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Nutrition Mission—A Multimedia Educational Tool for Youth Grades 4 - 6

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Nutrition Mission--A Multimedia Educational Tool for Youth Grades 4 - 6

Abstract

Nutrition Mission is a multimedia educational CD-ROM with an accompanying Web site designed to teach 4th - 6th grade students about making healthy food and activity choices. The CD-ROM incorporates a rich learning environment using graphics, audio, video, and interactive animations to excite students and make learning about nutrition fun. The CD includes lessons about the food guide pyramid, food labels, nutrient density, fast foods, snacking, physical activity, and food science experiments. Preliminary data indicates that the majority of youth acquire knowledge and skills related to foods, nutrition, and physical activity.

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Introduction

Childhood obesity is a serious health issue, with the prevalence reaching epidemic proportions and more than doubling in the last three decades. The Centers for Disease Control and Prevention estimates that 16% of children and youth between the ages of 6 and 19 are overweight--a figure that has more than tripled since the early 1960s (Hedley et al., 2004; National Center for Health Statistics, 2004).

Dietary interventions, with the focus of preventing and reducing obesity, have met with mixed results. The outcomes of numerous studies of school-based interventions are inconclusive in determining which aspects of a school-based intervention are most effective. However, the most successful interventions are behaviorally focused and are based upon the identified needs of the target population (Ontario Public Health Association, 2002). To provide research-based information that focuses on the identified needs of the youth, an interactive multimedia educational CD-ROM, *Nutrition Mission*, was developed.

Project Description

The *Nutrition Mission* CD-ROM incorporates a rich learning environment using graphics, audio, video, and interactive animations. The Interactive Design and Development (IDD) Company in Blacksburg Virginia was contracted to produce the CD.

Prior to CD development, three focus group interviews were conducted with 27 youth to assess their present knowledge about nutrition and snacking and physical activity habits. The results were used to develop the CD-ROM's educational messages.

During the development process, three additional focus group interviews were conducted with 29 youth to gather information about educational activity design, format, and characters that would appear on the CD. The researchers provided content information and assisted IDD with the development of the educational activities.

The final version of the *Nutrition Mission* CD is a secret agent headquarters where children can enter as recruits with their own code. The recruits complete a short pre-test, and then begin to participate in "special agent" training in four areas: Mission Briefing, Mission Training, R & D Lab, and the Mess Hall.

The Mission Briefing training consists of lessons on the food guide pyramid, nutrition facts label, and nutrient density. Mission Training highlights the physical activity pyramid and provides an activity log. The R & D lab focuses on specific nutrients (calcium, fats, iron, protein, sodium, sweeteners, and vitamin C) and their food sources. The R & D lab also includes grade-appropriate food science experiments that can be conducted in school or at home with the assistance from an adult. The Mess Hall includes information and games related to fast foods and snacking.

Each training area was developed to focus on content areas, using a variety of educational techniques. Emphasis is on learning through exploration and examples. The lessons incorporate a cycle of instruction, practice, test, and reward. Games, video, bar charts, multiple choice questions, and mini-lectures are used to communicate information. Each training area takes approximately 20-30 minutes to complete; however, the games can be played for as long as the student likes.

The final activity for each level is a Mission Readiness test. This comprehensive test is formatted like a board game in which you collect three pyramids. The score is based on the number of multiple choice questions answered correctly. This activity requires the child to apply and evaluate the information presented.

Nutrition Mission even includes a rap, "The BVM," which emphasizes balance, variety, and moderation. A companion Web site includes resources for students, educators, and parents. The Web site includes educational handouts, resource lists, description about how the program meets educational standards, the lyrics to the rap, and links to credible Web sites that offer nutrition and physical activity information.

Evaluation

Nutrition Mission includes a pre-test and a post-test evaluation. Educators can upload the student data to the Web site, where it is compiled. Preliminary data from 56 students who completed the pre-test and post-test indicates that the majority of youth acquire knowledge and skills related to foods, nutrition, and physical activity. Table 1 shows the percentage of students who answered each question correctly as well as the significance of the corresponding paired t-test results. The students improved their scores significantly between pre-test and post-test for each of the 10 questions as well as the total score.

Table 1.
Percentage of Correct Responses for Each Question at Pretest and Posttest
(N=56)

Question	% Correct (pre-test)	% Correct (post-test)	p-value from t-test
1. Each day you should eat the most servings from which food group?	41	89	.000
2. The Food Guide Pyramid teaches us. . .	73	96	.000
3. How many servings should you have from the milk group each day?	54	86	.000
4. The Nutrition Facts label. . .	38	63	.009

5. When a food is nutrient dense, it. . .	38	86	.000
6. A good snack is. . .	29	91	.000
7. Which statement is false about fast food?	27	70	.000
8. Which of the following fast food items contain the least amount of fat per serving?	11	52	.000
9. How much moderate physical activity should you get?	27	71	.000
10. Which of the following is the best strategy for maintaining a healthy diet?	27	61	.000
Total score mean	36	76	.000
Total score range	10 to 70	40 to 100	

Nutrition Mission educator and student user responses, obtained from email messages and personal discussions with users, have been overwhelming. The educators have reported that the CD has enabled them to teach nutrition and physical activity concepts in a new, innovative manner. Students are likewise enthusiastic about their experiences with the program and find themselves wanting more. These comments provide project staff with insight into the success of the Nutrition Mission.

From educators:

- "I love the food science experiments. What a wonderful way to teach nutrition concepts!"
- "My students love the CD. They could play the games for hours!"
- "You should have heard the gasps when the single slice of pepperoni pizza sent it through the roof!"

From students:

- "I couldn't stand IQ until I saw her in the BVM rap. She is kinda like Mrs. Doubtfire--really cool!"
- "I wish my teacher would allow us to play the games longer."
- "This just boggles my mind! I never thought about nutrient density before. Now I will pay more attention to what I eat!"

Conclusion

The *Nutrition Mission* CD-ROM is an innovative way to help youth acquire knowledge, skills, attitudes, and behaviors necessary to improve their nutrition and fitness. Preliminary evaluation data shows that *Nutrition Mission* students are making significant improvements in their knowledge and skills regarding foods, nutrition, and physical activity. User responses indicate that educators and students alike are enthusiastic about using the CD. Extension educators and other educators who work with youth can incorporate *Nutrition Mission* as an integral component of their curriculum to facilitate improvements in nutrition and physical activity choices among their students.

To order *Nutrition Mission*, send a check for \$30 per CD plus \$5 for shipping per order to the Penn State Publications Distribution Center, 112 Agricultural Administration Building, University Park PA 16802. To order using a MasterCard or VISA, call toll-free 1-877-345-0691.

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