Using Consumer Input to Guide the Development of a Nutrition and Health Website

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Abstract

Consumers want timely, research-based information available online. The project objective was to develop a user-friendly nutrition and health website for Colorado Extension consumers. An electronic survey (n=381) was administered to current and potential Extension consumers to understand their: use of the Web and electronic devices; topics of interest; and preferred mode of information delivery. Results, in conjunction with best practices for website usability and health literacy, were used to develop the Live Eat Play Colorado website. Audience-centered websites with content packaged in small doses and delivered via multiple modalities may enhance reach and use of university and Extension resources.

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Introduction

For over 100 years, Extension has been a trusted source for objective, research-based information. This information has historically been available to the public in the form of printed fact sheets and, more recently, for electronic view through Extension websites. While fact sheets provide reliable, scientific content and often receive a high number of Web-based page views, electronic versions of fact sheets were developed for desktop computers, thus the format is not conducive to other electronic formats such as smart phones and tablets. As such, fact sheets alone may not be meeting the needs of today's Extension consumer.

In Colorado, nutrition and health fact sheets make up over one-third of all fact sheet pageviews on the Extension website, totaling 2.75 million in 2013 (unpublished Google Analytics data), demonstrating the public's desire for credible, Web-based nutrition and health information. According to the 85% of individuals in the U.S. who use the Internet, medical professionals are no longer the preferred first line of inquiry for health information (Hesse, Nelson, & Kreps, 2005; Fox & Duggan, 2013). In fact, 72% of Internet users say they have looked online for health information within the past year, and from 2002-2006 searches for "diet, nutrition, vitamins or nutritional supplements" were the third most commonly searched health topics (Fox & Duggan, 2013; Fox, 2005).

The number of individuals seeking health information online shows no signs of decreasing (Whitten,

Buis, Love & Mackert, 2008). The majority of smartphone owners have used their phone to look up health information, and new types of technology such as smartphones and tablets enable Internet access for audiences such as Hispanics and African Americans, for whom it might otherwise be limited (Fox & Duggan, 2013). Moreover, 56% of American adults own a smartphone, and the majority of these are young cell phone users (Fox, 2011). Therefore, it is important for Extension professionals to understand what devices their target audiences are using to search for and view information.

When developing Web-based materials, educators should also consider how consumers receive and process health information, including generational differences. Only one out of 10 adults are considered health literate, defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions and prevent disease (Kindig, Panzer, & Nielsen-Bohlman, 2004). Additionally, generational differences in the way one searches, receives, and processes information exist among users, and the communication strategies used to disseminate health information need to account for these differences (Bennett, Maton & Kervin, 2008). An older generation tends to find the physical ramifications (e.g., shortness of breath) of a particular health message to be influential, while a younger generation finds the social ramifications (e.g., body image) persuasive (Keller & Lehmann, 2008).

Extension information should be packaged in a consumer-friendly format that can be accessed on both desktop and mobile devices. Additionally, in the development and communication of this content, health literacy and generational differences must be taken into consideration. Input from the target audience is needed to determine how to best tailor materials and modes of communication for future Extension materials.

Purpose and Objectives

The overall aim of the project reported here was to develop a user-friendly nutrition and health website for diverse consumers of Colorado State University Extension. The project objectives were to:

1. Understand consumers' use of the Web and electronic devices, their perception of credible health information and topics of interest and their preferred electronic format of information delivery.

2. Use consumer input and best practices for website usability to build the Live Eat Play Colorado website.

Methods

To meet the project objectives, a needs assessment was conducted with potential Extension consumers, the results of which informed website development, including concept mapping and content development.

Needs Assessment

A 24-question survey was developed and tested for face and content validity with experts in nutrition, public health, exercise science, and communications. Pretesting and cognitive interviews were

conducted (n=8) with individuals from each demographic subcategory (4 age groups, 2 genders). After minor edits, a SurveyMonkey® link was disseminated to a convenience sample of adults via email. A snowball recruitment approach was used. Descriptive statistics were analyzed using IBM SPSS 21.0 (Chicago, IL). The project was deemed Exempt from Colorado State University's Institutional Review Board.

Website Development

Concept Mapping

The goal of the Live Eat Play Colorado website was to help Coloradans live healthier lifestyles by providing information and tips on work-life balance and goal setting in the **Live** section; healthy eating at every stage of life, disease management, recipes, and current hot topics related to food in the **Eat** section; and a variety of ideas for physical activities that can provide lifelong enjoyment and fitness benefits in the **Play** section. Site maps were developed for each of the three sections to facilitate content development and management, and to create the framework for content placement on the website (U.S. Department of Health and Human Services, 2015).

Content Development

A team of faculty, staff, and students contributed to drafting Live Eat Play Colorado website content:

1. Using consumer needs assessment results;

2. Addressing Extension educators' needs;

3. Translating national guidelines (e.g., 2010 Dietary Guidelines for Americans and Healthy People 2020);

4. Repackaging existing Extension materials (e.g., fact sheets and curricula);

5. Developing new materials on timely topics; and

6. Applying best practices for health communications and website usability (National Institutes of Health, 2014; U.S. Department of Health and Human Services, 2015).

Key usability strategies included: development of actionable and interactive content; clear and organized display of content; and constant evaluation and revision of content. Constructs of Social Cognitive Theory (self-efficacy, behavioral capability, reinforcement, and expectations) were incorporated into materials, as appropriate (McAlister, Perry, & Parcel, 2008). A protocol was drafted, and a multi-pass review system was used by campus-based content experts in reviewing and evaluating website content for information accuracy, health literacy, aesthetics, and search engine optimization. (Moore, Shackelton, & Bellows, 2015; National Institute of Health, 2014; Niebaum, Cunningham-Sabo, Bellows, 2015; U.S. Department of Health and Human Services, 2015). Imagery, with captions, was added as a final step in the development of content (Clyatt, Shackelton, & Bellows,

In Press).

Results

Needs Assessment

Respondents (n=381) were mostly women (80.2%) and white/non-Hispanic (93.9%). Age, education, and income levels are described below (Table 1).

Table 1.

Age, Education, and Income Levels

of Survey Respondents (n=381)

Age (n=381)	
18-29	22%
30-49	31%
50-64	37%
65+	10%
Education (n=380)	
Less than college degree	27%
College degree	34%
Greater than college degree	38%
Income (n=376)	
$50,000 or less	32%
$50,001 - $99,999	35%
$100,000 or greater	23%
Prefer not to answer	10%

Responses from select questions, by age group, are displayed below.

1. **When going to a website for health/nutrition information, how important are the following factors to you? (Very Important or Important)**

   Across all age groups: Credibility of the source (97%); Ease of understanding information (96%), Ease of finding information/Navigation (96%); Depth of information (93%)

   Unique to 50+: Printer friendly handouts/recipes (PDFs) (80%) compared to 49% for 18-29 year olds.

2. **When looking for information on health and nutrition, how important are the following sources to you? (Very Important and Important)**

   Across all age groups: Doctor's visit (77%), Internet (69%), Dietitian/Nutritionist (63%); Books (59%) Advice from family/friends (48%)

   Unique to 18-29 year olds: Internet (71%) was the same as Doctor's visit (70%).

3. **When looking specifically at health/nutrition information online, how likely are you to do the following? (Very or Somewhat Likely)**

   Across all age groups: Read an article (97%); Read a handout (88%); Read the Ask an Expert section (78%);

   Unique to 18-29 year olds: Read a blog (83%) compared to 33% for 50+;

   Unique to 50+: Watch a slideshow (68%) compared to 48% for 18-29 year olds.

4. **How often do you visit the following online sources for information related to health/nutrition? (Never or Not Familiar)**

   Across all age groups: Pharmaceutical (44%), Extension (40%); News Media (25%), Gov't Agencies (24%); Health Department (25%); University sites (22%), WebMD (12%)

Table 2 illustrates the nutrition and health topics of interest by age group. Five key topics were ranked high for all age groups - recipes or cooking; a specific disease or condition; exercise or fitness; specific foods and nutrients; and healthy cooking. Each age group had an additional, and different, high ranking topic area.

Table 2.

Responses, by Age Group, to the Question "When searching for health/nutrition information, how likely are you to search for the following topics? (Very Likely or Somewhat Likely)"(n=381)

18-29		30-49	
Recipes or cooking	93%	Recipes or cooking	91%
A specific disease or condition	92%	A specific disease or condition	88%
Exercise or fitness	91%	Specific foods and nutrients	87%
Specific foods and nutrients	88%	Exercise or fitness	86%
Healthy cooking	85%	Healthy cooking	80%
Healthy eating on a budget	**73%**	**Healthy eating plans**	**75%**
50-64		**65+**	
Recipes or cooking	96%	A specific disease or condition	92%

A specific disease or condition	92%	Recipes or cooking	86%
Specific foods and nutrients	88%	Specific foods and nutrients	78%
Exercise or fitness	80%	Exercise or fitness	73%
Healthy cooking	80%	**Basic health care news**	**70%**
Weight management	**73%**	Healthy cooking	68%
Note: Gray shaded boxes highlight the one different topic of interest in each age group.			

Website Development

Concept Mapping

The website's three main content sections (Live, Eat, and Play) were divided into subsections to provide easier access to over 250 content pages (with PDF handouts) and 14 cooking videos. The site's 13 subsections include:

- Live - Plan Ahead, Be Productive, Rejuvenate, and My Live Eat Play;

- Eat - Nutrition 101, Eating Well at Every Stage, Building a Healthy Diet, Tools for Disease Management, Recipes, and The Healthy Kitchen;

- Play - Physical Activity 101, Being Active at Any Age, PLAY All Year Long.

Additionally, cork bulletin board-like boxes were positioned on each landing page to enable the featuring of timely and relevant resources. Many of these highlight and link to nutrition and health fact sheets on the CSU Extension website, allowing the user access to more in-depth information. Figure 1 displays the homepage of the Live Eat Play website.

Figure 1.

Screenshot of the Live Eat Play Colorado Homepage (www.liveeatplay.colostate.edu)

Content Development

Target audience input informed the design and content development of the Live Eat Play Colorado Website. Results from the needs assessment were summarized, and the research team devised a plan based on expertise, best practices, and organizational resources. Table 3 describes the application of needs assessment results to the website design. Table 4 illustrates how research-based best practices for writing for and designing websites were applied in the development of the content (National Institute of Health, 2014; Niebaum, Cunningham-Sabo, Bellows, 2015; U.S. Department of Health and Human Services, 2015).

Table 3.

Incorporating Needs Assessment Results into the Design of the Live Eat Play
Colorado Website

Result	Addressed
Credibility, ease of understanding info, and ease of finding info are important when going to websites for health info	University provides researched based, credible information
	University logo and branding visible on each page
	Content organized in sections and subsections- e.g. Eat > Nutrition 101 > Nutrients A-Z > Calcium
	Content was written at an appropriate reading level

	and info is presented in a clear and organized format
Doctor's visits, internet, and dietitians are important when looking for health info	Website provides reliable, credible information on Internet.
	Content information written by experts (e.g. nutrition information by dietitians or dietetic students; physical activity and health information written by exercise science, health promotion, or public health professionals or students)
Likely to read an article, a handout, or Ask the Expert section when looking specifically at health info online	Content mostly in form of articles and handouts (web-version or PDF)
Topics of interest	Included sections with content on recipes and cooking, specific disease or conditions, specific foods and nutrients, exercise or fitness, and healthy cooking- e.g. handouts on heart disease, avocados, calcium, physical activity recommendations.

Table 4.

Application of Strategies for Writing and Designing Easy to Use Health Web Sites to the Live Eat Play Colorado Website (U.S. Department of Health and Human Services, 2015)

Key Strategy	Approach Taken
Learn about your users and their goals	Disseminated surveys
	Engaged target user in development of materials (e.g. college section written by college students, etc.)
Write actionable content	Placed most important information first within handouts
	Wrote in plain language with a positive tone with appropriate reading level
	Provided action steps and directions
	Described health behavior
	Reviewed content by multiple reviewers for accuracy
Display content clearly on the page	Used meaningful titles and headings
	Wrote content in small chunks with use of bullets
	Used appropriate colors, images, font style and size

	Used white space appropriately
Organize content and simplify navigation	Organized content into sections and sub-sections
	Grouped handouts within sub-sections
	Used linear information paths
	Provided easy access to home and main sections via menu tabs
	Included search option
Engage users with interactive content	Included social media links
	Provided printer friendly PDF versions of handouts
	Incorporated YouTube videos
	Asked questions in text to encourage user to search for answer
Evaluate and revise your site	Google Analytics and Search Engine Results Pages
	Constant target audience input (e.g. pretesting materials, usability testing).

Conclusions

Consumers want timely, unbiased, and research-based information online. While fact sheets provide an abundance of information, using a web-based platform for dissemination of materials with less information, lower reading level, and audience-focused topics via various modes of delivery may enhance reach and use of university and Extension resources. Extension and universities have an opportunity to repackage information into credible, consumer- and Web-friendly formats, thus engaging new and younger audiences for Extension. Emphasizing the university namesake may also help to introduce and engage younger and new audiences to Extension. In this needs assessment, 40% of respondents never used or were not familiar with Extension versus only 22% for university sites.

Target audience input is a critical component in the development of any program, including websites. Engaging the target audience with material development and program delivery considerations ensures the resulting program or website will be received and subsequently used (Francis, Martin, & Taylor, 2011). Combining the consumers' wants and needs with website usability best practices provided a strong framework for the design of the Live Eat Play Colorado website. Attention to details such as font (size and style); the balance and interplay of text and imagery; and careful development of concept maps that minimize 'clicks' are attributes that will lead to successful user experiences (Stevens et al., 2008). Further, consumers prefer websites that have a professional appearance (Schneider, van Osch, & de Vries, 2012). Brouwer et al. (2010) found that more than half of website visitors left a health-oriented website within the first 30 seconds, thus the graphical appeal of a website is critical to engage consumers' attention and prevent early disengagement (Schneider, van

Osch, & de Vries, 2012). Graphic design and imagery were a key consideration in the development of Live Eat Play Colorado.

Understanding how consumers are using the Live Eat Play Colorado website is a next step. A usability study will be conducted to better understand the consumers' experience with the site and identify any necessary modifications that need to be made. Further, data from Google Analytics will allow for identification of website users, what content is being viewed and when, and if social media platforms are helping create greater engagement with the website.

Implications for Extension

Extension has traditionally created materials that are designed for general audiences and converted text-dense materials originally designed for print to an online format, limiting the reach in which information can be consumed into today's electronic world. In a recent survey of nutrition and health Extension specialists, findings indicated that there was strong interest for technology-based educational materials such as s one-stop website that is user friendly and timely (Peña-Purcell et al., 2012). Developing materials specific for electronic use will allow Extension educators to tailor information for multiple audiences and expand the repertoire of delivery modalities—videos, blogs, infographics, social media—and platforms—computer, tablet, and smartphone. Web-based resources can be developed quickly for time-sensitive topics, in multiple modalities, and with greater sensitivity to specific target audience's needs and interests, thus allowing for better reach and increased impact. As Case, Cluskey, & Hino (2011) point out, websites allow for compelling tools to attract potential users, and timely resources, incentives, and interactive components will keep consumers coming back to the website.

In addition to content interests, Extension educators should consider the target audience's preferred mode of information delivery as an initial step in the development of purposeful messages and materials. Blogs may be an ideal communication channel on topics of interest for younger consumers but not middle-aged adults, as illustrated by our needs assessment findings that 83% of 18-29 year olds were likely to read a blog compared to only 33% of those over the age of 50. Web-based delivery allows educators to package similar information in various formats and tailor it for multiple audiences. For example, information for eating healthfully for one or two is of great interest to young consumers as well as older adults. The strategies and tips are the same for both audiences, but the context, tone, and delivery mode differ by audience. Websites allow for educators to easily disseminate tailored information.

Further, websites could be a portal for more frequent connections with the consumer and/or more in-depth learning experiences (Case, Cluskey, & Hino, 2011). Information presented on Live Eat Play Colorado is presented in Web-friendly (html) format as well as printable handouts (PDF). The intent is that Extension educators can use handouts in classes that would direct consumers to the website if they sought additional information. The dual purposed handouts would allow for continued learning outside of the classroom and serve as a resource over time.

Past Extension communication strategies appear to have focused on general audiences. By being purposeful with communication strategies and matching the content, the audience, and the mode of delivery, the likelihood of reaching the target audience will be greatly enhanced. An additional

application to Web-based materials is Search Engine Optimization techniques, which have the potential to increase the visibility of Extension materials through enhanced placement on search engine results pages (Moore, Shackelton, & Bellows, In press). Consumers are now inundated with information through multiple platforms, making it even more important to carefully craft messages and materials that engage them and meet their needs and lifestyles.

Acknowledgements

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