

TEACHING NUTRITION TO THE DEVELOPMENTALLY HANDICAPPED USING COMPUTER ASSISTED INSTRUCTION

LARRY KATZ, K. P. JOHNSON¹

University of Calgary

and

J. THOMAS DALBY

Alberta Children's Hospital (Canada)

INTRODUCTION

The shift in management policies for the developmentally handicapped to increased deinstitutionalisation has been well documented (e.g. Bruininks, *et al.* 1980). Residential facilities now focus largely on training employment skills as well as self-care routines. Teaching methods for the developmentally handicapped have remained "traditional" despite some encouragement to explore alternative methods such as computer-assisted instruction (Stolurow, 1976). The advantages that CAI offers for this population include greater individualisation of instruction, continuous feedback and low language requirements. It also would free teaching staff from tiring repetitious tutoring that is often needed.

This report describes a pilot application of CAI in teaching a nutrition concept (food grouping) to developmentally handicapped adults who were in the final stage of a residential rehabilitation programme. The importance of teaching discrimination of food groups to this sample was amplified by the poor nutritional status and habits of the mentally retarded (Jaslow & Spagna, 1977). Hoppe (1979) has informally described her efforts in nutritional instruction with the mentally retarded and others have stressed the need for increased attention to this area of concern (e.g. Lee, 1976).

METHOD

Subjects

Nine students (three women, six men) who were enrolled in the Vocational and Rehabilitation Research Institute residence programme in Calgary were selected by residence staff. Mean age of students was 27.3 years (S.D. = 3.4), with a range of 19.8 to 34.5, their Peabody Vocabulary Test scores ranged from 30 to 74 with a mean I.Q. of 51.11 (S.D. = 8.5). Burt Reading Test scores were not calculable for five people while the remaining four had a mean reading score of 7.1 years (S.D. = .2).

Programme¹

This CAI programme was written to teach food group discrimination. Four food groups have been advocated by nutritionists: (1) fruit/vegetables, (2) meat, (3) cereal and (4) dairy. In this experimental programme the fruit/vegetable group was divided to avoid some initial confusion. A month's selection of menus offered in the cafeteria at V.R.R.I. were surveyed and foods representing each group were chosen.

¹Complete details regarding the computer programme are available from the first author upon request.

Food group discrimination was taught with a drill and practice routine using 35mm. slides and limited text. The programme was composed of four sub-units (1) a pre-test which assessed subject's food group knowledge (2) exact and random match to sample of five individual foods, one from each food group (3) random matching pairs of foods, one being the original five foods in (2) and one from the same food group (4) random match to 25 individual foods, including the original five foods. The keyboard used contained five buttons with prints of the five original foods placed above them This keyboard was connected to an IMSAI 8080 microprocessor (with an interface to control a Kodak Random Access Slide Projector and character generator capability for a CRT screen).

PROCEDURE

Students were familiarised with the keyboard and apparatus. Feedback to the student was individualised on the basis of reading ability (printed on CRT screen and keyboard beeps).

The pre-test was administered to the students. Then they proceeded through the training sub-units. Units 2 (exact and random matching to five foods) and 3 (random pairs matching) required 100 per cent mastery before he/she could proceed to the next unit. Unit 4 (random match to 25 foods) required 85 per cent mastery. All students were successful in achieving these levels but the programme instructs the student to see their teacher if they are unsuccessful after two attempts at the lists.

Upon completion of the training programme a post-test of food grouping was given after which a test of transfer was administered. The transfer test presented a slide of four foods, three belonging to one group. The subject had to pick the food that did not belong. A management programme provided the subjects with the option of completing the entire programme series during one session or returning for a second session.

RESULTS

All people showed improvement from pre- to post-testing. Mean correct responses (maximum 15) for pre-test, post-test and transfer test were: 8.44 (S.D. = 3.59), 13.11 (S.D. = 2.18) and 14.00 (S.D. = 1.07). A correlated t-test between pre-test and post-test performance revealed a significant group difference $t(7) = 5.97, p < .001$. Both readers and non-readers showed this significant improvement. Post-test and transfer test scores were not significantly different.

Two people required a second session to complete the post-test and transfer test. All other students completed the CAI programme in one session (ranging from 28 minutes to 65 minutes with a mean time of 49 minutes). All of them indicated that they enjoyed the programme and were anxious to participate in further computer instruction.

DISCUSSION

The successful training of developmentally handicapped adults to conceptually discriminate food groupings is not, in itself, a remarkable achievement. The use of a computer in teaching these skills however is noteworthy. With a minimal amount of teacher involvement even nonreaders rapidly acquire the concept presented. This raises the possibility that other modes of instruction and topics could be viably facilitated by computer.

The programme described here is an initial step towards a comprehensive nutritional education for the developmentally handicapped. Subsequent programmes would include teaching daily food requirements, the impact of food choices on health and

the importance of related factors such as exercise and rest. Imparting nutrition education does not guarantee relevant changes in behaviour (Cosper, *et al.* 1977). With obese children it has been reported that nutrition education is less effective than a behaviour modification programme in promoting weight loss (Epstein, *et al.* 1980). Incorporating behavioural change techniques into a nutritional education programme would maximise the potential benefits to the participant.

SUMMARY

Poor nutritional habits are often a characteristic of the developmentally handicapped. This report documents a pilot investigation of the use of computer-assisted instruction in nutrition education with this population. People were successfully trained to categorise individual foods according to their food group. It is proposed that CAI would be a valuable method of teaching comprehensive nutritional skills.

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