Alabama in Motion: The Development of a Web-Based Program Management Application for Alabama Residents to Fight Against Obesity

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This paper introduces the problem faced by the Alabama Cooperative Extension Service (ACES) Office and their program entitled, "Alabama In Motion." The program encourages an active, healthy lifestyle for Alabama residents by providing a system which tracks the amount of exercise done and the amount of pounds lost. The program allows for individuals, teams or schools to register. There were many problems encountered by the ACES office due to having a manual paper-based system. These problems were eliminated with the construction of the database-driven, online program management tool.

Introduction

The prevalence of diabetes, asthma, and obesity are high in Alabama. This leads to premature death, illness, and lost workdays and productivity. The United States showed a steady increase of obesity from 12.0% in 1991 to 17.9% in 1998. This steady increase was observed in all states; in both sexes; across age groups, races, and educational levels; and occurred regardless of smoking status (Mokdad, Serdula, Dietz, Bowman, Marks and Koplan, 1999). As for Alabama adults, 63 percent are overweight or obese and 60 percent do not meet recommended guidelines for physical activity. In addition, between 14 and 35 percent of the children in Alabama are overweight. In addition to being unhealthy, being obese is also expensive. In the United States, the total cost attributable to obesity amounted to $99.2 billion dollars in 1995. Approximately $51.64 billion of those dollars were direct medical costs (Wolf and Colditz, 1998). Alabama's share of this cost came out to around $1.32 billion. As for diabetes, Alabama leads the is amongst the leaders in the nation in the incidence of diabetes cases per year (Backalar, 2009).

The 2005 Dietary Guidelines and the newly revised food guide pyramid, MyPyramid, advise at least 60 minutes of physical activity for youth and at least 30 minutes for adults most days of the week. To achieve these goals, members of the Alabama Cooperative Extension Office (ACES) created Alabama in Motion. Alabama in Motion serves as an easy and fun way to burn fat, lose weight, ward off heart disease and diabetes, strengthen bones and muscles, reduce

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the risk of certain cancers, lower blood pressure, boost one's mood, and add years to life. The program allows users to document their personal information, record their exercise routines online, and track their progress. In addition to single users, the Alabama in Motion program also accommodates teams and schools to use the system as well.

Problems and Obstacles

After this program was implemented, ACES faced three major problems. First, participants in the program had to fax in results using a standard form. This would make the program inaccessible for participants without access to a fax machine. Second, for those with access to a fax machine, it was a hassle for the ACES staff to record these results in a standard excel spreadsheet. Last, it was important for the ACES staff and the participants to share information about the results that were recorded. When participants wanted to get an update on the number of miles walked or the number of pounds lost, they would have to call or email the ACES staff. This limited the availability of information to the office hours of the employees in charge of the program. For the ACES staff, phone calls and emails from participants checking on their stats constantly interrupted their daily routines.

Goals and Objectives

The solution derived for the above mentioned problems was to create a database to house this information and connect it to a web-based interface. The main goals were threefold. First, the program participants needed a web-based form that would replace the paper form that they formally faxed to the ACES office. This eliminated the need to print out a paper form. It also took away the guesswork of understanding the handwriting of others. For the environmentally conscious, the solution also saved on the use of paper. Second, results from this form would need to be recorded in a database. This, combined with a web-based interface, would give ACES staff members access to the information without having to physically record in from forms that were faxed into the office. Another benefit of the database is for report gathering. Data stored in a database can easily be retrieved as new questions emerge about the performance of the program. Last, an interface would be created in which program participants could track all of their progress online.

Application Features

The tool was completed and allowed access to guests, registered members, and program administrators. Guests of the site had access to the following pages: Home, About Us, How it Works, Forms, Registration, Program Materials, Success Stories, FAQ's, and Contact Us. In the site's homepage, guests have access to all of the other guest pages mentioned above. There is a section for users who have previously registered to log in as well as a link to register for the program. In the center of the page is a list of facts, which encourage the benefits of joining the program. In the "About Us" page, site guests get the opportunity to learn about the program's Mission Statement and Vision. They also gain access to see the program staff and to learn about their expertise for their respective positions in the program. The page entitled "How it Works" is a page containing the three ways guests can register for the site – as an individual, a group, or a school. Also contained on the page is a synopsis of the process of each registration type. In the

"Forms" page, a listing of paper forms is available for the use of program participants as well as guests interested in participating. Some of the forms listed at the site's conception are a Mileage Log form, a Registration form, and a Wrap-Up form. The staff of the Alabama in Motion program decided that there may be a time that a program participant may not have Internet access and that it was germane that a method exists for them to be able to participate nonetheless.

Prospective participants must register using the "User Registration" page. This page takes the following information: Name, address, county, date-of-birth, ethnicity, gender, email address, username and password (ethnicity, county, gender and date-of-birth are used for reporting purpose only). Information collected from the page creates an account for individual members. Only individual members are allowed to create team and school accounts. Options to create the team and school accounts are listed on the individual homepage (Figure 2). "Program Materials" provide guests and participants access to the use of tools required to participate in the program. An example is the mileage conversion chart. This chart converts a variety of different activities into miles walked based on the number of calories burned. To show prospective participants how well the program has worked, the "Success Stories" page was created. This page displays different teams and individuals that the program has proven to help.

For those participants or guests that are new to the site, the "Frequently Asked Questions" or FAQ page was listed. Here, questions asked most frequently to the program staff are displayed to provide added information to guests and program participants. For those whose questions are not answered in the "Frequently Asked Questions" page, the "Contact Us" page exists. This page gives the names, titles, and contact information for all the Regional Extension Agents throughout the state.

Once logged in, the participant is given a menu of options along with a listing of results. This page is entitled the "Individual Homepage" (figure 2). The menu consists of a link to the "My Teams" page, which gives the participant access to all functions related to team participation like creating a team or adding a member to a specific team. After the "My Teams" section is the "My School Teams" section that gives access to adding, modifying and deleting information concerning teams started at schools in the state. Under the Menu rests the "Individual Results" section of the page. This page provides a snapshot of the number of pounds lost and the number of miles exercised for each individual week. It also shows the total for the duration of the program (16 weeks) and any activity done after the program finished. After the "Individual Results" section are the final two areas on the page.
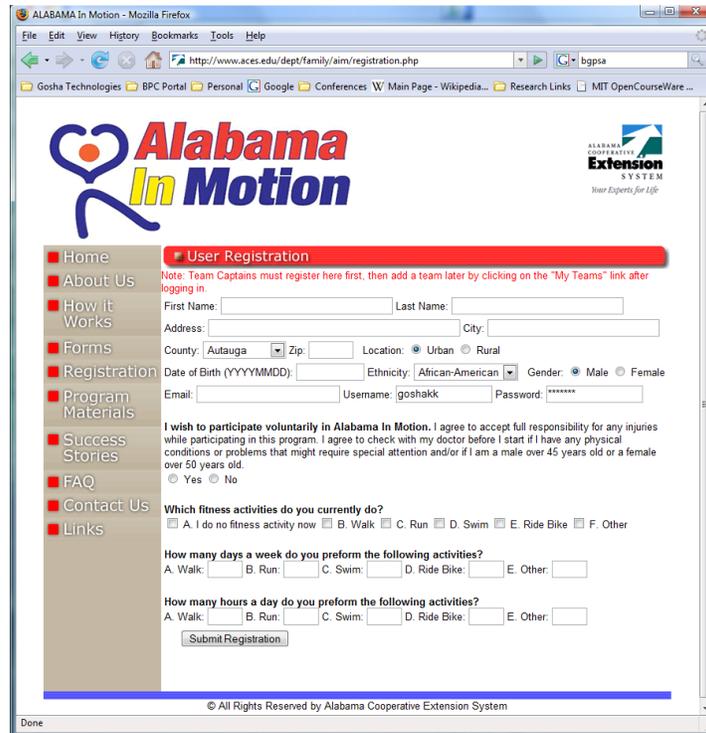
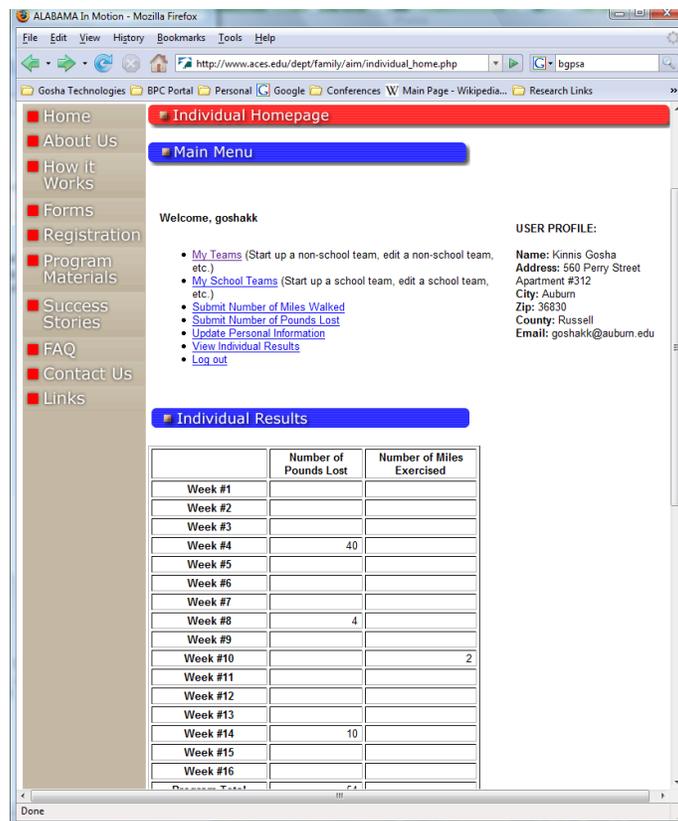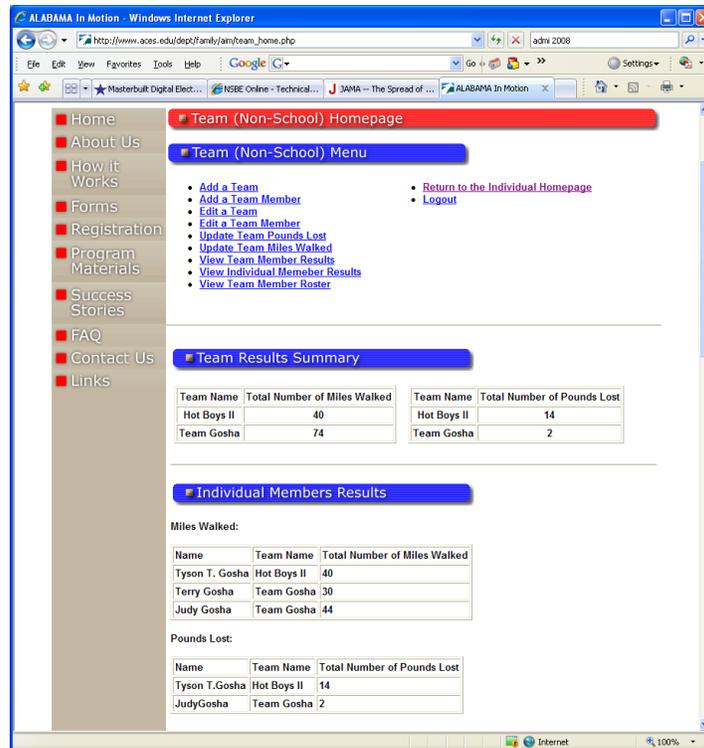Figure 1 – Alabama in Motion Registration Page

Figure 2 – Individual Homepage

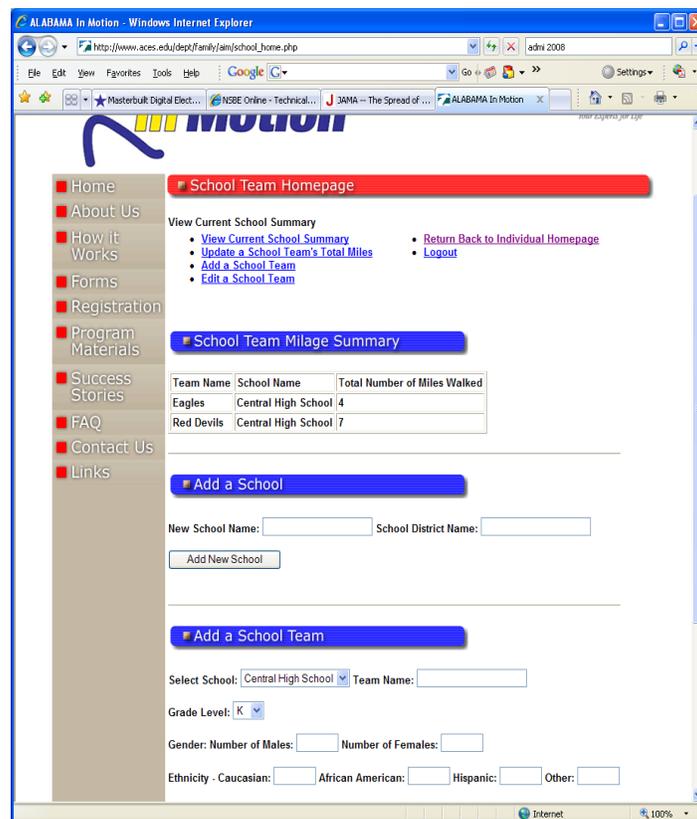Figure 3- Team (Non-School) Homepage

Figure 4 – School Team Homepage

The first section is a "Submit Results" section in which participants report how many miles walked or how many pounds lost for a given week. The second section, the "Edit Personal Information" section, is where participants can change and update their personal info such as names, addresses, and email addresses.

For those participants that wish to start a team, the "Team (Non-School) Homepage" (figure 3) is accessible from the "Individual Homepage." Once the "My Teams" link is selected from "Individual Homepage" the "Team (Non-School) Homepage" gives several options to participants. By choice of the Alabama in Motion staff, only team captains were to be given access to a team's account information. If a participant starts a team, he or she is considered to be the team's captain from that point. The first option a participant has on this page is to add a team. This section allows a captain to insert a team name and a team source. The choices for a team source include a 4-H chapter, church, family, worksite or other. Once a team is added, it is instantly displayed in the team results summary listed near the top of the page.

This summary includes the total number of miles walked and the total number of pounds lost by each team. After a team has been entered, a captain has the ability to add a member to a team. Because of the program's staff need for demographic information, it was required for captains to not only enter the member's name but their gender, ethnicity, and date of birth as well. As team members are added, captains have the option to upload miles walked and pounds lost for each of these members in the "Update Team Pounds Lost" and the "Update Team Miles Walked" sections. As results are entered for each team member, a table is simultaneously updated on the page with the miles walked and pounds lost totals for each team member. Members also have the option to view rosters for each team that participant is a captain for, edit a team's name, or edit a team member's information.

Participants can also start and manage teams listed under individual schools in the "School Team Homepage" (figure 4). Here, participants must first add a school by entering the school's name and school district. Once a school is entered, the captain can enter teams for the schools one-by-one. The grade level of the team, team name, and the name of the school for which the team belongs are asked. Also asked is the number of males and females and the number of students in each ethnic group. Only after a team has been added, captains may then update the number of miles a particular team has walked. Captains just enter the name of the team, the number of miles and the week they were walked. As in the last two homepages, the totals are updated in a table shown on that page with all of the miles from each school. Every page listed after a user logs in has a link that enables them to log out.

Software and Design

For the database, MySQL was chosen to house all of the data. The database consisted of 15 tables. They consisted of:
- Counties (All counties in the state of AL)
- Documents (Links to documents uploaded by the ACES staff)
- FAQ (Frequently Asked Questions posted by the ACES staff)
- Grade Levels (A listing of grades from K-12)
- Individual Data (Personal and demographic information from individual participants)
- Links (Useful websites posted by ACES staff)
- Miles (Tracks the miles walked by individual participants)
- Pounds (Tracks the pounds lost by individual participants)

- o Race (A listing of various ethnicities for demographics)
- o Schools (A listing of registered schools)
- o School Miles (A record of miles walked by a particular school)
- o School Teams (A listing of all school teams)
- o Teams (A listing of all non-school teams)
- o Team Members (A listing of names and demographic info for individual team members)
- o Weeks (A listing of all available weeks in the system)

There were three technologies used in the construction of this online tool. For the online interfaces, HyperText Markup Language (or HTML) was used to design the pages. The choice for the database was narrowed down to MySQL. MySQL is the world's most popular open-sourced database server. In addition to being free, it is also very powerful. To access the data stored in the database, a server-side scripting language called PHP was used. PHP is a very popular scripting language used to create dynamic websites and is famous for its flexible, cross platform technology that provides amazing powerful features. The software used to manage all of the code was Macromedia's Dreamweaver 8. Dreamweaver 8 is one of the best WYSIWYG ("What you see is what you get") Web Design and Development tools available today (Dykes, 2006).

<div align="center">Conclusion</div>

It can be inferred that the implementation of a web-interfaced database system for the organization and consolidation of information for the Alabama In Motion campaign is highly advantageous. The three areas in which the new system improved upon the former system of information collection and dissemination are: increased accessibility, more efficiency in task flow, and better information analysis.

Although, the pen and paper are commonly available tools, fax-machines are not as prevalent. By providing a web-based, and subsequently paperless system, users that might not have immediate access to a fax machine, yet have access to a personal computer, will have greater accessibility to transmitting their information to the system. Greater accessibility is also afforded in that participants do not have to call during office hours, but have the ability to get updates on their progress almost instantaneously at a time most convenient for them. By eliminating the need for participants to contact ACES staff directly to get updates on progress, the employees were more productive and were afforded the ability to have more focused concentration while attending to the affairs of the office without continual interruption.

Also by standardizing the method of input to dropdown menus and textboxes, the possible error that occurred while transmitting information to an excel spreadsheet is non-existent. Instead of the ACES staff being uncertain about their accuracy in deciphering the participant's handwriting, the burden of doubt is hypothetically lifted from the shoulders of the staff members. However, more responsibility is given to the participant to review their input and make sure it is accurate. Due to the effective interface of the web-based system, the parsing of information pertinent to the progress of participants is considerably easier than the excel spreadsheet.

More and more people are switching to the use of the mobile web. To accommodate these users, a mobile user interface, using WML, will be added so that users can update miles walked as soon as they finish walking them (while it is fresh on their minds). A voice user interface will

also be designed using VXML to allow users without the mobile web on the cellular phone to be able to update their mileage from anywhere.

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