National Library of Medicine

A User-Centered Approach to Redesigning the Associate Fellowship Program Website

Final Report

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# Abstract

**Title:** A User-Centered Approach to Redesigning the NLM Associate Fellowship Program Website

**Objective:** The purpose of this project was to create a more visually appealing website for the Associate Fellowship Program that would more adequately meet the information needs of prospective applicants.

**Methods:** The project started with a user needs analysis that included collecting data about the existing AFP website from web analytic tools, reviewing results of a prior focus group of alumni Associates and conducting a new focus group with current Associates, interviewing alumni Associates, representatives from institutions that have hosted second year Associates, and selected NLM staff. Personas were created to represent the top three user groups for the website, and to identify the key goals and tasks they seek to accomplish when visiting the site. A gap analysis identified information or media that needed to be added or reorganized based on a comparison of user feedback and existing content.

**Results:** Based on user feedback, the redesigned website has been expanded to include a more comprehensive description of the history and purpose of the Associate Fellowship Program, the application process and timeline, and first and second year activities; as well as improved navigation menus and breadcrumbs. A new “Where Are They Now?” feature allows alumni to share how the fellowship benefitted them, and what they have accomplished after completing the program.

**Conclusion:** Involving users in the redesign process enables the new website to better meet their needs. Ideally, the improved site will give prospective applicants a more positive impression of the Fellowship Program and NLM, and encourage more individuals to apply.

# Background

The Associate Fellowship Program (AFP) website is used primarily as a recruitment tool to provide information on the program to prospective applicants. Since its launch in the late 1990s, the website had not received a major redesign. Current and alumni Associates expressed concerns that the site looked outdated and did not provide enough details about the program’s history and activities. In June 2012, a redesign effort was initiated. Focus groups were conducted with the 2011-2012 first and second year Associates. However, the redesign was not completed at that time. This project builds on the initial focus groups and provides additional assessment of user needs and further analysis of the content in order to design a more comprehensive site to meet the user needs.

# Methods

The project began with a user needs assessment to identify the primary user groups and gain feedback from representatives of each group in order to understand their information needs and the changes in content that would be required to meet this need. Following the needs assessment, a content matrix and gap analysis were used to evaluate and reorganize the content of the website. Then new content and media were created or selected. A new design for the look of the website and its navigation features were created and implemented with the assistance of two web developers. After the redesign and content development was completed, the site was tested for usability and accessibility.

## User Needs Assessment

The user needs assessment provides an opportunity to learn more about the user group for the website, and to identify their goals when visiting the site, and the most important tasks they need to complete while on the site. The methods used for the user needs assessment include web analytics, personas, focus groups, and interviews.

### Web Analytics

Web analytics were used to measure the users’ behavior while they were on the AFP website. The data includes how many visits the site and its individual pages have received, how long a user stayed on a page, and how many clicks a link had received. For this project, the report tracked user behavior from November 8, 2013 to February 5, 2014. During this time, the AFP website homepage received 2,020 visits and 2,796 page views. The average time spent on this page is 1.25 minutes. The information on which links were clicked most often highlighted the current content is most valuable to the site visitors, and identified which links should remain prominently displayed on the homepage or navigation bar.

### Personas

Personas are fictional characters that represent the different types of users that visit a website. The personas for this project were used to identify the website audience, determine the primary users, and discover their top tasks. This information would help in determining what the goals of the website should be, and to make note of website content and features that could be improved to meet those goals and top tasks.

As part of the February 2014 Reference and Web Services (RWS) curriculum unit, the first year Associates engaged in a group discussion about the website audience and created three personas. It was determined that the audience included prospective applicants, second year hosts, alumni Associates, librarians looking to hire, and NLM staff. By taking into account the web analytics results of which links were visited most often, the top three user groups were selected along with an estimate of what percentage of the users fell into each category. The personas were developed by answering six questions:

* Who is the user?
* Where does our site fit into his/her goals or life?
* When and how is our site used?
* What features are important to our users?
* How should our project look and behave to satisfy our user?

The three user groups represented by the personas are prospective applicants, second year hosts, and NLM staff. Twenty-eight year old Jessica represents prospective applicants which were estimated to be 75% of the website users. She is in her last semester of library school and visits the site multiple times to learn about the program, and eventually to apply. Library director Dr. Bob represents second year hosts which are estimated to be 8% of the website users. He has never hosted an Associate before and only visits the site once before forwarding the information to another librarian or staff member to complete the application process. Newly promoted Barb represents NLM staff which is estimated to be 2% of the website users. She is interested in proposing an Associate project and visits the site to learn more about their background and interests.

### Focus Groups

A focus group is a small group discussion guided by a moderator. The discussion has a focused topic, and the participants share their opinions or experiences related to that topic. In June 2012, Kathel Dunn moderated focus groups with four first-year Associates and five second-year Associates to receive feedback on the look, function, and content of the website. The Associates were asked seven questions:

* What do you like about the web site?
* What don’t you like about the website?
* What influence, if any, did the website have in your decision-making to apply to the Associates program?
* Do you still reference the web site?
* Did the web site affect your perceptions of NLM beforehand?
* What is confusing about the web site?
* Looking specifically at the application process – what is that like?

In February 2014, Joanna Widzer moderated a focus group with five first-year Associates. The Associates discussed how they had used the site during their application process. They also shared which content was most useful to them, identified gaps where additional information is needed about the Program, and brainstormed ideas for features that could help the Program to have a more engaging online presence.

### Interviews

Interviews were conducted March 7 – 21, 2014 with other key stakeholders for the Associate Fellowship Program. These interviews included alumni Associates, representatives from hosting institutions, and selected NLM staff. The purpose of these interviews was to receive feedback from other user groups and key NLM staff, and to identify other potential information needs not recognized by the Associates who participated in the focus groups.

The alumni Associate interviewees included Joyce Backus, Associate Director of Library Operations at NLM, Stephanie Dennis, Head of the Health Information Products Unit at NLM, Jessi van der Volgen, Curriculum & Content Specialist at the NLM Training Center, and MaShana Davis, Web Content Manager at the National Institutes of Health Library. They were asked eight questions. Kathel Dunn, AFP Coordinator and Barbara Rapp, Chief of the Office of Planning and Analysis at NLM and a former AFP Program Coordinator were asked all of the same questions except numbers five and six.

1. In your opinion, what is the primary purpose of the AFP website?
2. Who is the audience?
3. What do you like about the website?
4. What do you dislike about the website?
5. Did you reference the website before, or during your Associate Fellowship application?
6. Did the information on the website meet your needs?
7. Is there anything confusing about the website?
8. Is there anything that you would add or remove?

The interviewees representing host institutions included Gary Frieburger, Director of the Arizona Health Sciences Library, and James King, Chief of the Information Services and Resources Branch at National Institutes of Health Library. In addition to the alumni perspective, Jessi van der Volgen and MaShana Davis also represented the host perspective because they have assisted in writing letters of proposals for their institutions. The hosts were asked four questions:

1. Did you reference the website for the 2nd year letter of proposal?
2. Is the information complete – did it meet your needs?
3. Did you use any other sources of information for 2nd year info (other host institutions, Kathel, etc.)?
4. Do you have any suggestions for any content or features to add or remove that would be beneficial to a host?

### Putting All of the Assessment Together

The user needs feedback gained from the web analytics, personas, focus groups, and interviews were combined to present a big picture view of what the various stakeholders needed from the website. Everyone agreed that the purpose of the site is to recruit for future Associate Fellows. The potential applicants are the primary audience; most identified the secondary users as second year hosts and alumni Associates. Other potential users include applicant references, potential employers, and NLM staff.

Most of the requests for improved content related to information about the Associate Fellowship program, and information about the alumni Associates. Potential applicants would benefit from more information about the program’s history, program year activities, applicant qualifications, and the application process. More information about alumni after they left the program would help demonstrate how the program improved their skillset and provided value in the workforce, and also help alumni keep in touch with each other. Representatives from host institutions were happy with the information that was provided to them. They would benefit from additional information about what size projects to propose. Also, with the change in the second year funding model making the process more like hiring a new employee, they would appreciate more details in the Associates bios, such as a resume and description of projects completed at NLM. For more details on the user needs feedback, see Appendix I.

## Content Matrix

The content matrix in its simplest form is an inventory of all the content on a website. This inventory helps with evaluating the nature and usefulness of existing content, the hierarchy of the pages and how they are linked to each other, and the depth of the levels of links. This information is helpful for planning the revision and addition of content.

Since the AFP website is small, the Associate gathered information about the content by clicking through each page on the site. Then she created the content matrix in a MS Excel spreadsheet. Each row represented a page on the website. For each page, she included the name of the navigation link for the page, the page title, notes about the page content, and the URL where the page can be found. She also identified broken links and links to external content.

## Gap Analysis

During the gap analysis, the user needs feedback was compared to the content that is currently on the website. This analysis showed what is missing and what needed to be removed. A document was created to layout the organization of the information for each webpage, and how the content would be reorganized. During the gap analysis, a new content matrix was created as well to represent the new organization and hierarchy of information.

## Content Development

With the assistance of Kathel Dunn, information on the program was created or re-written in plain language, to make the description of the program history, activities, and application process more comprehensive. The old website was very text-heavy with the only images being group photos of each cohort. For the new website, additional photos were selected to create a slideshow on the homepage and to help break up text on other pages. Alumni Associates were asked to submit updated bios that included information on how the program prepared them for their current job and any advice they have for incoming Associates.

The AFP website includes a webinar that is usually updated every two years. However, the last webinar had been recorded three years ago. As part of content development, a new webinar was planned and recorded on May 8, 2014. The webinar features AFP Program Coordinator Kathel Dunn, first-year Associates Don Jason, Kate Masterton, Christian Minter, Nicole Pettenati, and Holly Thompson, and second-year Associates Karen Gutzman and Kevin Read. The webinar includes information on the Associates’ experience in the program, and advice for the application, interview, and relocation.

## Creating the New Design

To gain design ideas, the Associate looked at websites of other library and medical school residency programs. Then she used Balsamiq wireframing software to create mockups of three design options. Feedback was sought from several people with connections to the Associate Fellowship Program, but who also have some experience with web design or content management. This group included MaShana Davis, Stephanie Dennis, James King, Kate Masterton, and Troy Pfister. After receiving their feedback, the Associate chose the final design.

The mockup of the selected design was given to web developers Rochelle Robinson and Winston Churchill. Rochelle created the cascading style sheets (CSS) for the look of the page, photo slideshow, and navigation features. The CSS defines how HTML elements are displayed. Winston created the new templates for the AFP pages. The templates enable the easy creation of new pages that maintain the consistency of design and format.

## Website Launch and Testing

### Usability testing

Before the website went live, Kathel Dunn and Nicole Pettenati participated in usability testing. They used the preview URL through the content management system. During the test, they clicked through each page and link on the site and responded to a set of questions relating to navigation, content, and overall impression. Based on testing feedback, minor edits were made to the phrasing of some of the text, and a few links needed to be updated. The test questions are below:

**Navigation**

1. Does the navigation bar display on every page?
2. Do the links on each page work?
3. Do the link titles and breadcrumbs match the page content?
4. Is it easy to know where you are within the website?

**Content**

1. Do the images display correctly?
2. Does the image slideshow on the homepage transition at a comfortable speed? When you click the button or arrow to advance to the next photo, does the photo change immediately?
3. Is the text written in “plain language”? Is it simple and to the point?
4. Is there any information missing that would be important for a potential applicant to know?

**Overall impression**

1. Is the site visually attractive, fresh, and inviting?
2. Any additional comments or suggestions?

### Accessibility testing

The WAVE website accessibility evaluation tool was used to test the accessibility of the website. The Firefox toolbar version was installed, which is able to evaluate any content that appears within the web browser. The Associate also met with Systems Librarian Brooke Dine who has expertise in website accessibility standards.

The WAVE tool identified some errors with page headers, missing alt tags, and unnecessary HTML tags. In addition, Brooke identified two errors with the horizontal navigation bar at the top of the webpages. Individual navigation bar buttons needed to stay highlighted for each page within a section, and this was not happening during testing. For example in the “Meet the Associates” section of the website, the navigation bar button for the “Meet the Associates” page would highlight for this page, but also for other sub-pages in this section, such as “Where Are They Now?” The second navigation bar error is that the navigation bar should show the same behavior with using a keyboard as with a mouse, and this was not happening either. For example when using the mouse to hover over a navigation button, it highlights in a different color. The same thing should happen when moving to buttons using the Tab key on the keyboard. A user should also be able to select a button using the Enter key.

# Results

Based on user feedback, the redesigned website has been expanded to include a more comprehensive description of the history and purpose of the Associate Fellowship Program, the application process and timeline, and first and second year activities; as well as improved navigation menus and breadcrumbs. A new “Where Are They Now?” feature allows alumni to share how the fellowship benefitted them, and what they have accomplished after completing the program. A new “Life in DC” page provides some general information about living in the Washington, DC Metro area, and provides suggestions for communities to consider for relocation. The organization, structure, and labeling of the content was improved to make it easier to locate information. A picture slideshow was added to the homepage, and additional images were included on various pages within the site, to make the pages more visually appealing and to provide an inside view of program activities.

# Discussion

The user-centered redesign of the AFP website enables the site to better meet the needs of prospective applicants. Ideally, a well-designed site provides the applicants with a more positive impression of the Fellowship Program and NLM, and encourages more individuals to apply. This project has also encouraged more alumni Associates who are excited by the changes for applicants, to request some additional updates to alumni information. Currently, the only alumni listed are the website is from the 1998 cohort to the present. However, the program has existed since 1957, and pre-1998 alumni would like to see their names included as well.

There were two lessons learned in particular. The first is that when communicating changes or technical specifications, to always include a visual to explain the request. This visual can be a screenshot or mockup design. This cuts down on miscommunication, and makes sure everyone is on the same page. The second lesson is to include accessibility standards in the design phase instead of waiting until after the website is developed. Because accessibility wasn’t considered in detail until the last stages of the project, it required the web developers to have to go back several times and correct the CSS and templates, and in turn extended the length of the project. Accessibility is important and can influence design decisions, so it’s best to have an accessibility expert review design mockups as well before final decisions are made.

This project provided the Associate with opportunity to learn new skills related to user needs assessment, web design, information architecture, writing technical requirements, and working with the TeamSite content management system.

# Recommendations

There are several recommendations for potential next steps in the continued development of the website features and content.

**Short-Term** (1-3 months)

* Fix remaining accessibility issues. The navigation bar still needs some work to be able to behave the same when navigating by keyboard as with the mouse. Also, there is still an alt tag error with one of the pictures in the homepage slideshow.
* Create a searchable/sortable table that includes the names and cohort years of all alumni Associates from 1957 to present. For those cohorts that have a bio page, the names of those Associates will be an active link taking the user to the cohort’s page.
* Adding new pages to the site for pre-1998 cohorts. Those cohorts that have photos and bios in an electronic format will have first priority. As time permits, photos and bios in print format may be digitized and added as well.

**Mid-Term** (March or April)

* A brief report of the usage statistics from the next application period (September – February)
  + Has web traffic increased over last year’s application period?
  + Which links are used most often?
  + How long are visitors staying on the pages?
  + Did the number of applications increase this year?

**Long-Term**

* Responsive design of the website
* Social media presence or addition of “news” page on the site
* Adding a list of sample projects
  + Represent 1st & 2nd year
  + Need permission of project sponsors or second year institution
  + Should list link to abstracts, reports, or presentation slides?

# Acknowledgements

The author would like to thank the project sponsors, Joanna Widzer and Emily Lawrence for their guidance and support, as well as Brooke Dine for advice on accessibility issues, and web developers Winston Churchill and Rochelle Robinson for creating templates and CSS for the new web design. She is also thankful for the support of Dr. Kathel Dunn, the Associate Fellows, her preceptor Janice Kelly, and NLM senior staff, Dr. Donald Lindberg, Betsy Humphreys, Joyce Backus, and Dianne Babski.

# Appendix I – Supporting Documents

The supporting documents have been posted to the NLM SharePoint site. The URLs are listed below.

Web Analytics Reports

* NLM Main Web<https://sharepoint.nlm.nih.gov/Projects/nlmassociates/Associate%20Fellow%20Report/NLM%20Main%20Web_analytics.pdf>
* Associate Fellowship Program Home Page  
  <https://sharepoint.nlm.nih.gov/Projects/nlmassociates/Associate%20Fellow%20Report/AFP%20homepage_web%20analytics.pdf>
* Associate Fellowship Program Application Page  
  <https://sharepoint.nlm.nih.gov/Projects/nlmassociates/Associate%20Fellow%20Report/AFP%20Application%20page_web%20analytics.pdf>

User Needs Feedback  
<https://sharepoint.nlm.nih.gov/Projects/nlmassociates/Associate%20Fellow%20Report/User%20Needs%20Feedback.docx>

Content Matrix  
<https://sharepoint.nlm.nih.gov/Projects/nlmassociates/Associate%20Fellow%20Report/AFP%20Website%20Content%20Matrix.xlsx>

Gap Analysis

<https://sharepoint.nlm.nih.gov/Projects/nlmassociates/Associate%20Fellow%20Report/AFP%20Site_Gap%20Analysis.docx>

# Appendix II – Maintenance Checklist

**September**

| Add new cohort’s photo and bios to “Meet the Associates” page (meettheassociates.html). |  |
| --- | --- |
| Move previous cohort’s photo and bio to alumni area of website   * + Create a new page for them (Ex: “bio2014.html”)   + Add link for this new page to the “ Alumni Associate Index” page (formerassoc.html) |  |
|  |
| Add the info on Associates participating in a second year to “Optional Second Year” page (2ndyearinfo.html). Add to table under “Second Year Placements” section: year, Associate name, and institution name. |  |
| Update application deadline on homepage. |  |
| Update “How to Apply” page with deadline, updated application form & reference form (applicinfo.html). |  |
| Update stipend info on “About the Associate Fellowship Program” page if needed (proginfo.html). |  |

**January**

| Update “Host Institutions” page with proposal information (deadline, timeline, updates to hosting obligations) |  |
| --- | --- |

**February**

| Remove date of application deadline from homepage (index.html) and “How to Apply” page (applicinfo.html).  Replace with wording: “The application for the 2014-2015 Associate Fellows is now closed. We will announce our application deadline for 2015-2016 in the fall.” |  |
| --- | --- |

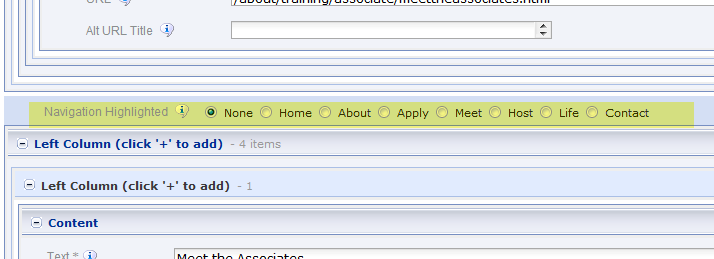
**July**

| Change photos on homepage slideshow |  |
| --- | --- |
| Add more bios to “Where Are They Now?” |  |

# Appendix III – Technical Specifications

**Creating New Pages**

* Use the Associate page template
* Column layout
  + This template provides the option for using both the left and right columns.
  + The two column layout is only for pages that need to include the left-hand navigation menu.
  + The template will default to one column if no content is entered into the left column field.
* Navigation Highlighted
  + To designate which button on the navigation bar will remain “highlighted” while the user is on this page, select from the radio buttons as seen below. For example, a new alumni page would fit into the Meet the Associates category, so you would select “Meet” from the options listed.

****

* Fill in the other fields as needed.

**Naming Conventions**

* All new pages added to the website should have the title and header start with “Associate Fellowship Program.” (Ex: Associate Fellowship Program: Life in DC)
* When adding new bio pages, the URL should end with “bio” followed by the year the cohort ended. (Ex: the URL for the 2013-2014 page would be http://www.nlm.nih.gov/about/training/associate/**bio2014.html**)

**Images**

All images should be resized before uploading to TeamSite.

* Home page slideshow
  + Size: 925px X 270px
  + File type: PNG
  + There is a separate folder within the Associate section of TeamSite where new images should be uploaded when changing the slideshow.
* Associate/Alumni bio pages
  + 650px X 398px
  + File type: JPG
* Where are They Now? Page
  + The sizes vary because it depends on the type of headshot sent in by the alumni. None are wider than 230px, or higher than 325px.
  + File type: JPG
  + The original headshot images are stored on the P drive (P:\Associates\PHOTO LIBRARY\Alumni Headshots for Website)

## Appendix IV – Accessibility Best Practices

Designing an accessible website ensures that all potential users, including those with disabilities, are able to easily access and use the website. The user experience of those with disabilities should be equal to the experience as those without disabilities. Below is a list of some best practices for the accessibility issues that were encountered during this project. For additional information on other best practices, visit <http://www.usability.gov/what-and-why/accessibility.html>.

* **Skip navigation** - Provide a skip navigation feature that allows keyboard and screen reader users to bypass a long list of navigation links and go straight to the main content of the page.
* **Alternative text** - Images should include Alternative text in the HTML code.
* **Section headings** – Use HTML header tags to divide large amounts of text. The HTML header tags should be used in numerical order. Start with <h1> for the main header, and use <h2>, <h3>, and so on to organize the different sub-sections of content.
* **Captioning/Transcripts** – Provide in-sync captioning for videos and webinars, and transcripts for audio recordings.
* **Dual functionality of navigation** **options** – Users should be able to access and use the navigation bar and other features through both the mouse and keyboard. Any behaviors that can be seen with a mouse (such as the navigation bar buttons changing colors) should also be able to be seen when using keyboard commands.
* **Testing** – Use an accessibility testing tool to test the website before it goes live for the public. The tool used for this project is the WAVE Web Accessibility Tool (<http://wave.webaim.org/toolbar/>).