

# Videotex as a Tool for Health Promotion

By Michel Bourque, Ph.D.,  
and  
Robert Perreault, M.D.

## Abstract

As one of the major components of health promotion, education is more and more becoming the focus of health planners. Based on the efficiency criteria validated for the traditional health education strategies, the exploration of the new computer-assisted media to pursue health promotion objectives offers challenge. It also raises important pedagogical issues which are discussed in the present paper based on the experience of the Tele-Health project. Using the Canadian videotex technology, Tele-Health produces and makes accessible numerous interactive programs for both public/patient education and continuing medical education.

## Introduction

As one of the major components of health promotion, education is more and more becoming the focus of health planners. The central reason for all this scrutiny lies with the obstacles that have been stressed in the health education literature regarding both its impact and its efficacy. Furthermore, many of the demonstration and evaluation studies that have brought positive results have been labor intensive making their generalization doubtful in an era of high economic constraints. Nevertheless, the work done in the last decade relative to the use of health education strategies to promote healthy lifestyles and competent help-seeking has validated a number of guidelines that may now be used as criteria for the exploration of alternative educational technologies.

According to Green (1980) who conducted a thorough survey of the literature on the subject, a number of pedagogical parameters have been shown to be effective in the transmission of health information: the communication of the material should occur in an interactive environment; the acquisition of behavioral skills should be favored; traditional pedagogical

Michel Bourque is the director of the Computer and Biostatistics Center, Clinical Research Institute of Montreal.

Robert Perreault is from the Community Health Department, Montreal General Hospital.

criteria should be respected; the education process should be integrated in the user's daily life; it should afford continuity with existing resources of this environment; finally, the potential solutions should be cost-efficient.

As can be seen, these observations suggest that the material should be adapted to individual needs and communicated in a way that provides immediate feedback. The selected teaching vehicle has to provide for the teaching of behavioral skills (Wright, 1981) as well as being able to convey information using the highest pedagogical standards. The process should be integrated in the user's natural environment so as to take place at moments and places of highest spontaneous motivation. This later item is specially important to subjects such as health behavior since the motivation to learn is rooted in individual experiences, perception and problem-solving skills. Any teaching vehicle that cannot adapt material to individual constraints has been shown to have very limited impact. Finally, health education systems need to be easily integrated in the already existing and very complex networks of health care delivery and health promotion organizations.

As a possible tool capable of meeting most if not all the above-mentioned criteria, computer-assisted interactive teaching has long been seen as a promising alternative to one-to-one health educator-patient interaction. While the field has been under study for nearly two decades (Slock and Slock, 1972), it is only recently that the available technologies have made it possible to overcome its two greatest drawbacks, namely the short attention span stemming from unappealing text displays and high cost of individual work stations and networks. The maturation of microcomputer technology has brought the cost down and the development of the high resolution color display technology known as videotex is rapidly solving the problems related to appeal and user friendliness in a cost-effective fashion.

## The Tele-Health Project

Over the past three years, the present authors have been developing and evaluating computer-assisted interactive teaching as a tool for public health education as well as for continuing medical education. Using the Canadian Telidon videotex technology, they are building a health information databank known as

Tele-Health (Perreault and Bourque, 1983). The public health bank (Table I) now comprises fifteen programs available to the general public both in private homes and on an experimental specialized network with terminals placed in the waiting rooms of health clinics, physician's offices and public places such as pharmacies. These programs were selected on the basis of public health

TABLE I

### Tele-Health: Public health databank themes

- Risk factors
- Food and health
- Alcohol
- Smoking
- Coping with stress
- Adolescence and adaptation
- How to select health care services
- Childhood infectious diseases
- Vaccination
- Insomnia
- Depressive states
- Headaches
- Cold and flus
- Digestion
- Cardiovascular problems

literature and nationally identified public health objectives.

In parallel to the public health project, Tele-Health is developing a professional databank with the goal of providing both continuing medical education and informational support to clinical practice. Table II lists the areas currently being

TABLE II

### Tele-Health: Professional databank themes

#### Informational support to medical practice:

- Objective criteria protocols for psycho-social problems
- Medication guide
- Drug interactions
- Poisons

#### Continuing medical education:

- Selected papers from the medical journals
- Essential bibliographies in health (edited by a panel of experts)
- Clinical epidemiology databank

developed. The professional databank is also designed as a participatory core building process under peer review.

## Pedagogical issues

On the basis of this experience, it becomes interesting to attempt to narrow down the pedagogical issues involved in the mediatization process of health-related material for the general public. There are of course many such models for traditional health education. (Green et al, 1980; Green, 1979; Hulka et al, 1975). Two factors motivate a new attempt (Bourque and Perreault, 1983). They are based on the fact that the telematic approach introduces new elements into the traditional equation such as direct and immediate access to information and easy tailoring of information to individual needs through computer intelligence.

The first factor relates to the reinforcement of the motivation required for behavioral change. The second issues a challenge to the assumption that formalized presentation of a topic represents a preliminary and essential component in any education process.

## Reinforcement of initial motivation

It has long been recognized in the literature (McAlister et al, 1982) that health information can be made available by many media saturation approaches but that behavioral change based on this information is only possible if people can become motivated to change. In order to achieve the motivation objective, traditional approaches to health education have had to overly expose people to problems and their solutions with the recognized drawback that the over-information required to achieve an appropriate level of sensitization is often a source of anxiety.

With interactive media, it becomes possible to use the impetus of an individual's spontaneous motivation as a vehicle to lead him to a desired sensitization process which can in turn be formulated according to the specific needs and interest of the person. Health information then becomes accessible through a myriad of entry points. A program focusing on dietary habits, for instance, could be entered through a meal-planning guide, an indigestion-management protocol, a calorie-counting table or any other entry point representative of the interests of target population sub-groups. All these entry points then lead to dietary habit information but only after the initial

interaction has reinforced each individual's reasons for using the system. By comparison, traditional approaches would have to provide streamlined information to the target population forcing people into a student role and potentially losing subjects through lack of motivation or raising anxiety through overexposure. The alternatives, all quite costly, would be to devise many programs and to multiply access procedure to various sub-groups or to provide face-to-face health education. This last approach remains one of the more potent tools available but usually has to be limited to high risk groups due to cost.

## Formalization

The second change that is being introduced in health education with the advent of computer-based instruction concerns the order of presentation of the various components involved in the education process. It has traditionally been necessary to transmit health-related information in a formal quasi-academic structure before suggesting the application of this information to a specific problem. With computer-based instruction, this structured approach becomes unnecessary as the information bank can be accessed from many entry points and the interactive nature of the process makes it possible to let the computer lead the user through the material. This feature turns the instruction vehicle into a problem-solving tool that can be immediately applied to whatever problem or preoccupation motivates contact with the system. The initial usefulness of the experience therefore, provides a strong reinforcement and paves the way to a formalized presentation of the topic if the user so desires.

People not interested in knowledge acquisition who would normally drop out of health education programs can use the computer to solve problems. It should be noted that even for these people, the computer will model a number of skills conducive to better health management and decision-making. Wright (1981) has shown simulation, modeling, feedback and repetition to be extremely potent tools for teaching behaviors and skills. Most of these components can be built into the computer interaction.

## Discussion

Conceptually, computer-assisted media do appear to avoid many of the obstacles met by traditional strategies in pursuing

health promotion objectives. Preliminary evaluation of the Tele-Health project tends to support this hypothesis. However, in their ongoing effort to keep pace with technological developments, health planners must avoid the lure of defining objectives that are subservient to the latest gadgets. A good way to avoid this pitfall is to analyse the new possibilities in the light of the very real objectives they have always had to meet in order to see when and how new tools can do old jobs better or deal with previously unreachable objectives. In the final analysis, and as interactive media gain maturity, systematic planning in the implementation of computer-assisted strategies seems very profitable.

## REFERENCES

- Bourque, M. and Perreault, R. (1983): A planning guide to computer-assisted health promotion. Proceedings of the Seventh Annual Symposium on Computer Applications in Medical Care, Baltimore (in press).
- Green, L.W., Kreuter, M.W., Deeds, S.G. and Partridge, K.B. (1980): Health education planning: a diagnostic approach. The Johns Hopkins University, Mayfield Publ. Col, Boston.
- Green, L.W. (1979): Educational strategies to improve compliance with therapeutics and preventive regimens; the recent evidence. In Haynes, R.B., Taylor, D.W., Sackett, D.L. (eds), Compliance in Health Care, Johns Hopkins University Press, Baltimore.
- Hulka, B.S., Kupper, L.L., Cassel, J.C. et al. (1975): Doctor-patient communication and outcomes among diabetic patients. *J. Commun. Health*, 1: 15-27.
- McAlister, A., Priska, P., Salonen, J., Tromilethlo, J. et al. (1982): Theory and action for health promotion: illustrations from the North Karelia Project, *AJPH*72: 43-50.
- Perreault, R. and Bourque, M. (1983): Tele-Health: an interactive television system for health promotion. Proceedings of SYSTED 83, Charles Tilquin, ed., Montréal (in press).
- Slack, W.F., and Slack, C.W. (1972): Patient-computer dialogue. *New Engl. J. Med.*, 236: 1304-1309.
- Wright, J., Mathieu, M. and McDonough, C. (1981): An evaluation of three approaches to the teaching of behavioral therapy. *J. Clin. Psychology*, 37: 326-335.