



Short communication

A historiographic review of health education interventions and the microcomputer

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ABSTRACT

Since the advent of the microcomputer in the 1970s and the Internet in the early 1990s, the Information Age has revolutionized modern society and daily life and reshaped the health education and health promotion (HEHP) fields. Microcomputers have evolved from a rare commodity to a standard expectation for HEHP professional preparation, program development, and delivery of services and information. To examine microcomputer use in both historical and contemporary perspective, this article identifies and evaluates the first publications that explored possible application of microcomputers and computer-assisted instruction in the HEHP field. A historiographic review was conducted between January 1960 and December 1989 and by applying search strategies to ten academic electronic databases. Articles were evaluated for subject matter, article type, target audience, and applicability to the HEHP fields using these constructs: Effectiveness, cost-containment, instructional, pilot test, tailoring, and theory. The article sample was carefully reviewed, tabulated, and evaluated. The search procedure identified 39 articles which met the search parameters and demonstrated applicability with one or more core constructs. Effectiveness and tailoring emerged as the most prominent constructs associated with HEHP; a call to action was the most common article type. What was apparent during the search period and relevant today is the necessary rejection of a single method for microcomputer application. A relationship between target audiences and the populations they served is also apparent in the early literature.

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1. Introduction

According to the U.S. Census, 17% of American households had access to the Internet in 1997 using a microcomputer [1]. Today, over 70% of households have computer-based Internet access with more accessing the Internet through tablets, smart phones, and other wireless mobile devices [1]. Growth in computer use and Internet access has led to a commensurate increase in computer-assisted health education and health promotion (HEHP) programs [2–5]. With new emerging resources and practices using innovative computer-assisted tools and applications, the integration of technology with HEHP is a reality in demand [6,7]. From community wellness [3] and health literacy [8] to health coaching [2] and E-

learning [9], combinations of computer-assisted technologies with HEHP has contributed to contemporary public health and health promotion. According to Wang [6], computer-assisted HEHP instruction and intervention serves as a technological ‘catalyst’ in improving wellness, longevity, and overall quality of life.

Early applications of human-computer interaction within HEHP began with the advent of the microcomputer in 1970s [10–16]. At this time, applicability and feasibility of the microcomputer was investigated in the first microcomputer pilot studies [17,18] within the HEHP fields. Historically, this time period represents a significant event in the annals of all health disciplines. The use of computer-based interventions led to a new direction for HEHP as both a profession and a research discipline. Internet access via the microcomputer became commercially pervasive in the early 1990s with exponential growth in successive years [19]. Microcomputer adoption included parallel rates associated with Internet access and marked the beginning of the modern use era.

The purpose of this historiographic review was to examine the

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first research articles, position papers, and pilot studies that used computers and computer-assisted programs in the fields of health education and health promotion. An investigation of microcomputer use during a period of availability with no implied expectations places current use in both historical and contemporary perspective. Within the context of early predictions and projections, reviewing the evolution of microcomputer applications allows individuals and organizations an opportunity to re-evaluate current practice. Health education practitioners can incorporate this period of historical reflection to current and future goals related to computer use, computer-assisted practice, and Internet applications.

2. Methods

A historiographic review was conducted by examining relevant articles identified between 1960 and December 1989 and by applying search strategies to ten academic electronic databases (Fig. 1). A combination of search terms included “computer,” “computer-assisted instruction,” “health education,” “health intervention,” and “health promotion.” The results generated by the search were limited to English publications and assessed for relevance to the topic. Furthermore, references from retrieved articles were reviewed to identify additional applicable publications. To address the specific topic, we excluded publications that did not offer insight into the conception or improvement of health education or reflective practices of health interventions with special consideration given to the use of computer-assisted technology. Publications were then evaluated and categorized by publication date, article type (primary research, literature review, or call to action), target audience (college educators, K-12 educators, or health promotion professionals), target discipline (public health

education and health promotion or health education and professional preparation), and applicability (cost-containment, effectiveness, instruction, pilot testing, or tailoring). Within this systematic review, *cost-containment* involved return-on-investment using microcomputer applications. *Effectiveness* suggested microcomputers could enhance the intended educational or health promotion outcome. *Instruction* involved improved learning outcomes in a student-centered environment. *Pilot testing* suggested primary data collection to assess microcomputer-assisted instruction and health promotion programs. *Tailoring* advocated for microcomputer use to enhance effectiveness and reach for specific health issues or target populations. *Theory* denotes microcomputers were used in theoretically-based health education and health promotion programming Table 1.

3. Discussion

Thirty-nine sample articles were included in this historiographic review. Publication dates ranged from 1974 to 1989 with a significant majority published from 1983 to 1987. Within our search parameters, the initial 1974 publication occurred a few years after personal computers were realized in the marketplace; industrial computers were in use several decades earlier. Following the publication, seven subsequent articles were published over an 8-year period from 1974 to 1982. The bulk of these publications involved primary research that investigated the microcomputer's potential as a health education and health promotion tool. In the following four years from 1983 to 1987, twenty-nine articles (74% of the sample) were published with fourteen (36% of the sample) made available in 1983 alone.

Two disciplines were identified within the publication sample. Twenty-two articles appealed to *public health education and health promotion* which included individual, community, and population level initiatives. The remaining 17 articles concerned *health education and professional preparation* which involves health instruction at all levels (e.g. primary and secondary health courses and college level professional preparation courses). The peak period (1983–1987) saw a reverse in this trend with 16 articles associated with health education/preparation and 13 articles associated with public health education/promotion. The target audience for the full sample included health promotion professionals (25 or 64%), college teachers (14 or 35%), and K-12 educators (2 or 1%). The peak period included a similar pattern with health professionals (18 or 62%) and college educators (11 or 38%).

Three specific article types were identified within the sample: Call to action, primary research, and literature review. The literature review represents a broad category given literature on the microcomputer in health education, health promotion, and professional preparation was relatively scarce. The majority of articles in the sample that reviewed existing literature did so on a tertiary level. The call to action was most common (17 or 44%) and prominently featured during the peak publishing period. In 1983 alone the call to action article type represented nine of the 14 articles published.

In this review, applicability referred to our interpretation of how each article could be used and included effectiveness of microcomputers in health education and health promotion, cost-containment, instructional practices, pilot testing, tailoring of health promotion initiatives or instructional programs, and use of theory. Three articles included a single application, most articles included two or three applications, one article involved four, and no articles contained more than five. Effectiveness was most prominent and found in 31 of 39 sample articles. Tailoring followed with 24 appearances and no other application was found in more than half of the sample. During the peak period these patterns were

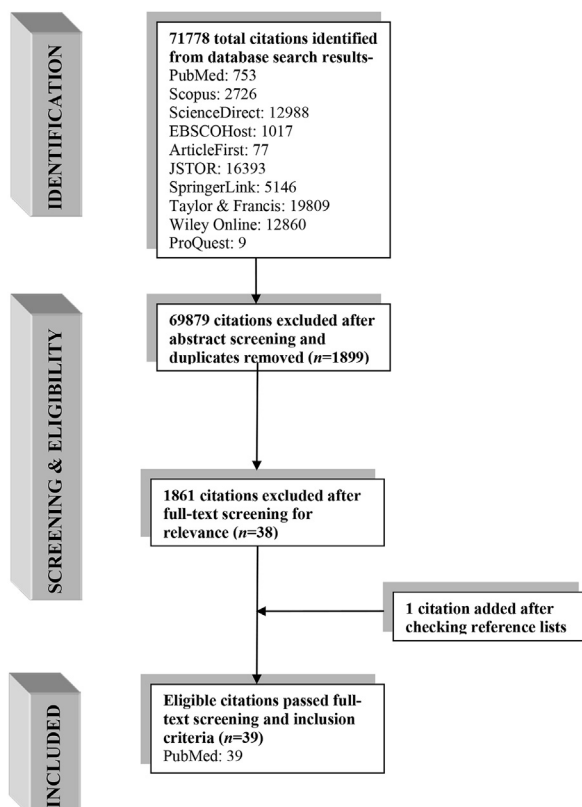


Fig. 1. Diagram of literature search process.

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