Examining the usability of an elementary school website

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Abstract: Throughout a school year, important information must be communicated between schools and families of elementary students. Despite communication via newsletters, emails, and flyers, some information is lost in the transition from the classroom to home. A school website allows parents to access important, current information about their child’s school. To be effective, it must be easy to navigate and use. The purpose of this usability study was to evaluate the content and organization of a school website to enable developers to improve its effectiveness for parents and families. The study was conducted with six parents. Data were collected using field notes and screencasting software to record the computer screen activity and participants’ verbal comments as they navigated the website while being audio recorded. Analysis included qualitative coding of field notes, screencasts and audio transcripts and descriptive statistical analysis of screencasting data. Five out of the six participants were able to complete all four tasks in the study. Feedback from participants indicated that they found the website organized and up to date, but lacking some features such as testing scores, pictures of students, and a grading portal to name a few.

Introduction

As children enter the school system, both parents and teachers create a support system in advancing that child’s educational interests. This relationship requires constant communication to ensure that academic, behavioral, or emotional issues are addressed and resolved. When teachers and parents are able to communicate effectively and maintain active roles in a child's life, the child is able to get the support they need and it can lead to higher grades while decreasing anxiety about school (Tan & Goldberg, 2009). Ultimately, constant and effective communication between the school and home is essential for the success of the student.

Historically, the most popular method of communication between home and school was paper-based communications (notes, newsletters, flyers, etc.). While an effort was made to get messages out in a timely manner, communication would break down when messages were not received. When a breakdown of communication happens, both
parents and teachers are missing out on important information that can affect a student’s life. One way to improve parent access to important school information is to create a school website. A school website serves as an information repository for stakeholders in the educational process (Hartshorne, Friedman, Algozzine, & Kaur, 2008). This digital form of communication ensures that parents have a central location for information, while also creating a direct connection between home and school.

To be effective as a communication tool, the website must be easy to navigate and find information. In order to improve one school website’s effectiveness and ease of use, a usability study was conducted. The purpose of this usability study was to evaluate the functionality and effectiveness of a public elementary school’s website designed to increase school and home communications for the parents of children enrolled at that K-5 elementary school on Oahu.

Background and Literature Review

Usability Studies

As Foley (2011) notes, usability refers to the functionality of a website for a broad group of people. A usability study is used to observe people as they try to use something with the intent of making it easier for them to use (Krug, 2010). If a website is not user friendly and easy to use, then it will not be utilized. The information gathered from a usability study can help improve areas of a website that are difficult for users to navigate, especially since ease of use and navigation are critical components in determining website usability (Pearson & Pearson 2008). A website’s goal is to give users access to information that they desire in the fastest way possible (Rosen & Purinton, 2004).

Before a usability study begins, problems are identified with the application based on usability guidelines or heuristics and past experiences with similar products (Crowther et al, 2004). Once a website is ready for a usability study, users test the issues of order, navigation, layout, instructional aids, pace and flow of the material, and aesthetic appeal. (Crowther et al, 2004). With the data recovered from each user, changes and fixes are made to the website and it can be further improved with additional testing.

Nielsen (2012) states that there are five quality components for usability: learnability, efficiency, memorability, errors, and satisfaction. This usability study focused on learnability (how easy it was for users to accomplish tasks), efficiency (how quickly they could perform tasks), and satisfaction (their overall opinion on design).

The objective of this usability study was to have participants find pertinent information about school life on the website. The study focused on four tasks: finding information and events on the school calendar, registering a student for kindergarten, joining the PTSA, and finding and downloading the school newsletter. Participants were then encouraged to explore the website and share their opinion on what types of features or information they would like to see or changes they would suggest.

Visual Design
A good rule of thumb when designing a website is to maximize the limited space available by putting important information in prominent areas (Jeong and Han, 2012). The purpose of the homepage is to add value to all of the resources provided by making them findable (Swanson & Green, 2011). Since the homepage is the first thing users see, it is a preview into a website and users often determine if they would like to explore the website further based on the feeling they get from the homepage (Liu et al, 2008). It is a fine line between aesthetics and functionality with a homepage. A distinctive website appeals to users and makes it more memorable (Rosen & Purinton 2004). The homepage should be used to highlight key pieces of information and unique features about the school. This can be helpful for current parents, future parents who are researching the school, and parents of children who are contemplating transferring schools.

In a study conducted by Casey & Poropat (2013), participants with low computer experience felt that poor aesthetics affected perceived ease of use of the website. Since parents of elementary school children have a wide range of technology experiences, the school website should be created with the average user in mind. Visual design elements do not only pertain to graphics on the screen, but also the arrangement of elements to appeal to the senses or emotions of the user. Aesthetics can bridge the gap between a product and user’s emotion’s or feelings (Glore & David, 2012). A study conducted by Fogg et al (2003), found that the visual design aspects of a website, specifically layout, typography, font size and color scheme have a significant impact on how people assess credibility. A site that is viewed as readable is also viewed as professional. For educational sites, where readability is concerned, black on white or a closely related combination of text should be used (Hall & Hanna, 2004).

**Design**

Instead of modifying the old website, a new school website was created with the intent of making it easier to access important information. In previous years, informal feedback from parents and staff suggested that information was difficult to find, the website was not updated frequently enough, and there were too many drop down menu choices. The new website streamlined information into a simpler menu bar, as seen in Figure 1, and served as a place for families to access important information at their leisure.

The school website was created using Wix, an online website creator. To expand on the options available for modification of the website, the school bought a paid account. All images were provided by Wix or from personal cameras.
Literature supported a simple and easy to use design. Since parents are generally very busy people, many of the key pieces of information from the school should be found on the homepage. Key information might include the school newsletter, registration information, upcoming events, and the morning announcements videos. This information was organized into different boxes, as seen in Figure 2, to make it easier to read and find as recommended by Swanson and Green, (2011). To make information easy to read, a light colored background was chosen with most text in black for optimal contrast.

Methodology

To examine the usability, parents were recruited and asked to go through a series of four scenarios. The participants started the usability study on the school’s homepage before they explored various parts of the website. A MacBook Pro laptop was used with QuickTime Pro utilized to record all computer monitor activity as well as audio comments that each participant made as they completed the usability tasks. Prior to beginning, each participant was asked if they knew how to use the laptop and if they had any questions on how to use it.
Participants
The target audience for the study was parents or future parents. Ideal participants were parents who had no experience with the new school website, as parents who had visited the site previously may already be familiar with the four tasks required.

Although ten participants were originally planned, the study was carried out with six participants. Research conducted by Nielsen (2012) found that the optimal participant size for a usability study was five to avoid additional costs with a bigger test. Six participants were recruited through personal phone calls or emails to friends and family. Upon receiving a call or email from a willing participant, a convenient date and time was set to conduct the study. Four participants completed the study at their homes, while one participant preferred to complete it at the mall and another at a public library. Each participant signed a consent form (Appendix A) that informed them that the study would not last more than thirty minutes and be of minimal to no impact to them personally.

Data Collection
The first part of the usability study focused on getting background information on each participant, as displayed in Table 1. The six participants had a variety of technological experiences and occupational backgrounds ranging from stay at home mom to a licensed practical nurse (LPN). Even though there was a wide gap in the technological experiences, it did not seem to affect their ability to navigate the website as five of the six participants were able to complete all the tasks of the study in under thirteen minutes.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Occupation</th>
<th>Number of hours in a week for internet activity</th>
<th>Activities on the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teacher</td>
<td>8 hours</td>
<td>Researching for classroom materials/lessons</td>
</tr>
<tr>
<td>2</td>
<td>Stay at home mom</td>
<td>2 hours</td>
<td>Email, looking up information for kids, finding recipes</td>
</tr>
<tr>
<td>3</td>
<td>Teacher</td>
<td>25-30 hours</td>
<td>Work related- looking up classroom materials/lessons, email, social media</td>
</tr>
<tr>
<td>4</td>
<td>Juvenile youth counselor</td>
<td>35 hours</td>
<td>Looking up apps for son, games/videos for son, social media</td>
</tr>
<tr>
<td>5</td>
<td>Stay at home mom</td>
<td>10 hours</td>
<td>Email, social media, sales, crafting websites</td>
</tr>
<tr>
<td>6</td>
<td>Licensed practical nurse</td>
<td>10 hours</td>
<td>Videos, email, looking up son’s grades/assignments</td>
</tr>
</tbody>
</table>

The four tasks for the usability study revolved around finding information on the calendar, kindergarten registration, parent teacher student association (PTSA), and
newsletter. These areas were chosen because they had been inquired about in the past by current and prospective parents of the school.

The website design was evaluated based on the success of each participant completing four tasks that they were given throughout the session. When a participant was unsuccessful in finding the necessary information, they were asked to verbally explain why they struggled to complete the task. Some form of the following questions were used to prompt responses: Where did you think the information would be and why? What images or textual information aided or hindered your ability to find the correct information? At the end of the study, participants were verbally asked questions to share their opinions on aesthetics and general suggestions to improve the website.

**Data Analysis**

Data collected from the usability study included field notes, screencast recordings of the computer screen, and audio transcripts of the participants. All qualitative data (field notes, recordings and transcripts) were compared, coded and categorized into themes. These themes showed connections and relationships between categories and highlighted similarities in the opinions of participants.

**Results**

Five of the six participants were able to successfully complete each of the four tasks asked of them during their study. Task completion times are noted in Table 2. Although five of the six participants were able to successfully find the school newsletter, three of them had difficulty understanding the instructions for how to download it. Even though the school newsletter was located prominently on the homepage, three out of the six participants had difficulty understanding the directions on how to download the newsletter. Four of the six thought the calendar was with the upcoming events located on the homepage, though they all eventually found it under the ‘about us’ tab in the menu. The school calendar was the only task located within the drop down menus.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Task 1 time: School Calendar</th>
<th>Task 2 time: Kindergarten Registration</th>
<th>Task 3 time: Join PTSA</th>
<th>Task 4 time: School Newsletter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 min 10 sec</td>
<td>52 sec</td>
<td>54 sec</td>
<td>1 min 23 sec</td>
</tr>
<tr>
<td>2</td>
<td>1 min 15 sec</td>
<td>39 sec</td>
<td>15 sec</td>
<td>39 sec</td>
</tr>
<tr>
<td>3</td>
<td>30 sec</td>
<td>34 sec</td>
<td>33 sec</td>
<td>25 sec</td>
</tr>
<tr>
<td>4</td>
<td>48 sec</td>
<td>22 sec</td>
<td>25 sec</td>
<td>40 sec</td>
</tr>
<tr>
<td>5</td>
<td>2 min 1 sec</td>
<td>59 sec</td>
<td>19 sec</td>
<td>1 min 21 sec</td>
</tr>
<tr>
<td>6</td>
<td>1 min 6 sec</td>
<td>48 sec</td>
<td>34 sec</td>
<td>2 min 10 sec*</td>
</tr>
<tr>
<td>Overall Average</td>
<td>1 min 18 sec</td>
<td>42 sec</td>
<td>30 sec</td>
<td>1 min 6 sec</td>
</tr>
</tbody>
</table>

Note: * Participant was unable to complete the task and gave up after 2 min 10 sec.
Two of the tasks- kindergarten registration and PTSA- were located in two places on the website, the homepage and in the menu bar at the top. All participants found the information on the homepage for kindergarten registration, but only two were able to find the PTSA button.

Users made several positive comments on the aesthetics of the website. Two users liked the size and prominence of the school name on the homepage as well as the inclusion of the school’s mural on the top of the page. Five of the six commented on the organized nature of the website and how easy it was to read the information. Two comments were about the colorful nature of the website and the inclusion of a picture of the school mascot on the homepage. All participants noted that the information seemed up to date.

There were several suggestions made by participants. At least two of the six felt that the website could benefit from more pictures of students or the school including student grades and testing scores for the school. Another feature that half of the participants sought was a list of current faculty, staff, and administration. There were two suggestions for features that improved convenience for parents: paying for lunch accounts online and creating an online school store to purchase school merchandise.

Discussion

A critical issue that needs to be resolved quickly is the instructions for downloading the school newsletter. Half of the participants misread the directions and one participant was unable to download the newsletter at all. If over half of the participants of this study had issues, it is definitely something that needs to be resolved quickly as real parents who visit the site might also experience the same issue and become frustrated.

Although two participants made comments to include more pictures of students on the school website, there are issues with clearance from the Department of Education for using pictures of student’s faces. All parents must sign an audio/visual release form at the beginning of the school year and there is a small percentage who decline to have their children publicized on the website for various reasons. There would need to be a list of students who could not be featured on the website and that would be an added responsibility of the website editor.

Two of the tasks- Kindergarten registration and joining the PTSA- had significantly shorter times of completion. This could be attributed to the fact that each task was located in two places on the website, one on the homepage and one within the menu bar. This could have further implications for future design in that important pieces of information might be easier to find if put in two places.

All suggestions made by participants fit into two categories: convenience and informational. The suggestion to include a feature to update lunch account balances and purchase school merchandise could help alleviate the need to come to the school to pay
lunch accounts or sending a check with a child to school. The option to add a lunch account or school merchandise area to the website using something like PayPal could be considered. The inclusion of a grade portal and reporting of testing scores would provide more information to parents that they seemed to want. Incorporating a grade portal could help both teacher and parent be on the same page as far as a student’s progress is concerned.

**Conclusion**

As society moves toward using more technology for communication, schools need to consider ways in which they keep in touch with parents. Through the use of a school website, parents were able to find important information about their child’s education. Although every effort was made to ensure that the website is easy to navigate and use, a usability study can pinpoint areas that need modification or fixing or important additions.

Through a usability study with parents as participants, features and informational improvements can be made. A critical improvement will be to change the directions for downloading the newsletter. An encouraging point of this usability study was that all participants had at least one positive thing to share about the website related to it’s organization, aesthetics and content.

Although the information gathered from this usability study will aid in improving the website, it is not without it’s limitations. All users of this study had not previously visited the website and that could have had an affect on what improvements they would like to see. Next steps could involve polling current parents for suggestions of features or information that they would like to see on the website.
References


Appendix A: Consent form

Agreement to Participate in
A Website Usability Study

Christine Kotomori

This usability study is being conducted as a component of a final project for a Master’s degree. The purpose of this usability study is to evaluate the functionality and effectiveness of an elementary school’s website designed to increase school and home communications for the parents of children enrolled at a K-5 elementary school on Oahu. You are being asked to participate, because you are a parent of a child at the elementary level.

Participation in the study will consist of being prompted to locate pertinent pieces of information on an elementary school’s website and sharing your thoughts and opinions aloud to ascertain your overall opinion as you navigate. The prompting questions will focus on pinpointing the areas where important school forms, news and contact information are located. Data from the interview will be summarized into broad categories. No personally identifying information will be included with the research results. The usability will last no longer than 30-45 minutes. Approximately 10 people will participate in the study. The study participants will be audio recorded for the purpose of transcription. The investigator believes there is little or no risk to participating in this research project.

Participating in this research may be of no direct benefit to you, although you may learn some interesting information about the school and be better able to locate relevant information from their website. It is believed, however, the results from this project will help the elementary school assess the necessary changes that need to be made to their website to improve the ease of use and functionality of this site.

Research data will be confidential to the extent allowed by law. Agencies with research oversight, such as the UH Committee on Human Studies, have the authority to review research data. All research records will be stored in a locked file in the primary investigator’s office for the duration of the research project. Audio recordings will be destroyed immediately following transcription. All other research records will be destroyed upon completion of the project.

Participation in this research project is completely voluntary. You are free to withdraw from participation at any time during the duration of the project with no penalty, or loss of benefit to which you would otherwise be entitled.

If you have any questions regarding this research project, please contact the researcher, Christine Kotomori.
If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies at (808) 956-5007.

**Participant:**
I have read and understand the above information, and agree to participate in this usability study.

__________________________
Name (printed)

__________________________  ______________
Signature                     Date

**Audio Recording:**
I understand that my verbal responses will be recorded as I participate in this usability study. These audio recordings will only be accessed by the researcher and will be destroyed following the transcription of the recording.

__________________________
Name (printed)

__________________________  ______________
Signature                     Date