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Keywords
social marketing theory, limited resource audience, online education

Disciplines
Digital Communications and Networking | Family, Life Course, and Society | Food Science | Human and Clinical Nutrition

Comments
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Abstract: Spend Smart Eat Smart (SSES), a unique website combining nutrition and food buying education for limited resource audiences (LRAs), was revised using social marketing theory to make it more appealing and relevant to LRAs (25-40 years). Focus groups and surveys identified the needs and preferences of LRAs. Needs were cooking, basic health, and budget-friendly nutrition ideas. Preferences were limited text, more videos, graphics, and color. Usability testing of the revised site indicated users perceived the information valuable and the design appealing. By incorporating the needs and preferences of LRAs, SSES is now perceived as appealing as well as relevant.

Introduction

The number of families struggling to put food on the table is at a record high. Currently, there are approximately 17 million (14.6%) U.S. households classified as food insecure (defined as "inadequate or unsure access to enough food for active healthy living") (Andrews & Nord, 2009, pg. 34). Extension provides nutrition education for limited resource audiences (LRAs) through the Expanded Food and Nutrition Education Program (EFNEP) and Supplemental Nutrition Assistance Program (SNAP-Ed; formerly known as Food Stamp Nutrition Education). Various educational approaches (in-person education, online and distance education) have been evaluated and shown to result in positive behavior change. A commonly

used Extension education delivery method is paraprofessional-led group and individual nutrition education sessions. Both group and individual education result in increased servings of grains, vegetables, dairy, and meat/meat alternatives (Luccia, Kunkel, & Cason, 2003). Similarly, a blended method of distance education (online/mail) for LRAs was effective in increasing positive changes in dietary intakes and self-efficacy (Campbell, Koszewski, Behrends, King, & Stanek-Krogstrand, 2009).

Limited time availability of clientele and Extension personnel cuts have increased the need for more effective indirect nutrition education delivery methods. In response, ISU-Extension and Outreach launched the nutrition education website, Spend Smart, Eat Smart (SSES) <http://www.extension.iastate.edu/foodsavings/> intended for LRAs. Originally, most of the online information was in a format similar to that of traditional print educational handouts. Response to SSES was positive; however, usage data (survey completed by 219 out of 670 users [33% response rate]) indicated the target audience (LRA, ages 18-40 years) was not using the site to the extent desired. Based on these results it was determined changes to SSES were necessary to better attract LRAs ages 18-40 years.

The SSES revision process was based on the framework of Social Marketing Theory (SMT). SMT is an important part of program design because it includes the target audience and gives program developers an opportunity to identify the communication, environmental, and personal factors that can influence the success of the program to produce measurable behavior change (Storey, Saffitz, & RimÃ³n, 2008; Snow & Benedict, 2003; Francis & Taylor, 2009). SMT is a cyclical process comprised of six steps: 1) planning and strategy, 2) selecting channels and materials, 3) developing materials and pretesting, 4) implementation, 5) assessing effectiveness, and 6) using feedback to revise the program (Lefebvre & Rochlin, 1997). Each SMT step is essential in producing a client-centered curriculum that promotes measurable outcomes.

The goal was to revise SSES using SMT principles to make it more appealing and relevant to LRAs ages 18-40 years. The data presented here address SMT Steps 1-3 (Table 1). The objectives were to:

1. Identify the nutrition needs and preferences of LRAs ages 18-40 years;

2. Identify motivators and barriers to online nutrition education; and

3. Assess the receptiveness of the target audience to the revisions.

The study protocol was approved by the Iowa State University Institutional Review Board for human subjects. The project was funded through an Iowa State University College of Human Sciences Helen Lebaron Hilton grant and Excellence in Extension Grant.

Table 1.
Social Marketing Theory Steps

Social Marketing Theory Step	**Tasks Performed**
1. Planning and strategy	• Conducted needs and preference assessment (focus groups and online surveys)

2. Selecting channels and materials	• Reviewed SSES website
3. Developing materials and pretesting	• Revised SSES based on needs and preference assessment • Developed two online lessons (unit cost and label reading) • Created knowledge quizzes and polling systems to assess impact of SSES • Conducted usability test

Methodology

Step 1: Needs and Preference Assessment

A needs and preference assessment was conducted for both the target audience (LRA ages 18-40) and health care professionals serving LRAs. Two focus groups were conducted in a rural (n=1) and an urban (n=1) area of Iowa. Focus group sessions included the completion of a short survey addressing Internet/computer use, general demographics, and program marketing strategies. Group discussions (60 to 90 minutes in length) looked at barriers and motivators to adopting health-promoting nutrition changes, program style preferences, and topic suggestions. Participants were recruited via flyers and emails through local ISU Extension offices and received a gift card for their assistance. Additionally, health care professionals completed an online needs assessment survey. Various Iowa-based health care professionals were asked to complete an online survey via nutrition list-serves. Health care professions were given an option to enter a raffle to receive a gift card for their assistance.

Focus group discussions were transcribed by an independent party and were analyzed for themes. The online surveys were analyzed using descriptive statistics.

Steps 2 and 3: Selecting, Developing and Pretesting Materials

Using needs assessment data as a guide, an interdisciplinary team comprised of nutritionists, Web and graphic designers, and information technology experts began the extensive revision process. Nutritionists critically reviewed the website content for need and relevance for the target audience. The selected information underwent further modification to ensure it was presented in a format identified as appealing for the target audience. Additionally, the team reviewed four nutrition websites, both non-profit and for-profit, to evaluate the layout, content, and general design.

Once revisions were completed, a usability test was conducted with a convenience sample of EFNEP and/or SNAP-Ed eligible individuals. Participants were recruited through a local Extension office and WIC office (urban setting). Usability testing (approximately 30 minutes per person) was conducted by Extension IT and nutrition personnel and involved the completion of a questionnaire ascertaining general demographic information and general computer use. Each session was videotaped to monitor website navigation strategies. Usability testing included open-ended interview questions and the completion of specific tasks via the new website (e.g., "Let's say you made this recipe and really liked it. How would you share your experience with others reading this recipe?). Participants received a gift card for their assistance.

Results and Discussion

Part 1: Needs and Preference Assessment

Twenty-four people in both urban and rural locales elected to participate in the focus groups (Table 2). The majority was female (83.3%) between 18 and 27 years of age (62.5%) and had computer/Internet access at home (75%). This access is higher than what other studies with LRAs have demonstrated, which may indicate Internet access is becoming more readily available for LRAs. In a 2008 survey of LRAs, about half (43%) had a computer at home, and only one-third (33.3%) had Internet access in the home (Landers & Shults, 2008).

Table 2.
Focus Group Participant Information

	Number	Percent
Location		
Urban	7	29.2%
Rural	17	70.8%
Age		
18 to 22 years	9	37.5%
23 to 27 years	6	25.0%
28 to 32 years	5	20.8%
33 to 40 years	4	16.7%
Gender		
Male	4	16.7%
Female	20	83.3%
Participated in food assistance programs (e.g. EFNEP, FNP, WIC)		
Yes	14	58.3%
No	10	41.7%
Computer/internet access[a]		
Home	18	75.0%
Work	6	25.0%
Library	3	12.5%
Friends' homes	2	8.3%
School	1	4.2%

Other	1	4.2%
I don't have access to a computer	1	4.2%
Comfort level using the internet		
Very comfortable	19	79.2%
Somewhat comfortable	2	8.3%
Not comfortable	2	8.3%
I don't have access to a computer	1	4.2%
Participate in social networks		
Yes	17	70.8%
No	6	25.0%
I don't have access to a computer	1	4.2%
Would participate in online nutrition education programming		
Yes	9	37.5%
No	3	12.5%
Unsure	11	45.8%
No answer	1	
Preferred method of receiving nutrition education programming announcements[a]		
Internet (e.g. email, social network, etc)	16	66.7%
Flyer	15	62.5%
Postcard	12	50.0%
Newspaper	10	41.7%
Friends/family	9	37.5%
Health care professional	6	25.0%
Phone	2	8.3%
Mail	1	4.2%
[a] Percentages do not equal 100% because participants were asked to mark one or more choices.		

Health care professionals serving LRAs completed an online survey to determine the unfulfilled nutrition education needs of their clientele. A convenience sample of 76 (69 Female, 1 Male, 6 no answer) health professionals with an average of 13 years of experience working with LRAs completed the online survey (Table 3).

Table 3.
Health Care Professional Information

	Number	Percent
Location of practice		
Urban	36	51.4%
Rural	34	48.6%
No answer	6	
Age		
18-24 years	3	4.4%
25-34 years	22	32.4%
35-44 years	10	14.7%
45-54 years	17	25.0%
55 years or older	16	23.5%
No Answer	8	
Gender		
Male	1	1.4%
Female	69	98.6%
No answer	6	
Experience working with LRAs		
Yes	73	100%
No	0	0%
No answer	3	
Familiarity with SSES		
Yes	49	71.0%
No	20	29.0%
No answer	7	
Refer clientele to SSES		
Yes	21	40.4%
No	31	59.6%
No answer	24	

Barriers and Motivators Towards Healthy Promoting Nutrition Behaviors

The main barrier identified by focus group members to selecting more "healthier" foods was cost. Other barriers were convenience, lack of experience preparing healthy foods, family traditions, uninformed on the health benefits, and marketing of less healthy items. Moreover, the rural-area focus group comprised of mostly younger individuals (n=9, 52.9%; age 18-22 years) stated apathy as a barrier.

Similarly, three key barriers identified by the health professionals for clients when adopting recommended nutrition behaviors included limited:

- Finances (n=62, 86.1%)
- Nutrition knowledge (n=59, 81.9%)
- Motivation (n=54, 75.0%)

Other barriers mentioned included limited cooking skills, not being ready to make changes because of cultural influences, not able to see the long-term benefits to the recommended changes, and a lack of support by family or friends.

Conversely, reasons for choosing "healthier" foods included:

- The health of children and family
- Feeling good about oneself in that they are doing something good for themselves and their family
- Weight concerns

Economic Impact on Food Behaviors

All focus group participants reported using generic products more often. Other changes included cutting out foods because of cost (e.g., purchasing hamburger instead of steak). Some stated they are preparing more foods from scratch rather than buying frozen convenience foods. However others reported buying generic "helper" meals and other convenience foods when they are on sale to stretch their food dollar. All respondents reported that they seldom eat out.

Internet/Computer Use

Although the majority of focus group participants reported Internet access, during the discussion barriers to participating in online programming included access, resources, time, and poor marketing of the website. Many said they did not have time at work to navigate a website nor did they have time when home. When asked to expand on marketing ideas, participants suggested including a website announcement with take-home school materials. One participant said "I check my kid's backpack every day, [to see] if the school sent home stuff." Several participants agreed that networking with school districts would be an effective marketing strategy. Others said a catchy commercial airing between 4:00 and 6:00 p.m. on a local news channel or radio station when they are more likely to be watching and/or listening would be appealing.

Nutrition Education

Attributes of education programs enjoyed by focus group participants included interactions between the presenter and participants, use of visual aids including videos, receipt of written education materials, and receiving practical, understandable, and relevant recommendations. Disliked characteristics included lecture style without participant interaction and speaking above the comprehension level of the participants. Participants' preferred aspects of an online nutrition education program included short segments (e.g., 15 minutes), 24-hour access to lessons, energetic speaker if applicable, and user friendliness. For our participants "user friendly" included relevant information for the target audience, use of color, graphics, no log-ins, no requested personal information, simplicity, and limited advertisements.

Identified Nutrition Education Topics

Both focus group participants and health professionals were asked to identify budget-friendly nutrition education topics of need and interest. The most common themes were shopping on a budget and cooking. Given the limited counseling time health professionals have with clientele, a comprehensive overview of nutrition is rare. Areas of nutrition not typically covered in counseling sessions included: how to compare food prices (n=45, 63.4%); meal planning (n=38, 53.5%); how to shop for nutritious foods (n=36, 50.7%); and healthy cooking (n=30, 42.3%). Additional comments suggest health care professionals have limited time to provide in-depth discussion on any nutrition topic.

The health professionals correctly identified topics of interest to their clientele, as demonstrated in Table 4. Furthermore, the suggested nutrition education topics reflect the three leading nutrition topics not covered in counseling sessions with our select group of health professionals. Focus group participants repeatedly said they desired recipes with nutritional information as well as pictures of the finished product. Other suggestions included substitution ideas (e.g., using seasonal produce) and modifying recipes to accommodate allergies. Another main theme identified by the focus groups was shopping on a budget, specifically, identifying a bargain, using coupons effectively, and navigating sales. These results are similar to other preference assessment studies demonstrating desire by LRAs for lessons on making food last for the month, meal planning and using leftovers (Landers & Shults, 2008).

Table 4.
Frequently Suggested Nutrition Education Topics

Topic	Suggested by Health Professionals [a]	Suggested by Focus Group Participants [b]
Quick and easy meals and snacks (including recipes with nutritional information; nutritional and cost benefits to homemade)	X	X
Meal planning (e.g. shopping lists, fruits and vegetables, using leftovers)	X	X
Shopping on a budget (e.g. comparing food products for best price, unit pricing, coupons, navigating sales ads)	X	X

Child nutritionâ picky eaters, age-appropriate food choices, food allergies/intolerances	X	X
Basic cooking techniques	X	X
Food substitutions (e.g. replacing non-seasonal produce with seasonal in recipes)	X	X
Portion sizes	X	
[a]Total number of respondents was 65; [b]Total number of respondents was 24		

SSES Use

Over half of the health care professionals surveyed reported they were not referring clients to SSES. Better SSES marketing strategies were recommended when asked what could be done to make it more "user friendly" for both themselves and their clients. Suggestions were brochures or handouts for distribution, including one explaining how to navigate SSES and an outline of SSES content. The preference for printed advertisement materials is similar to that expressed by LRAs.

Content recommendations included short positive messages at an appropriate reading level for the target audience; offering a variety of culturally and age-appropriate recipes; and keeping the content current. Some also commented that an alternative approach to distributing SSES content, like videos, may be necessary because many of their clients have limited or no Internet access. However, based on our survey results, access to a computer is common for LRAs, but the time available to search for information is a factor.

Two SSES marketing strategies were presented to the health professionals (a poster or 11x17 stand-alone table board with tear off sheets); about a quarter (n=16, 23.5%) said they wouldn't use either. Other advertising methods recommended by the respondents included a brochure or bookmark to be used with existing materials often given to clients. Another suggestion was to ask other agencies serving LRAs to include a link to SSES in any client-targeted emails.

The information collected during the needs and preference assessment indicated a need for nutrition education. There are challenges to using a Web-based education format, primarily access. Nearly all focus group participants had access to a computer; however, the time available to navigate websites was limited. Another identified barrier was insufficient marketing strategies. In this situation, the best advertising strategy was printed materials distributed through the local school systems and health agencies. Finally, an unanticipated barrier identified by younger focus group members was apathy. Apathy is a very difficult barrier to overcome when trying to attract first-time program participants.

Tailored nutrition education programs are typically well received by the intended audience and results in positive dietary changes (e.g., increased fruit and vegetable consumption) (Gans et al., 2009). Based on the aforementioned results, it was determined to redesign SSES for a slightly older LRA (ages 25-40) and to incorporate more consumer-friendly design elements. This involved the inclusion of short videos (e.g., cooking demonstrations [available on DVD too] and online lessons); user-friendly recipes; short, bullet-point information; user-friendly tabs; and creative use of color and graphics. Topics addressed included cooking, basic health, and budget-friendly nutrition ideas. The recipes were selected based on cost, nutritional value, and preparation time.

Steps 2 and 3: Selecting, Developing and Pretesting Materials

Using needs assessment data, SSES content was critically reviewed. Information not identified as a need or preference was removed. Remaining materials were grouped based on three categories: plan (e.g., menu planning), shop (e.g., how to make a grocery list) and eat (e.g., recipes). These categories were chosen to fulfill the request by health care professionals for short positive messages. The content was modified to incorporate the visual preferences of the target audience (e.g., bulleted format rather than paragraph style). The overall revised SSES incorporated the preferred characteristics of reviewed websites (e.g., flash videos, graphics) (Figures 1 and 2).

Figure 1.
Original SSES Home Page

Figure 2.
Revised SSES Home Page

Usability testing was completed with a convenience sample of 13 LRA adults (11 females, 2 Males). Most (10 out of 13, 77%) were between the ages of 18 and 35 years. Nearly all (12 out of 13, 92.3%) reported participating in an EFNEP/SNAP-Ed program. Most (11 out of 13, 84.6%) had computer/Internet access, with over half reporting at-home access. Approximately one-third (5 out of 13, 38.5%) stated they used the Internet for information on a daily basis. Participants provided verbal feedback throughout the testing process and also completed a post-test survey in which participants ranked website attributes on a five-point Likert scale (1= Disagree, 5=Agree).

Usability test results provided useful insights as to how users would actually navigate the site. As Table 6 shows, participants rated the revised SSES quite high (overall average was 4.46 out of 5.00). Users liked the design and the information provided, particularly the recipe section with video demonstrations. They perceived the information to be valuable, liked the overall look, and reported they would come back to the site on their own.

Although the response was positive, a few obstacles were identified. Some of the selected terminology for information tabs was unclear to the users and resulted in their going to the wrong section for information. They also struggled to find the "Ask SpendSmart" link, which was for the SSES blog as well, and had difficulty navigating from the recipe blog back to the home page. These obstacles were addressed during the final revision process.

Table 5.
Rating of the Revised SSES Website

Comment	Average Rating
I liked the overall design.	4.33
I liked the colors.	4.80

I liked the layout.	4.67
It was easy to find information	4.00
It was easy to navigate the site	4.27
The language and labels were clear.	4.47
I would visit the site again.	4.87
Overall opinion	4.27
[a] Number of responses equals 13	

Summary

Technology is often looked upon as the best way to not only provide education but also to advertise programming opportunities. However, program developers need to consider the needs and preferences of the target audience to determine the best method for reaching clients. The high prevalence of computer/Internet access within our small sample as well as the high ratings of SSES suggest the target audience is more likely to use SSES in the future.

These results indicate that by incorporating the needs and preferences of the target audience we created a nutrition education platform perceived as appealing as well as relevant to their lives. However, based on focus group discussions, tracking website usage of LRAs will be difficult because this audience generally does not like providing demographic information. Another challenge to online education for LRAs is advertising its availability. We discovered that technology-based advertising for Web-based programs is not ideal for LRAs or those providing health services to LRAs. Instead, traditional advertising methods (e.g., flyers, postcards) through trusted entities like the school system are desired.

Implications for Future Extension Online Education Development

As budgets continue to decrease, it is likely that Extension programs will move towards more indirect technology-based education methods like websites. Although time consuming, incorporating SMT principles during the development process, including advertising methods, is anticipated to result in better use by the pubic of online Extension education programs. Extension program developers can apply SMT steps during program development by:

- Assessing the target audience's needs and preferences prior to program creation
- Engaging the target audience throughout program development (e.g. material development, program delivery method) to ensure the resulting product is well received and subsequently used
- Evaluating the program to determine if the expected outcomes are being met and to assess the target audience's receptiveness to the program

- Revising the program using evaluation data to ensure that the target audience continues participating and that the desired outcomes are being achieved.

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