

TEACHING CONSUMERS BY COMPUTERIZED PROGRAMS

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Today is the tomorrow we worried about yesterday. In relation to teaching consumers by computerized programs, it may not be yesterday but today is the tomorrow.

From elementary grades through college, today's students learn by using computers and writing their own computer programs. Will these individuals be satisfied with generalized verbal or written responses to their consumer questions? Will they sit through a two-hour meeting to receive information or do two hours of calculation that a computer could supply in 15 minutes or less?

What about meeting the educational needs of consumers who will have computer terminals in their homes? Johathan, a planned community southwest of Minneapolis, Minnesota, is an example of a suburb where this will be a reality. In addition to meeting some of their educational needs, residents will use the computer terminals to shop, attend town meetings, and view their favorite film at home.

There is a place for interactive computer programs in consumer education. Currently, the computer system is ahead of the development of computer programs.^{1,2,3} Hopefully, you will begin to identify content areas that could be developed into effective interactive computer programs.

This paper includes (1) a review of interactive computing and how it operates; (2) a discussion of programs used in the University of Minnesota Agricultural Extension Service food and nutrition program; (3) a listing of responsibilities for developing interactive computer programs.

INTERACTIVE COMPUTER PROGRAMS

"'Interactive' or 'conversational' computing means that when you type in a question or comment or run a program, the computer responds right away. (This is in contrast to a 'batch' system where you subject your commands and programs as a unit or receive your output as a unit minutes or hours later. . .)".⁴

Interactive programs are generally small and require a small amount of data. The consumer should be able to complete the run of a program within a half hour or should have the option to take a break at this point. As with other teaching methods, you must consider the learner's interest span.

The essentials for developing and using interactive computer programs are (1) administrators who support the approach; (2) colleagues who are knowledgeable about computers and computer programming; and (3) a computer time-sharing system.

To operate an interactive computer program the user needs a terminal, which could be a teletypewriter, a telephone, or a teletypewriter/television combination. The terminal is a device remote from the computer that reads or displays data.⁵ The messages are transmitted by telephone. The user prepares the input sheet, then accesses the interactive computer program. After the user enters the information the computer requests, it responds and may ask additional questions.

UNIVERSITY OF MINNESOTA EXTENSION SERVICE FOOD AND NUTRITION PROGRAM

FOINANA, Food Intake Analysis, is a program developed at the University of Minnesota, which will evaluate the nutritional quality of a person's food intake for a day. Analyses are done by (1) comparing the daily food intake to the recommendations of the Daily Food Guide and (2) comparing the intake to the appropriate Recommended Dietary Allowances for calories, protein, iron, calcium, Vitamin A and Vitamin C. Home and Garden Bulletin No. 72, Nutritive Value of Foods, is the source of the food composition information. The program will be updated to be consistent with the 1973 Recommended Dietary Allowances.

To use FOINANA, the first step is to prepare the input sheet, which is a listing and coding of the foods eaten in the last 24 hours. When the input sheet is completed, the computer program is accessed via the coded food list as requested by the computer. The computer gives the user an opportunity to check for errors and to make changes in the coded food list.

The first analysis is based on the Daily Food Guide. The computer places the food items in the appropriate food group and tells the number of servings eaten as well as the recommended number of servings.

The second analysis has two parts. The first section of the nutrient analysis pertains to calories and nutrients (protein, fats and carbohydrates) which furnish calories. The user can learn which foods have the highest caloric values because the computer is programmed to give the top five. The second section pertains to the analysis of iron, calcium, Vitamin A and Vitamin C which are often low in American diets. For each of these nutrients, the computer will tell the user the foods eaten that were sources of the nutrient. If the user wishes, the computer will list additional foods that are sources for each of the nutrients.

How has FOINANA been used? Initially, it was used to introduce Minnesota extension home economists to interactive computer programs. Since then, it has been used by some Expanded Food and Nutrition Program assistants to evaluate the food recalls of the program homemakers. Both program assistants and homemakers liked it. The homemakers seemed less threatened when the computer told them they needed to change some of their eating practices. Other uses included high school classes in home economics and science; college classes including food and nutrition, computer science, mathematics; Extension homemaker groups; senior citizens; library clubs.

The most involved use of the computer was the pilot educational program, Computerized Food Shopping. This was a joint effort with the University of Minnesota Agricultural Extension Service, North Dakota State University Cooperative Extension Service and College of Home Economics, Concordia College, and Moorhead State College in Moorhead, Minnesota, and Piggly-Wiggly supermarkets (Nash-Finch Company, Minneapolis, Minnesota). To implement Computerized Food Shopping, workshops were held for 176 home economists and home economics students who would be staffing the booths in the supermarkets. Store personnel also attended an informational meeting.

The Computerized Food Shopping Program components were CANFS, a food directory, and a computerized food shopping list (input sheet). CANFS, Computer Assisted Nutritious Food Shopping, is the computer program based on Virginia Polytechnic Institute and State University computer program, GROCR. The primary objectives are to help consumers to become more aware of the nutritional adequacy of their shopping list and to become more aware of the way they spend their food dollars.

The food directory lists food items most frequently purchased by consumers. They are grouped according to the Daily Food Guide food groups. For each food category, the number of servings needed per day is given. Information for each food item includes item number, item description, number of servings per market unit, cost per market unit, and cost per serving. This information is used to prepare the input sheet.

After the computer prints out a brief explanation of the program, the user enters information about household size and estimated weekly food budget.

For each food group, the nutrition message tells the number of servings needed per day per person and the total number of servings needed during the week for the household. The shopper is told if the recommended number of servings are met or exceeded or if additional servings are needed from other sources. Throughout, the shopper is told the estimated food bill and remaining amount of money.

When all the food items have been entered, the computer prepares a personalized shopping list. For each food item selected, the shopper is told the amount to buy, the total number of servings and the estimated cost of the item. Also, the total estimated food bill. Shoppers could take the complete print-out with them, using the shopping list

to pick up their groceries.

Was Computerized Food Shopping successful? Of the 350 participants, 125 completed evaluation forms. More than 80 percent liked knowing how they were spending their food dollar and nearly the same percentage liked knowing the amount of food needed each week to provide nutritious meals and snacks to the family members. About three-fourths of the participants liked knowing how much they spent for non-food items. Nearly all of the shoppers indicated the information should be helpful to them and others in the future.

DEVELOPING EDUCATIONAL INTERACTIVE COMPUTER PROGRAMS

You and I do not need to be computer programmers to develop and use interactive computer programs. It might be helpful to know about programming techniques and capabilities, but computer programmers can assist us.

Our responsibilities as educators include:

- 1 - Identifying topics. What information do consumers want or need to know?
- 2 - Deciding whether or not the computer is the appropriate teaching tool. Would another method be as effective or more effective?
- 3 - Determining the functions the computer is to perform.
- 4 - Outlining the print-out format. Will consumers understand the information on the print-out? What data needs to be in the data bank to enable the computer to perform its functions? Remember, the computer will do only what it has been instructed to do.
- 5 - Helping the computer programmer "de-bug" the program.
- 6 - Sharing the program with others.

Satisfactions and frustrations are experienced throughout the development and use of interactive computer programs. People react differently to computers and computer programs. This varied reaction probably will continue until home terminals are readily available. Programs need to be developed before then.

SUMMARY

As educators or as individuals who are concerned about consumers, the tomorrows become todays too fast. Now is the time to begin preparing for 1980 and beyond. We need time to develop and test interactive computer programs before all consumers have access to terminals. We also need to share the programs we develop with each other. Hopefully, you will begin to consider educational interactive computer programs as one approach in consumer education. They will be a part of the future.

FOOTNOTES

¹The Planning Task Force for Educational Computing Services, A Proposed Educational Computing Services Organization: Its Facilities and Services, a report to the Governor's Joint Committee on Computers in Education (August 15, 1972), p. 1-2.

²MECC Report. Minnesota Educational Computing Consortium, Capitol Square Building, St. Paul, Minnesota 55101.

³Jones, Martin V., "How Cable Television May Change Our Lives," The Futurist, Vol. VII, No. 5 (October, 1973), 196-199.

⁴Borowick, Roger and Allen Hesse, Parke Kunkle, Tom Loftus, Elmer Matila, Don Penn, The MERITSS Handbook, ed. Ed Coover, second edition (1972), p. 1-2.

⁵The Planning Task Force for Educational Computing Services, p. 1-2.