WMUG-LPFM Online
Radio & Website Usability
Study
Term Project
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The Smoking Aces
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WMUG-LPFM Online Radio and Website Analysis

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Abstract

WMUG has a very appealing website and are off to a good start. We believe that by using the information obtained in our learning curve, GOMS predictions, KLM calculations, and usability comparison analysis WMUG can improve the overall appearance and functionality of their website. Improvement in the areas of; site address, navigation consistency, media player requirements, and full utilization of space; WMUG can improve their current website to appeal and satisfy the wide scope of users they serve.
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Introduction

The website we decided to analyze for this project can be viewed at www.wmugradio.org. The website is a public interface for WMUG (World Wide Media Under God), a gospel music station. The station is run by The Christian Witness, a nonprofit organization.

It appears that the heaviest use of the website occurs through its streaming online music player. This allows listeners worldwide to click and listen to the stations live feed 24/7. Also listed on the site are the station’s weekly programming schedule, a schedule of community sponsored events, and a donations page. The station is non-profit and runs off of donations and spots.

This website is interesting because of its heavy use in the Indiana, PA area. The available audience in Indiana, PA alone is 94,000 people. The website also serves a key value to the radio station because of its ability to distribute the station worldwide. While the FM radio station only reaches local listeners, the website is able to provide worldwide coverage. Many listeners call in from distant locations such as China, India, Africa, and other places. This is important because the radio station is strictly driven by donations. This makes a well designed website a must for the radio station.

This report will analyze wmugradio.org using the methods and practices taught in IST 331. We will start by documenting the current state of the site and any predictions we might have. We will perform a learning curve analysis, task analysis, and a usability analysis. We will then discuss what the results mean to WMUG. After everything has been laid out we will present our areas for improvement and recommended solutions.
Who is WMUG

Background

WMUG-LPFM is a non-profit gospel radio station located in Indiana, PA. WMUG was founded by JD Varner and The Christian Witness in 2001. WMUG’s construction was funded by generous donations. WMUG houses seven computer systems; one of which will concern us, the online audio streaming computer. WMUG is ran and maintained by locals donating time and efforts. WMUG Radio at 105.1 FM is a low-power FM station that is limited in its scope of dedicated listening space. The signal covers Indiana Borough, the Campus of IUP, White Township and the "fringes" beyond. Of the 94,000 people in Indiana County, approximately 40,000 of these reside within the scope of the station.

Purpose

The purpose of WMUG is simple, spread gospel music to listener’s ears. Once started and live on the FM Band, WMUG started looking for other ways to share their music. One suggestion was to allow listeners to tune in from the internet. After a long analysis of the best system to use, WMUG signed up with a provider. A website was made and a link was placed to allow listening. Although it has been 5 years since this implementation, no changes have been made. We hope to help update the website and enhance the usability of the online listening.
**Current Website**

**State of Site**

The current website can be described as “ok” and “usable”. Figure 1 depicts the current website of WMUG.

**Figure 1**
The site uses generic HTML, CSS, and many images to gain appeal. Colors are comforting and welcoming although not utilized fully. The logo in the top left is not linked to the home page, which is almost a standard across all webpage’s. The site utilizes a top main bar for navigation including; Home, About, Programming, Schedule, Troops, Sponsors, Testimonial, and Contact. Some of these links should be reconsidered. The left side bar seems to expand once links are clicked but it is not utilized well and seems too random with the data displayed.

Uses for Site

The two main purposes of the site are to listen online and donate money to the site. Neither of these two functions is easily found. There is a graphic in the top right to click to listen online; also there is a link on the left column sometimes. To donate you must click “about” then “funding” then you must read through a lot of text to only find you have to mail donations to WMUG. A feature we believe can be very useful if implemented well would be a real-time schedule. This could allow listeners to know when their favorite programs will be on.

Company Stated Problems

WMUG realizes they are not capturing the full potential of wmugradio.org. Although there are no statistics available we believe there listener population can improve drastically with a redesigned site. Since funding is a concern with WMUG, online methods of contribution should be put in place. WMUG also want their website to be updated more often with current events.

Foreseen Problems

As a team we can foresee problems WMUG will have with capturing the full value of wmugradio.org. Since there is not a staff of highly trained employees and those able to maintain a complex website, any design will need to stay simple so employees can open a file change and add text and then upload the updated pages. With the wide array of listeners and other target audiences it will be hard to design a site that will please all. Also this is an international organization; we will have to make sure any solutions will be compatible worldwide.
Analysis

We have analyzed wmugradio.org using the methods taught in class and applied general knowledge our group already had. We have applied our learning study lab, task analysis lab and a usability study lab for this report; each of which add their own benefits to our analysis.

Learning Curve

Users will be repetitively performing the same tasks time after time on the site. It won’t be as critical to make listening online easy to use the first time, as it will to make it easier every time after that. Users should become experts at starting the listening process in a short period.

Background

This study involves measuring the time taken for a subject to perform a simple task multiple times. A learning curve should be seen when the times recorded are plotted on a line graph. Learning curve studies have been performed in multiple areas on a wide array of subjects and topics. Such studies have been used in development of many software packages, web sites, operating system distributions, many non-technical related areas, etc. One such study is “The Learning Curve” by Ritter and Schooler. This study helps prove the existence and usefulness of studying the learning curve.

Our study measures the time it takes for an individual to initiate listening to the radio station online. WMUG–LPFM broadcasts its live radio feed 24/7 online at www.wmugradio.org. On the home page is a link “Listen Online”. The goal of this study is not only to measure the learning curve of subjects, but also record data to measure the effectiveness of the current site setup. It is believed that the site is currently not set up in the best manner to allow this task to be efficiently completed. It is predicted that subjects will have difficulties in multiple areas to perform the task: the web address is not common or easy to remember and there will be compatibility and requirement issues in order to successfully complete the task.

Methodology

Subjects

Subjects we selected for this analysis had the following traits in common; they were Penn State undergraduate students, between 20-23 years of age, white males, and where not compensated. Tests were performed in the evening hours during the week. The subjects were medium to high computer users. Subject 1 is majoring in English, Subject 2 is majoring in Business in Supply Chain, Subject 3 is majoring in Communication Arts and Sciences, and Subject 4 is majoring in Mechanical Engineering.

Task
Listen to WMUG-LPFM radio station online from home on a personal computer.

**Instructions**
The instructions were given to all subjects on a piece of paper. Once the subjects read the instructions and fully understood the task at hand, the paper was taken and used by the overseer to record times and observations. The instructions were as follows: “Yesterday you were driving down the street in your car. You were scanning through the radio and tuned in to 105.1. You liked what you heard and faintly remember them mentioning the name WMUG and that you could listen to them on the Internet. Now you are at home in front of the computer connected to the Internet. Listen to the radio station online.”

**Environment**
Subjects participated in their homes on their personal equipment. Environments varied although had key areas of common. All subjects used a PC with Microsoft Windows XP or Vista. Web browsers consisted of various versions of Firefox, Internet Explorer, and Opera. Plug-in and other software previously installed varied.

**Design**
We asked four subjects to perform the task. Each subject performed the task 15 times. Our task involved first opening a browser of their choice. Then the subject had to find a way to navigate to the correct website address which is www.wmugradio.org. Then the subject had to click on the link that says “Listen to our live Internet broadcast!” At this time you will be prompted to install the necessary software. You will then be required to navigate to another site to download the software needed. At this time you will then have to restart your browser. Then you will need to re-open the browser and go to the websites address. You will then need to click on the live Internet broadcast link and the music will begin to play. After that step you are complete, and we totaled the time it took to complete these steps.

**Results**
Our subjects completed the tasks faster than we had suspected the first time. They did not have any issues with the download site which made the process go quickly. The times got faster as the person completed the task and the first time they completed the task took slightly longer due to having to download the required software. After the initial time the subjects would then have to open the browser and click the live Internet music button and the music would begin to play.

Each subject’s times are charted on line graphs to view there learning curve. See Figure 2 Figure 3 Figure 4 and Figure 5 for results.

**Figure 2**
Figure 3

Task Timing Series 2
Figure 4

Task Timing Series 3

Time (Seconds)

Trial Number
Figure 5

Task Timing Series 4

All subjects’ trials together are charted on Figure 6.
Figure 6

A linear average of all results is plotted on Figure 7.
Figure 7

All subjects’ results and totals are listed in Figure 8.
Each of the four subjects completed the task a total fifteen times. This gave us a total of 60 times the process was run. The total time it took Subject 1 to complete the tasks was 5:01. The total time it took Subject 2 to complete the tasks was 4:37. The total time it took Subject 3 to complete the tasks was 5:24. The total time it took Subject 4 to complete the tasks was 7:56.

**Analysis**

Analyzing our results, one can see that as the task goes on (as a subject repeats the task) the time it takes for the subject to complete the task is reduced. This pattern holds to a small degree overall, but the effect takes less of an impact over time. This is especially true for the first trial, where the time is almost 4 times greater than the trials that followed. After about task 5 the times appeared to plateau but log-log would suggest not.

The most likely reasons for our results are specific to the nature of the task. The first trial was a large spike in the results; this was because for every subject, the first trial forced the subject to download software to listen to the radio online. This time was highly variable because there were incompatibilities and troubles. The users had to navigate through a separate site then intended in order to obtain the new software. The users also had to restart their web browser when the software plug-in was done installing. The first trial can be considered as unimportant to calculating our average, but in reality it is part of the initial process.
The task time decreased after the first trials because the users found a few shortcuts (besides not having to install the plug in). When searching for the WMUG website, users learned that they could shorten the search terminology. For example a search of WMUG will yield the same results as WMUG Christian Radio. Furthermore, on some computers, users had settings which enabled Google to remember the search and automatically fill out the search bar with the previously entered term. Users did not have to search for the "Listen to the radio" button after the first trial as well.

Near the end of the task, the time could not get any lower because it was reaching the base limit for a person to carry out the task. One can observe that after time, a user runs out of possible shortcuts to decrease the times. A user also runs out of the ability to make one task more efficient as he or she gains confidence, muscle memory (a very insignificant factor in this case), and knowledge for the task. The time vs. effort evens out as well for a user. A user could have spent extra time during one of their tasks to bookmark the site. While this would have increased the time for one task, it would have made the process faster for every task that followed.
Task Analysis of WMUG Features

In the interest of making the WMUG website more users friendly and efficient, we used task analysis to better understand the manual and mental activities and factors surrounding some of the major functions on the website. The actions most commonly carried out on the website are users donating to the station and users listening to WMUG through web.

This task analysis can help us understand where users might make mistakes or waste time and may help us predict ways that will lead users to carry out these tasks better. We used both GOMS and KLM task analysis models.

Goals Operators Methods Selection Analysis (GOMS)

The first method that we used to analyze the tasks is known as GOMS or goals, operations, methods, and selection rules. GOMS describes the task a user is carrying out to its elementary actions. GOMS is meant to consider physical, cognitive, or perceptual actions.

In GOMS, goals are what a user means to accomplish. Operators are the actions that the user carries out to achieve the goal. Methods are sets of operators that a user uses to complete a goal, there can be multiple possible methods to reach a goal. Selection rules describe how a user picks a method.

We defined each of the major criteria for GOMS for the two tasks as follows:

<table>
<thead>
<tr>
<th>Goals:</th>
<th>Task 1: To activate WMUG's online radio feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>What users mean to accomplish.</td>
<td>Task 2: To transfer funds from one's account into WMUG's account via the internet.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operators:</th>
<th>Task 1: Visually locate proper buttons/links, click on website buttons, scroll across web page, wait for load.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operators, or elementary perceptual, motor, or cognitive actions included in the task.</td>
<td>Task 2: Visually locate proper buttons/links, click on website buttons, scroll across web page, know credit card information and personal information, type in personal information, wait for load.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Methods:</th>
<th>Task 1: Find the listen online button and click on it. (Loading time) If necessary obtain appropriate media software by being redirected to windows media player download page. (Loading time) Click on the download link and or proceed directly to next step. Wait for system to load. Listen and control listening experience.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods describe procedures for achieving goals.</td>
<td></td>
</tr>
</tbody>
</table>
**Keystroke Level Model Analysis (KLM)**

The keystroke level model is based off of an attempt to predict task execution time from a specific task scenario. The KLM model looks at actions at a level of pressing keys or using other IO devices. In order to assemble a set of directions for the KLM we first had to specify what counted as a KLM action, which would be our measurement unit. We determined that the list of these actions would be: keys on the keyboards, and mouse clicks. The non-physical actions behind these specifications would be clicking on website buttons/links, activating text fields, scrolling, and typing. Furthermore, the keystroke level model indicates that one should consider mental operators for when a user must stop and think, and an operator for when a user must wait for the system to respond. We then estimated the times each of these operators would take:

<table>
<thead>
<tr>
<th>Task</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website buttons/links</td>
<td>2s</td>
</tr>
<tr>
<td>Scrolling</td>
<td>2s</td>
</tr>
<tr>
<td>(One) Keyboard key</td>
<td>2.75 letters per second = (Avg 33 words per minute * 5 letters avg per word) / 60 seconds</td>
</tr>
<tr>
<td>Activate text field</td>
<td>1.5s</td>
</tr>
</tbody>
</table>
Next we theorized what the score in seconds would be for each task:

<table>
<thead>
<tr>
<th>Listen to WMUG Radio Online</th>
<th>Action</th>
<th># of Instances</th>
<th>Time</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scrolling</td>
<td>1 Instance</td>
<td>2 seconds</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Website buttons/links</td>
<td>1 Instance</td>
<td>2 seconds</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Waiting for system to respond</td>
<td></td>
<td>3 seconds</td>
<td>=</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td>8 seconds</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Make a Donation Online</th>
<th>Action</th>
<th># of Instances</th>
<th>Time</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scrolling</td>
<td>3 Instance</td>
<td>6 seconds</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Website buttons/links</td>
<td>4 Instance</td>
<td>8 seconds</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Activate text field</td>
<td>5 Instance</td>
<td>7.5 seconds</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Typed keys</td>
<td>~50 instances</td>
<td>18.7 seconds</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Waiting for system to respond</td>
<td></td>
<td>10 seconds</td>
<td>=</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td>56.3 seconds</td>
<td></td>
</tr>
</tbody>
</table>

As you can see the time it takes to listen to the online audio is minimal, however these numbers can be misleading because they do not take into account the visual search for the button or the required plug-in and features needed to successfully listen. We believe this undocumented time is where room for improvement exists. The time it takes to donate is very long and has room for improvement. These are topics we will discuss in the discussion section of the paper.

Usability Study through Comparison

A usability study holds great value to a website owner. We studied the usability in two aspects: navigation and layout. We have compared WMUGradio.org to RelevantRadio.com.

Navigation Structure

WMUG

WMUG has a primary navigation toolbar near the top of the site. Featured on the toolbar are the options to proceed to separate home, about, programming, schedule, troops, sponsors, testimonials, and contact pages. The toolbar is easy to read and in a prominent location. The colors compliment the style of the site, and are pleasing in that regard. The links on the primary toolbar are not
partitioned by any visible buttons, but are all present on one large bar. Clicking on or around the text of the desired links takes you where you need to go. At the bottom of the site on each webpage are HTML tagged text links to the pages, mimicking the primary toolbar (so that you don’t have to scroll up if you want to navigate the primary toolbar). See Figure 9.

**Figure 9**

On the left-hand side of each webpage in WMUG, there is a set of secondary navigation links that allow one to browse pages that change in regard to which page you have been redirected to by the primary navigation toolbar. These secondary links are related to or subsets of the primary link pages.
These links are HTML tagged text links. All HTML tagged text links are colored blue, as is the standard link color and turn purple when they have been used.

In the upper right corner a picture of a bible with the words “listen online” lead the user to a link which allows him or her to listen to WMUG online. This link is present on all pages. Clicking on listen online opens a new window with the radio player.

Relevant Radio
http://www.relevantradio.com

The primary navigation links for the Relevant Radio site are located in between two curved lines on the left hand side of the site. The links are clickable text. When you navigate to a new page on the site, the corresponding link turns red and has a diamond adjacent to it, to let the user know what page they are on. The primary links are slightly higher or lower on different pages. Each of these primary links, when clicked on reveal subcategories of the page under the link you clicked on. When you click on the sub-link, it turns red as well as the primary page link. Each link completely reloads the page, including the navigation bar. See Figure 10.

Figure 10

At the top of the web page there are Donate Now and Listen Now buttons. Both redirect the display page below to their respective pages, which is inconsistent with the behavior of the navigation bar on
the left. The buttons on top have separate, defined borders, and stand out in a prominent location on the page.

At the bottom of the page, there are a few quick links with copyright, contact information, and other such information that is also present in the main navigation bar.

**Comparison**

Functionally, these two navigation layouts are relatively similar. The cognitive efficiency are also very similar, however, both sites have advantages and disadvantages.

The navigation of WMUG is much more visually organized. Much of the text on Relevant Radio is identical to the navigational text links and can be hard to catch at first. At WMUG, it is immediately clear where the navigation controls are.

Both sites have sub-links that link off of the primary links. WMUG has much more prominently placed links in a completely separate bar on the left. Relevant radio’s links are in a more intuitive place (under the main links they are a subset of), yet were hard to notice initially since the whole page refreshes as per the change blindness concept (CHANGEBLINDNESS WEBSITE).

**Layout Comparison**

**WMUG**

In our reading on cognitive capabilities (Ritter and Churchill Chapter 7), we learned about how people often scan instead of read, especially in the case of websites. Furthermore, the simple standards are established that this interface should be as easy to use, simple, and yet helpful as possible. For a webpage there are both visual and functional complexities to consider, and often the balance between ease and features must be met. Visually, WMUG has a very well organized and simple layout. There are elements which draw the eye, and yet all the vitals (links etc) are in prominent and easy to access places. However, there is wasted space in WMUG’s layout. On several pages, there is some empty space present at the top of the display frame causing the user to have to scroll down. It is a benefit to the user to have the primary links at the bottom of the page, as a user does not have to scroll back up to change locations.

**Relevant Radio**

The layout of relevant radio is very distracted. The design violates one of the first laws of graphic design: maximum 3 colors. Not only do the colors cause the eye to be drawn to non-vital elements, but the sheer amount and size of text cause the site to draw emphasis on nothing in particular. The link bar still stands out, but is not immediately obvious, as the text is no different than anything else on the page. One thing to notice about this page is that it is vertically restricted. The main frame is
set not to resize, so no matter what resolution a computer is running the size of the site is the same. Relevant radio has its main functions present on every page.

Comparison
WMUG has a simpler layout, while Relevant Radio has more functionality on each page. Overall these websites have fairly simple functions, not complicate ones; therefore the layout can reflect this. In improving the layout of WMUG, the simple design should be kept. Given the cognitive habits of people on web pages, people do not spend a large amount of time on each page, and as many come mainly for the listening and donating functions. These functions should take a more prominent place among the layout of WMUG’s website.
Discussion

After performing our analyses we realize that some provided us with very strong material and others did not. We will discuss each one but will go more into depth in the analysis we found most helpful.

We learned many things from testing multiple subjects who used the WMUG website. Some of the things we learned were about time it took and how repetition decreased the time it took to do our task. Another thing we learned was that the age of the user severely affected how they used the website. The last thing we learned about how users had multiple problems making donations to WMUG. Let’s look closer at how long it took our subjects to log on to the website and how repetition decreased the initial time it takes to logon and listen to music.

Our Learning Curve study helped show us that our subjects learned how to logon the website faster as they logged on repeatedly. We tested four subjects each fifteen times, totaling 60 trails. It took the subjects anywhere from 4:37 to 7:56 to do the fifteen trials. As we monitored our subjects we learned that the times decreased for the first five trails and then after that the times were about the same. This means that our subject’s level of mental concentration was high at first, but as they repeated the task muscle memory started to play more of a role than mental concentration. This is evident in any task that is repeated a number of times such as when you first learned how to type, or ride a bicycle. However there is a point where muscle memory can not improve anymore and the learning curve stays flat lined; which explains why our subjects times did not continually decrease.

The age of our user is directly proportional to the amount of content that could be accessed. It seems as though that the users who got the most out of the WMUG website were the users who were between the ages 15 and 30. They were able to access the website and access the music on the website. The user who were between the ages of 30 and 60 were able to access the website, however some were confused when they were required to download the plug-in that was needed. Finally the users who were over 60 had troubles logging onto the website and had no clue that they could access music from the website. These results may be because younger people are more computer literate than older computer users. This is due to the simple fact that computers have been widely used within the past 15 years. Older computer users had to learn the computer basics at an older age and therefore stereo typically tend not to be as receptive as younger users. This means that if we can design a solution with our older users in mind then all users should be able to access our website with minimal problems.

The Task Analysis study helped break down the main tasks bit by bit and give us a goal time to design the site around. The time it takes to listen to the online audio is minimal, however these numbers can be misleading because they do not take into account other actions required, plug-in, and features
needed to successfully listen. The biggest area for improvement for the online listening would be to make sure the link is very visible and stands out to the home page viewers. The time it takes to donate is very long and has room for improvement. Although a comparison was not recorded, we understand that many other website allow a speedy checkout and or donations. We can improve this process by adding features to make it simpler on the donator. Adding services such as PayPal or Google checkout would allow for a fast secure payment method.

Our Usability through Comparison Study helped benchmark wmugradio.org vs. RelaventRadio.com. The cognitive efficiency of both sites is similar; however, both sites have advantages and disadvantages. An improvement could be a combination of these systems. WMUG primary links only refresh the display frame in the webpage, while a serious flaw of Relevant Radio is that the entire page refreshes for most of the links causing the page and the links to “jump around” after a load. However, the drop down sub-links on Relevant Radio is much more intuitive, and the user does not have to look elsewhere for navigation. Both site’s have a problem with their navigation layouts however. Upon research, many features are located as sub-links, which are not displayed on either site until you access them through a primary link. Relevant Radio’s feature of highlighting the current page on the navigation bar is also beneficial because it keeps the user aware of what page they are on. This can be difficult sometimes, as link names are not always indicated on pages.

In improving the layout of WMUG, the simple design should be kept. Given the cognitive habits of people on web pages, people do not spend a large amount of time on each page, and as many come mainly for the listening and donating functions. These functions should take a more prominent place among the layout of WMUG’s website.
Conclusion

To best assist WMUG improve their website and the main functions it was created for, we will layout those practices which need to be reconsidered and provide suggestions to improve the functionality of the site. We believe addressing the issues of; site address, navigation consistency, media player requirements, and full utilization of space should be considered.

The site address wmugradio.org proved to be challenging for users to find and for them to remember. In our Learning curve analysis we did not provide users with the address; instead we tried to simulate how they would have to find the stations website by using search engines and guessing. The first and most common guesses were wmug.com. It took too long for users to find wmugradio.org. We believe considering changing the main address to wmug.com and keeping for the next few years wmugradio.org as a redirect link. This will help obtain new visitors and give the old listeners time to adjust to the new address.

We have found that the navigational links on the site are not consistent. The links on the top most navigation bar are appealing and work well. We believe consideration should take place as to which items should be there. Generally on websites these links do not change too often, and links such as troop concerned us. Perhaps a link Efforts could link to troops, etc having any information of events or ways WMUG is participating in efforts. Also the navigation should be kept consistent. The bottom navigation bar is a good idea, but was noticed to not be consistent with the links on the top.

The “Listen now” link is very appealing and works well; however there is still room for improvement. First placement of this link may not be in the best location. Perhaps having it at the top of the left column will be best. Another suggestion would be to leave it where it is and to add a listen now master link in the top navigation bar. This is where most subjects first looked for it. With regard to functionality of the online listening, integrating an embedded media player into the website would suit well. You Tube is a perfect example of a website that uses this sort of technology. This would provide for an easy accessible and hassle free listening experience that could be used by all levels of computer users. The second option is to provide the user with a link from the website that will instantly launch your computers default media player. For Windows users it is Windows Media Player and for Apple users it is Quick Time. This link will allow the user to access music with one click without installing any additional plug-ins or programs.

The last item we would like to point out is the poor utilization of screen space. There is not lot of information that needs to be displayed however this does not mean that we should have empty pages. Perhaps condensing pages so that there are fewer links and fuller pages will suit. Keeping text at consistent sizes and alignments will also help.
WMUG has a very appealing website and are off to a good start. We believe that by using the information obtained in our learning curve, GOMS and KLM, and Usability analysis WMUG can improve the overall appearance and functionality of their website. By paying attention to the users, what they are looking for, and how they find it; WMUG can become a leader in the internet radio industry.
Works Cited

