Heuristic Evaluation

Hennepin County Library Website: www.hclib.org

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Introduction

This report is a heuristic evaluation of the Hennepin County Library website: www.hclib.org. This evaluation will help recognize usability strengths as well as recognize areas on the library site that might need usability improvement in reference to Jakob Nielsen's ten usability heuristics. Thus, this evaluation will not only help me better prepare for the usability test of the website at the end of March, but it will also benefit you, the Hennepin County Library staff, and your visitors. I have familiarized myself with most of the website already, but for this report, I will be specifically evaluating the heuristics of the "Events & Classes" tab using Jakob Nielsen's ten usability heuristics. For more information and explanations on Nielsen's usability heuristics, please click on the following link: http://www.nngroup.com/articles/ten-usability-heuristics/. For this report, I will give one example from the Hennepin County Library "Events & Classes" tab for each of the ten heuristics. Each heuristic example will include a definition of the heuristic as stated by Jakob Nielsen, my evaluation and explanation of the heuristic, and a visual to accompany and supplement the written explanation. Please feel free to contact me with any questions or comments for this report via email at stubb055@umn.edu.
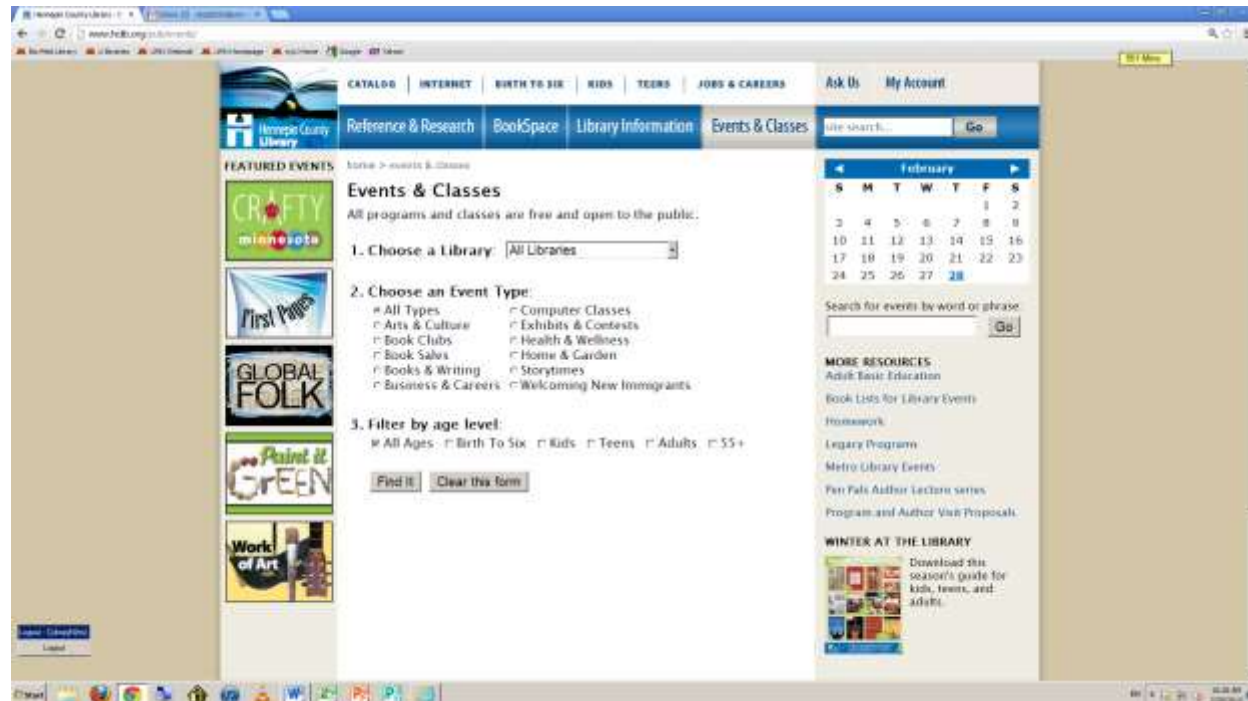
"Events & Classes" Main Link/Page

1. Visibility of System Status (Feedback)
The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

One feature of the "Events & Classes" tab that complies with this first heuristic of feedback is the "Registration Confirmation" screen (**see Figure 1.1**) that pops up after a user fills out an online registration form (**see Figure 1.2**) for a specific class the user wants to take. After users fill in and complete the online class registration form, they click the "register" button at the bottom of the screen (where the blue arrow is pointing in **Figure 1.2**). After clicking the "register" button, a feedback message is displayed on the screen letting the users know that the form was submitted properly and that they are officially registered for the class. This "Registration Confirmation" page not only provides feedback to the users by letting them know where they are on the site, but also, it provides feedback to assure the users that the form was accepted when they clicked the "register" button. In other words, the registration process is easy to navigate for users because registration is completely visible online. The registration confirmation screen keeps users informed (that is, it lets the users know that the form has been processed successfully).

However, it is also important to point out that users can register multiple times under the same name and receive a feedback message of confirmation each time. I will explain this issue more in depth in the "error prevention" usability heuristic, but this registration feedback issue is problematic because one user can fill up over half the class by submitting multiple registration forms without even realizing that they are doing that. For example, I initially filled out and submitted a form for a Microsoft Excel class in February under a fake name and identity. Then, I hit the back button a few times, I filled out the form two or three more times without realizing it, and I ended up filling up the entire class (and wait listing the class) without any intention on my part as a user. Thus, I would recommend giving users even more feedback on the "Registration Confirmation" page by informing them that they should only register once for a class or an event.

Figure 1.1 Registration Confirmation screen (feedback message)
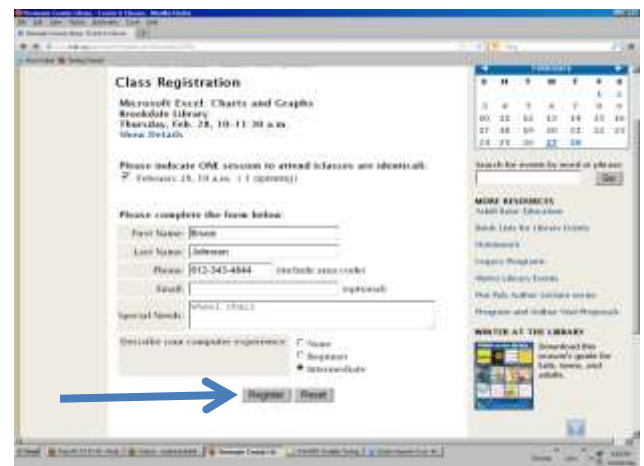
Figure 1.2 Class Registration form

2. Match between System and the Real World (Metaphor)

The system should speak the users' language, with words, phrases, and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

Overall, there is a strong match between the system and the real world within the "Events & Classes" tab. However, I would just like to point out one example that needs further improvement in addressing the Hennepin County Library's audience and the audience's language preferences. When adult users click on the "Events & Classes" main link from the home page, they will be brought to the events and classes search form. If they are non-native English speakers and/or new immigrants to the United States (such as Somali, Hispanics, or Hmong), they might click on, under "Choose an Event Type," the option that reads "Welcoming

New Immigrants." If they click the "Find It" button, the non-native English speaking users will be brought to a search results page that looks like **Figure 2.1.** On the one hand, this page matches the system and the real world because it follows real-world conventions. That is, the events appear in a logical order because the most recent event dates are towards the top of the page, and to find the later event dates, users have to scroll down towards the bottom of the page.


Figure 2.1 Library Events Page for Non-native English Speakers

On the other hand, this page does not necessarily use language that non-native English speakers can relate to. For example, non-native English speakers may not understand what "Conversation Circles" (**see Figure 2.1**) are or they may not be able to read the name of the event because they cannot read English well. Also, the language used in the description of the events entitled "Conversation Circles" might be ambiguous to the language conventions of non-native English speakers. However, I do realize that the Hennepin County Library provides phone numbers (**Figure 2.1**) below the event descriptions so that Hmong, Somali, and Spanish speakers can call and learn about the events in their own languages. So, if a Spanish immigrant wanted to learn about the event "Conversation Circles" that he or she found within the "Events & Classes" tab, but he or she wanted language that was familiar to him or her, then he or she can call the number listed underneath the event description. But, I would still recommend having a brief description of the event "Conversation Circles" (underneath the English description of the event) in Spanish, Somali, and in the Hmong languages so that the system of non-native English speakers matches their real-world conventions.

3. User Control and Freedom (Navigation)

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

In Figure 3.1, there is an excellent example shown in the screenshot **(follow the blue arrow)** that complies with this usability heuristic of user control and freedom. First of all, up at the top of the screen, there is a trail of "breadcrumbs." These breadcrumbs allow users to easily figure out exactly where they are on the site, how deep they are within the site, how far away they are from the home page, and how to work their way back to the home page if they get lost. These breadcrumbs provide a simple way for the users to "undo and redo" so that they know how to get out or leave the page without having to constantly hit the back and forward buttons or without having to leave the site. In this example, users can use the breadcrumbs as "emergency exits" to let them know that they are

Figure 3.1 Breadcrumbs

currently on the "Class Registration" page, and thus, the breadcrumbs show the users the specific path ("classes," "events & classes," and "home") back to the home page. Overall, breadcrumbs allow users to easily navigate deep within the site. Even when they click on something by mistake or when they make an error in filling out a registration form, they can find their way back to where they started. However, I also noticed a problem: breadcrumbs are on only certain pages and not on every subpage within the library "Events & Classes" tab. In the case where there are no breadcrumbs on the page, users are more likely to either leave the website or hit the back button on their web browsers, a tedious and frustrating task that gives users less control and freedom in navigating the site. So, I would recommend a very simple fix by placing "breadcrumbs" on all subpages deep within the site in order to provide users with an easy way out.
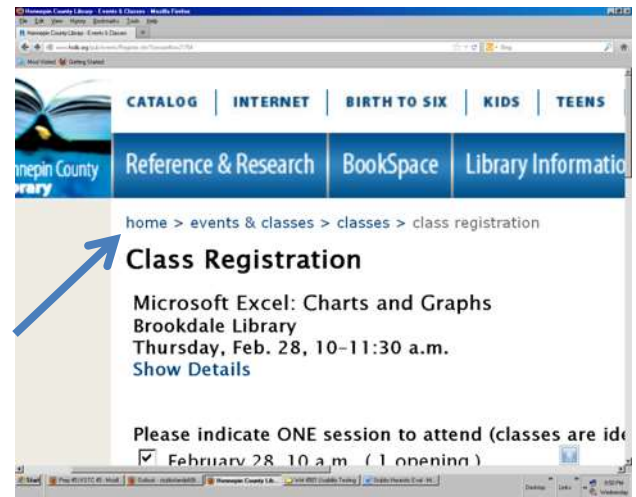
4. Consistency and Standards (Consistency)
Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

Overall, the layout of the Hennepin County Library website and the layout of the "Events & Classes" tab within the website follow pretty consistent standards and conventions. In other words, the location of each function and feature did not change as I went from page to page within the "Events & Classes" tab. For example, the events search box (**Figure 4.1, second arrow down**), the events calendar (**Figure 4.1, the first arrow**), and the "Tell a Friend" feature (**Figure 4.2**) on the events search page are all consistently placed on the "Events & Classes" interface. The "Events & Classes" page layout (**Figure 4.3**) is consistent with the page layout of the Home page (**Figure 4.4**) if you compare the two interfaces side by side, which allows users to recognize and identify that they are still on the Hennepin County Library website when they leave the home page and go deeper into the site.
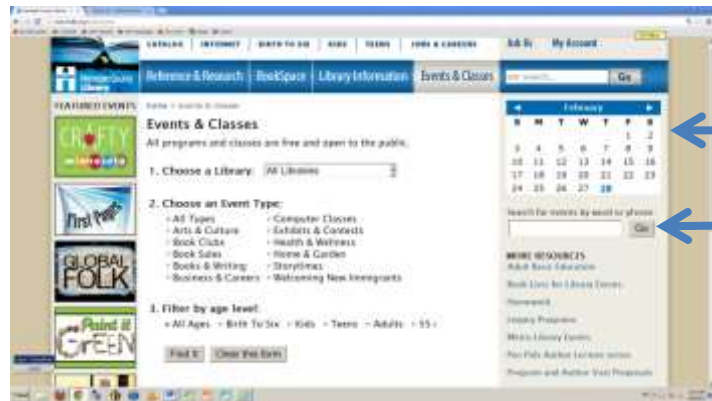
Figure 4.1 Consistent Use and Placement of Events Calendar and of Events Search function.

Figure 4.2 Consistent Use and Placement of "Tell a Friend" Feature on Events search results page.

Figure 4.3 Consistent layout of "Events & Classes" link as compared to home page in Figure 4.4

Figure 4.4 Consistent Layout of Home Page (compatible with layout of "Events & Classes" link in Figure 4.3)

However, when users click on the "Kid Events" or the "Teen Events" categories listed underneath the "Events & Classes" tab, consistency becomes somewhat of an issue. For example, by clicking on the "Teen Events" link, users will find a layout that is not quite consistent with the Library home page. On the "Teen Events" page (**Figure 4.5**), users will still find the events calendar, the Hennepin County Library logo, and the events search tool located

consistently on the interface. However, this page has an inconsistent layout because the side bars are no longer gray like in the "Events & Classes" tab, but rather, the side bars are now a light-blue color. Also, on the "Teen Events" page, users will see information in the left side bar, but on the "Events & Classes" general search page, users will find a blank, gray side bar with no information.

Figure 4.5 Screenshot of "Teen Events" page (linked underneath "Events & Classes" tab). Screenshot shows inconsistent layout (specifically inconsistent use of color in the side bars as compared to the home page and the "Events & Classes" main page.

The inconsistency in color and layout is even more evident on the "Kid Events" page (**Figure 4.6**). This inconsistency might be problematic because it could confuse the users in such a way that they might start to think that they have exited the Hennepin County Library website, and they might think they have entered onto a completely different site. So, I would suggest making the color scheme and the layout of the "Kid Events" page and the "Teen Events" page more consistent with the home page and the "Events & Classes" page so users do not have to wonder whether or not kid and teen events are different from adult events or wonder whether these events are on a completely different website.

Figure 4.6 Inconsistent layout (inconsistent use of colors) in "Kid Events" page

5. Error Prevention (Prevention)
Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

Although the Hennepin County Library site and the "Events & Classes" tab within the site have many excellent functions to prevent user errors from occurring in the first place, I would like to point out one area of the "Events & Classes" tab that might need further improvement in preventing errors. In **Figure 5.1,** there is a screenshot of an event registration page for a "New Yorker Discussion Group." The form, itself, is pretty self-explanatory for the average user, and before submitting the form, the site will prevent a form error from occurring before the user hits the "Register" button. For example, the site will detect an "invalid" email address, an "invalid" phone number, and whether or not there is a first and last name in the name fields. However, after the users submit their registrations through the "Register" button, there is nothing that prevents the users from submitting a registration form two, three, or four times by accident using the same exact name, phone number, and email address. For example, if a user clicks the "Register" button like in **Figure 5.1**, they will be brought to a

Figure 5.1 Event Registration Page. Users can click on the "back" button of the web browser and the "Register" button multiple times and take up multiple seats within an event or class. Users can also submit fake names, phone numbers, and email addresses.

registration confirmation screen. However, it is very easy for the user to click on the back button of the web browser and fill in the form two, three, four, five, or any X number of times. So, a user might not realize that he or she is signed up for multiple seats within one class or event. It is important to prevent this error from happening because there are a limited number of seats available for each class and event. If one person takes up two or three seats within a class, then other users will be forced onto the wait list or might not even register in the first place if there are no more seats available. To prevent this error from occurring, I would recommend to disable the "Register" button after it is clicked so that users can not register multiple times or to find a way so that people cannot submit fake names and phone numbers multiple instances.

6. Recognition rather than Recall (Memory)

Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.
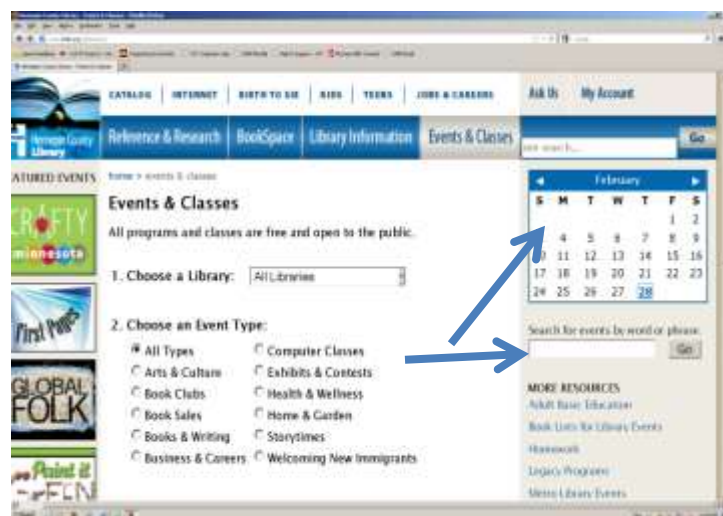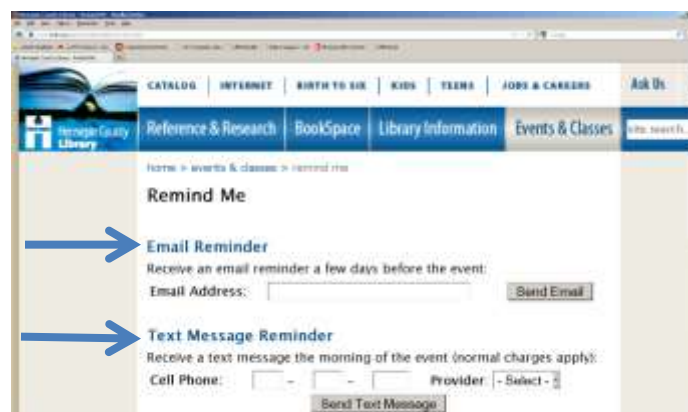

Figure 6.1 Events Calendar in right side bar eases memory work of the user.

The Events Calendar and the Events and Classes form on the main "Events & Classes" page, as shown in **Figure 6.1**, work together to ease the memory load of the users of the site. For example, if a user has a particular event he or she wants to register for in mind and knows the date of the event, but he or she does not recall the name of the event, what library the event is at, or cannot determine what type of event this event is, then the user can use the event calendar right below the site search function by clicking on the date that the event falls on. By scrolling through the list of events for a particular day, the user does not have to memorize the event, but rather the user just has to recognize it from the list of events. Similarly, if a user does not remember the date of the event, the user can use the form in the center of the screen or the events search tool in the right side bar in **Figure 6.1 above** to narrow down his or her search options, which minimizes the user's memory work greatly.

Another way that the Hennepin County Library "Events & Classes" tab promotes recognition rather than recall and memory work is through the "Remind Me" feature **(see Figure 6.2)**. This feature allows users to sign up for email and/or text message reminders/alerts of the event they just registered for online. So, instead of remembering the event, the date of the event, and which library the event it is at, they can receive all of that

Figure 6.2 "Remind Me" of events feature makes memory work of the average user almost nonexistent.

information through an email, an email confirmation, and through a text message. This "Remind Me" feature is important because it not only reduces the memory load of the average user, but also, that average user of the Hennepin County Library website accesses the site outside of the physical buildings of the libraries (at home, on their phones, etc.) So, email and phone reminders

make sense. Thus, this "Remind Me" feature, and more generally the "Events & Classes" tab, highly complies with the usability heuristic of recognition (rather than memory).

7. Flexibility and Efficiency of Use (Efficiency)
Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
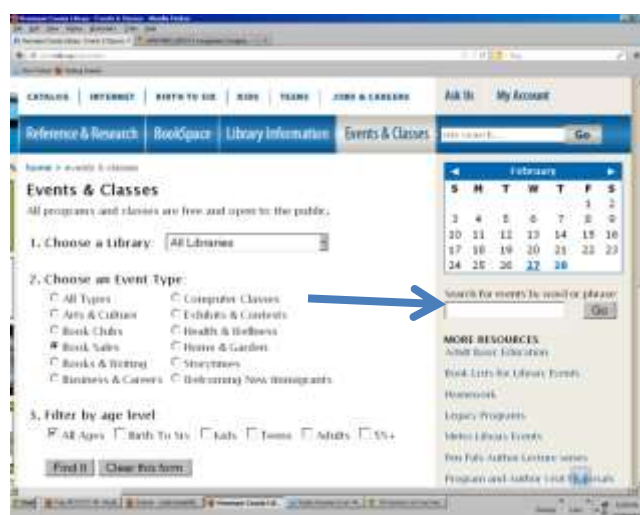
Figure 7.1 Accelerator: Events search box

As I was evaluating the "Events & Classes" tab, I noticed several accelerators designed for the expert or returning users that also help the inexperienced or novice users understand and figure out how to use the events tab both efficiently and quickly. One excellent example of an accelerator is the events search box below the calendar feature (**see Figure 7.1**). The events search box is different from the site search box that is located in the upper right hand corner of the website because whereas the site search searches the entire library website, the events search searches only for events and classes at the library. Thus, 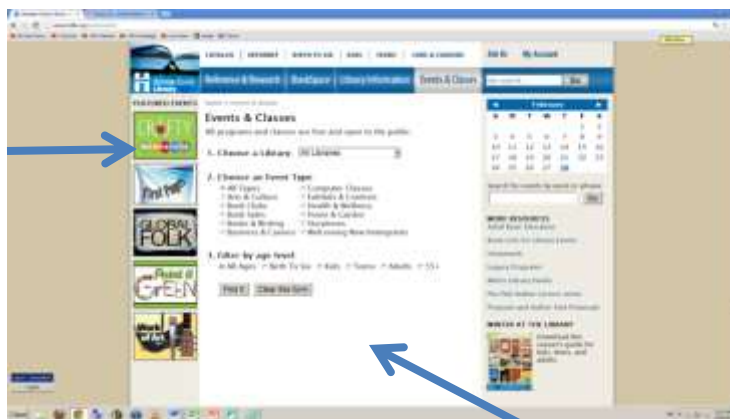this example complies with the usability heuristic of flexibility and efficiency of use because the events search bar speeds up the process of finding a class for mainly the expert (returning) users. It allows people who are familiar with the "Events & Classes" tab to skip over filling out a form, and thus, users can spend less time finding the event or class that they are looking for. By using the events search, users can spend less time on navigation pages and more time looking for and finding destination pages. Also, this events search box can also speed up the search time for novice users of the "Events & Classes" tab because typing a keyword or phrase like "PowerPoint" into the box is much more efficient than filling out a three-step form to find a class on the basics of Microsoft PowerPoint.

However, the main issue with the events search box is that it is off to the side of the screen (on the right-hand side) just below the site search. This placement of the events search might be problematic because users might not be able to find the events search in a timely manner if their eyes are focused towards the center of the screen where the form and most of the content are. Plus, users might mistake the site search for the events search, an issue that could possibly take the users farther away from their destinations rather than closer. So, I would recommend moving the events search box towards the center of the page where it is more visible and accessible to the average user. The Events search tool is flexible and efficient to use in order to find classes in a timely manner, but the "Events & Classes" form in the center of the page is inefficient in comparison because users can only select and search for one "Event Type" (step 2) at a time. Users can search events and classes for multiple age groups in one, single search, but users are not able to search for two, three, or four event types during a single search, a usability problem that can be a quick fix by allowing the users to select more than one "event type" on the form.

8. Aesthetic and Minimalist Design (Design)

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

The "Events & Classes" main page/link (**see Figure 8.1**) is a good example of aesthetic and minimalist design. First of all, the page uses a lot of white space in the center of the page where the three-step events and classes form is located. White space helps guide the user's eyes down and across the page more quickly and easily with minimal confusion for the user. Also, another good design aspect of this page is that it uses very little text (not too text heavy). This

Figure 8.1 "Events & Classes main page/link

element of design is important to consider because this page is a navigation page and not a destination page. Generally, web users read and expect written content on destination pages (pages that users want to end up at), and they expect navigation pages like in **Figure 8.1** to be highly visible, easy to understand, and have very little text in which they have to read so that they can get to the destination pages in a timely manner. The white space adds visual contrast and clarity to the page. Thus, the minimalist design of this page makes searching for events and classes at the Hennepin County Library website more user friendly and easy to navigate. Also, the "Featured Events" section in the left side bar in **Figure 8.1** adds to the aesthetics and beauty of this page because it creates a visual contrast with the text on the events form. The visuals in the left side bar give the page "pop." In other words, the visuals of the featured events will naturally attract the users' attention once they click on the "Events & Classes" link. Having focal points on each page to draw the users in is crucial to keeping the users' attention.

However, once the user finds his or her way into the search results page for library events, it is very difficult for the user to quickly skim and scan the list of the events because the events are

squished together, the text descriptions of the events have a very small font size (accessibility issue), and there is excess clutter that could be eliminated or minimized (**see Figure 8.2 for example**). In this example, there is not much visual contrast or visual hierarchy of information that attracts the users' eyes. There are no focal points that grab the users' attention when they see the list of events, which probably will result in less time of user interaction with the "Events & Classes" tab and with the library site in general.
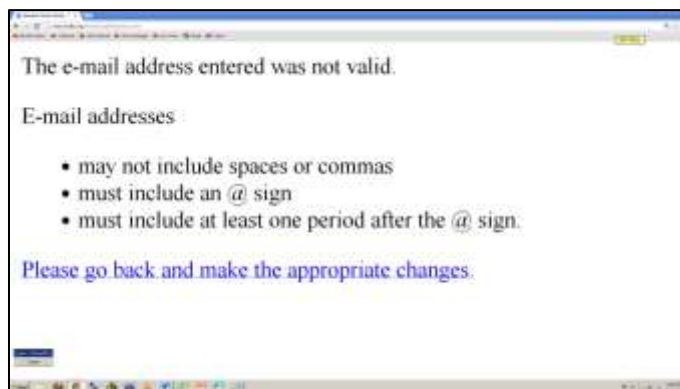
Figure 8.2 Cluttered search results page for "Health & Wellness" events at all libraries for all age groups. Small text could decrease accessibility for vision-impaired and decrease readability for general users.
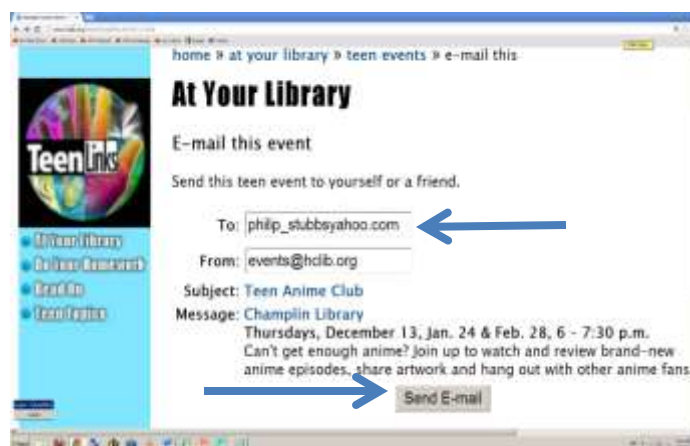
9. Help users recognize, diagnose, and recover from errors (Recovery)
Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

The error message (**see Figure 9.1**) that pops up on the screen after submitting a "wrong" or "incorrect" "Tell a Friend/E-mail this event" form (**see Figure 9.2**) to somebody else is an excellent example of this ninth usability heuristic. Once the user clicks the "Send E-mail" button on the "E-mail this event" form in **Figure 9.2**, the user will either be taken to an e-mail confirmation screen that gives the user positive feedback to let him or her know that the e-mail was successful, or the user will be taken to an error message screen like in **Figure 9.1**. This is an excellent error message that helps users to not only recognize their mistakes in filling out the e-mail form, but also, this message helps users recover and correct their errors without leaving the site, without clicking on the back button, and without becoming too frustrated. The error described in this message is written in simple, everyday language that is easy to understand ("The e-mail address entered was not valid"). Also, the message accurately describes why there was a problem with the e-mail address in the first place. In this case, I forgot the @ sign in the e-mail address as shown in **Figure 9.2.** Finally, the error message allows users to

Figure 9.1 Error message after submitting form

Figure 9.2 Incorrect "Tell a Friend/E-mail this event" submission form (missing @ sign in "To" box)

recover from the error by clicking on the link entitled, "Please go back and make the appropriate changes." However, the error message does not exactly tell me what 'appropriate changes" are to be made. But, for the most part, I found the error messages, in general, across the "Events & Classes" tab and across the entire library website to be quite helpful and useful in explaining problems and helping users come up with solutions that will get them back on track with their tasks and goals.

10. Help and Documentation (Help)

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

The Hennepin County Library has an excellent "Ask Us" page that is located as a category underneath the "Reference & Research" tab on the home page. This page (**Figure 10.1**) gives important help information in the right side bar, and it allows users to text, instant message chat, e-mail, or call a librarian from the Hennepin County Library for more help on how to use the website and how to find certain information on the website. In the right-side bar on the "Ask Us" page, there is no important "How Do I…" information regarding events and classes (e.g., how to register online for a computer class). The "Ask Us" page also allows users to check the hours of not only when their specific libraries open, but also, it gives users hours for when they can call, e-mail, text, or chat with staff during the day. However, the main problem with this "Ask Us" page is its location. It took me quite a long

Figure 10.1 "Ask Us" page found through "Reference & Research" tab (outside of the "Events & Classes" tab).

time to find this website help page when I was exploring and evaluating the "Events & Classes" tab for this heuristic evaluation because I was looking for a "help" or "Ask Us" page within this specific tab. I did not realize right away that I had to go through an entirely different tab (Reference & Research), use the site search function, or click on the "Ask Us" icon at the very top of each page to get appropriate help and to get my questions answered by the library. I could not find any relevant help information within the Events & Classes tab. I had to go somewhere else on the site to find that information. In fact, the only user help information I found within the "Events & Classes" tab was a very small, vague "How to Register" for classes section in the side

bar inside the "Class" link (**see Figure 10.2**). This "How to Register" section does not provide enough information for the expert or novice user. Thus, I would recommend putting the "Ask Us" page as a category underneath each major tab on the home page, especially on the "Events & Classes" tab, so that users can focus more on their actual tasks (such as looking up and signing up for classes and events) and focus less of their attention on finding important library contact information hidden in another tab.
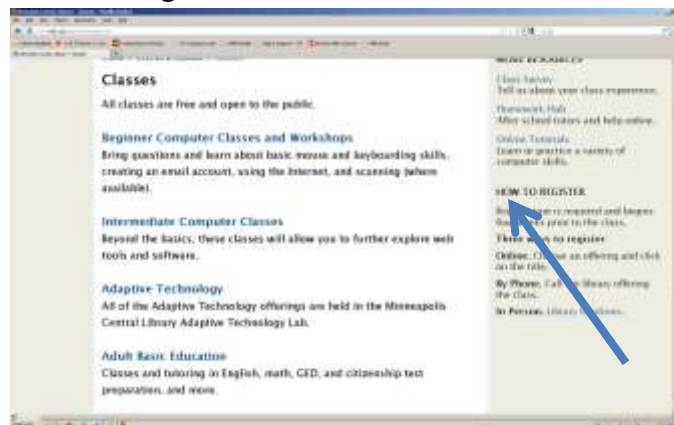
Figure 10.2 "How to Register" section (example of user help information – vague and unclear instructions)

Conclusion: Overall Assessment of "Events & Classes" tab and Summary of the Heuristic Evaluation

After completing the Heuristic Evaluation for the Hennepin County Library "Events & Classes" tab, I found several usability strengths in reference to Nielsen's ten usability heuristics, and I also found some weaknesses or areas to consider for improvement within this tab as well. As for the strengths, in general, I think the Hennepin County Library "Events & Classes" tab complies with six of Nielsen's usability heuristics: visibility, metaphor, navigation, recovery, memory, and efficiency. However, just because I classify these as strengths does not mean that they should not be considered for areas of improvement. For example, I think in terms of visiblity, the "Events & Classes" section complies very well with this heuristic because the registration process for a class or event is highly visible (that is, the display of a registration confirmation page gives users feedback on whether or not the registration was successful), but at the same time, visibility is a weakness because I found myself often clicking on the back button to get back to the home page or main "Events & Classes" page because there was no feedback or information on where I was located within the site. However, I did find this section to be easy to navigate once I figured out there were breadcrumbs at the top of most of the pages. Also, I think this section of the site complies with metaphor because the list of events and classes on a search results page are listed in a logical order (most recent dates at the top and less recent dates at the bottom of the page); however, it is also important to consider the fact that some of the language and terminology of this section might not be useful or helpful for non-native English speakers. Out of these six heuristics, I thought the biggest strength was memory. I think this section of the site does a very good job of easing the memory load of the user because of all the different, efficient ways of finding a class or event (though some ways are more efficient and inefficient than others) and because of all the ways of remembering the information for that event. Users do not have to memorize events or classes, but rather, they just have to recognize the class they want from a short list. Similarly, users do not have to memorize the registration times and dates when the "Remind Me" feature will remind users for them. If a user made a mistake in filling out one of these registration forms, an effective error message will allow users to easily recover from the mistake with little time wasted.

On the other hand, I think the Hennepin County Library "Events & Classes" tab has three major problems or weaknesses in terms of Nielsen's heuristics, and these weaknesses are consistency, error prevention, and help. First of all, I think the site lacks overall consistency in the layout across the pages within this section, especially when a user clicks on the "Teen Events" or "Kid Events" links. This inconsistency may cause confusion for the user thinking that they are at a different library's site. I found error prevention to be the most problematic with the filling out of the online registration forms because there was no way to prevent users from submitting multiple forms under the same name for the same class. Finally, there was little information in terms of user help within the "Events & Classes" tab itself besides a small, short instructional on how to register. To get help with the "Events & Classes" tab, users had to click on the "Ask Us" page at the top of every page or find the "Ask Us" page within the "Reference & Research" tab. The "Ask Us" page is problematic because it distracts and diverts the users' attention away from their goals in the "Events & Classes" tab.

There is one usability heuristic that I have not mentioned yet in the conclusion and that is design. I felt like in terms of the design, this tab has a lot of strengths (white space, limited text on some

pages, visual contrast, visual hierarchy, etc.); however, I still think design is one major area to consider because of the cluttered texts on the search results pages that lists the different library events. Thus, for me, design is a strength and a weakness to be addressed.

Overall, I found a pretty equal number of strengths and weaknesses from this heuristic evaluation. There are a lot of good things happening with this site in terms of the usability heuristics, but at the same time, there are still various spots within the "Events & Classes" tab that still need to be addressed and further considered. I hope this evaluation can be useful and helpful to the Hennepin County Library and its visitors going forward. I hope my usability team and I can further uncover and unravel some of these issues and weaknesses for the Hennepin County Library during the usability testing session coming up and report back to the library with useful results.