to be verified. Moreover, users are capable of providing insight on how to improve confusing areas within a site. Prior to going live online with a web site, an exploratory usability test may locate deficiencies and oversights that would otherwise go unnoticed. ("Market trends")

Although typically done in early stages, the exploratory test done here still has significant relevance, and revealed some interesting insight into the Harvard website.

Task 1

Starting at the home page, navigate through the site, not attempting to perform any specific task. During this activity, you may be simply gathering an overall impression of the university through its web site. Navigate to five or ten pages on the site, and then answer the following questions.

Question	Summary / Results of Responses
Describe your initial impression of the Harvard website?	The initial impression of the users is that the site is easy to navigate and find information. Users noted that the site looks well organized, is not overloaded and cumbersome, and is devoid of clutter.
Describe your initial impression of the overall look of the site (color scheme, graphics, etc.)?	<p>In general, users found the site professional looking. More than one user made positive comments regarding the striking red image at the top and the 3-d images on several of the pages.</p> <p>Users' initial impression is that they like that that all of the pages they navigated to had basically the same look and feel. However, the fact that the different schools of Harvard had a different look was raised. In particular, users were dissatisfied with the fact that although the top image and color schemes were consistent, the content in the middle of the pages completely changed. Users found this phenomenon detracted from the professionalism of the site, giving the impression that it was "clumped together".</p>
What impression would you make about Harvard University if this web site was your first impression of the university. Please use descriptive words	<p>Overall, users had the impression that Harvard cares about its employees and students. One user was very impressed with the Employment page, as it provided detailed benefit information and gave a sense of a very friendly positive experience. There are several "Schools of Harvard" providing students with an opportunity to explore each of these areas.</p> <p>Although the overall impression was favorable, it was noted by multiple users that the site should focus more on the students on every page of the site.</p> <p>Only one user felt that the site did not live up to what they would expect from a school of such high regard.</p>
Does this impression from above differ from your existing impression about Harvard University?	All users had thought of Harvard as an elite school, and the site did change this impression.

Do the graphics on the website enhance or detract from your overall impression of the site?	<p>Users responded favorably towards the graphics of the site. All found the graphics at least adequate, and all felt that they enhanced their experience.</p> <p>However, some graphics on the site were felt to be more appealing than others. Users cited graphic enhancement as appealing, while the same users found some of the graphics needing to be a bit more interesting.</p>
Did you find the information easy to locate on the website?	<p>Users felt that most of the information was easy to locate. However, several users cited issues with the search feature. One user stated they typed in a couple of items that they felt a student would look up, but it did not return the expected information. For example, a user searched for Advising and received information regarding different job positions. Another user performed a search for admission requirements, catalog, courses offered, and financial aid information, and the search returned what they expected.</p>
Would you consider attending Harvard University based on your initial web site review?	All responded answered "Yes" to this question.

Table 1 - Exploratory Test Task 1 Results

Task 2

Navigate to the section of the site relating to undergraduate business degrees.

Question	Summary / Results of Responses
Under what Harvard college did you find this information?	Some users went to the schools, but some went to the admissions information. Both locations had no mention of undergraduate degrees.
Which undergraduate business degrees are offered at Harvard University?	There are not any undergraduate courses offered at Harvard according to the users.

Table 2 - Exploratory Test Task 2 Results

Task 3

Starting at the home page, please locate the admissions application. Also, see if you can find any admissions applications deadlines.

Question	Summary / Results of Responses
Were you able to easily find the admissions application?	All users were able to find the applications very easily.
What were the admissions deadlines you found?	For the period of the evaluation, all of the users found the deadlines for the Harvard Business school, which were Oct. 13, Jan. 5 and March 9th.
What are the minimum requirements for admission to Harvard Business school?	<p>Users found a variety of statements regarding the admissions requirements to the Harvard Business School, which means that the information is not clear, or that separate information is found in multiple locations of the site. For example, two users found the following information regarding the admissions requirements:</p> <p>User 1: Responses to the application essay questions ,Current resume, Three recommendations (must be submitted online) Self-reported transcripts from all undergraduate and graduate academic institutions attended (full- or part-time) HBS Community Standards Statement, Statement of Application Integrity</p> <p>User 2: The minimum requirements are: Leadership potential, strong academic ability and personal qualities and characteristics. There was no minimum number of years of work experience required to apply to the program.</p>

Table 3 - Exploratory Test Task 3 Results

Task 4

From the home page, please locate financial requirements for Harvard Business School.

Question	Summary / Results of Responses
Were you able to easily find the financial requirements?	Users were mixed in their ability to find the financial requirements for attending Harvard. Three of the users stated that they found nothing, and 2 of the users stated they found information

	on a Financial Aid tab.																
What will a 12 credit hour semester at Harvard cost for tuition and fees?	<p>Although the users could not find the direct answer to this question, 4 out of 5 found located the cost for a full school year at Harvard, which does address the spirit of the question being asked.</p> <p>Users found the following for the cost of attendance for 2004-2005:</p> <table> <tr> <td>Tuition</td><td>\$27,448</td></tr> <tr> <td>Health Services Fee</td><td>\$1,264</td></tr> <tr> <td>Student Services Fee</td><td>\$1,908</td></tr> <tr> <td>Room</td><td>\$4,974</td></tr> <tr> <td>Board</td><td>\$4,286</td></tr> <tr> <td>Subtotal - billed cost</td><td>\$39,880</td></tr> <tr> <td>Estimated Personal Expenses</td><td>\$2,570</td></tr> <tr> <td>Total billed and unbilled costs</td><td>\$42,450</td></tr> </table>	Tuition	\$27,448	Health Services Fee	\$1,264	Student Services Fee	\$1,908	Room	\$4,974	Board	\$4,286	Subtotal - billed cost	\$39,880	Estimated Personal Expenses	\$2,570	Total billed and unbilled costs	\$42,450
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Estimated Personal Expenses	\$2,570																
Total billed and unbilled costs	\$42,450																

Table 4 - Exploratory Test Task 4 Results

Post-Test Questions and Demographics

The following questions will be asked following the online exploratory test.

1. Do you feel you were able to successfully complete the tasks you were given using the Harvard University website?

Users were able to complete most of the tasks successfully; however, users noted that there were a couple that took several clicks in different areas to find the requested information. For example, one user was not able to find the tuition information and guessed at what should be clicked to find the information.

2. Is the Harvard website one which you would visit again?

All of the respondents expressed that they would visit the site again if they were considering attending any ivy league school.

3. On a scale of 1 to 10 (one being the lowest, and ten the highest), how would you rate the website?

The average score of the users was 7.6.

4. What, if any, single aspect of the web site left you with the most positive impression of the site?

For most users, the home page had the most positive impression.

5. What, if any, single aspect of the web site left you with the least positive impression of the site?

Most users stated that the inconsistency in navigation and the unpredictable nature of the site was a severe detriment to the usefulness of the site.

6. Do you have any security concerns regarding the site?

None of the users cited any security concerns.

7. Do you feel that the organization of the site, as well as the language, was tailored to your needs?

Users were divided on this question. The ones that answered no all stated that from a prospective student perspective, the organization of the site was questionable.

8. If there was something you would change about the web site overall, what would it be (you can cite more than one change if you wish)?

In response to this question, all of the users stated that navigation was one thing that they would change. Users cited inconstancy as the issue. Two users stated that the organization of the home page should be changed, and that the graphics needed to be reviewed.

HEURISTIC EVALUATION

One of the most important ways to make your Web site easier to use is to do testing with users. But there are several other techniques in the usability engineering arsenal that can be applied to the Web.

Today, we'll talk about heuristic evaluation. Heuristic evaluation involves the study of a user interface by a small set of evaluators (3-5 is recommended) who look for violations of common usability principles (rules of thumb, aka heuristics). The problems identified in a heuristic evaluation could be tackled right away, leading to a redesign; might be used to focus a usability test; or could be used elsewhere in your user-centered design process.

Heuristic evaluation is well-suited for the Web because it can be easy, fast and inexpensive. Often the evaluators are specially-trained usability specialists, but you can also use people with just an hour of training. If your site is already "live" or on a staging area, then your evaluators can be spread out across the globe.

Basically, heuristic evaluation involves identifying your heuristics, gathering opinions about the usability of your site, merging and rating the problems that were identified, and then trying to work toward solutions.

("User-experience.Org")

Generally Accepted set of Standard Heuristics

- Visibility of System Status
- Match Between the System and the Real World
- User Control and Freedom
- Consistency and Standards
- Error Prevention
- Recognition Rather than Recall
- Flexibility and Ease of Use
- Aesthetic and Minimalist Design
- Help Users Recognise, Diagnose, and Recover from Errors
- Help and Documentation

Below is a description of each of the elements of the heuristic evaluation, followed by the summary of results of the heuristic evaluation performed as part of this statement of work. For a complete listing of the specific questions asked of the users of the heuristic evaluation, refer to *Appendix B – Heuristic Evaluation* on Page 35.

Visibility of System Status

The basic question to be answered here is "Where am I and where do I go next?"

Match between the System and the Real World

The system should speak the users' language, using words, phrases and concepts that are familiar to the user, rather than system-oriented terms

User Control and Freedom

Site visitors often choose system functions by mistake, and will need a clearly marked "emergency exit" to leave the unwanted page without having to go through an extended dialogue

Consistency and Standards

Users should not have to wonder whether different words, situations, or actions mean the same thing.

Error Prevention

However, if errors do occur, try to provide user friendly messages in natural language rather than code.

Recognition Rather than Recall

Make sure objects, actions, and options are highly visible.

Flexibility and Ease of Use

Accelerators, which may be unseen by the novice user, can often speed up the interaction for the expert user, and allow the system to cater to both types of visitors. You might, for instance, allow users to tailor frequent actions.

The following questions / tasks will be included in the heuristic testing script:

- Does the site allow you to register? If so, register, and then determine if you can log back into the site and recover any information you previously provided.

Aesthetic and Minimalist Design

Rarely needed information accessible via a link so that the details are available, but don't interfere with the more relevant content.

The following questions / tasks will be included in the heuristic testing script:

- Does the site have a "Contact Us" or similar link?
- Is there content that would not apply to one of the key roles of the site (prospective students, faculty, and staff)?
- Is there significant scrolling required on the pages, indicating that each page contains too much content?

Help Users Recognize, Diagnose, and Recover from Errors

Your error messages should be expressed in plain language with no codes or jargon. They should detail the problem, and constructively suggest a solution.

The following questions / tasks will be included in the heuristic testing script:

Help and Documentation

Ideally, every online system could be used without documentation, However, it may be necessary to provide help and documentation to cater to the needs of all users, and be on the safe side.

Heuristic Evaluation Summary of Results

Visibility of System Status

The Harvard site has issues in this area. Not all pages have a Home tab, or a way to get back to the home page or the navigational scheme presented on the main page. For example, if you choose the Employment tab from the home page, you go to a page that has a completely different navigational scheme. If you go one more page down, you cannot return directly to the main page, which is where the user started from. As you move further through the site, the user will be lost as there is no way to return down the path in which they came.

The site does not have map per se, but it does have site guide. The guide however is limited and does not provide a comprehensive view of the entire site.

Match between the System and the Real World

The site does not have any set of terms for the user to reference. Although most terms in higher education are known, there are many which are not. Examples of terms used in higher education that a prospective student may not understand are bursar, provost, and the differences between degrees, programs, and departments.

User Control and Freedom

As mentioned above, not every site has a home tab, so the user cannot get back to the starting point directly. Navigational schemes vary widely, and although there is freedom to explore on the site, users can get lost quickly.

In addition, it is difficult for a user to get from key topic to key topic without first navigating back to the home page. Providing users with a more direct approach throughout the site would be a tremendous improvement.

Consistency and Standards

The site overall lacks in consistency from many vantage points. Although the word Home is used consistently, it does not react consistently. For example, on some pages the Home tab takes you to the Harvard home page, while on others the Home link takes you to the home page of that section (ex: Harvard Libraries).

Furthermore, the menu phrases and designs do not follow any consistent standard, either in working, looks, location, or reaction. On some pages of the site, java script is used for navigation once the user makes a selection, while on others the user must select a Go button.

Error Prevention

The admissions applications are very different for every school of Harvard. Some require you to login, some do not. There were no blatant issues with errors on the applications, but it is obvious that each one has its own set of rules and possible errors that could occur, and they are all handled differently.

Recognition Rather than Recall

Most of the pages of the site provide the user with a meaningful title that describes the topic they are viewing. Never on the site does the user get any text that allows them to go back to the previous topic. For example, it would be more intuitive if the site navigation provided options such as “Back to Libraries...”.

Flexibility and Ease of Use

There is no registration functions on the Harvard site, nor is there any point at which the user's input or actions can be recalled for future use. Therefore, there are no personalization capabilities at Harvard.edu.

Aesthetic and Minimalist Design

Nearly every page on the Harvard site requires the user to scroll for content. In many cases, the content is not pertinent to the key objectives of the site. For example, on the home page, there is a lot of news type information that is not pertinent to prospective students or faculty, which are the top two objectives.

Help Users Recognize, Diagnose, and Recover from Errors

Actually, when you go the undergraduate admissions application for Harvard, you leave the Harvard site altogether. There is no warning that this is about to happen, and could confuse the user. The application goes to a URL that opens in the same window as the Harvard site.(<http://app.commonapp.org/>).

Help and Documentation

The main page has a link for searching for content, but the actual search user interface is on a separate page by itself. Actually, there are multiple search interfaces on the site (reference the home page and the search on the employment page. When you go to the President's page, you get yet another search interface. This inconsistency will cause the user to wonder if they get the same results from these different search interfaces.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Overall, the Harvard University web site accomplishes its business objectives, which are:

- To recruit new students to Harvard University
- To recruit new faculty and staff
- To promote community involvement through outreach and university-sponsored athletics

The web site, in general, is architected around these objectives; however, there are several design flaws that should be immediately addressed. These flaws should be very easy to correct, and center around:

- The navigational scheme of the main page
- The consistency in navigation throughout the site
- The prioritization of content on the main page

These elements are all addressed in the *List of Recommended Site Changes* and the

Prototype/Mock up for Redesigned Site.

Recommendations

List of Recommended Site Changes

While the site is generally in good condition, it does need some key changes to make it more effective and meet the needs of the users. These changes are outlined below.

- Rework the pages so that there is not as much scrolling required. If every page requires scrolling, the users will be frustrated.
- Ensure that the navigational scheme for each page is consistent. This will be difficult in a university environment, as each of the schools I am sure does their own sites.
- Ensure that menus are consistent, and that all have a Home link back to the Harvard home page.
- Eliminate the duplicate search engines and have only one search engine for the entire site.
- Establish breadcrumbs or other methods for allowing the users to see where their navigation has taken them, and provide them with a way for them to get navigate in reverse.
- Ensure that there is consistency between the sites in the graphics, colors, and page layouts.
- Rework the navigation scheme on the home page to be more consistent with the user roles and topics.

Prototype/Mock up for Redesigned Site

In order to illustrate the changes to the site, a visual prototype has been created. This prototype should provide a clear representation of the changes that are necessary to improve the site.



Figure 9 - Prototype Home Page

In the above prototype, several of the recommendations have been incorporated to improve the usefulness of the homepage.

The first major change is the dual navigation, which is more consistent than the current site. The horizontal menu is role based navigation, and the left navigation is topic based. The current site mixes these concepts, which is inconsistent for the user.

The menus on the left can be fly out menus if desired, or they can link to full pages with another set of navigation to the details. For example, the schools of Harvard can be either sub menus of the Schools of Harvard menu item, or the menu can direct the user to a page with navigation to each of the schools.

Also, notice the search capability in the upper right corner of the site. This should remain constant on every page. In the upper left corner, there is a link to take the user to the Harvard home page. This link should also be on every page of the site.

In the bottom of the page, the site guide has been replaced with a Site Map. This is more common verbiage for users, and if Harvard would like to incorporate the existing site guide on the map page, that would be acceptable.

APPENDIX A – EXPLORATORY TEST

Testing Script

What the web site is

The web you will be evaluating is Harvard University (<http://www.harvard.edu>). The site is the main site for all of Harvard colleges (business, law, etc).

Reading from Notes

I will be reading the following from my notes to make sure I remember to say everything and keep consistent.

Purpose

We are testing this web site to identify strengths and weaknesses in its design.

Anonymity

What you do in this study will be kept completely anonymous.

Video/Audio Recording

We will be taping you throughout the session. This tape is used only by our design and testing teams to ensure that we have accurately understood what went on during the session. Please tell us if you would prefer not to be taped.

Voluntary Participation

Your participation in this study is voluntary. You may choose to skip any of the questions in this study or quit the entire session at any time.

Procedure

This entire session should take about one hour. We will be working through several tasks on the web site. During each task, I will be observing you and taking notes. If you encounter problems or difficulties, those are exactly the problems with the design that we are trying to identify and improve. When this happens, I cannot give you any help, because we are interested in how you would solve such problems on your own.

Think Aloud

As you work through the tasks, I would like you to think aloud. This means saying any thoughts or reactions that come to mind as you work. If you are silent for a while, I may occasionally prompt you to start speaking again.

Consent Form

Consent Form

The purpose of this user study is to evaluate the design of web sites we have developed. As a volunteer in this study, your participation will be anonymous. You will fill out some questionnaires while using the web site to work through specific tasks. As you work, you will be observed by an experimenter who may take notes on your activities. This entire study should take no more than an hour. If for any reason you are uncomfortable with the study, you may end it at any time.

I, _____, have read and fully understood the extent of the study and any risks involved. I sign here acknowledging the above information.

Date: _____

Participant Name: _____

Participant Signature: _____

Project: Harvard University Web Site

Figure 10 - Exploratory Test Consent Form

Task Sheet and Questionnaires

Task 1

Starting at the home page, navigate through the site, not attempting to perform any specific task. During this activity, you may be simply gathering an overall impression of the university through its web site. Navigate to five or ten pages on the site, and then answer the following questions.

- Describe your initial impression of the Harvard website?
- Describe your initial impression of the overall look of the site (color scheme, graphics, etc.)?
- What impression would you make about Harvard University if this web site was your first impression of the university. Please use descriptive words.
- Does this impression from above differ from your existing impression about Harvard University?
- Do the graphics on the website enhance or detract from your overall impression of the site?
- Did you find the information easy to locate on the website?
- Would you consider attending Harvard University based on your initial web site review?

Task 2

Navigate to the section of the site relating to undergraduate business degrees.

- Under what Harvard college did you find this information?.
- Which undergraduate business degrees are offered at Harvard University?

Task 3

Starting at the home page, please locate the admissions application. Also, see if you can find any admissions applications deadlines.

- Were you able to easily find the admissions application?
- What were the admissions deadlines you found?
- What are the minimum requirements for admission to Harvard Business school?

Task 4

From the home page, please locate financial requirements for Harvard Business School.

- Were you able to easily find the financial requirements?
- What will a 12 credit hour semester at Harvard cost for tuition and fees?

User List

The following users will be performing the exploratory test:

User 1: _____

User 2: _____

User 3: _____

User 4: _____

User 5: _____

User 6: _____

Post-Test Questions and Demographics

The following questions will be asked following the online exploratory test.

9. Do you feel you were able to successfully complete the tasks you were given using the Harvard University website?
10. Is the Harvard website one which you would visit again?
11. On a scale of 1 to 10 (one being the lowest, and ten the highest), how would you rate the website?
12. What, if any, single aspect of the web site left you with the most positive impression of the site?
13. What, if any, single aspect of the web site left you with the least positive impression of the site?
14. Do you have any security concerns regarding the site?
15. Do you feel that the organization of the site, as well as the language, was tailored to your needs?
16. If there was something you would change about the web site overall, what would it be (you can cite more than one change if you wish)?

APPENDIX B – HEURISTIC EVALUATION

Visibility of System Status

The basic question to be answered here is “Where am I and where do I go next?”

The following questions / tasks will be included in the heuristic testing script:

- Does every page have a “Home” tab?
- Does each page have a consistent navigational scheme that allows you to easily move from topic to topic?
- Is there a “breadcrumb” showing how you arrived at the pages you navigated to?
- Is there a site map?

Match between the System and the Real World

The system should speak the users' language, using words, phrases and concepts that are familiar to the user, rather than system-oriented terms

The following questions / tasks will be included in the heuristic testing script:

- Is there a glossary of terms related to higher education?
- Are there any hyperlinks that provide the user with definitions of words on the site?
- Does the site describe what a FAFSA is?

User Control and Freedom

Site visitors often choose system functions by mistake, and will need a clearly marked "emergency exit" to leave the unwanted page without having to go through an extended dialogue

The following questions / tasks will be included in the heuristic testing script:

- Does every page have a “Home” tab?
- Does each page have a consistent navigational scheme that allows you to easily move from topic to topic?
- Can you move from key topic to key topic easily without going to the home page first?

Consistency and Standards

Users should not have to wonder whether different words, situations, or actions mean the same thing.

The following questions / tasks will be included in the heuristic testing script:

- Do all pages use the word “Home” or “Homepage”, but not both?
- Are the menus consistent throughout the site, using the same words or phrases?
- Does the site, wherever asking for users to select from lists, consistently use a “go” button to actually make the move, or is it handled by a script reacting to the event?

- Do all links external to the site open in a separate window?

Error Prevention

However, if errors do occur, try to provide user friendly messages in natural language rather than code.

The following questions / tasks will be included in the heuristic testing script:

- Attempt to complete the admissions application. Omit required information from the application, and determine if the error messages accurately describe the problem you infused into the application.

Recognition Rather than Recall

Make sure objects, actions, and options are highly visible.

The following questions / tasks will be included in the heuristic testing script:

- Does every page show a title that describes the topic of the page?
- Does each page give you an option to find the previous topic?
- Do you see inconsistent graphics on the site that represent the same function?

Flexibility and Ease of Use

Accelerators, which may be unseen by the novice user, can often speed up the interaction for the expert user, and allow the system to cater to both types of visitors. You might, for instance, allow users to tailor frequent actions.

The following questions / tasks will be included in the heuristic testing script:

- Does the site allow you to register? If so, register, and then determine if you can log back into the site and recover any information you previously provided.

Aesthetic and Minimalist Design

Rarely needed information accessible via a link so that the details are available, but don't interfere with the more relevant content.

The following questions / tasks will be included in the heuristic testing script:

- Does the site have a "Contact Us" or similar link?
- Is there content that would not apply to one of the key roles of the site (prospective students, faculty, and staff)?
- Is there significant scrolling required on the pages, indicating that each page contains too much content?

Help Users Recognize, Diagnose, and Recover from Errors

Your error messages should be expressed in plain language with no codes or jargon. They should detail the problem, and constructively suggest a solution.

The following questions / tasks will be included in the heuristic testing script:

- Attempt to complete the admissions application. Omit required information from the application, and determine if the error messages accurately describe the problem you infused into the application.
- Was the required information properly identified?
- Are the error messages easily visible?

Help and Documentation

Ideally, every online system could be used without documentation, However, it may be necessary to provide help and documentation to cater to the needs of all users, and be on the safe side.

The following questions / tasks will be included in the heuristic testing script:

- Is there a search capability on the home page?
- Is the search capability available throughout the site?
- Can you easily make your way from the home page to the admissions application?

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