

A DESCRIPTIVE STUDY OF THE  
MOBILE INSTRUCTIONAL RESOURCE CENTRE PROJECT:  
AUGUST 1973 TO MARCH 1974

by

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## ABSTRACT

The P.A. Woodward Mobile Instructional Resource Centre Project (MIRC) was a motorized educational delivery system used by the Division of Continuing Education in the Health Sciences at the University of British Columbia to provide learning opportunities for health professionals in their home communities. This study describes the project and analyzes its role in continuing education in the health field for those resident in the rural areas served by the project.

The MIRC was a highway bus converted into a mobile continuing education facility containing three audio visual learning stations and over 1300 audio visual learning programs. Operated by a graduate adult education student, the MIRC visited 17 rural British Columbia communities between August 1, 1973 and March 31, 1974. During this period, data were obtained from 521 participants in 11 health professions and from 136 non-participants in seven health professions.

Participation rates in the MIRC project were higher than those in other programs provided by the Division of Continuing Education in the Health Sciences during the same period whether examined by community or by professional category. MIRC participation rates were significantly higher among those professions for whom the Division provided other programs than they were among those for whom it did not. Participation rates were not related to distance

from Vancouver but were higher for communities with smaller local hospitals.

The MIRC project appears to have served a different set of individuals than did other Division programs. Direct costs were approximately four times as high but the expenses borne by participants and their employers were not considered.

Participants and non-participants differed significantly with respect to sex, profession, location of employment, and number of professional books read.

Reactions to the project, measured on a five-point scale, were favorable over-all. Significant differences among the professional groups were observed on two items and among various communities on all items. Reaction scores were not significantly related to participation rates or to the size of communities, but were higher in communities nearer Vancouver.

By assigning ranks to eight alternative educational delivery systems, the respondents as a whole indicated that they preferred an audio-visual learning station in a hospital or in the MIRC project. Participants whose rankings were not related to those of non-participants preferred these same two systems. Non-participants preferred using a hospital library or attending courses outside their communities.

Among the reasons given for not participating, most did not suggest ways in which the project could be altered to improve participation.

It was concluded that the MIRC project is an acceptable and effective system for delivering continuing education opportunities to health professionals in rural British Columbia.

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## CHAPTER I

### INTRODUCTION

In the modern world, the pervasive influence of constant and rapid change is having an impact on virtually every aspect of human endeavour. Technological advances resulting in a proliferation of new skills and knowledge make it virtually impossible for highly trained individuals to keep abreast of developments in their fields. This problem is compounded by the fact that knowledge and skills which are not in consistent use deteriorate unless they are reinforced in some other way. The several professions are becoming increasingly aware that unless their members take steps to keep abreast of changes and developments, and to offset the deterioration of present knowledge and skills, the inevitable result will be professional obsolescence (12,15,17,24,30,75). The implications of this possibility are serious for all professional groups, but they are serious in the extreme for the health professions, where the consequences of obsolescence can be measured not only in economic terms but also in terms of the intensity of human suffering and the length of human life; therefore, increasing pressure is being exerted by governments, professional associations, and the general public on members of the health professions to demonstrate continuing competence (21,22,47,56,68,75).

The solution most often proposed to the problem of ensur-

ing and maintaining competence is continuing professional education. Indeed, four of the professions: dentistry, medicine, nursing and pharmacy have begun to specify that the right to practice is conditional on participation in continuing education (11, 56, 68, 75). This increasing emphasis on continuing education is appropriate in an ideal sense because of its potential ability to provide the necessary opportunities for lifelong professional development and growth, but there are a number of practical problems that must be resolved before the ideal can be achieved.

For those responsible for providing continuing education, a major problem is its marginal status in the eyes of governments as well as sponsoring agencies and institutions. The principal consequences of this perceived marginality are a lack of funds and a shortage of appropriately trained health education manpower. The geographical remoteness of many practicing health professionals makes these even more significant. This is borne out by professionals who cite an inability to leave their work situation, costs, the time required and the distance to be travelled to attend courses as reasons for non-participation (53).

It is clear that if continuing education is to provide an effective means of preventing professional obsolescence, particularly for those practicing in remote areas, delivery systems must be developed that can replace the traditional approaches to instruction. Such systems must minimize costs, make economical use of health education manpower, reduce time lost in travel and

stimulate interest in non-traditional forms of learning.

#### PURPOSE OF THE STUDY

This study describes the P.A. Woodward Mobile Instructional Resource Centre (MIRC) Project, which was developed to respond to the learning needs of rural health practitioners, and analyzes its role in continuing education in the health professions.

#### PROCEDURE

Data were obtained from members of 11 health professions in 17 communities in British Columbia between August 1, 1973 and March 31, 1974. The health professions were: dentistry, medicine, nursing, nutrition and dietetics, pharmacy, rehabilitation medicine, social work, licensed practical nursing, medical records librarianship, medical laboratory technology and radiologic technology. Data from non-participants were obtained from the first seven groups.

#### DATA COLLECTION

Participants were asked to complete a data form during their first visit to the MIRC, and a total of 521 were completed. Non-participants were identified from a list of all health professionals in each community visited, and a random sample, to a maximum of 20 in each community, was selected. Each person selected was mailed a questionnaire during the week following the MIRC's visit to their community. Of the 333 forms mailed, 136

were returned for a return rate of 40.8 percent (Appendix A, page 115).

Data on participation rates in the MIRC project were obtained from records maintained during the visit to each community while data on participation in other educational activities were obtained from records maintained by the University of British Columbia.

#### DATA ANALYSIS

Frequency distributions were calculated and means and standard deviations obtained. Chi square tests were conducted to measure discrepancies between expected and obtained frequencies, and F tests performed to test for significant differences among subgroup means. Pearsonian correlations were calculated where appropriate to measure the degree of association between variables.

#### DEFINITION OF TERMS

Adult Education - "... any planned and organized activity provided by an individual, an institution, or any other social instrumentality that is intended specifically to assist an adult to learn and which is under the immediate and continuing supervision of an instructional agent who manages the conditions for learning in such a way as to facilitate the successful achievement of the learning objectives" (82).

Continuing Education in the Health Sciences - "systematic learning activities designed to modify attitudes and/or update or



enlarge the knowledge and skills of health professionals so that their competence is maintained for the purpose of improving health care services" (50).

Distance Education - educational activities designed for learners who are geographically separated from the institution, organization or agency providing the activities.

Delivery System - a means of making learning opportunities accessible to potential learners. The term implies a purposeful activity on the part of a learning agent intended to create opportunities for learning and to provide a means of making those opportunities accessible.

## REVIEW OF THE LITERATURE

In order to provide a background for the examination of the MIRC Project, this section will review the continuing education literature related to distance education for health practitioners. The problem of providing for the needs of adult learners who are geographically remote from centres of learning is not unique to the health sciences. It has been a concern of adult educators for centuries. Indeed, continuing education in the health sciences as a whole has emerged only recently as a recognizable movement within the field of adult education, so that most of the approaches taken to providing learning opportunities for health professionals in remote communities have their origins in the general development of the field. Because most of the important delivery systems currently used in the health sciences

have originated in North America, only literature from the United States and Canada has been included.

This review of literature in the health sciences draws heavily on the extensive review of North American literature in continuing education in dentistry, medicine, nursing and pharmacy published by Nakamoto and Verner in 1973. It extends their review as it pertains to distance education in those professions to December 1976. Literature from six other professions: occupational therapy, physiotherapy, nutrition and dietetics, medical records librarianship, medical laboratory technology and radiologic technology covering the period from January 1960 to December 1976 was reviewed and is included because representatives of these groups also participated in the MIRC project.

This review will focus on delivery systems designed to meet the needs of potential learners who are geographically distant from major educational centres. It will include both those systems developed for distant learners by learning agents in the major educational centres and those developed by distant learners to meet their own needs. Definitions of the various systems will be presented where appropriate when they are described. The categories of delivery systems used in this review are: home study systems, off-campus and travelling courses, media, and community-initiated systems.

#### HOME STUDY

One of the earliest and most important means of providing

learning opportunities to the general population of adult learners who are at a distance from teaching centres is correspondence study, but formal correspondence courses have played a relatively small part in the distance education of health practitioners. Other forms of home study, most notably programmed instruction, have been used to a greater extent.

Mackenzie (1971) defined correspondence instruction as "... instruction offered through correspondence which requires interaction between the student and the instructing institution." In its traditional form, correspondence study consists of a series of printed lessons with assignments which the student completes and returns to the instructor for marking and suggestions. This has been supplemented by a variety of media: audio-tapes, films and slides, open or closed-circuit television, videotape, programmed instruction, computer assisted instruction, telephone (telelecture and consultations) and radio (49).

Home study is not a significant factor<sup>2</sup> in continuing education in any of the health professions. Medicine, the only profession which summarizes continuing education courses by type on an annual basis, reported a total of 12 home study courses in 1969-70 which was 0.59 percent of all courses offered (53). In 1975-76, 67 home study courses were 1.2 percent of the total number (68). Correspondence and programmed instruction are the principal home-study delivery systems, other than journals, used by other professions as well; however, no descriptive studies on either have appeared in the literature.

No important developments in the use of correspondence have appeared in the health sciences literature since 1970. As was reported by Nakamoto and Verner (1973), it is used fairly extensively in continuing pharmaceutical education. The United States Dental Corps, which has been offering continuing education through correspondence since 1957 (53), is still the principal user of this delivery system in Dentistry. Correspondence is seldom used in continuing nursing education.

Programmed instruction has been defined as "... a self-instructional approach to learning in which information is presented in a co-ordinated sequence of question-and-answer steps or frames" (10). As Nakamoto and Verner (1973) pointed out, it is used most extensively in continuing education in pharmacy. The Journal of the American Pharmaceutical Association listed 31 sources of programmed instruction courses for pharmacists in August 1973 (10). The appropriateness of programmed instruction for continuing pharmaceutical education was examined by Mrtek and Mrtek (1971) who concluded that it was most effective as a remedial tool. Hodapp and Kanun (1970) compared programmed instruction and closed circuit television and found them equally effective in terms of cognitive gains.

The only study reporting the use of programmed instruction in continuing dental education since 1970 is a study by Melrose (1976) conducted by the Department of Pathology of the School of Dentistry at the University of Southern California. Approxi-

mately 3,100 dentists completed an oral cancer course which included a pre- and post test. The results based on test scores, participant responses, number of referrals and other measures were positive. Programmed instruction courses on a wide variety of subjects are available through the Division of Dental Health of the United States Public Health Service. Programmed materials for general practitioners have been developed by the Division of Periodontology of the University of California School of Dentistry as well (53).

The use of programmed instruction in medicine and nursing has not changed significantly since 1970. Nakamoto and Verner (1973) pointed out that although programmed materials on a variety of topics are available to doctors from a number of sources, they receive greatest use in continuing medical education as a supplementary device in conjunction with other forms of instruction. Their use in nursing has not been extensive. Adams (1971) described a number of guided independent study packages on a variety of topics available to nurses through the Department of Nursing at the University of Wisconsin. The American Journal of Nursing is publishing a series of programmed instruction supplements on assessment techniques (62).

#### OFF-CAMPUS COURSES

An early approach to distance education was the traveling lecture which has become one of the principal delivery systems

both in general adult education and in continuing education in the health sciences. Off-campus and travelling courses are a traditional way of delivering continuing education to rural health professionals and they are mentioned in the literature of most of the professions where they are called "community" or "circuit" courses.

A circuit course usually has a regularly itinerary which includes a number of communities, whereas a community course is offered in a single location; however, the terms are frequently used interchangeably in the literature. Circuit courses have been defined as "... those presented at relatively isolated communities by touring faculty groups" (68) and this definition is sufficiently broad to include all types of community courses.

Nakamoto and Verner (1973) reported that circuit courses were receiving increasingly less emphasis in the late 1960's as a way of delivery continuing medical education. Since then, this trend seems to have been reversed. In 1969-70, only 14 circuit courses were reported in the United States and they accounted for 0.69 percent of all courses. In 1975-76, however, 136 were reported, accounting for 3.25 percent of the total (68). This is consistent with the "... (virtual) tidal wave of interest in learning by community physicians" noted by Strauch (1975).

Braucher (1971) provides a summary of programs offerings in continuing pharmacy education. In a four-year comparison of programs sponsored by pharmacy schools alone and co-sponsored with professional associations (1966-69), he reports that the number of off-campus courses was greater than the number offered on campus

each year. The number and proportion of off-campus courses actually declined during the period, from 158 (62%) in 1966 to 121 (54%) in 1969, whereas the number and proportion of on-campus courses remained fairly constant. The difference is accounted for by "combination" courses offered both on campus and off using electronic media. They were first reported in 1967 and accounted for seven percent of the total in that year.

No general summary of course offerings by type or location has been published by the other professions; therefore, it is not possible to determine the extent to which community or circuit courses are used.

A variation of the off-campus course is a delivery system that employs a specially-equipped motor vehicle. Such vehicles are used extensively for delivering primary health care services in rural areas (6,18,20,42,48) and in providing consumer education (6,13,42). They have been used by rehabilitation medicine (48) and dentistry (20) in British Columbia. Tseitlin (1973) reported descriptions and specifications of vehicles that could be used for these purposes. Limited use has been made of such vehicles for continuing education for health professionals. Spicer (1975) described a project in Arizona which comprised a small van staffed by a registered nurse who led learning experiences in rural communities using audio visual equipment and materials stored in the van. The learning experiences were conducted in local facilities and not in the van itself. No other similar projects have been described.

## MEDIA

Ely (1963) defined major categories of media: mass media, instructional media and instructional aids. The first two are useful for classifying mediated delivery systems. Because instructional aids were defined as "supplementary" in the teaching-learning process and "not self-supporting", they cannot comprise the essential component of a delivery system and while they will be mentioned in descriptions of other delivery systems, they will not be described separately.

Media has played an important role in the development of distance education delivery systems both for the general adult population and for health practitioners. Mass media is used extensively in general adult education while its use in continuing education in the health sciences is less extensive in some respects, but with certain mass-media delivery systems used mainly in the health sciences. The use of instructional media has not been nearly as extensive in general adult education as it has in continuing education in the health sciences.

### Mass Media

Mass Media has been defined as "the instruments of communication that reach large numbers of people with a common message" (28). Knowles (1962) has said that the progress made by the principal mass media in developing programs organized specifically for educational purposes is one of the more significant adult



educational achievements of the modern era. The forms of mass media used most frequently in general adult education are: print media (newspapers, books, magazines), motion pictures, radio and television. In continuing education in the health sciences, journals are the only form of print media used extensively; motion pictures are used primarily as instructional media or instructional aids; television is used extensively and radio to a lesser degree. Telephone delivery systems, which are less often used in general adult education, are beginning to play an important role in continuing health education.

The principal form of print media used in continuing education in the health sciences is the professional journal. Each profession has at least one. Most have several and some deal exclusively with matters relating to education. Many professional journals offer self-assessment systems to their subscribers. The typical system involves an anonymous multiple-choice test which is mailed to a testing agency. The results, a reading list, and in some cases a discussion of incorrect responses is returned, usually within two weeks. The primary purpose is to stimulate independent study among members of the professions and to direct that study in areas where deficiencies have been shown to exist. Self-assessment systems are used most extensively in medicine and dentistry (14,39,66,67,68).

Although the motion picture has played a fairly important role in providing distance education opportunities for the general

population of adult learners, the literature in the health sciences makes no reference to its use for delivering continuing education to health practitioners.

Broadcast radio played a prominent role in adult education between 1920 and 1960 but it has been less prominent in continuing education in the health sciences; however, two-way radio has been used to some extent.

Nakamoto and Verner (1973) reported that two-way radio had been used in continuing medical education and in continuing education in nursing during the 1960's. Griswold (1972) reported that it was being used in continuing pharmaceutical education in Albany, New York. Denne (1972) described a study conducted by the Inter-Mountain Regional Medical Program involving several health professions in 48 hospitals in six states. The study found that more participants were from rural than from urban areas, and that the majority of the physician-participants in rural areas did not attend courses away from home. Problems in scheduling, reception and content were reported and the two-way facility was seldom used. The study concluded that audio recordings and/or audiotape-slide programs could serve the same purpose at a lower cost and a high level of satisfaction for the participants.

There are two principal types of television delivery systems: broadcast or open-circuit, and closed-circuit systems. Broadcast or open-circuit systems are those through which "... programs are radiated for reception by any listener or viewer with-

in range of the station" while a closed-circuit system "...limits distribution of an image to those receivers which are directly connected to the origination point by coaxial cable or microwave link" (28). General adult education has used broadcast systems more extensively than closed-circuit while both types of systems have been used in continuing education in the health sciences.

As Nakamoto and Verner (1973) pointed out, open-circuit television is used most extensively in continuing medical education but its use appears to have decreased since 1970. In 1969-70, 12 "TV-Radio" courses were reported in the Journal of the American Medical Association (53) and in 1976-77, the number had decreased to six (68). A study conducted by the Inter-Mountain Regional Medical Program, which had been providing open-circuit television programs for general practitioners over a period of 11 years, concluded that active learner-involvement, an element essential for adequate motivation, has not been provided for in open-circuit television to date and that "the results ... cast doubt on whether open-circuit television has enough potential to compete with other means of continuing medical education and leisure-time programming on commercial television stations" (19). A survey conducted by the Faculty of Medicine at the University of Western Ontario concluded that "Medical educational television is seen as being complementary to other forms of continuing education rather than completely satisfying the need for such education by itself" (41).

Open-circuit television was scarcely used in continuing

dental education before 1970 (53). Since that time, it has been used extensively in New England and the North Central United States (38,84,85,86). In New England, an attempt to provide for active learner participation through the use of a telephone question-and-answer system was abandoned after three years because of a low rate of utilization. However further use of open-circuit television systems was encouraged (38). In the "MIND" region (Minnesota, Iowa, Nebraska, and the Dakotas), an extensive educational television system supplemented by portable equipment and tapes for areas outside the broadcast area and by satellite clinics was operated with the assistance of federal government funds for two years, but attempts to continue the system through subscription fees were unsuccessful (84,85,86).

Open-circuit television has not been extensively used in continuing nursing education. Nakamoto and Verner (1973) cited a California study designed to determine whether nurses gain more from television broadcasts viewed at home or with groups of colleagues in a hospital conference room. Home viewing was found to be superior to group viewing as measured by learning achievement. Hensely (1975) reported a project at Chapel Hill in which nurses were trained to act as group leaders for their colleagues in television-centred classes conducted in their local work settings.

Like the other professions, pharmacy used open-circuit television more extensively as a delivery system for continuing education during the late 1960's than it does at the present time.

Nothing has been published on its use since 1970.

Closed-circuit television has been used as a delivery system for continuing education in dentistry, medicine, nursing, pharmacy and in dietetics. Like broadcast television, it has been used most extensively in medicine.

Hufhines (1972) studied physician and hospital characteristics associated with the use of medical television in Southern California. He reported that the programs were being viewed "... by those physicians who are in greatest need of continuing medical education; that is, non-specialists with the least training, who, on the average graduated from medical school about 20 years ago and who admit more patients to hospital than do non-viewing physicians." He also found that the viewers tended to be associated with smaller hospitals and concluded that the television network was an important delivery system for continuing education in those hospitals because other educational opportunities were limited. Caldwell (1974), reviewing nine years of closed-circuit programming by the University of California, noted a significant decrease in service when federal funds were withdrawn in 1971. He concluded that television appears to have no more inherent magnetism than any other form of continuing education and that motivation to engage in learning appears to hinge on whether or not a particular program fills a need at the time it is presented.

The telephone has not been used to any great extent as a distance education delivery system in general adult education. It has achieved some prominence, however, in the last few years in

continuing education in the health sciences. Telephone systems have become increasingly popular as a means of delivering continuing education to rural health practitioners. The terms most commonly used to describe this approach are "telelectures" and "teleconferences". Telelectures are frequently supplemented by electronic chalkboards or by slides. Nakamoto and Verner (1973) reported the use of telelectures in continuing education in medicine, nursing, and pharmacy. Since 1970 their use appears to have increased.

Silverston and Hansen (1973) described a telephone conference system developed at the University of Wisconsin which grew from an 18 hospital network in 1965 to 75 hospitals in 1972. In that year, approximately one-third of a total of 50,000 hours of instruction provided for practising physicians was delivered through telephone conferences. An evaluation study found that participants showed cognitive gains and demonstrated retention after a six-month interval. It concluded that telephone conferences were meeting the goals set for them. The University of Texas Health Sciences Centre at San Antonio has been operating a teleconference system for physicians for seven years linking over 100 hospitals in five states with the San Antonio Centre (77). Dymont (1971A) described a telephone lecture systems for nurses and allied health professionals developed by the Regional Medical Program in Western New York involving 51 hospitals. Donaldson (1968) described a telelecture system for dietitians operated by the

University of Wisconsin. Spears (1973) reported a study comparing results of a two-day workshop and a series of telelectures on the same topic. The study found no significant differences between the means of post-test scores and concluded that the telelectures were as effective as the workshop.

### Instructional Media

The term instructional media has been defined as "devices which present a complete body of information, and are largely self-supporting rather than supplementary in the teaching-learning process" (28). Unlike mass media, instructional media in itself is not a system of delivering educational experiences to potential participants. Being largely self-supporting, it provides the necessary instructional component, but learner access must be accomplished by adding a delivery component. Several instructional media delivery systems are being used in continuing education in the health sciences. Principal among these are audiotape and video tape subscription services, telephone dial-access services and computer-assisted instruction. Learning resources centres, which have been developed in a number of areas, provide an additional system for distributing instructional media and other learning resources. Although learning resources centres have been developed to serve the needs of the general population of adult learners as well, the development of the other instructional media delivery systems described has been most extensive in the health sciences.

A number of systems which deliver audiotapes and video tapes to health professionals on a regular basis through a subscription are in operation at the present time. As reported by Nakamoto and Verner (1973), the most extensive audiotape subscription services have been developed for continuing medical education. The largest of these is operated by the Audio-Video Digest Foundation which distributes two to four tapes per month in each of 12 subject areas to subscribers in several countries. Oakley (1972) estimated that participation rates in Audio-Video Digest subscriptions in the United States ranged from 18 percent of all family practitioners to 41 percent of board-certified anaesthesiologists. The mean rate for all 12 groups was approximately 30 percent. The Philadelphia College of Pharmacists provides an audiotape subscription service called "Pharmatapes" designed particularly for rural pharmacists (32). The American Society of Hospital Pharmacists provides a similar service (55). Canadian dentists may subscribe to a cassette service provided by the Canadian Dental Association (11). The American Dietetic Association offers a cassette-a-month subscription plan (70) and Thompson (1966) refers to an audiotape correspondence system for physiotherapists. No participation figures for these services have appeared in the literature.

Video tape subscription services are less developed than those for audiotapes, principally because of the higher costs involved. The Canadian Dental Association has decided to postpone



entry into the field for this reason (11). It is seen by some, however, as an important future prospect. Services operating at present are intended primarily for continuing medical education. As of May 1974, the Los Angeles Ear Research Institute had over 1,500 monthly subscribers (83) and The Network for Continuing Medical Education has provided a bi-weekly video tape service to more than 800 institutions in the New England States for the past ten years (54).

Pearson (1974) defined a dial access system as an information service that provides telephone access to brief recorded summaries, with a typical message between four and eight minutes in length. This system appears to be unique to the health sciences.

Nakamoto and Verner (1973) pointed out that dial access systems were being used most extensively in continuing medical education and that they had been introduced in Canada as well as in the United States. The only other profession to initiate a service prior to 1970 was nursing. The situation appears to be largely unchanged, although the scope of the services may have grown. Pearson (1974) reported 13 dial access systems in the United States and Canada serving 20 states and provinces.

Although no objective data has been published, two studies indicate that the use of a dial access library may result in improved patient care. Silverston and Hansen (1973) described a study conducted at the University of Wisconsin which found that

nearly one-third of the calls resulted in a reported change in behaviour by the physician. Pearson (1974) reported a more comprehensive study involving all dial access services in operation at the time and found that nurses and physicians were the heaviest users of the services, with approximately twice as many calls being made by nurses as by physicians. Some calls were made by dentists and pharmacists even though it was not intended for those professions. Proportionally more callers were from rural than from urban areas. The users indicated that they had changed one or more aspects of their practice based on what they had heard and that they had gained confidence in managing patient problems; however, they also indicated that they would not pay a nominal amount (even toll charges) for the use of the service.

Ertel (1972) defined computer-assisted instruction (CAI) as "an approach to education in which the instructional program and some educational materials are stored in a computer and utilized to teach an individual a pre-determined body of knowledge." Computerized delivery systems seem more appropriate for the preparatory training of students or for courses in major centres than for distance education. The situation in the health sciences may be changing to some extent. Hoffer (1975) described a small-scale study of the use of computer-assisted instruction in five community hospitals in Michigan, Massachusetts, California and Ohio. A terminal connected to the computer at Boston Massachusetts General Hospital was placed in the emergency department of each hospital.

A number of physicians, nurses and para-medical personnel were receptive to CAI and considered it a valuable resource, and the study concluded that CAI "... appears to have a positive impact on physician behaviour."

Learning resources centres capable of distributing and, in some cases, producing a wide variety of learning resources have been developed in Canada and the United States, some for general adult education and other exclusively for the health sciences. Nakamoto and Verner (1973) reported that several were being developed for physicians and other health professionals through the Regional Medical Programs in the United States and that a number of others were being operated by universities, professional associations and federal government agencies. These centres, which distribute materials on a loan or rental basis, provide a valuable support system for adult learners in rural areas by supplying materials to individuals for independent study and aids to support instruction in programs initiated by communities.

#### COMMUNITY-INITIATED SYSTEMS

A fundamental principle of adult education is that if maximum learning is to occur, appropriate learning opportunities must be available when the need to learn arises. All too frequently, this is not the case in distance education. Content for learning experiences and schedules are often determined without adequate consultation with the prospective learners. Consequently,

distance education delivery systems do not always provide the kinds of learning opportunities that are most appropriate at the time they are required. To compensate for these deficiencies, adult learners have tended to turn to informal types of learning opportunities such as consultations with local authorities and to relevant literature. When more comprehensive investigations of a topic have been required, they have formed primary learning groups to examine and discuss matters of mutual interest, and they have arranged formal courses and workshops. The two principal forms of organized learning activities initiated within local communities have been discussion groups and short courses. Discussion groups have been used both by the general population of adult learners and by health professionals. Community-initiated courses for the general adult population tend to be organized by local educational authorities rather than by the learners themselves. This is not the case in the health sciences.

### Discussion Groups

A discussion group is "...a learning situation which conforms to the characteristics and societal processes of a group so that learning is achieved by the group as a unit as well as by its individual members; and in which the responsibility for learning is shared equally by the group members and the instructional agent" (81). The use of discussion groups is referred to frequently in the distance education literature using a variety of terms such as

study clubs, reading circles, listening groups, and others, but the nature of the activity is the same. Discussion groups have been used in general adult education and in continuing education in the health sciences, both by agencies as a means to provide learning opportunities for adults in their communities and by adult learners themselves to satisfy their own learning needs.

Nakamoto and Verner (1973) reported that the first health profession to use discussion groups extensively was dentistry. They pointed out that these groups, called study clubs, have two characteristics that make them particularly effective:

- 1) the members are involved in planning their own education, and
- 2) as small informal primary groups, they provide for member interaction and facilitate the use of instructional techniques with high learner participation.

In dentistry, approaches taken by study clubs vary, with members accepting responsibility for directing the group on a rotating basis, or through the use of outside resource personnel. In most cases, the primary emphasis is on clinical skills. As of December 1976, seven states and two provinces accepted participation in dental study club activities for credit toward mandatory continuing education requirements. Since 1970, study clubs have been reported in medicine (16,77), pharmacy (55), and dietetics (70). Johnson (1966) reported their use in physiotherapy during the 1960's. In almost all cases, members of the group are responsible for the planning and organization. Because costs are usually limited and arrangements relatively easy to make, study clubs are

particularly valuable to health practitioners in smaller rural communities.

### Community-Initiated Courses

Courses developed by adult learners in their communities to meet their own learning needs seem to be more prevalent in continuing education in the health sciences than in general adult education. Nakamoto and Verner (1973) noted a trend toward courses and other learning experiences developed in community hospitals. The trend appears to be continuing.

Hiss (1976) described two types of approaches commonly used in continuing medical education: 1) formal programs organized by a local co-ordinator or a planning committee, and 2) staff conferences, which may consist of presentations by local or visiting authorities, discussions of record audits, x-ray conferences and other similar activities. Both Hiss (1976) and Brock (1975) mentioned an aspect of the trend toward community-initiated learning experiences that is emerging in other professions as well: the appointment of local co-ordinators. These co-ordinators are local health professionals selected by their colleagues or by a central agency to initiate and sometimes direct learning experiences in their communities. An extensive system of co-ordinators was established by the Division of Continuing Education in Pharmacy at the University of British Columbia in 1976 (5). The Canadian Dental Association Task Force on Continuing Education recommended in February 1976 that a national network of regional co-ordinators

be established. The co-ordinators would be located in communities remote from teaching centres and, supported by materials and funds from the Canadian Dental Association, would be responsible for continuing education in their regions (11). The appointment of these local and regional co-ordinators appears to an acknowledgment of two important principles: 1) if continuing education is to be delivered in a way that is likely to meet community needs, at least a portion of the responsibility must rest with local health practitioners, and 2) local practitioners are capable of and interested in accepting this responsibility.

## CHAPTER II

### THE MIRC PROJECT

In this chapter, the history and origins of the P. A. Woodward Mobile Instructional Resource Centre (MIRC) project, its purposes, and the manner in which it was operated and administered will be described.

### ORIGINS OF THE PROJECT

The Division of Continuing Education in the Health Sciences at the University of British Columbia was established on April 1, 1968 (31). At that time, it was made up of representatives from four professions: medicine, nursing, pharmacy and dentistry. By August 1973, it had expanded to include human nutrition and dietetics and rehabilitation medicine as well (4).

One of the concerns of the Division has been that "continuing education should be available where a (health professional) practices" (78). To achieve this, the Division of Continuing Education in Medicine offered "Community Hospital" courses in several locations each year. In 1969-70 and 1970-71, it coordinated a television series which consisted of 24 programs broadcast at weekly intervals over seven private stations and their 67 satellites (3). During the 1970-71 and 1971-72 program years, the Division of Continuing Nursing Education conducted a Coronary and



Intensive Care Project which attracted 1517 registrants in 21 locations (2,3). The Division of Continuing Education in Pharmacy maintained a lending library of audiotapes that had 60 subscribers in 1972-73 of whom 48 were in communities outside Greater Vancouver. Although such special projects enjoyed considerable success, their impact on the over-all problem of providing adequate continuing education opportunities for rural health professionals was limited because of their limited duration and scope.

In September 1969 the idea of a mobile resources centre that would take continuing education opportunities into isolated areas of the province was introduced and enthusiastically supported and encouraged (27). To achieve this objective, a vehicle was purchased in January 1970 and by August 1973, with the necessary preparations completed, the P. A. Woodward Mobile Instructional Resource Centre (MIRC) Project began.

#### DESCRIPTION OF THE MIRC

The total number of health personnel in small rural communities in British Columbia is such that it would be impossible for the MIRC to provide the volume and scope of continuing education opportunities required to meet their needs; therefore, it was intended that the MIRC should act as a stimulus and a supplement rather than a substitute for other continuing education activities. Specifically, its purposes were:

1. to stimulate the interest of rural health professionals in continuing education
2. to make rural health professionals aware of modes of independent learning utilizing audio visual media and to stimulate their interest in those particular modes, and
3. to supplement the continuing education activities of the Division (59).

#### ADMINISTRATION

The project was administered by a working committee made up of the directors of continuing education in dentistry, human nutrition, medicine, nursing, pharmacy, and rehabilitation medicine, along with representatives from social work, adult education, biomedical communications, and the Bio-Medical Library. This committee was chaired by the Executive Director of the Division.

During the development phase, the committee was responsible for establishing the purposes, obtaining the necessary financial support, acquiring the vehicle, designing the physical layout for the learning environment, making arrangements for its renovation, selecting the equipment and materials, determining the itinerary, and approving the design for the evaluation of the project. During the operational phase it up-dated the materials, selected additional communities to be included in the itinerary, and made modifications and changes in the purpose and operation of the project as required.

## OPERATION

The MIRC was a former highway bus<sup>1</sup> converted into a mobile continuing education facility by students at the British Columbia Vocational School (Figure 1). It contained three learning stations, each of which could accommodate two people. Each station was equipped with a cassette tape recorder, a carousel slide projector and a rear screen projection unit. The stations were also wired to accommodate a television monitor for receiving closed-circuit video tape programmes played on a half-inch black-and-white video tape recorder. One station contained an Autotutor (a programmed instructional device which uses specially designed 35 mm film) and another had a cartridge movie projector.<sup>2</sup> The programs were self-contained treatments of a particular topic ranging in length from a few minutes to more than an hour and many of them were supported by supplementary printed material. Most of the programs were intended for physicians with very few for dietitians, and none at all specifically for physiotherapists, occupational therapists, licensed practical nurses, medical records librarians, medical laboratory technologists or radiologic technologists (TABLE I).

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<sup>1</sup> Specifications for the mechanical aspects of the vehicle are presented in Appendix B, page 131.

<sup>2</sup> Specifications for the audio visual equipment are presented in Appendix B, page 131.

FIGURE 1

LAYOUT AND ARRANGEMENT OF THE MOBILE INSTRUCTIONAL RESOURCE CENTRE

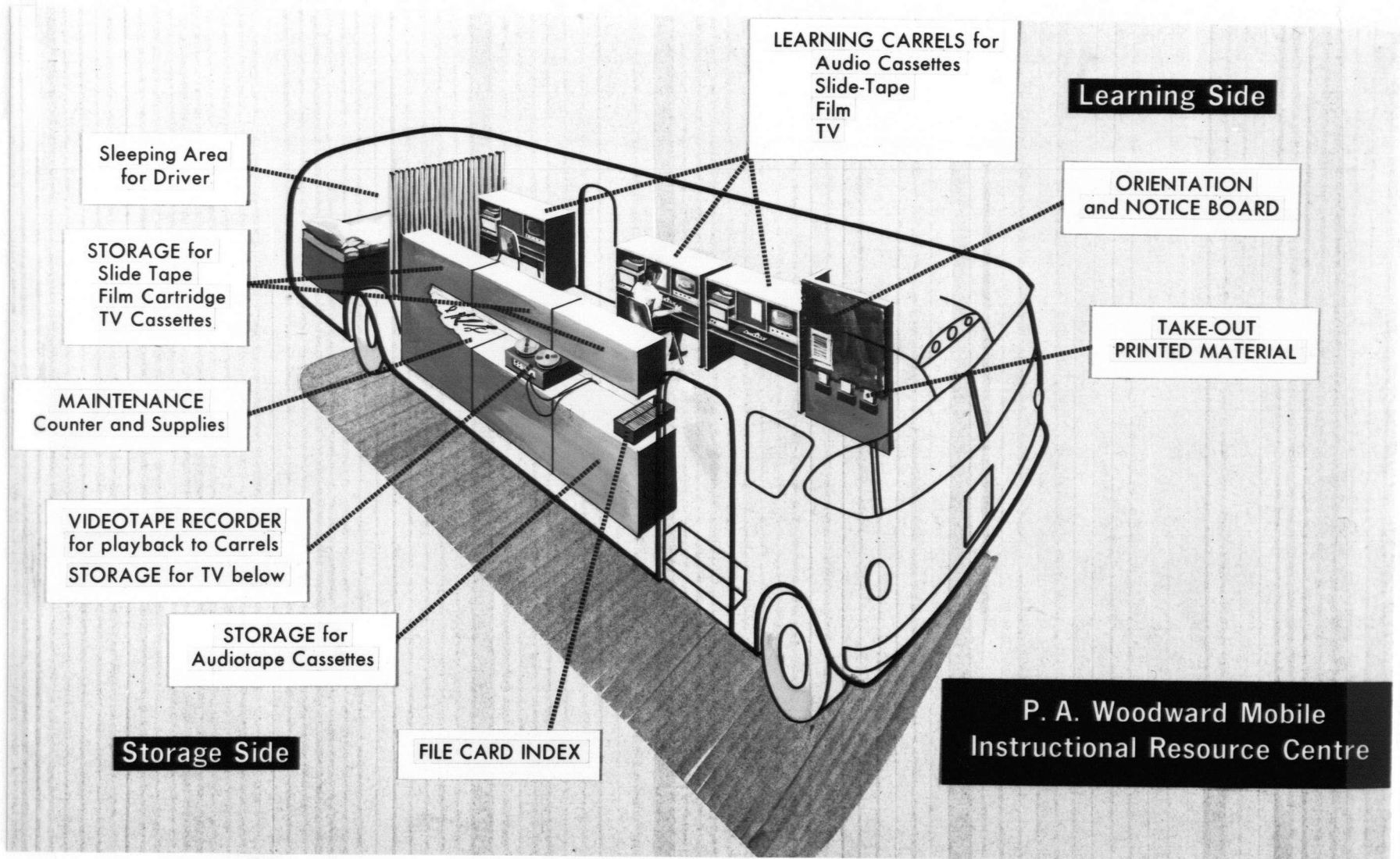


TABLE I

PERCENTAGE DISTRIBUTION OF MATERIALS IN THE  
MIRC BY PROFESSION AND TYPE OF PROGRAM: AUGUST 1973

| PROFESSION  | TYPE OF PROGRAM |       |                |      |                |      |                    |     |                    |     | TOTAL |       |
|-------------|-----------------|-------|----------------|------|----------------|------|--------------------|-----|--------------------|-----|-------|-------|
|             | Audio<br>Tapes  |       | Slide<br>Tapes |      | Video<br>Tapes |      | Autotutor<br>Films |     | Movie<br>Cartridge |     |       |       |
|             | No.             | %     | No.            | %    | No.            | %    | No.                | %   | No.                | %   | No.   | %     |
| Dentistry   | 18              | 94.7  | 1              | 5.3  |                |      |                    |     |                    |     | 19    | 1.4   |
| Dietetics   | 1               | 33.3  | 2              | 66.6 |                |      |                    |     |                    |     | 3     | 0.2   |
| Medicine    | 973             | 86.5  | 103            | 9.2  | 20             | 1.8  | 14                 | 1.2 | 15                 | 1.3 | 1125  | 84.2  |
| Nursing     | 129             | 96.9  |                |      | 4              | 3.1  |                    |     |                    |     | 133   | 9.9   |
| Pharmacy    | 38              | 100.0 |                |      |                |      |                    |     |                    |     | 38    | 2.8   |
| Social Work | 9               | 45.0  |                |      | 11             | 55.0 |                    |     |                    |     | 20    | 1.5   |
| TOTAL       | 1168            | 87.3  | 106            | 7.9  | 35             | 2.7  | 14                 | 1.0 | 15                 | 1.1 | 1338  | 100.0 |

During the period from August 1, 1973 (the beginning of the operational phase) to March 31, 1974 (the end of the first project year), the MIRC visited 17 rural communities (Figure 2)<sup>1</sup>. The criteria applied in selecting communities for the itinerary were:

1. expression of interest by local health professionals in a visit by the MIRC
2. size of the local hospital as indicated by the number of beds with preference being given to communities with smaller hospitals
3. remoteness from major continuing education centres with preference being given to more remote communities, and
4. nearness to a route between other locations included in the itinerary.

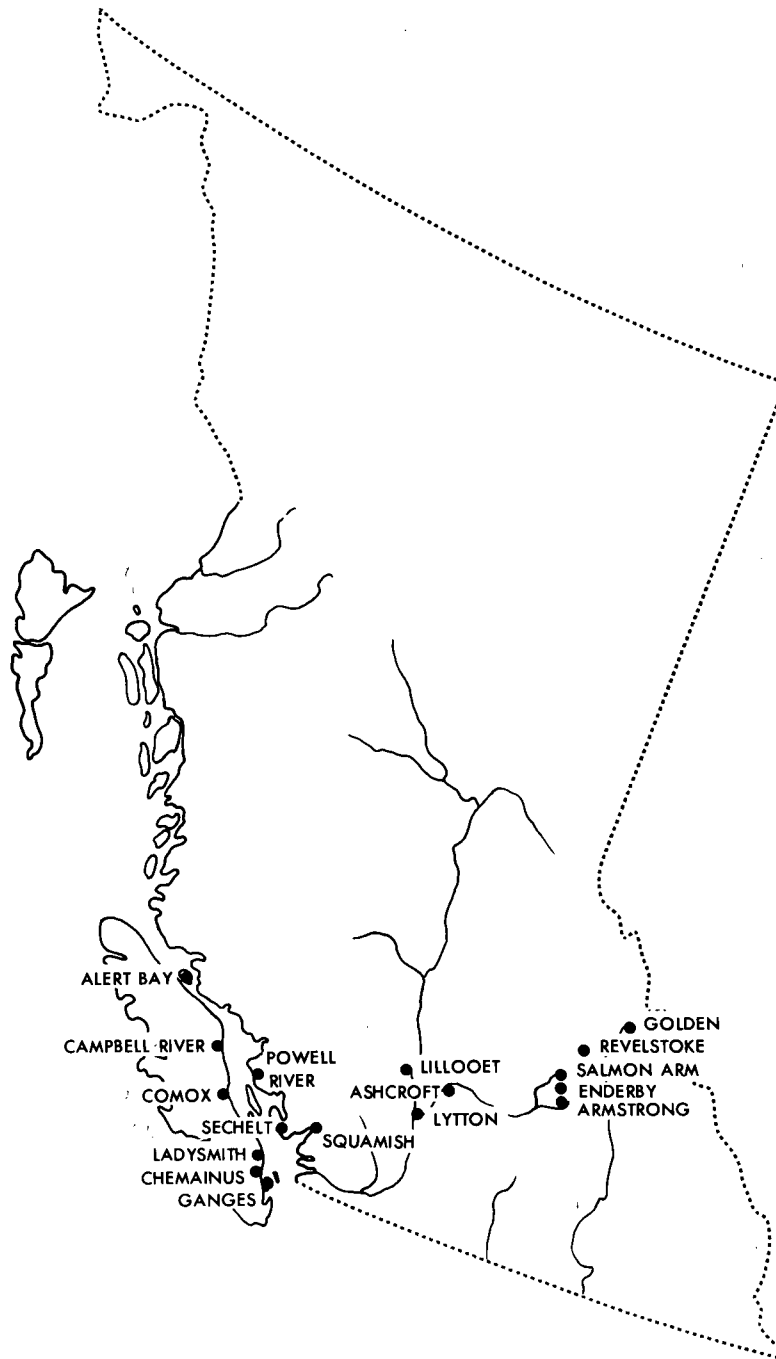
A standard procedure was applied in each community visited. Preliminary advertising describing the nature and purpose of the project and an appropriate news release were forwarded to the community prior to the visit. An index listing a portion of the material available and the hours of operation were included in this advance mailing to enable potential participants to plan their schedule for using the MIRC, and to help them determine the type of learning activity they wished to use. When the MIRC arrived

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<sup>1</sup> The itinerary is presented in Appendix C, page 133.

FIGURE 2

COMMUNITIES INCLUDED IN THE MIRC ITINERARY:  
AUGUST 1, 1973 TO MARCH 31, 1974



in the community, additional publicity was undertaken by the field staff to ensure that all local health professionals were aware that it was at the local hospital, where it remained for a week. The hours of operation - a minimum of sixty per week - were designed to afford maximum opportunity for participation.<sup>1</sup> No fee was charged.

Appointments were necessary only in the larger locations at times of peak demand. After a period of orientation, participants were assisted in selecting a program suited to their needs or interests and then taught how to operate the appropriate equipment along with some suggestions to facilitate their learning. After using materials, they were asked to evaluate them. Before the end of the first visit, each participant was asked to complete a questionnaire to gather data about demographic and employment characteristics, continuing education activities, and reactions to the project. No limits were imposed on the length of time a participant could remain in the MIRC or on the number of visits that could be made during the schedule of operation.

#### ROLE OF THE FIELD SUPERVISOR

During the operation phase, the field supervisors had three areas of responsibility: education, data collection, miscellaneous duties related to publicity, the operation and main-

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<sup>1</sup> Various schedules were tested. They are presented in Appendix D, page 135.



tenance of the vehicle and its equipment, and administrative details. When the operation phase began, two field supervisors who were graduate students in the Department of Adult Education were assigned to the project. One of these withdrew after only a few communities had been visited; so the other continued alone. The basic nature of the role was not affected by this change, although it did have an impact on the amount of time that could be devoted to interaction with the participants.

The educational role played by the field supervisor began with an attempt to stimulate interest through visits to doctors, dentists, pharmacists, health care agencies, and the hospital to acquaint health care personnel with the nature and purpose of the project and to encourage them to participate. Within the MIRC, the function of facilitating learning was added to and combined with stimulating and maintaining interest. The field staff provided orientation for participants by stressing the unique aspects of the various types of materials and assisted them in selecting programs appropriate to their interests, their chosen media, and the time they had available. This was followed by instruction in the operation of the appropriate equipment and suggestions as to how it could be used most effectively for learning. Where two or more participants were using a program simultaneously, they were encouraged to engage in discussion in order to reinforce their learning.

The field supervisor made no attempt to answer questions

about content. When such questions arose, the participants were asked to consult an authoritative source or others in the community who had used the program. At the request of participants, the field supervisor developed lists of programs on particular topics for more comprehensive study during subsequent visits.

### SUMMARY

The Mobile Instructional Resource Centre project was one of a number of attempts by the Division of Continuing Education in the Health Sciences at the University of British Columbia to provide learning opportunities for rural health professionals in their home communities.

The core of the project was a highway bus that had been converted into a mobile continuing education facility containing three learning stations, each with a variety of audio visual equipment, and over 1,300 programs, the majority of which were intended for doctors and nurses. The 17 communities included in the itinerary between August 1, 1973 and March 31, 1974 were selected on the basis of their interest in the project, their size, and remoteness. The MIRC spent a sixty-hour week at the hospital in each community. Appointments were seldom necessary and no fee was charged. Participants were given an orientation to the learning environment, helped to select a program, taught how to use the equipment, and asked to evaluate the program. Before leaving, they were asked to react to the project and provide information about their demographic and employment characteristics and continuing education activities.

### CHAPTER III

#### PARTICIPATION AND COMPARISON WITH OTHER PROGRAMS CONDUCTED BY THE DIVISION OF CONTINUING EDUCATION IN THE HEALTH SCIENCES DURING THE SAME PERIOD

In this chapter, participation in the MIRC project will be analyzed and compared with participation in other activities conducted by the Division during the same period. The clientele served by the MIRC project and other Division activities will be examined to determine whether the same individuals were being served by both, and costs of operation will be compared.

#### PARTICIPATION

Members of 11 health professions from 17 British Columbia communities participated in the MIRC project between August 1, 1973 and March 31, 1974. The participating professions comprised the major categories of health workers delivering direct patient care in communities outside the Lower Mainland at that time. The communities visited ranged in size from approximately 300 to over 13,000 inhabitants, and were located in the southern portion of the province and along the east coast of Vancouver Island, between 40 and 500 miles from Vancouver. A detailed analysis of participation based on professional categories and characteristics of communities is presented below.

## PARTICIPATION BY PROFESSION

A total of 521 health practitioners in 11 professional categories participated in the MIRC project during the period concerned although some of the professions were not represented in the smaller communities. Only four professions: medicine, nursing, licensed practical nursing and x-ray technology were included in the group of potential participants in every location. The only profession to participate in all 17 communities was nursing. In addition to representatives of the 11 major professional categories, 92 other health-related personnel participated in the project. Included in this group were nurses' aides, ambulance attendants, housekeeping and maintenance personnel, industrial first aid workers and others. Because the numbers in each of these categories were small, they were not included in the analysis of participation.

The 521 health professional who participated in the project represented approximately 41 percent of the potential participants (TABLE II). The highest rates of participation were recorded by physiotherapists (62.5%) and medical laboratory technologists (58.5%). This is surprising since the MIRC contained no materials designed specifically for their use (see TABLE I, p.33). The lowest rates were recorded by medical records librarians (23.1%) and dentists (24.4%). This might have been predicted because the MIRC contained no materials for medical records librarians, and being located at the hospital in each community, it was not as accessible to dentists as it was to members of other professions.

TABLE II  
PERCENTAGE DISTRIBUTION AND PARTICIPATION RATES  
FOR ELEVEN HEALTH PROFESSIONAL CATEGORIES

| PROFESSION                    | PARTICIPANTS |       | POTENTIAL PARTICIPANTS |        | PARTICIPATION RATES |
|-------------------------------|--------------|-------|------------------------|--------|---------------------|
|                               | No.          | %     | No.                    | %      |                     |
| Rehabilitation Medicine       | 15           | 2.88  | 24                     | 1.90   | 62.50               |
| Medical Laboratory Technology | 31           | 5.95  | 53                     | 4.19   | 58.49               |
| Dietetics                     | 5            | 0.96  | 9                      | 0.71   | 55.56               |
| Medicine                      | 60           | 11.52 | 147                    | 11.62  | 40.82               |
| Nursing                       | 278          | 53.36 | 632                    | 50.00  | 40.82               |
| Pharmacy                      | 24           | 4.61  | 59                     | 4.66   | 40.68               |
| X-Ray Technology              | 12           | 2.30  | 32                     | 2.53   | 37.50               |
| Social Work                   | 15           | 2.88  | 43                     | 3.40   | 34.88               |
| Licensed Practical Nursing    | 68           | 13.05 | 211                    | 16.69  | 32.33               |
| Dentistry                     | 10           | 1.92  | 41                     | 3.24   | 24.39               |
| Medical Records Library       | 3            | 0.57  | 13                     | 1.02   | 23.08               |
| TOTALS                        | 521          | 100.0 | 1264                   | 100.00 | $\bar{x} = 41.22^*$ |

\* Weighted mean

$\chi^2 = 28.29$  d.f. = 10  $p < .01$

In order to determine whether the differences in participation rates among the various professional groups were statistically significant, a Chi square test was performed and was found to be significant at the  $p < .01$  level ( $\chi^2 = 28.29$ , d.f. = 10). In view of this, three further questions were investigated.

Did the fact that the MIRC contained no learning materials specifically intended for certain professions deter members of those professions from participating? The professions were grouped according to whether or not learning materials were provided for their use and a Chi square test was performed on the proportions of participants to non-participants.<sup>1</sup> Because the test was not significant ( $\chi^2 = 1.01$ , d.f. = 1), it was concluded that the availability of profession-specific learning materials was not a factor that affected participation.

Did the fact that the MIRC was located at the hospital in each community act as a deterrent to participation for members of those professions not employed at the hospital? Dentistry, pharmacy and social work were the professions whose employment did not normally relate directly to the hospital. The result of a Chi square test performed on the proportions of participants to potential participants in these three professions (collectively) and in the remaining professions taken as a group tended toward significance ( $\chi^2 = 2.90$ , d.f. = 1,  $p < .10$ ), indicating that location

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<sup>1</sup> The professions for whom no learning materials were specifically intended was listed in Chapter II.

of employment may have been a factor that influenced participation to some extent.

Were participation rates among these professions for whom the Division provided other forms of learning opportunities higher than among those for whom it did not? The regular programming of the Division during the term of the project did not include programs for licensed practical nurses, medical laboratory technologists, medical records librarians and social workers. A Chi square test performed on the proportions of participants to potential participants in these professions (collectively) and the remaining professions (also taken as a group) was significant at the  $p < .05$  level ( $\chi^2 = 3.95$ , d.f. = 1). The mean participation rate for the professions for whom the Division did provide other programs was 44.1 percent, whereas the mean rate for the other groups was 37.3 percent. This would appear to indicate that those groups for whom the Division provided other forms of learning opportunities were somewhat more likely to participate in the MIRC project than those for whom it did not.

#### PARTICIPATION BY LOCATION

The 17 communities visited by the MIRC were located in southern British Columbia and along the east coast of Vancouver Island (see Figure 2, p. 35). The total number of health professionals in the 11 categories discussed in the previous section ranged from 18 in one community to 211 in another, with an average

per community of 80. Participation rates in the various communities ranged from 76.2 percent in Chemainus to 24.0 percent in Powell River. The mean participation rate was 41.2 percent. The largest community was Powell River with 13,726 inhabitants, which also had the largest hospital: 150 beds. The smallest community was Ganges with 329 inhabitants and a 25 bed hospital; and the smallest hospital (17 beds) was located in Armstrong, whose population was 1,648. The mean community size was 3,750, and the mean hospital size 54 beds (TABLE III).

To test the relationship between community size and participation rates, Pearsonian correlations were calculated and found to be significant at the  $p < .05$  level ( $r = -.492$ , d.f. = 17). Therefore, it appears that smaller communities tended to have higher participation rates than larger communities.

#### PARTICIPATION BY HOSPITAL SIZE

A further test determined that participation rates were also negatively related to the size of the local hospital as measured by the number of beds ( $r = -.503$ , d.f. = 17,  $p < .05$ ). Plotting the data revealed that, with three exceptions, participation rates in communities having hospitals 40 beds or smaller were higher than those in communities with hospitals larger than 40 beds (Figure 3). A Chi square test revealed that the rates were significantly higher in communities with smaller hospitals (40 beds or fewer) than in those in larger hospitals ( $\chi^2 = 45.051$ , d.f. = 1,  $p < .005$ ).



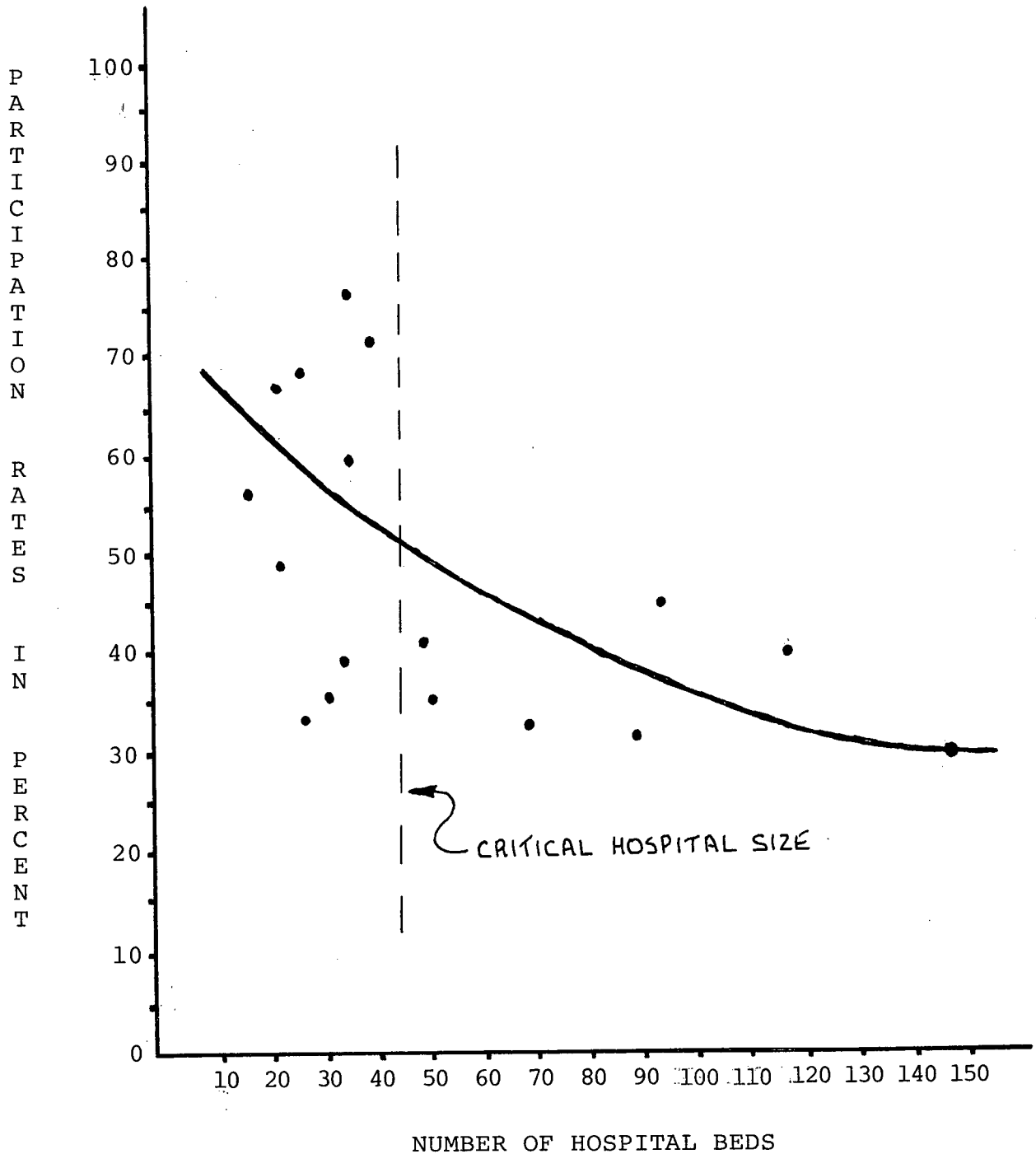
TABLE III  
COMPARISON OF COMMUNITIES BY PARTICIPATION RATES,  
POPULATION AND NUMBER OF LOCAL HOSPITAL BEDS

| COMMUNITY      | NUMBER OF<br>PARTICI-<br>PANTS | NUMBER OF<br>POTENTIAL<br>PARTICI-<br>PANTS | PARTICI-<br>PATION<br>RATES | POPULA-<br>TION OF<br>TOWNSHIP | NUMBER<br>OF BEDS |
|----------------|--------------------------------|---|-----------------------------|--------------------------------|-------------------|
| Chemainus      | 32                             | 43  | 76.19                       | 2170                           | 37                |
| Alert Bay      | 29                             | 40  | 72.50                       | 760                            | 40                |
| Ganges         | 25                             | 37  | 67.57                       | 329                            | 25                |
| Enderby        | 24                             | 36  | 66.67                       | 1158                           | 23                |
| Golden         | 27                             | 45  | 60.00                       | 3000                           | 40                |
| Armstrong      | 16                             | 28  | 57.14                       | 1648                           | 17                |
| Squamish       | 22                             | 45  | 48.89                       | 6121                           | 24                |
| Campbell River | 65                             | 143   | 45.45                       | 10,000                         | 96                |
| Ladysmith      | 27                             | 67  | 40.29                       | 3664                           | 49                |
| Comox          | 81                             | 211   | 38.39                       | 3980                           | 120               |
| Revelstoke     | 21                             | 59  | 35.29                       | 4897                           | 50                |
| Lillooet       | 12                             | 34  | 35.29                       | 1514                           | 30                |
| Sechelt        | 36                             | 107   | 33.64                       | 590                            | 70                |
| Lytton         | 6                              | 18  | 33.33                       | 494                            | 25                |
| Salmon Arm     | 41                             | 125   | 32.80                       | 7793                           | 93                |
| Ashcroft       | 13                             | 44  | 29.55                       | 1916                           | 32                |
| Powell River   | 44                             | 183   | 24.04                       | 13,726                         | 150               |
| TOTALS         | 521                            | 1264  | $\bar{x}=41.22^*$           | $\bar{x}=3,750.58$             | $\bar{x}=54$      |

\* Weighted mean

FIGURE 3

## PARTICIPATION RATES BY HOSPITAL SIZE



If an objective of the MIRC project is to achieve maximum rates of participation in each community visited, the results of these tests appear to suggest that this is most likely to be achieved in smaller communities with hospitals of 40 beds or less. Therefore, if the length of the visits is uniform and fixed, the policy of giving preference to smaller communities appears to be sound. However, because the same period of time (one week) was spent in all communities, and because the actual number of participants in most communities with a hospital larger than 40 beds was greater than the number in communities with smaller hospitals, it might be appropriate to relate the length of the visit to the size of the hospital and to test the relationship again when this adjustment has been made.

#### PARTICIPATION BY COMMUNITY DISTANCE

The distance of the communities from Vancouver ranged from 40 to 490 miles. The mean distance was 194.9 miles. Because ferry travel was required to reach several of the communities, their distance was calculated in terms of hours of travel time by automobile as well. The most distant community in terms of travelling time was 10.89 hours from Vancouver; the nearest was 0.91 hours away, and the mean time distance was 5.08 hours (TABLE IV).

To test the relationship between participation rates and the distance of communities from Vancouver, two Pearsonian correlations were calculated. The correlations were .10 with mileage

TABLE IV  
COMPARISON OF COMMUNITIES BY PARTICIPATION  
RATES AND DISTANCE FROM VANCOUVER

| LOCATION       | PARTICIPATION<br>RATE | DISTANCE<br>MILES | DISTANCE<br>HOURS |
|----------------|-----------------------|-------------------|-------------------|
| Chemainus      | 76.19                 | 65                | 2.70              |
| Alert Bay      | 72.50                 | 245               | 9.61              |
| Ganges         | 67.57                 | 58                | 2.98              |
| Enderby        | 66.67                 | 329               | 7.31              |
| Golden         | 60.00                 | 490               | 10.89             |
| Armstrong      | 57.14                 | 319               | 7.09              |
| Squamish       | 48.89                 | 41                | .91               |
| Campbell River | 45.45                 | 140               | 4.32              |
| Ladysmith      | 40.29                 | 58                | 2.54              |
| Comox          | 38.39                 | 115               | 3.83              |
| Revelstoke     | 35.59                 | 398               | 8.84              |
| Lillooet       | 35.29                 | 201               | 4.47              |
| Sechelt        | 33.64                 | 40                | 1.57              |
| Lytton         | 33.33                 | 161               | 3.58              |
| Salmon Arm     | 32.80                 | 337               | 7.49              |
| Ashcroft       | 29.55                 | 208               | 4.62              |
| Powell River   | 24.04                 | 108               | 3.70              |
| MEANS          | 41.22*                | 194.88            | 5.08              |

\* Weighted by frequency

distance (d.f. = 17), and .05 with travelling time (d.f. = 17). Neither was statistically significant. It appears that neither distance nor travel time to Vancouver was related to participation rates in communities included in the itinerary during the period concerned.

#### COMPARISON OF PARTICIPATION IN THE MIRC WITH OTHER PROGRAMS

Between September 1, 1973 and March 31, 1974, the Division of Continuing Education in the Health Sciences conducted 75 short courses and workshops in 15 locations throughout the province, providing learning opportunities for 2,880 participants from 96 British Columbia communities as well as from other provinces and the United States. Approximately half of the participants in these programs were from the greater Vancouver area, with approximately 35 percent living in rural British Columbia communities (TABLE V). Slightly less than half (48.7%) were doctors, 22 percent were nurses, and 10 percent were dentists. None of the other professions accounted for more than six percent of the total. The majority of participants in all professional groups except medicine and pharmacy were drawn from greater Vancouver. Approximately 40 percent of doctors were from rural British Columbia and 40 percent from Vancouver. Forty percent of pharmacists were from rural British Columbia, 36 percent from Victoria and 24 percent from Vancouver.

In order to calculate participation rates in Division

TABLE V

PERCENTAGE DISTRIBUTION OF ENROLLMENT IN COURSES AND WORKSHOPS BY  
PROFESSION AND BY RESIDENCE: AUGUST 1, 1973 TO MARCH 31, 1974

| PROFESSION              | <u>PLACE OF RESIDENCE</u> |       |          |       |                        |       |                          |       |       |        |
|-------------------------|---------------------------|-------|----------|-------|------------------------|-------|--------------------------|-------|-------|--------|
|                         | Greater Vancouver         |       | Victoria |       | Rural British Columbia |       | Outside British Columbia |       | TOTAL |        |
|                         | No.                       | %     | No.      | %     | No.                    | %     | No.                      | %     | No.   | %      |
| Dentistry               | 169                       | 57.68 | 21       | 7.17  | 70                     | 23.89 | 33                       | 11.26 | 293   | 10.17  |
| Dietetics               | 67                        | 93.05 | 2        | 2.28  | 2                      | 2.78  | 1                        | 1.39  | 72    | 2.50   |
| Medicine                | 584                       | 41.63 | 60       | 4.28  | 590                    | 42.04 | 169                      | 12.05 | 1403  | 48.72  |
| Nursing                 | 330                       | 50.69 | 34       | 5.22  | 261                    | 40.10 | 26                       | 3.99  | 651   | 22.60  |
| Pharmacy                | 28                        | 24.14 | 42       | 36.21 | 46                     | 39.65 | 0                        | 0.00  | 116   | 4.03   |
| Rehabilitation Medicine | 135                       | 78.95 | 9        | 5.26  | 26                     | 15.20 | 1                        | 0.59  | 171   | 5.94   |
| Social Work             | 9                         | 81.82 | 0        | 0.00  | 2                      | 18.18 | 0                        | 0.00  | 11    | 0.38   |
| Others                  | 122                       | 74.85 | 6        | 3.68  | 29                     | 17.79 | 6                        | 3.68  | 163   | 5.66   |
| TOTALS                  | 1444                      | 50.14 | 174      | 6.04  | 1026                   | 35.63 | 236                      | 8.19  | 2880  | 100.00 |

activities other than the MIRC project, registrations between September 1, 1973 and March 31, 1974 were tabulated with duplications (more than one registration by any individual) and registrations by health professionals from outside the province eliminated. Proportions were calculated using data for the number of potential participants in each profession (63). Participation rates in Division programs were compared with rates in the MIRC project for those professions for whom learning opportunities were regularly provided in the normal programming of the Division: dentistry, dietetics, medicine, nursing, pharmacy and rehabilitation medicine.

#### PARTICIPATION BY PROFESSION

A total of 2,474 British Columbia health professionals from the six professions served by the Division participated in programs during the period concerned, compared to 392 participants from the same professions in the MIRC project (TABLE VI). The over-all participation rate in the MIRC project (42.9%) was significantly higher than the over-all rate (15.1%) for all other Division programs ( $\chi^2 = 438.302$ , d.f. = 1,  $p < .005$ ). Comparing the rates for the individual professional groups revealed no statistically significant differences between the Division and the MIRC project for dentistry ( $\chi^2 = 0.011$ , d.f. = 1), dietetics ( $\chi^2 = 2.482$ , d.f. = 1), and medicine ( $\chi^2 = 0.751$ , d.f. = 1). In the other three professions, the rates for the MIRC project were

TABLE VI

COMPARISON OF PARTICIPATION RATES IN THE MIRC PROJECT AND OTHER  
DIVISION PROGRAMS BETWEEN AUGUST 1, 1973 AND MARCH 31, 1974

| PROFESSION                 | DIVISION PROGRAMS              |  |                             | MIRC PROJECT                   |  |                             |
|----------------------------|--------------------------------|--|-----------------------------|--------------------------------|--|-----------------------------|
|                            | Number<br>of Parti-<br>cipants | Number of<br>Potential<br>Participants | Partici-<br>pation<br>Rates | Number<br>of Parti-<br>cipants | Number of<br>Potential<br>Participants | Partici-<br>pation<br>Rates |
| Rehabilitation<br>Medicine | 170                            | 805                                    | 21.24                       | 15                             | 24                                     | 62.50                       |
| Dietetics                  | 71                             | 272                                    | 26.10                       | 5                              | 9                                      | 55.60                       |
| Medicine                   | 1234                           | 4310                                   | 36.93                       | 60                             | 147                                    | 40.82                       |
| Nursing                    | 625                            | 11,182                                 | 5.55                        | 278                            | 632                                    | 40.82                       |
| Pharmacy                   | 116                            | 1534                                   | 7.56                        | 24                             | 59                                     | 40.68                       |
| Dentistry                  | 260                            | 1194                                   | 21.78                       | 10                             | 41                                     | 62.50                       |
| TOTALS                     | 2474                           | 16,375                                 | $\bar{x}=15.11^*$           | 392                            | 912                                    | $\bar{x}=42.98^*$           |

\* Weighted Means



significantly higher than were those for the Division: nursing - 40.8 percent compared to 5.6 percent ( $\chi^2 = 1243.957$ , d.f. = 1,  $p < .005$ ); pharmacy - 40.7 percent compared to 7.6 percent ( $\chi^2 = 73.650$ , d.f. = 1,  $p < .005$ ); and rehabilitation medicine - 62.5 percent compared to 21.2 percent ( $\chi^2 = 20.695$ , d.f. = 1,  $p < .005$ ).

The relatively high participation rate for doctors in Division programs may have been accounted for in part by the community hospitals program operated by the Division of Continuing Medical Education which offered courses in several rural locations during the period concerned. Moreover, both doctors and dentists were largely self-employed, and therefore may have found it relatively easy to leave their communities to participate in learning experiences elsewhere. The comparison for dietetics may be suspect because of the relatively small number of cases involved.

To focus the comparison on only those professional groups in communities visited by the MIRC, registrants in Division activities were sorted according to their home addresses to determine the number of actual participants from each community. Participation rates were calculated using the same figures for the number of potential participants and once again, only those professions regularly served by the normal programming of the Division were included in the comparisons.

It was found that participation rates in Division programs ranged from zero in rehabilitation medicine and dietetics to 34.7 percent in medicine, compared with a range from 24.4 percent in dentistry to 62.5 percent in rehabilitation medicine for the

MIRC project (TABLE VII), and that the pattern of participation described with respect to Division activities as a whole appeared to apply to participation in the communities visited by the MIRC as well. Participation rates in the MIRC project were significantly higher than rates in other Division activities for dietetics ( $\chi^2 = 4.43$ , d.f. = 1,  $p < .05$ ), nursing ( $\chi^2 = 240.566$ , d.f. = 1,  $p < .005$ ), pharmacy ( $\chi^2 = 9.647$ , d.f. = 1,  $p < .005$ ) and rehabilitation medicine ( $\chi^2 = 12.707$ , d.f. = 1,  $p < .05$ ). There was no significant difference for dentistry ( $\chi^2 = 0.20$ , d.f. = 1) or medicine ( $\chi^2 = 0.925$ , d.f. = 1).

#### PARTICIPATION BY LOCATION

Comparing participation in each community visited by the MIRC, it was found that the total number of participants from these communities in Division activities was 101 compared to 392 in the MIRC project (TABLE VIII); consequently the over-all participation rate in the MIRC project was significantly higher: 42.98 percent compared to 12.17 percent ( $\chi^2 = 233.73$ , d.f. = 1,  $p < .005$ ). The number of participants in Division activities from most of the communities was quite small. There were none at all from Alert Bay, Lillooet, Lytton and Ashcroft, and fewer than five in eight other communities. There were 20 or more, however, from Campbell River, Salmon Arm and Powell River. These communities accounted for 60 percent of the participants for the Division but only 30 percent for the MIRC project. Only four locations provided fewer than 15

TABLE VII

COMPARISON OF PARTICIPATION RATES IN THE MIRC PROJECT AND IN OTHER DIVISION PROGRAMS  
BY HEALTH PROFESSIONALS FROM COMMUNITIES VISITED BY THE MIRC BY PROFESSION

| Profession                 | Number of<br>Potential<br>Participants | Number of<br>Partici-<br>pants in<br>MIRC Project | Number of<br>Participants<br>in Division<br>Activities | Partici-<br>pation<br>Rate:<br>MIRC | Partici-<br>pation<br>Rate:<br>Division |
|----------------------------|--|---|--|-------------------------------------|---|
| Rehabilitation<br>Medicine | 24                                     | 15  | 0  | 62.50                               | 0.0                                     |
| Dietetics                  | 9                                      | 5   | 0  | 55.56                               | 0.0                                     |
| Medicine                   | 147                                    | 60  | 51   | 40.82                               | 34.69                                   |
| Nursing                    | 632                                    | 278   | 34   | 40.82                               | 5.38                                    |
| Pharmacy                   | 59                                     | 24  | 8  | 40.68                               | 13.56                                   |
| Dentistry                  | 41                                     | 10  | 8  | 24.39                               | 19.51                                   |
| TOTALS                     | 912                                    | 392   | 101  | $\bar{x}=42.98^*$                   | $\bar{x}=12.17^*$                       |

\* Weighted Means

TABLE VIII

COMPARISON OF PARTICIPATION RATES IN THE MIRC PROJECT  
AND OTHER DIVISION PROGRAMS BY HEALTH PROFESSIONALS  
FROM COMMUNITIES VISITED BY THE MIRC BY LOCATION

| LOCATION          | Number of<br>Potential<br>Partici-<br>pants | Number of<br>Partici-<br>pants in<br>MIRC Pro-<br>ject | Number of<br>Partici-<br>pants in<br>Division<br>Activities | Partici-<br>pation<br>Rate:<br>MIRC<br>Project | Partici-<br>pation<br>Rate:<br>Division<br>Activities |
|-------------------|---|--|---|--|---|
| Chemainus         | 33  | 27   | 3   | 81.82  | 9.09  |
| Alert Bay         | 21  | 16   | 0   | 76.19  | 0.0   |
| Ganges            | 29  | 18   | 1   | 62.07  | 3.45  |
| Enderby           | 19  | 16   | 3   | 84.21  | 15.79   |
| Golden            | 29  | 21   | 3   | 72.41  | 10.34   |
| Armstrong         | 18  | 11   | 1   | 61.11  | 5.56  |
| Squamish          | 35  | 18   | 2   | 51.42  | 5.71  |
| Campbell<br>River | 110   | 52   | 20  | 47.27  | 18.18   |
| Ladysmith         | 45  | 20   | 3   | 44.44  | 6.67  |
| Comox             | 145   | 55   | 12  | 37.93  | 8.28  |
| Revelstoke        | 44  | 19   | 8   | 43.18  | 17.78   |
| Lillooet          | 22  | 8  | 0   | 36.36  | 0.0   |
| Sechelt           | 82  | 32   | 4   | 39.02  | 4.88  |
| Lytton            | 13  | 4  | 0   | 30.77  | 0.0   |
| Salmon Arm        | 88  | 30   | 20  | 34.09  | 22.73   |
| Ashcroft          | 30  | 8  | 0   | 26.67  | 0.0   |
| Powell<br>River   | 149   | 37   | 21  | 24.83  | 14.09   |
| TOTALS            | 912   | 392  | 101   | $\bar{x}=42.98^*$                              | $\bar{x}=12.17^*$                                     |

\* Weighted Means

MIRC participants. Participation rates in Division activities ranged from zero percent for the communities mentioned to 22.7 percent for Salmon Arm. Participation rates in the MIRC project ranged from 24.8 percent in Powell River to 81.8 percent in Chemainus and were significantly higher for all communities ( $p < .005$ ) except Salmon Arm for which the difference was not statistically significant ( $\chi^2 = 2.262$ , d.f. = 1).

With the exception of Alert Bay, which is a very remote community and might therefore have been expected to send very few participants to outside activities, participation rates in the communities which provided no participants in Division activities were low in the MIRC project as well. Lillooet, Lytton and Ashcroft were all below the group mean, even though their hospitals had fewer than 40 beds and they therefore might have been expected to record higher rates.

#### COMPARISON OF CLIENTELE

In order to determine whether the same individuals were being served by the MIRC project and other Division activities, the lists of participants' names from each community were compared. It was found that of a total of 433 participants, 342 (77.2%) participated in the MIRC project but not in any other Division activity; 50 (11.3%) participated in the MIRC project and at least one other Division activity and 51 (11.5%) participated in at least one Division activity but did not participate in the MIRC project (TABLE IX).

TABLE IX

COMPARISON OF INDIVIDUALS PARTICIPATING IN MIRC PROJECT AND  
OTHER DIVISION PROGRAMS BY PARTICIPANTS' HOME COMMUNITIES

| COMMUNITIES    | PARTICIPATION            |       |                                      |       |                   |        |       |        |
|----------------|--------------------------|-------|--------------------------------------|-------|-------------------|--------|-------|--------|
|                | Division Activities Only |       | MIRC Project and Division Activities |       | MIRC Project Only |        | Total |        |
|                | No.                      | %     | No.                                  | %     | No.               | %      | No.   | %      |
| Chemainus      | 2                        | 6.89  | 1                                    | 3.45  | 26                | 89.66  | 29    | 100.00 |
| Alert Bay      | 0                        | 0.0   | 0                                    | 0.0   | 16                | 100.00 | 16    | 100.00 |
| Ganges         | 0                        | 0.0   | 1                                    | 5.56  | 17                | 94.44  | 18    | 100.00 |
| Enderby        | 2                        | 11.11 | 1                                    | 5.56  | 15                | 83.33  | 18    | 100.00 |
| Golden         | 2                        | 8.70  | 1                                    | 4.34  | 20                | 86.96  | 23    | 100.00 |
| Armstrong      | 0                        | 0.0   | 1                                    | 9.10  | 10                | 90.90  | 11    | 100.00 |
| Squamish       | 1                        | 5.27  | 1                                    | 5.27  | 17                | 89.46  | 19    | 100.00 |
| Campbell River | 2                        | 3.71  | 18                                   | 33.33 | 34                | 62.96  | 54    | 100.00 |
| Ladysmith      | 2                        | 4.55  | 1                                    | 9.09  | 19                | 86.36  | 22    | 100.00 |
| Comox          | 8                        | 12.70 | 4                                    | 6.35  | 51                | 80.95  | 63    | 100.00 |
| Revelstoke     | 5                        | 20.83 | 3                                    | 13.50 | 16                | 66.67  | 24    | 100.00 |
| Lillooet       | 0                        | 0.0   | 0                                    | 0.0   | 8                 | 100.00 | 8     | 100.00 |
| Sechelt        | 2                        | 5.88  | 2                                    | 5.88  | 30                | 88.24  | 34    | 100.00 |
| Lytton         | 0                        | 0.0   | 0                                    | 0.0   | 4                 | 100.00 | 4     | 100.00 |
| Salmon Arm     | 11                       | 26.82 | 9                                    | 21.95 | 21                | 51.23  | 41    | 100.00 |
| Ashcroft       | 0                        | 0.0   | 0                                    | 0.0   | 8                 | 100.00 | 8     | 100.00 |
| Powell River   | 14                       | 27.45 | 7                                    | 13.73 | 30                | 58.82  | 51    | 100.00 |
| TOTALS         | 51                       | 11.51 | 50                                   | 11.29 | 342               | 77.20  | 443   | 100.00 |

Looking at the various communities, it was found that in each of seven of the 13 locations from which Division participants were drawn, only one individual participated both in the MIRC project and in other Division activities. In each of three other locations, there were four or fewer common participants. In these 10 communities, which provided a total of 16 common participants, 133 individuals participated in the MIRC project or in Division activities only. In only three locations did a fairly large number of individuals participate in both - Campbell River: 18 individuals (33 percent of the participants from that community); Salmon Arm: 9 individuals (21.95%); and Powell River: 7 individuals (13.7%). However, as the percentage figures demonstrate, even in these locations, the total number of individuals participating in the MIRC project or in Division activities only, greatly exceeded the number of common participants.

Therefore, it seems that, on the whole, within the six professions included in the regular programming of the Division, the MIRC project served a different set of individuals. Moreover, the MIRC project served several professional groups not included to any appreciable extent in other Division activities: licensed practical nurses, medical laboratory technologists, medical records librarians, x-ray technologists, and social workers, thus reinforcing the conclusion that separate sets of individuals were served.

## COMPARATIVE COSTS

The total costs of operating the MIRC project between September 1, 1973 and March 31, 1974 were \$42,500.28 (TABLE X). More than half of this amount (\$25,296.46) was made up of starting capital costs, including the salary of a project director hired to do early developmental work. Approximately 35 percent (\$15,445.27) was operating costs, and the remainder (\$1,758.55) was spent on evaluation. In order to determine the cost of the project during the period concerned, the starting capital costs were amortized over three years - the intended life of the project. The amortized starting capital costs for the first year were found to be \$8,432.15. The operating and evaluation costs brought the total costs for the first year to \$25,635.97.

During the same period, the Division received \$108,546.00 in tuition fee revenue. Because its budget was calculated on a cost-recovery basis, this amount is considered to be its cost of operation, excluding salaries contributed by faculties, schools and professional associations which amounted to \$50,972.64. Therefore, the total cost of operating the Division during this period was \$159,518.64.

In order to compare the cost of providing the two types of services, a common unit was derived: the participant-hour-of-instruction or one hour of instruction provided to an individual participant. Because the Division's programs are provided for groups of participants, the number of participant-hours-of-



TABLE X

COSTS OF OPERATING THE MIRC PROJECT  
BETWEEN AUGUST 1, 1973 AND MARCH 31, 1974

| ITEM  | AMOUNT            | AMOUNT FOR<br>FIRST YEAR |
|---|-------------------|--------------------------|
| Starting Capital Costs                        |                   |                          |
| Vehicle                                       | \$ 1,423.00       |                          |
| Renovations                                   | 6,143.19          |                          |
| A-V Equipment                                 | 4,674.30          |                          |
| A-V Materials                                 | 9,227.91          |                          |
| Project Director                              | 3,828.06          |                          |
|   | <hr/> \$25,296.46 |                          |
| Amortized Starting Costs<br>(\$25,296.46 ÷ 3) |                   | \$ 8,432.15              |
| First Year Operating Costs                    |                   |                          |
| Salaries                                      | \$ 9,987.96       |                          |
| Vehicle                                       | 3,800.85          |                          |
| Publicity                                     | 435.00            |                          |
| Supplies                                      | 312.00            |                          |
| A-V Repairs                                   | 364.00            |                          |
| Toll Fees                                     | 195.00            |                          |
| Miscellaneous                                 | 349.40            |                          |
|   | <hr/> \$15,445.27 | \$15,445.27              |
| Evaluation Costs                              |                   |                          |
| Salaries                                      | \$ 900.00         |                          |
| Supplies & Duplicating                        | 518.55            |                          |
| Computing Time                                | 100.00            |                          |
| Clerical Typing                               | 240.00            |                          |
|   | <hr/> \$ 1,758.55 | \$ 1,758.55              |
| Total Costs to March 31, 1974                 | \$42,500.28       |                          |
| Total Annual Costs                            |                   | <hr/> \$25,635.97        |

instruction provided had to be calculated by multiplying the number of registrants in each program by the length of the program in hours. The sum of the products for the 75 programs offered during the period produced the total number of participant-hours-of-instruction. Because instruction in the MIRC project was individualized, the comparable total was the sum of all of the hours of instruction provided. The costs per-participant-hour-of-instruction were calculated by dividing the total operating costs by the total number of participant-hours-of-instruction.

The MIRC project served 521 participants during the period concerned at a total cost of \$25,635.97, making the average cost per participant \$49.21 (TABLE XI). The total cost to the Division of serving its 2,880 participants was \$159,518.64, making its cost per participant slightly higher: \$55.38. The average cost of the MIRC's 977 hours of instruction (the total number of hours it was open and available for use) was \$26.23 per hour compared to a per hour average of \$192.65 for the Division's 828 hours. Making the comparison on the basis of the common unit, the cost of operating the MIRC project was found to be \$16.44, approximately four times as much as the cost for the Division: \$3.89.

TABLE XI

COMPARISON OF COSTS OF THE MIRC PROJECT AND OTHER  
DIVISION PROGRAMS BETWEEN AUGUST 1, 1973 AND MARCH 31, 1974

| ITEM  | DIVISION     | MIRC        |
|---|--------------|-------------|
| Operating Costs                               | \$159,518.64 | \$25,635.97 |
| Number of Participants                        | 2880         | 521         |
| Number of Hours of Instruction                | 828          | 977         |
| Number of Participant-Hours<br>of Instruction | 41,005       | 1559.3      |
| Cost per Participant                          | \$55.38      | \$49.21     |
| Cost per Hour of Instruction                  | \$192.65     | \$26.23     |
| Cost per Participant-Hour<br>of Instruction   | \$3.89       | \$16.44     |

These figures seem to indicate that the cost to the Division of using group methods to deliver instruction were lower than individualized learning experiences delivered in the home communities through the MIRC project. These calculations, however, do not include costs to the participants and their employers. In the MIRC project, there were none. In order to attend many of the

Division's regular programs, participants (or their employers) had to pay for travel and accommodation as well as salary replacement and tuition fees. These factors would likely raise the total costs of the Division's other activities to a level at least equal to the cost of the MIRC project. Moreover, the MIRC project reached 291 participants not involved in other Division activities, and it did so using less than one-quarter of the professional manpower. Therefore, it would seem appropriate to make the comparison again at some future time, taking these other factors into consideration.

#### SUMMARY

A total of 521 health practitioners in 11 professional categories participated in the MIRC project in the 17 communities visited. They represented approximately 41 percent of the potential participants. Participation rates were found to be significantly higher among those professions for whom the Division provided other forms of learning opportunities than among those for whom it did not, and higher to a degree that tended toward significance among professions based outside a hospital than among hospital-based professions. Participation rates were not significantly related to the distance of communities from Vancouver, but were significantly higher in communities with hospitals having 40 beds or fewer than in those with larger hospitals.

During the same period, a total of 2,880 health professionals drawn largely from six professional categories partici-

pated in 75 short courses and workshops conducted by the Division. Of these, 2,474 were from British Columbia and were members of those professions included in the Division Committee. They represented approximately 15 percent of the potential participants from those professions in British Columbia.

The over-all participation rate in the MIRC project was found to be significantly higher than the rate in other Division programs, as were the rates for nursing, pharmacy and rehabilitation medicine. The rates for the three other professional groups did not differ to a degree that was statistically significant. The same was found to be true when only those professionals from communities visited by the MIRC were included in the comparison, except that, in this case, a significantly higher proportion of dietitians participated in the MIRC project. In most communities visited by the MIRC, participation rates among health professionals from those communities were found to be significantly higher in the MIRC project than in other Division programs. The only exception was Salmon Arm, where the difference in rates was not statistically significant. On the whole, the MIRC project appears to have served a different set of individuals than were served by other Division programs. When the two were compared on the basis of cost per-participant-hour-of-instruction, the MIRC project was found to have cost the Division approximately four times as much as its other programs. Costs to participants other than tuition fees were not included in the comparison.

## CHAPTER IV

### CHARACTERISTICS OF PARTICIPANTS

In this chapter, the demographic and employment characteristics as well as the continuing education activities of participants of the MIRC will be described. A comparison of participants and non-participants, the reactions of participants to the project, the relative preferences of both groups for various delivery systems for continuing education, and the reasons given by non-participants for not participating will also be described. Differences among participants and non-participants will be tested for significance, as will their ranking of alternative delivery systems. Participants' reactions will be tested to determine whether they are significantly related to the size of their communities or their distance from Vancouver.

### CHARACTERISTICS OF THE POPULATION

In order to establish a base-line description of the health professionals in the communities visited by the MIRC, data were obtained on demographic and employment characteristics and on continuing education activities from all participants and from a random sample of non-participants. Thus, the data presented below were obtained from 521 participants in 11 professional categories and from 136 non-participants in seven professional categories in all 17 communities included in the itinerary.

The demographic characteristics described are sex, age, marital status and location of most recent professional education. The employment characteristics are profession, field of employment, employment status, number of years of practice since graduation, and continuity of practice since graduation. The continuing education activities include the number of short courses and workshops attended, the number of professional books and issues of professional journals read and the use of media during the year prior to the visit of the MIRC.

#### DEMOGRAPHIC CHARACTERISTICS

The majority (76.7%) of the 657 respondents were female. Their mean age was 37.8 years, with 50 percent between 28 and 47 ( $Q = 9.15$ ) and approximately 70 percent between 26 and 49 ( $S.D. = 11.57$ ). Almost 70 percent were married, and only 18.6 were single. The largest proportion (40.8%) obtained their most recent professional education in British Columbia, with other Canadian provinces accounting for 37.1 percent and the United States 10.4 percent.

#### EMPLOYMENT CHARACTERISTICS

More than half of the respondents (54.5%) were nurses, with the next largest groups, doctors and licensed practical nurses, accounting for only 12.3 percent and 8.7 percent respectively. None of the other professions accounted for more than five percent of the total. Sixty-six percent were employed in a

hospital, 18.4 percent in private practice, and 5.2 percent in a public health agency. The remainder (10.3%) were employed elsewhere such as in a social service agency or else did not respond. Sixty-eight percent were employed on a full-time basis; 22.8 percent part time, and approximately six percent were not employed. Their mean length of time in practice was 10.9 years (S.D. = 8.3) and slightly more than half (54.6%) had practiced continuously since graduation.

#### CONTINUING EDUCATION ACTIVITIES

The respondents had attended an average of approximately two short courses or workshops during the year just prior to the MIRC's visit ( $\bar{x} = 1.7$ , S.D. = 2.8), but almost 40 percent did not respond to this item. They had read an average of six professional books ( $\bar{x} = 6.3$ , S.D. = 21.6) and 17 issues of professional journals ( $\bar{x} = 16.9$ , S.D. = 19.1) during the same period. Thirty-two percent and 16 percent, respectively, failed to respond to these items. They had made relatively little use of media during the previous year, with 38 percent having used a tape recorder, 20 percent a tape-slide system, 16 percent video tape and 15 percent eight millimetre film. Over 40 percent (41.1%) reported that they had used programmed instruction.

None of the respondents indicated that they had attended no workshops or had read no books nor journals. However, as was noted, the "no response" rate on these items was high. It may be



that included in the "no response" category were some responses that should have been recorded as zero. Because the questionnaires were not anonymous, it may be that respondents who were not using these basic approaches to continue their education were reluctant to state this and sign their names.

The relatively extensive use of programmed instruction reported (41.1%) may be misleading. Comments by some of the participants after the questionnaires were completed indicated that they did not understand the term. Some understood it to mean instruction provided in a formal program (course).

## COMPARISON OF PARTICIPANTS AND NON-PARTICIPANTS

### DEMOGRAPHIC CHARACTERISTICS

Participants and non-participants were compared on the basis of sex, age, marital status and location of their most recent professional education.

Slightly over 80 percent of participants compared to only 61.8 percent of non-participants were female; whereas 32 percent of non-participants compared to 19.4 percent of participants were male (TABLE XII). The difference between the two groups on the basis of the proportions of male and female respondents in each was found to be statistically significant at the  $p < .005$  level ( $\chi^2 = 12.45$ , d.f. = 1).

TABLE XII

COMPARISON OF PARTICIPANTS AND NON-PARTICIPANTS ON  
DEMOGRAPHIC CHARACTERISTICS

| CHARACTERISTICS   |                        | PARTICIPANTS |       | NON-PARTICIPANTS |       |
|---|------------------------|--------------|-------|------------------|-------|
|   |                        | No.          | %     | No.              | %     |
| SEX*  | Male                   | 101          | 19.38 | 44               | 32.35 |
|   | Female                 | 420          | 80.62 | 84               | 61.76 |
| AGE   | Mean                   | 37.55        |       | 38.97            |       |
|   | Standard Deviation     | 11.56        |       | 11.58            |       |
| MARITAL STATUS  | Single                 | 104          | 20.08 | 18               | 13.24 |
|   | Married                | 361          | 69.29 | 97               | 71.32 |
|   | Other                  | 55           | 10.56 | 13               | 9.56  |
| LOCATION OF<br>MOST RECENT<br>PROFESSIONAL<br>EDUCATION | B.C.                   | 213          | 40.88 | 55               | 40.44 |
|   | Elsewhere in<br>Canada | 200          | 38.39 | 43               | 31.62 |
|   | Other                  | 95           | 18.23 | 26               | 19.12 |

\*  $\chi^2 = 12.45$       d.f. = 1       $p < .005$

No statistically significant differences were observed on the other characteristics examined. The mean age of participants was 37.6 and non-participants 38.9 ( $\chi^2 = 5.305$ , d.f. = 4). Approximately 70 percent of both groups were married ( $\chi^2 = 2.528$ , d.f. = 2); about 40 percent had obtained their most recent professional education in British Columbia, and 38 percent of participants compared

to 32 percent of non-participants had been trained elsewhere in Canada ( $\chi^2 = 0.98$ , d.f. = 2).

#### EMPLOYMENT CHARACTERISTICS

The participants were drawn from 11 professions, whereas the non-participants represented only seven. When all respondents from both groups were included in a comparison on the basis of profession, a difference statistically significant at the  $p < .005$  level ( $\chi^2 = 47.16$ , d.f. = 10) was observed (TABLE XIII). When the groups were compared on the basis of equivalent professional categories, the level of significance fell to  $p < .01$  ( $\chi^2 = 11.47$ , d.f. = 6).

The majority, and approximately the same proportions, of both groups were nurses. However, a higher proportion of non-participants were dentists, doctors, social workers and physiotherapists, whereas a higher proportion of participants were pharmacists. Removing the last four professions from the group of participants reduced the magnitude of the differences, but differences still remained.

Approximately 70 percent of participants compared to only 48.5 percent of non-participants were employed in a hospital, whereas 27 percent of non-participants compared to 17 percent of participants were in private practice (TABLE XIV). The differences between the two groups on the basis of the proportions of respondents in the various types of employment situations were found to be statistically significant at the  $p < .01$  level ( $\chi^2 = 14.66$ , d.f. = 4).

TABLE XIII

PERCENTAGE DISTRIBUTION OF PARTICIPANTS  
AND NON-PARTICIPANTS BY PROFESSION

| PROFESSION                       | PARTICIPANTS |        | NON-PARTICIPANTS |        |
|----------------------------------|--------------|--------|------------------|--------|
|                                  | No.          | %      | No.              | %      |
| Dentistry                        | 10           | 1.92   | 9                | 6.62   |
| Dietetics                        | 5            | 0.96   | 1                | 0.74   |
| Medicine                         | 60           | 11.52  | 21               | 15.44  |
| Nursing                          | 278          | 53.35  | 77               | 56.62  |
| Pharmacy                         | 24           | 4.61   | 4                | 2.94   |
| Rehabilitation Medicine          | 15           | 2.88   | 8                | 5.88   |
| Social Work                      | 15           | 2.88   | 8                | 5.88   |
| Licensed Practical<br>Nursing    | 68           | 13.05  | 0                | 0.0    |
| X-Ray Technology                 | 12           | 2.30   | 0                | 0.0    |
| Medical Laboratory<br>Technology | 31           | 5.95   | 0                | 0.0    |
| Medical Records<br>Librarianship | 3            | 0.58   | 0                | 0.0    |
| No Response                      | 0            | 0.0    | 8                | 5.88   |
| TOTALS                           | 521          | 100.00 | 136              | 100.00 |

EQUIVALENT GROUPS (First 7 Professions)  $\chi^2 = 11.47$  d.f. = 6

TABLE XIV

PERCENTAGE DISTRIBUTION OF PARTICIPANTS AND  
NON-PARTICIPANTS BY EMPLOYMENT CHARACTERISTICS

| CHARACTERISTICS                                    |                           | PARTICIPANTS |       | NON-PARTICIPANTS |       |
|--|---------------------------|--------------|-------|------------------|-------|
|  |                           | No.          | %     | No.              | %     |
| FIELD OF<br>EMPLOYMENT*                            | Hospital                  | 368          | 70.63 | 66               | 48.53 |
|  | Private Practice          | 88           | 16.89 | 37               | 27.21 |
|  | Public Health<br>Agency   | 25           | 4.79  | 9                | 6.62  |
|  | Social Services<br>Agency | 13           | 2.50  | 4                | 2.94  |
|  | Other                     | 7            | 1.34  | 2                | 1.47  |
|  |                           |              |       |                  |       |
| EMPLOYMENT<br>STATUS (ns)                          | Full Time                 | 367          | 70.44 | 83               | 61.03 |
|  | Part Time                 | 119          | 22.84 | 31               | 22.79 |
|  | Not At Present            | 28           | 5.37  | 9                | 6.62  |
| YEARS OF<br>PRACTICE SINCE<br>GRADUATION (ns)      | Mean                      | 10.8         |       | 11.7             |       |
|  | Standard<br>Deviation     | 8.2          |       | 8.6              |       |
| CONTINUITY OF<br>PRACTICE SINCE<br>GRADUATION (ns) | Yes                       | 286          | 54.89 | 73               | 53.68 |
|  | No                        | 222          | 42.61 | 54               | 39.71 |

\*  $\chi^2 = 14.66$       d.f. = 4       $p < .01$

No statistically significant differences were observed on the other employment characteristics examined. The majority of both groups (70% of participants and 61% of non-participants) were employed full time ( $\chi^2 = 0.99$ , d.f. = 2), with the mean length of

practice for both between and 10.5 and 12 years ( $\chi^2 = 7.43$ , d.f. = 4). Approximately 54 percent of both groups had practiced continuously since graduation ( $\chi^2 = 0.02$ , d.f. = 1).

The comparison of participants and non-participants on the basis of demographic and employment characteristics identified significant differences on three variable: sex, profession and location of employment. Significantly more non-participants than participants were doctors, dentists, physiotherapists and social workers, whereas more participants were pharmacists. A greater proportion of non-participants were employed outside a hospital.

These differences are related. Location of employment probably emerged as a significant variable because the MIRC was located at the hospital in each community. Those whose principal place of employment was not in a hospital may have found it less convenient to participate. The differences on the basis of profession are accounted for in part by the fact that a significantly higher proportion of non-participants than participants were members of professions employed outside a hospital. Furthermore, the professions based outside a hospital tended to be male-dominated, whereas those based at a hospital tended to be female-dominated. This may help to explain differences noted on the basis of sex.

#### CONTINUING EDUCATION ACTIVITIES

Participants and non-participants differed significantly only on the basis of the number of professional books read. Because the "no response" rate on all items was fairly high, statis-

tical calculations were based only on actual responses.

The two groups did not differ significantly on the basis of the number of short courses or workshops they had attended ( $\chi^2 = 2.701$ , d.f. = 2) with both means falling between 1.5 and 1.8. Approximately 40 percent did not respond (TABLE XV). Non-participants had read a significantly greater number of professional books than participants ( $\chi^2 = 25.5$ , d.f. = 3,  $p < .005$ ), with a mean of 5.8 for participants and 8.0 for non-participants, but over 30 percent of both groups failed to respond. Participants had read an average of 16.9 issues of professional journals and non-participants 17.2, but the difference was not statistically significant ( $\chi^2 = 7.75$ , d.f. = 4). Approximately 16 percent of participants and 19 percent of non-participants did not respond.

Generally speaking, participants were more familiar with the types of media included in the comparison, except programmed instruction and film, with which both groups were approximately equally familiar. Although a significantly higher proportion of non-participants failed to respond to these items, when the two groups were compared and those who failed to respond were excluded from the comparisons, no statistically significant differences were observed (TABLE XVI).

TABLE XV

PERCENTAGE DISTRIBUTION OF PARTICIPANTS AND  
NON-PARTICIPANTS BY CONTINUING EDUCATION ACTIVITIES

| ACTIVITIES   | PARTICIPANTS |                       | NON-PARTICIPANTS |                       |
|--|--------------|-----------------------|------------------|-----------------------|
|  | Mean         | Standard<br>Deviation | Mean             | Standard<br>Deviation |
| NO. OF WORKSHOPS<br>ATTENDED (ns)                      | 1.75         | 3.05                  | 1.55             | 1.75                  |
| NO. OF PROFESSIONAL<br>BOOKS READ*                     | 5.85         | 23.29                 | 7.99             | 12.42                 |
| NO. OF ISSUES<br>OF PROFESSIONAL<br>JOURNALS READ (ns) | 16.89        | 19.54                 | 17.24            | 18.03                 |

\*  $\chi^2 = 25.50$       d.f. = 3       $p < .005$

The type of media with which the respondents were most familiar was programmed instruction, which had been used by approximately 41 percent of both groups during the previous year. However, this figure may be inappropriately high, because comments from some of the participants indicated that they misunderstood the term, and the same may have been true of some non-participants. Approximately 41 percent of participants compared to only 25 percent of non-participants had used a tape recorder, but the difference was not statistically significant ( $\chi^2 = 0.40$ , d.f. = 1). Less than 25 percent of both groups had used tape-slide programs,



TABLE XVI

PERCENTAGE DISTRIBUTION OF PARTICIPANTS AND  
NON-PARTICIPANTS BY USE OF MEDIA

| TYPE OF MEDIA             |             | PARTICIPANTS                   |       | NON-PARTICIPANTS |       |
|---------------------------|-------------|--------------------------------|-------|------------------|-------|
|                           |             | No.                            | %     | No.              | %     |
| TAPE-RECORDER             | Yes         | 215                            | 41.27 | 34               | 25.00 |
|                           | No          | 277                            | 53.17 | 26               | 26.47 |
|                           | No Response | 29                             | 5.56  | 66               | 49.53 |
|                           |             | $\chi^2 = 0.401$ d.f. = 1 n.s. |       |                  |       |
| TAPE-SLIDE<br>PROGRAM     | Yes         | 113                            | 21.69 | 19               | 13.97 |
|                           | No          | 369                            | 70.83 | 45               | 33.09 |
|                           | No Response | 39                             | 7.48  | 72               | 52.94 |
|                           |             | $\chi^2 = 0.878$ d.f. = 1 n.s. |       |                  |       |
| VIDEO TAPE                | Yes         | 97                             | 18.62 | 12               | 8.82  |
|                           | No          | 382                            | 73.32 | 43               | 31.62 |
|                           | No Response | 42                             | 8.06  | 81               | 59.56 |
|                           |             | $\chi^2 = 0.00$ d.f. = 1 n.s.  |       |                  |       |
| 8mm FILM                  | Yes         | 80                             | 15.36 | 20               | 14.71 |
|                           | No          | 400                            | 76.78 | 68               | 50.00 |
|                           | No Response | 41                             | 7.87  | 48               | 35.29 |
|                           |             | $\chi^2 = 1.48$ d.f. = 1 n.s.  |       |                  |       |
| PROGRAMMED<br>INSTRUCTION | Yes         | 214                            | 41.07 | 56               | 41.18 |
|                           | No          | 269                            | 51.63 | 49               | 36.03 |
|                           | No Response | 38                             | 7.29  | 31               | 22.79 |
|                           |             | $\chi^2 = 2.48$ d.f. = 1 n.s.  |       |                  |       |

video tape, and eight millimetre film. The lower "no response" rate among participants may have been due in part to the fact that they were supervised while they completed the questionnaire, whereas the non-participants were not.

The comparison of participants and non-participants on the basis of their continuing education activities during the previous year identified significant differences between the two groups only on one variable when the "no response" category was eliminated: non-participants had read more professional books.

#### REACTIONS OF PARTICIPANTS

In order to obtain their reactions to the MIRC project, participants were asked to respond to seven items relating to the nature of the project, the learning environment, the learning materials, the schedule of operation and the location of the MIRC in their community. Response categories and assigned weights were: strongly agree 5, agree 4, undecided 3, disagree 2, and strongly disagree 1. The responses were analyzed on the basis of professions and the communities in which they lived.

#### REACTIONS BY PROFESSION

The grand mean responses of the participants on all items ranged between 4.1 and 4.4 indicating that they agreed (but not strongly) with the statements (TABLE XVII). Since all items were worded positively, this was interpreted as a favorable re-

TABLE XVII

## PARTICIPANT REACTION TO THE MIRC PROJECT BY PROFESSION

| ITEMS   | MEAN RESPONSES* |      |           |      |           |      |           |      |           |      |                 |      |             |      |                            |      |           |      |            |      |           |      |                  |      |         |
|---|-----------------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------------|------|-------------|------|----------------------------|------|-----------|------|------------|------|-----------|------|------------------|------|---------|
|   | DENTISTRY       |      | DIETETICS |      | MEDICINE  |      | NURSING   |      | PHARMACY  |      | REHAB. MEDICINE |      | SOCIAL WORK |      | LICENSED PRACTICAL NURSING |      | X-RAY     |      | LABORATORY |      | LIBRARY   |      | ALL RE-SPONDENTS |      | F Prob. |
|   | $\bar{x}$       | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$       | S.D. | $\bar{x}$   | S.D. | $\bar{x}$                  | S.D. | $\bar{x}$ | S.D. | $\bar{x}$  | S.D. | $\bar{x}$ | S.D. | $\bar{x}$        | S.D. |         |
| The MIRC provides a worthwhile opportunity for me to continue my professional education | 4.2             | 1.5  | 0.5       | 4.4  | 4.4       | 1.0  | 4.5       | 0.7  | 4.4       | 1.1  | 4.6             | 0.5  | 4.4         | 0.5  | 4.4                        | 1.1  | 4.3       | 0.8  | 4.2        | 0.8  | 4.7       | 0.6  | 4.4              | 0.8  | N.S.    |
| The audio visual devices in the MIRC facilitate effective learning experiences          | 4.0             | 1.5  | 4.3       | 0.8  | 4.5       | 0.8  | 4.5       | 0.6  | 4.5       | 1.1  | 4.5             | 0.5  | 4.3         | 0.5  | 4.2                        | 1.1  | 4.7       | 0.5  | 4.3        | 0.5  | 4.7       | 0.6  | 4.4              | 0.8  | N.S.    |
| The MIRC provides materials pertinent to my needs                                       | 3.9             | 1.5  | 3.8       | 0.4  | 4.2       | 0.8  | 4.2       | 0.7  | 4.0       | 1.1  | 3.7             | 1.0  | 4.2         | 0.6  | 4.4                        | 1.1  | 3.8       | 1.1  | 3.6        | 0.8  | 2.0       | 0.0  | 4.1              | 0.8  | .00001  |
| Environment facilitates concentration   | 4.0             | 1.9  | 4.3       | 0.4  | 4.2       | 0.8  | 4.2       | 0.6  | 4.2       | 1.0  | 4.3             | 0.6  | 4.1         | 0.7  | 4.1                        | 1.1  | 4.3       | 0.9  | 4.2        | 0.7  | 4.7       | 0.6  | 4.2              | 0.9  | N.S.    |
| Layout is efficient   | 4.3             | 1.6  | 4.8       | 0.4  | 4.2       | 0.8  | 4.3       | 0.7  | 4.3       | 1.0  | 4.0             | 0.5  | 3.9         | 0.5  | 3.9                        | 1.1  | 4.2       | 0.5  | 4.4        | 0.6  | 4.7       | 0.6  | 4.3              | 0.8  | N.S.    |
| Hours of operation were convenient  | 4.3             | 1.6  | 4.8       | 0.4  | 4.1       | 0.9  | 4.3       | 0.7  | 4.1       | 1.1  | 4.0             | 0.7  | 4.1         | 0.5  | 4.0                        | 1.2  | 4.4       | 0.5  | 4.4        | 0.5  | 4.7       | 0.6  | 4.3              | 0.9  | N.S.    |
| Location was convenient   | 4.3             | 1.6  | 4.8       | 0.4  | 4.4       | 0.8  | 4.5       | 0.6  | 4.1       | 1.2  | 4.3             | 0.5  | 4.0         | 0.9  | 4.3                        | 1.1  | 4.5       | 0.5  | 4.6        | 0.5  | 4.7       | 0.6  | 4.4              | 0.8  | .05     |

\* Response Weights: Strongly Agree = 5 Agree = 4 Undecided = 3 Disagree = 2 Strongly Disagree = 1

action to those aspects of the project referred to in the statements.

The items with the highest grand means (4.4), and on which there were no significant differences among the professional groups, were: "The MIRC provides a worthwhile opportunity for me to continue my professional education," and "The audio visual devices in the MIRC facilitate effective learning experiences." This suggests that all of the groups tended to react favorably to the essential nature of the project. A third item, "The location (of the MIRC) was convenient." which also had a grand mean of 4.4, did show significant differences among the various professions ( $p < .04$ ). This result appears to be related to differences among the professions on the basis of location of employment, discussed earlier. The item with the lowest grand mean (4.1), on which significant differences among the professions were also observed ( $p < .001$ ), was "The MIRC provides materials pertinent to my needs." The low rating and the differences between the professional groups is undoubtedly due to the fact that the MIRC contained no materials specifically intended for certain participants.

#### REACTIONS BY LOCATION

The grand means for each item ranged between 4.1 and 4.4, as described above; however, an F test determined that there were significant differences among the mean rating of the various communities on all of the items (TABLE XVIII). To determine whether

TABLE XVIII  
PARTICIPANT REACTION TO THE MIRC PROJECT BY LOCATION

| ITEMS   | MEAN RESPONSES* |      |           |      |           |      |            |      |            |      |           |      |           |      |           |      |           |      |           |      | P Prob. |              |      |                |      |           |      |           |      |           |      |           |      |                 |       |
|---|-----------------|------|-----------|------|-----------|------|------------|------|------------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|---------|--------------|------|----------------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------------|-------|
|   | ARMSTRONG       |      | ENDERBY   |      | GOLDEN    |      | REVELSTOCK |      | SALMON ARM |      | LILLOOET  |      | LYTTON    |      | ASHCROFT  |      | SQUAMISH  |      | SECHLT    |      |         | POWELL RIVER |      | CAMPBELL RIVER |      | COMOX     |      | LADYSMITH |      | CHEMAINUS |      | ALERT BAY |      | ALL COMMUNITIES |       |
|   | $\bar{x}$       | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$  | S.D. | $\bar{x}$  | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. |         | $\bar{x}$    | S.D. | $\bar{x}$      | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. | $\bar{x}$ | S.D. |                 |       |
| The MIRC provides a worthwhile opportunity for me to continue my professional education | 3.4             | 2.1  | 4.4       | 1.1  | 4.2       | 1.3  | 4.2        | 1.5  | 4.4        | 0.7  | 4.3       | 0.5  | 4.0       | 0.8  | 4.0       | 0.9  | 4.7       | 0.5  | 4.7       | 0.5  | 4.4     | 0.5          | 4.5  | 0.5            | 4.4  | 0.5       | 4.5  | 0.7       | 4.3  | 0.6       | 4.7  | 0.5       | 4.4  | 0.8             | .0002 |
| The audio visual devices facilitate effective learning experiences                      | 3.3             | 2.0  | 4.4       | 1.1  | 4.2       | 1.3  | 4.4        | 1.1  | 4.3        | 0.5  | 4.7       | 0.7  | 4.3       | 0.6  | 4.6       | 0.5  | 4.5       | 0.5  | 4.5       | 0.6  | 4.4     | 0.5          | 4.6  | 0.6            | 4.5  | 0.5       | 4.5  | 0.6       | 4.5  | 0.5       | 4.6  | 0.6       | 4.4  | 0.8             | .0001 |
| The MIRC provides materials pertinent to my needs                                       | 2.9             | 1.9  | 4.2       | 0.8  | 3.8       | 1.3  | 3.7        | 1.1  | 4.3        | 0.6  | 4.3       | 0.9  | 4.0       | 0.4  | 4.3       | 0.6  | 4.0       | 0.6  | 4.1       | 0.7  | 4.2     | 0.7          | 4.2  | 0.7            | 4.1  | 0.7       | 3.9  | 0.7       | 4.2  | 0.7       | 4.3  | 0.7       | 4.1  | 0.8             | .0001 |
| Environment facilitates concentration   | 3.1             | 2.0  | 4.4       | 1.0  | 4.0       | 1.3  | 4.3        | 1.1  | 4.3        | 0.7  | 4.6       | 0.5  | 4.7       | 0.5  | 4.3       | 0.6  | 4.4       | 0.6  | 4.1       | 0.7  | 4.1     | 0.9          | 4.1  | 0.9            | 4.2  | 0.6       | 4.1  | 1.0       | 4.2  | 0.4       | 4.2  | 0.9       | 4.2  | 0.9             | .004  |
| Layout is efficient   | 3.3             | 2.0  | 4.3       | 1.1  | 4.0       | 1.3  | 4.1        | 1.1  | 4.5        | 0.5  | 4.3       | 0.5  | 4.3       | 0.8  | 4.4       | 0.7  | 4.5       | 0.6  | 4.3       | 0.6  | 4.4     | 0.6          | 4.3  | 0.6            | 4.2  | 0.6       | 4.3  | 0.8       | 4.3  | 0.6       | 4.4  | 0.6       | 4.3  | 0.8             | .0005 |
| Hours of operation were convenient  | 3.3             | 2.0  | 4.6       | 0.5  | 4.0       | 1.3  | 3.9        | 1.5  | 4.4        | 0.6  | 4.6       | 0.5  | 4.3       | 0.5  | 4.7       | 0.5  | 4.5       | 0.7  | 4.7       | 0.6  | 4.2     | 0.8          | 4.4  | 0.5            | 4.1  | 0.5       | 4.4  | 0.5       | 4.3  | 0.6       | 4.3  | 0.8       | 4.3  | 0.9             | .0001 |
| Location was convenient   | 3.3             | 2.0  | 4.8       | 0.4  | 4.2       | 1.3  | 4.1        | 1.2  | 4.5        | 0.5  | 4.6       | 0.5  | 4.5       | 0.5  | 4.7       | 0.5  | 4.7       | 0.5  | 4.5       | 0.5  | 4.5     | 0.5          | 4.5  | 0.5            | 4.4  | 0.5       | 4.4  | 0.8       | 4.5  | 0.5       | 4.4  | 0.7       | 4.4  | 0.8             | .0001 |

\*Response Weights: Strongly Agree = 5 Agree = 4 Undecided = 3 Disagree = 2 Strongly Disagree = 1

these differences were related to the size of the communities or their distance from Vancouver, Pearsonian correlations were calculated between ratings on each item and 1) the population of each community, and 2) their distance in miles from Vancouver.

None of the correlations between participants' responses and the population of communities was statistically significant (TABLE XIX). Therefore, it appears that community size was not a factor that accounted for differences in the mean ratings.

All of the correlations between responses and distance from Vancouver were negative, with three significant at the  $p < .05$  level or less, and three tending toward significance. This suggests that remoteness from Vancouver may have been a factor which accounted for a portion of the difference in the mean ratings, with those nearer Vancouver tending to react more favorably than those farther away. This negative relationship may be due in part to the fact that 19 of the 36 item means that fell below the grand means were recorded in the first four communities visited, which were also the farthest from Vancouver. The low ratings in these communities may have been due in part to the inexperience of the field supervisors who were learning how to act as facilitators as the project proceeded. If this was a factor, it may account for the very low ratings in Armstrong, the first community visited.

The mean responses to each of the items were tested and inspected in an attempt to account further for the differences noted in the mean reactions of the various communities. Possible

TABLE XIX

CORRELATIONS BETWEEN PARTICIPANTS' REACTIONS AND  
COMMUNITY SIZE, AND DISTANCE FROM VANCOUVER

| REACTION ITEMS  | POPULATION       |                               | DISTANCE FROM VANCOUVER |                               |
|---|------------------|-------------------------------|-------------------------|-------------------------------|
|   | Corre-<br>lation | Level of<br>Signifi-<br>cance | Corre-<br>lation        | Level of<br>Signifi-<br>cance |
| The MIRC provides a worthwhile opportunity for me to continue my professional education | r = 0.14         | n.s.                          | r = -0.52               | p<.02                         |
| The audio visual devices in the MIRC facilitate effective learning experiences          | r = 0.05         | n.s.                          | r = -0.44               | p<.04                         |
| The MIRC provides materials pertinent to my needs                                       | r = 0.07         | n.s.                          | r = -0.37               | p<.07                         |
| Environment facilitates concentration   | r = -0.08        | n.s.                          | r = -0.25               | n.s.                          |
| Layout is efficient   | r = 0.16         | n.s.                          | r = -0.46               | p<.03                         |
| Hours of operation were convenient  | r = -0.005       | n.s.                          | r = -0.38               | p<.07                         |
| Location was convenient   | r = 0.07         | n.s.                          | r = -0.38               | p<.07                         |

explanations were found only for four, which are discussed below. No statistically significant relationships were found to exist between the reaction scores and participation rates. The low means recorded in the first four communities will be noted, but not discussed.

For the first item: "The MIRC provides a worthwhile opportunity for me to continue my professional education", three of the seven means below the grand mean (4.4) were recorded in the first four communities. Three others were recorded in Lytton (4.0), Lillooet (4.3), and Ashcroft (4.3), whose participants rates in the MIRC project were lower than rates in other communities with hospitals of similar size, and which provided no participants in other Division activities. There may have been a general lack of interest in continuing education in these communities during this period.

For the third item: "The MIRC provides materials pertinent to my needs", communities (other than the first four) whose reaction scores were below the grand mean (4.1) tended to have a higher proportion of participants drawn from those professions for whom no specific materials were provided than did communities recording higher means.

On the fifth item: "The environment facilitates concentration", communities with the largest numbers of participants recorded the lowest means. Because space in the MIRC was limited, movement and conversation in the learning area were distracting.



The relatively low grand mean (4.2) indicates that this was a concern where the largest numbers participated. However, this rating indicates that, on the whole, participants felt that the environment did in fact facilitate concentration.

For the last item: "The location of the MIRC was convenient", communities recording the highest means: Ashcroft (4.7), Squamish (4.7) and Lillooet (4.6) were those in which the MIRC was clearly visible to anyone approaching the hospital and was only a few yards from a major entrance or exit. The only means below the grand mean (4.4) were recorded in the first four communities.

#### RANKINGS OF ALTERNATIVE DELIVERY SYSTEMS

In order to determine the respondents' preferences for continuing education delivery systems, both participants and non-participants were asked to rank eight different systems. A forced choice rank ordering was used.

The approach that was first in the rank ordering by the group of respondents as a whole was an audio visual learning station located in the hospital (TABLE XX). Continued visits by the MIRC were second, and lectures, seminars, etc. given by qualified people from outside the local health care community were third. Least preferred was a loan system for books, journals, etc.

Participants included the same three approaches as the entire group of respondents in their most preferred choices; however, continued visits by the MIRC received a slightly lower mean

rank than did a learning station in the hospital, and were therefore the participants' preferred approach by a slight margin. Least preferred were lectures, seminars, etc. given by members of the local health community and a loan system for books, journals and other print materials.

TABLE XX  
PARTICIPANTS' AND NON-PARTICIPANTS'  
RANKINGS OF ALTERNATIVE DELIVERY SYSTEMS

| DELIVERY SYSTEMS  | ALL<br>RESPONDENTS |               | PARTICIPANTS |               | NON-<br>PARTICIPANTS |               |
|---|--------------------|---------------|--------------|---------------|----------------------|---------------|
|   | Mean<br>Rank       | Rank<br>Order | Mean<br>Rank | Rank<br>Order | Mean<br>Rank         | Rank<br>Order |
| Audio Visual Learning<br>Station in the Hospital        | 2.81               | 1             | 3.22         | 2             | 4.59                 | 5             |
| Continued Visits by<br>the MIRC                         | 3.69               | 2             | 3.19         | 1             | 5.43                 | 8             |
| Lectures, Seminars,<br>etc. Given by Outside<br>Leaders | 4.08               | 3             | 3.95         | 3             | 5.07                 | 7             |
| Hospital Library  | 4.14               | 4             | 4.45         | 4             | 2.46                 | 1             |
| Lectures, Seminars,<br>etc. Given by Local<br>Leaders   | 4.45               | 5             | 5.09         | 7.5           | 4.28                 | 4             |
| Loan System for<br>Audio Visual<br>Materials            | 4.85               | 6             | 4.88         | 5             | 3.97                 | 3             |
| Conferences, Workshops,<br>etc. in Larger Centres       | 5.04               | 7             | 4.95         | 6             | 3.32                 | 2             |
| Loan System for Print<br>Materials                      | 5.98               | 8             | 5.09         | 7.5           | 4.88                 | 6             |

A Spearman rank correlation coefficient calculated to test the relationship between the rank ordering assigned to the means was not statistically significant ( $r_s = -0.398$ , d.f. = 8); nor was a Pearsonian correlation calculated between the mean ranks assigned to each item ( $r = -0.449$ , d.f. = 8, n.s.). This indicates that the two groups were dissimilar in their preferences for educational delivery systems. Indeed, comparing individual items revealed important differences.

Understandably, continued visits by the MIRC was the approach most preferred by participants and least preferred by non-participants, probably because participants, having made the decision to participate and having invested time in doing so, tended to be biased in its favor; whereas non-participants had no basis on which to form an opinion. The second preference of participants (an audio-visual learning station in the hospital) was the fifth choice of non-participants. This may be due in part to the fact that a significantly greater proportion of non-participants were employed outside a hospital and therefore would not find it convenient to use a learning station located there. However, the third preference of non-participants was a loan system for audio-visual materials, indicating some interest in using media for learning. The first choice of non-participants (a hospital library) was fourth preference of participants, a result consistent with the finding reported earlier that non-participants tended to read a greater number of books. The second preference

of non-participants (conferences and workshops in larger centres) was the sixth choice of participants. Because a greater proportion of participants were women working in hospitals, family and employment demands may have made it more difficult for them to get away.

#### REASONS FOR NOT PARTICIPATING

Non-participants were asked to indicate why they did not participate in the MIRC project by selecting one of nine reasons from a list or by writing in a reason not listed. Over 90 percent indicated in a previous item that they had been aware that the MIRC was in their community; so ignorance of its availability was discarded as a reason. Approximately 60 percent indicated that a demanding work schedule, family responsibilities, or holidays prevented them from participating (TABLE XXI). Practical problems related to the nature and operation of the project accounted for the reasons of only three percent. Other reasons such as illness accounted for approximately 7 percent, and 27 percent did not respond. Therefore, although more effective publicity might have some effect, the majority of the reasons cited do not suggest ways in which the project could be altered to improve participation.

TABLE XXI

PERCENTAGE DISTRIBUTION OF REASONS  
FOR NOT PARTICIPATING IN THE MIRC PROJECT

| REASONS  | ALL RESPONDENTS |        |
|--|-----------------|--------|
|  | No.             | %      |
| My work schedule was too demanding                             | 33              | 24.26  |
| Family responsibilities took up too much of my leisure time    | 25              | 18.38  |
| I was away on holidays   | 22              | 16.18  |
| Community responsibilities took up too much of my leisure time | 5               | 3.68   |
| The MIRC was not at a convenient location                      | 2               | 1.47   |
| The hours of MIRC operation were not convenient                | 2               | 1.47   |
| Other reasons  | 10              | 7.35   |
| No response  | 37              | 27.21  |
| TOTALS   | 136             | 100.00 |

## SUMMARY

The majority of the respondents were married females between the ages of 26 and 49, who were employed on a full-time basis as nurses in a hospital. They had practiced continuously since graduation for an average of 10.8 years, had attended two workshops during the year prior to the MIRC's visit, and had read an average of six professional books and 17 issues of professional journals during the same period. They had made relatively little use of audio visual media for learning.

There were no significant differences between participants and non-participants on the basis of age, marital status, and location of most recent professional education; but a significantly greater proportion of participants were female and of non-participants male. Both groups had read approximately the same number of issues of professional journals and had used media for learning to approximately the same extent. However, non-participants had read significantly more books. The two groups did not differ significantly on the basis of employment status, number of years of practice since graduation and continuity of practice since graduation. However, a significantly high proportion of participants were pharmacists, and of non-participants were dentists, doctors, physiotherapists and social workers. A significantly higher proportion of participants were employed in a hospital, and non-participants in private practice.

On the whole , participants' reactions to the MIRC project appear to have been favorable, although there were differences among the professions and the communities on individual items. Professions employed at a hospital tended to react more favorably to the location of the MIRC than those based outside, and groups for whom specific materials were provided tended to react more favorably than those who had to "borrow" materials from other professions. Differences among the mean reactions of the various communities could not be explained by differences in community size or participation rates, which were not significantly related to reaction scores; but were accounted for in part by distance from Vancouver which was negatively related to mean reactions on several items. This negative relationship may have been partly due to the relative inexperience of the field supervisors in the first four communities, whose ratings were among the lowest and which were the most distant. Other factors which may have accounted for some of the differences were: a possible lack of interest in continuing education in some communities; the lack of profession-specific materials for some groups; the difficulty of coping with large numbers of learners at one time; and the location of the MIRC in terms of its visibility and accessibility.

Respondents' rankings of alternative delivery systems for continuing education indicated that an audio visual learning station in a hospital was preferred, that continued visits by the MIRC was second, and that a loan system for print materials was least

preferred. The rank orderings assigned by participants and non-participants were not significantly related. Participants preferred the same three approaches as the group of respondents as a whole, although continued visits by the MIRC was their first choice. Lectures, seminars, etc. by local leaders and a loan system for print materials were least preferred. Non-participants, however, preferred using a hospital library or attending conferences or workshops in larger centres. Continued visits by the MIRC was their least preferred approach.

The majority of non-participants cited a demanding work schedule, family responsibilities, or holidays as reasons for not participating. Very few gave reasons that suggested ways in which the project could be altered to improve participation.



## CHAPTER V

## SUMMARY, CONCLUSIONS AND IMPLICATIONS

## SUMMARY

The purpose of this study was to describe the P.A. Woodward Mobile Instructional Resource Centre Project and to analyze its role in continuing professional education in the health field for those resident in isolated rural areas in British Columbia.

Data were obtained on the demographic and employment characteristics, continuing education activities, and reactions to the project of 521 participants in 11 professional categories, resident in 17 communities visited by the MIRC between August 1, 1973 and March 31, 1974. Data were obtained on the characteristics, continuing education activities, and the reasons for non-participation of 136 (40.8%) of 333 non-participants in seven professional categories.

The P.A. Woodward Mobile Instructional Resource Centre Project was one of a number of delivery systems used by the Division of Continuing Education in the Health Sciences at the University of British Columbia to provide learning opportunities for rural health professionals in their home communities during the early 1970's. The central feature of the project was a highway bus that had been converted into a mobile continuing education facility containing three audio visual learning stations and over 1300 audio

visual programs. The MIRC spent a sixty-hour week at the hospital in each community visited. The project was supervised by an inter-professional committee in the Division of Continuing Education in the Health Sciences and was operated by a field supervisor who was a graduate student in adult education.

A total of 521 health practitioners in 11 professional categories, representing approximately 41 percent of the potential participants, took part in the MIRC project during the period concerned. Participation rates were significantly higher among professions for whom the Division regularly provided other forms of learning opportunities than among those for whom it did not, and higher to a degree that tended toward significance among professions employed outside a hospital than among hospital-based professions. Participation rates were not significantly related to the distance of communities from Vancouver either in terms of miles or travel time, but were negatively related to the size of the local hospitals. Rates in communities with hospitals having 40 beds or fewer were significantly higher than in those with larger hospitals.

During the same period, a total of 2474 British Columbia health professionals from six professions, representing approximately 15 percent of the potential participants, took part in 75 short courses and workshops conducted by the Division.

For the six professions normally served by the regular programming of the Division, the over-all participation rate in

the MIRC project was significantly higher than the over-all rate for other Division activities, as were the rates for nursing, pharmacy, and rehabilitation medicine. The differences in rates for the other three professions were not statistically significant.

Limiting the comparison to health professional from those communities served by the MIRC project, 101 of whom participated in other Division activities and 392 in the MIRC project, it was found that the over-all rate for Division activities of other types was significantly lower than the rate for the MIRC project and that the same was true for four professional groups: dietetics, nursing, pharmacy and rehabilitation medicine. There was no significant difference for dentistry and medicine.

Making the comparison on the basis of individual communities, it was found that participation rates in the MIRC project were significantly higher than rates in other Division programs for all but one of the communities visited by the MIRC.

On the whole, it appears that the MIRC project served a different set of individuals than did other Division programs. Of a combined total of 443 participants from communities visited by the MIRC, only 50 (11.3%) participated both in the MIRC project and at least one other Division activity. The number of common participants in most locations was less than 10 percent of the total number from that location. Moreover, the MIRC project served a number of professions for whom the Division did not ordinarily provide learning opportunities.

The cost of operating the MIRC project during the period concerned was \$42,500.28 compared to \$159,518.64 for other Division programs. On the basis of the cost-per-participant-hour-of-instruction, the cost of the MIRC project (\$16.44) was approximately four times as high as the equivalent cost for other Division activities (\$3.89). Costs to participants and their employers were not available and therefore were not included in the calculations.

The majority of the 657 respondents from whom data were obtained in the MIRC project were married females between the ages of 26 and 49 who were employed on a full-time basis as nurses in a hospital. They had obtained their most recent professional education in British Columbia or another Canadian province and had practiced continuously for a period of 15 years or less since graduation. During the year prior to the MIRC's visit, they had attended an average of two workshops, and had read an average of six professional books and 17 issues of professional journals.

When participants and non-participants were compared on the basis of demographic and employment characteristics and continuing education activities, a number of statistically significant differences were identified. A significantly greater proportion of participants were female while more non-participants were male. A significantly higher proportion of participants were pharmacists while more non-participants were dentists, doctors, physiotherapists, and social workers. A significantly higher proportion of partici-

pants were employed in a hospital, and non-participants in private practice. Non-participants had read significantly more books. The two groups did not differ significantly on the other variables examined.

On the whole, participants' reactions to the project appear to have been favorable as measured by a five point reaction scale on which the mean reaction score for all items was between 4.1 and 4.4. Significant differences encountered among the various professional groups appear to be attributed to the location of employment and the lack of profession-specific materials for some groups. Significant differences were also encountered among the various communities on all items. Distance from Vancouver was negatively related to reaction scores on three items, indicating that respondents in communities nearer Vancouver liked those aspects of the project better than did those living farther away. This result may have been due in part to effects of the inexperience of the field supervisors in the first few communities, which were the most remote. Other factors which may have accounted for differences on some of the items are: a possible lack of interest in continuing education in some communities; the lack of profession-specific materials for certain groups; the difficulty of coping with large numbers of learners in the learning environment at one time; and the location of the MIRC in terms of its visibility and accessibility.

Respondents' rankings of eight alternative delivery systems for continuing education indicated that an audio-visual learning station in a hospital was preferred, that continued visits by the MIRC was second, and that a loan system for print materials was least preferred. The rank orderings assigned by participants and non-participants were not significantly related. Participants' first choice was continued visits by the MIRC, which were least preferred by non-participants, whose first choice was using a hospital library. Participants' second choice was an audio-visual learning station in a hospital, whereas the second choice of non-participants was conferences and workshops in larger centres. Neither group favored a loan system for print materials.

The majority of non-participants cited practical problems such as demanding work schedules, family responsibilities and absence due to holidays as reasons for not participating. Very few gave reasons that suggested ways in which the project could be altered to improve participation.

#### CONCLUSIONS

The Mobile Instructional Resource Centre appears to be an effective system for delivering continuing education to rural health professionals because participation rates for most professional groups and in most communities were higher than rates in other programs provided during the same period, and because it

reached a substantial number of professionals not reached by the other programs. It also appears to be a system that is acceptable to the people it is intended to serve because the reactions of most of the participants to the project were favorable. Although it is more expensive than other delivery systems when only costs to the provider are considered, this may change when costs to participants and employers are included. Therefore, it appears that the MIRC Project is an acceptable, effective, and potentially economical system to deliver continuing education in the health sciences to rural areas.

#### IMPLICATIONS FOR CONTINUING EDUCATION

On the basis of this study's findings, an audio-visual learning station located in a hospital is an attractive continuing education delivery system to rural health workers. Therefore, carrels such as those in the MIRC should be set up on a trial basis in a number of hospitals and a study made of their utilization. To be effective, however, this approach must be supported by a centralized loan system for audio-visual materials and by properly-trained technicians to service the equipment and materials as necessary.

Since non-participants expressed a preference for using a hospital library, it is important to ensure that all hospitals have libraries equipped with properly catalogued reference materials and appropriate periodicals. Learning stations should be located in or near the libraries and be supplemented by articles and other

relevant reference material.

In order to provide the necessary support systems for the libraries and learning stations in the local hospitals, a learning resources network is necessary to link the regional hospitals or the community colleges with a major central resource centre, possibly the Bio-Medical Library at the University of British Columbia.

Non-participants expressed an interest in a loan system for audio visual materials to be used outside the local hospital. Such a system could be operated from the hospital library or through the learning resources network. Before this is encouraged, criteria should be established to ensure that formats for audio visual materials are standardized and compatible with easily accessible and inexpensive playback equipment.

Topical materials for hospital libraries, learning stations and learning resources network could be determined in a number of ways: 1) analysis of the topics of programs used in the MIRC; 2) analysis of epidemiological data; 3) analysis by region of the results of self-assessment tests conducted by professional journals; 4) written simulations and self-assessment tests developed by the Division of Continuing Education in the Health Sciences at the University of British Columbia.

Because the participants in the MIRC and other programs in this study represented less than 50 percent of the potential clientele, other distance education systems should be investigated. The first step should be to find out who the potential participants



are (profession, specialty, etc.), where they are located, what types of continuing education activities they participate in at present, which they prefer, why they did not appear in any of the facets of this study, and other relevant information. This information will form a basis for selecting other approaches.

The MIRC project suggests that learning opportunities offered in the local communities are likely to attract a larger proportion of the potential participants than those offered elsewhere. Examples with strong potential for British Columbia are:

1. Educational experiences planned and organized by appropriately trained local co-ordinators such as the network of co-ordinators associated with the Division of Continuing Pharmacy Education at the University of British Columbia. Members of the network plan and conduct programs for their colleagues.

2. Off-campus courses and workshops planned by major education institutions.

3. Two-way audio and video television links connecting rural communities with major centres. Because of the mountainous terrain, satellite transmission would be more appropriate than micro-wave transmission in British Columbia. The present Hermes satellite is suitable for this purpose on a short-term basis.

4. Telephone dial access systems and telephone consultation services to provide assistance with specific patient management problems. However, while these services have been well-received elsewhere, the principle users: nurses, doctors, dentists

and pharmacists, have not always been willing to support the costs of operation.

5. Telephone conference systems. However, locations in which these have been successful have not been as mountainous as British Columbia and therefore higher costs of establishing suitable telephone linkages may make them less feasible in this province.

#### IMPLICATIONS FOR THE MIRC PROJECT

Because of the high participation rates and the favorable reactions of participants, it seems appropriate to continue the project.

The present vehicle, which has serious mechanical problems, should be replaced with a tractor-trailer combination. This would allow the field supervisor to travel independent of the trailer unit when required.

Because of the problems of providing educational activities for distant learners, the principal objectives of the project should be 1) to stimulate interest in the use of instructional media for independent learning, and 2) to assist with the development of local continuing education resources.

The MIRC should be staffed by two field supervisors trained in adult education and other matters related to the project. This would 1) permit maximizing the hours of operation without increasing the load on a single field supervisor; and 2) allow the field supervisors to lead and develop local discussion groups,

and work with local educators (co-ordinators of Continuing Pharmacy Education, in-service educators, chairmen of medical education committees, etc.) on matters pertinent to their interests.

The present policy of giving preference to smaller hospitals should be continued. However, to afford maximum opportunity for participation, the length of visits should be related to the size of the hospital, with no less than five days being spent in any location and a maximum of 10 days in locations with hospitals up to 100 beds in size. Because of space limitations in the MIRC, no community with a hospital larger than 100 beds should be included in the itinerary.

The audio visual holdings should be expanded to include materials for all professions the project is intended to serve. At present, the majority of the programs are intended for doctors, nurses, dentists and pharmacists. Because personnel in small hospitals form close-knit communities, it seems appropriate to provide materials for all workers delivering direct patient care. This means that programs for dietitians, medical laboratory technologists, medical records librarians, occupational therapists, physiotherapists, X-ray technicians and ambulance attendants should be added. Space limitations in the vehicle may make it inappropriate to try to include institutional support personnel (house-keeping, maintenance, laundry, etc.). Group sessions in the hospital could be planned for them.

A lending library of print materials should augment the

holdings to provide opportunity for in depth study of selected topics.

The second phase of the project should involve a change in focus with comprehensive treatments of specialized areas replacing the present general introduction to instructional media. Topics in demand at the present time are cardio-pulmonary resuscitation and the management of pain. One field supervisor should be a content expert who could conduct learning experiences for health professionals and the public while audio visual treatments of the topic were available in the MIRC.

If the MIRC project cannot continue in its present form, the carrels, equipment and materials should be used to establish a pilot project with learning stations located in three hospitals. Possible locations are Alert Bay, Enderby and Lillooet, which are typical of hospitals the project was intended to serve because of their small size and remoteness from Vancouver. If this is not feasible, the materials should become part of a loan system operated out of the Division of Biomedical Communications or the Woodward Bio-Medical Library.

#### IMPLICATIONS FOR FURTHER STUDY

The following aspects of the project appear to warrant further study:

1. The ability of the project to stimulate interest in continuing education and in the use of media for independent learn-

ing should be studied by gathering data on the continuing education habits and preferences of participants prior to and at an appropriate interval following their participation in the project. This would help determine whether participating in the MIRC project contributed to any change.

2. A more complete study of the costs of the project including costs to participants and employers, and the utilization of professional manpower, compared with similar costs for other delivery systems would be valuable.

3. The impact of participating in the project on the participants' practice should be studied.

4. A study should be conducted to determine the acceptability, effectiveness and economic feasibility of learning stations in local hospitals referred to in the previous sections.

5. The degree of association between participation rates and the size of communities should be tested again when the length of visits has been adjusted to relate to the size of the local hospital.

6. The degree of association between participation rates and the distance of communities from major continuing education centres should be tested again when a larger number of communities over a wider geographic area have been visited and when a procedure has been derived for including other continuing education centres in addition to Vancouver in the calculation.

7. The degree of association between participants' re-

actions to the project and the size of their communities and their distance from major continuing education centres should be tested again after more communities have been visited when a standard system of facilitating in the learning environment has been used.

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## APPENDIX A

Questionnaire For Participants

Covering Letter To Non-Participants

Questionnaire For Non-Participants

## Mobile Instructional Resource Centre

## Questionnaire for Participants

1. Name \_\_\_\_\_
2. Mailing Address \_\_\_\_\_  
\_\_\_\_\_
3. Phone \_\_\_\_\_ 4. Sex (1) male \_\_\_\_\_ (2) female \_\_\_\_\_
5. What is your age? \_\_\_\_\_
6. What is your marital status?  
(1) single \_\_\_\_\_ (3) widowed, divorced, or  
(2) married \_\_\_\_\_ separated \_\_\_\_\_
7. (a) In what country did you obtain your professional  
education? \_\_\_\_\_  
(b) If in Canada, what province? \_\_\_\_\_
8. What is your current health profession or occupation?  
(1) Dentistry \_\_\_\_\_ (7) Social Work \_\_\_\_\_  
(2) Dietetics \_\_\_\_\_ (8) LPN \_\_\_\_\_  
(3) Medicine \_\_\_\_\_ (9) X-Ray \_\_\_\_\_  
(4) Nursing (RN) \_\_\_\_\_ (10) Med. Lab. \_\_\_\_\_  
(5) Rehab. Med. \_\_\_\_\_ (11) Med. Library \_\_\_\_\_  
(6) Pharmacy \_\_\_\_\_ (12) Other \_\_\_\_\_  
(Specify) \_\_\_\_\_

9. What is your field of employment?

(check one)

- |                                |                           |
|--------------------------------|---------------------------|
| a. (1) hospital _____          | (5) child welfare _____   |
| (2) public health agency _____ | (6) mental health _____   |
| (3) private practice _____     | (7) corrections _____     |
| (4) public welfare _____       | (8) Other (Specify) _____ |

b. If you are employed by a hospital, how many beds does it have? \_\_\_\_\_

10. Are you employed?

- (1) full time \_\_\_\_\_
- (2) part time \_\_\_\_\_
- (3) not at present \_\_\_\_\_

11. In what year did you graduate from the course that gave you your professional qualifications? \_\_\_\_\_

12. How many years have you practiced since graduation? \_\_\_\_\_

13. Have you practiced each year since graduation? (1) yes \_\_\_\_\_

(2) no \_\_\_\_\_

14. How many years have you practiced in British Columbia? \_\_\_\_\_

15. What are your employment plans? Do you intend to:

- (1) continue working until retirement \_\_\_\_\_
- (2) stop working when you marry \_\_\_\_\_
- (3) stop working when you have a family \_\_\_\_\_



(4) stop working for an interval of time for  
personal reasons but plan to return to full  
or part time employment later \_\_\_\_\_

(5) undecided \_\_\_\_\_

16. Approximately how many professional workshops, short courses,  
and conferences have you attended in the past year? \_\_\_\_\_  
(number)

17. Approximately how many professional books (including reference  
books) have you read in the past year? \_\_\_\_\_  
(number)

18. Approximately how many issues of professionals journals have  
you read in the past year? \_\_\_\_\_  
(number)

19. Which of the following aids to learning have you used in the  
past year? (check each item)

|  |               |              |
|--|---------------|--------------|
| (i) tape recorder:                     | (1) yes _____ | (2) no _____ |
| (ii) tape-slide programme:             | (1) yes _____ | (2) no _____ |
| (iii) video tape:<br>(television film) | (1) yes _____ | (2) no _____ |
| (iv) 8 mm films or film loops:         | (1) yes _____ | (2) no _____ |
| (v) 16 mm films:                       | (1) yes _____ | (2) no _____ |
| (vi) programmed instruction:           | (1) yes _____ | (2) no _____ |

20. How did you first hear about the M.I.R.C.?  
(check one)

(1) letter from the hospital \_\_\_\_\_

(2) telephone call from hospital \_\_\_\_\_

- (3) informed in person by someone in authority  
at the hospital \_\_\_\_\_
- (4) letter from Social Work contact person \_\_\_\_\_
- (5) telephone call from Social Work contact  
person \_\_\_\_\_
- (6) informed in person by Social Work contact  
person \_\_\_\_\_
- (7) informed at a meeting \_\_\_\_\_
- (8) saw introductory tape-slide presentation \_\_\_\_\_
- (9) saw notice on hospital bulletin board \_\_\_\_\_
- (10) told by someone who had used it \_\_\_\_\_
- (11) saw M.I.R.C. beside hospital \_\_\_\_\_
- (12) read article in local newspaper \_\_\_\_\_
- (13) received information from U.B.C. \_\_\_\_\_
- (14) heard about it on the radio \_\_\_\_\_
- (15) other (specify) \_\_\_\_\_

21. How many weeks ago did you first hear about the M.I.R.C.?

\_\_\_\_\_

---

STOP HERE. PLEASE COMPLETE THE REST OF THE QUESTIONS AT THE END  
OF YOUR FIRST VISIT TO THE M.I.R.C.

---

Now that you have completed your first visit to the M.I.R.C. please indicate your feelings about it by checking the appropriate responses:

|  | strongly<br>agree | agree | unde-<br>cided | disagree | strongly<br>disagree |
|--|-------------------|-------|----------------|----------|----------------------|
| 22. M.I.R.C. provides a worthwhile opportunity for me to continue my professional education          | _____             | _____ | _____          | _____    | _____                |
| 23. The audio visual devices in the M.I.R.C. facilitate effective learning experiences               | _____             | _____ | _____          | _____    | _____                |
| 24. M.I.R.C. provides materials pertinent to my needs  | _____             | _____ | _____          | _____    | _____                |
| 25. Catalogue system (indexes) was adequate to enable me to identify materials pertinent to my needs | _____             | _____ | _____          | _____    | _____                |
| 26. M.I.R.C. environment facilitates concentration   | _____             | _____ | _____          | _____    | _____                |
| 27. M.I.R.C. is efficiently laid out   | _____             | _____ | _____          | _____    | _____                |
| 28. Hours of M.I.R.C. operation were convenient  | _____             | _____ | _____          | _____    | _____                |

strongly agree    agree    unde-    disagree    strongly  
agree    .....    cided    .....    disagree

---

29. M.I.R.C. was at  
a convenient  
location

\_\_\_\_\_

30. Length of M.I.R.C.  
visit (1 week)  
was adequate

\_\_\_\_\_

31. At present, the M.I.R.C. visits approximately 40 communities  
on a one-week per location basis.

Do you feel that: (check one)

(1) one week per year is satisfactory

\_\_\_\_\_

(2) visits should be one week in length but more  
frequent

\_\_\_\_\_

(3) visits should continue to be once per year,  
but longer than one week

\_\_\_\_\_

(4) visits should be longer and more frequent

\_\_\_\_\_

32. In order to facilitate planning of continuing education ex-  
periences on a long-term basis, we would like to determine  
what your preferences are.

Please rank the following methods of continuing education in  
order of your preference by placing the numeral "1" beside the  
method that you feel best suits your needs, "2" beside the one  
that seems second best and so on up to "8".

Please rank each item.

RANKING

- (1) A hospital library equipped with books, jour-  
nals, brochures, etc. suitable for and avail-  
able to all members of the health care team.

\_\_\_\_\_

## RANKING

- (2) A learning station in the hospital equipped with a tape recorder, slide projector, video tape hookup and with appropriate audio visual materials for these devices. \_\_\_\_\_
- (3) Lectures, seminars, group discussions, etc. given or led by members of the local health care community. \_\_\_\_\_
- (4) Lectures, seminars, group discussions, etc. given or led by qualified people from outside the local health care community. \_\_\_\_\_
- (5) Conferences, workshops and short courses held in larger centres. \_\_\_\_\_
- (6) A correspondence system that would make available by mail on a short term loan tapes, slides, video tapes and films for use by individuals or groups. \_\_\_\_\_
- (7) A correspondence system that would make available on a short term loan basis pertinent books, journals, brochures, etc. \_\_\_\_\_
- (8) Continued visits by the P.A. Woodward Mobile Instructional Resource Centre. \_\_\_\_\_

## COMMENTS \_\_\_\_\_

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THE UNIVERSITY OF BRITISH COLUMBIA  
HEALTH SCIENCES CENTRE  
2075 WESBROOK PLACE  
VANCOUVER, B.C., CANADA  
V6T 1W5

122

CONTINUING EDUCATION IN THE HEALTH SCIENCES  
P.A. WOODWARD INSTRUCTIONAL RESOURCES CENTRE  
Phone:

Dear \_\_\_\_\_:

The P.A. Woodward Mobile Instructional Resource Centre (M.I.R.C.) was recently located in your community. For a description of the Resource Centre, please refer to the pamphlet enclosed with this letter.

As part of an evaluation of the educational effectiveness of the M.I.R.C. we would like to obtain information from health professionals who did not use it. We would appreciate your assisting us in making this evaluation by filling out the enclosed questionnaire. Within one week of receipt of this letter please return your completed questionnaire to us in the stamped, self-addressed envelope provided. All replies are strictly confidential.

Thank you for your help.

Yours truly,

Field Supervisor, M.I.R.C.

Mobile Instructional Resource Centre  
Questionnaire for Non-Participants

1. Name \_\_\_\_\_
2. Mailing Address \_\_\_\_\_  
\_\_\_\_\_
3. Phone \_\_\_\_\_
4. Had you heard about the M.I.R.C. prior to reading the letter  
attached to this questionnaire? (1) yes \_\_\_\_\_ (2) no \_\_\_\_\_

---

IF YOUR ANSWER TO QUESTION 4 WAS "NO" PLEASE GO DIRECTLY TO  
QUESTION 9.

---

5. How did you first hear about the M.I.R.C.?

(check one)

- (1) letter from the hospital \_\_\_\_\_
- (2) telephone call from hospital \_\_\_\_\_
- (3) informed in person by someone in authority  
at the hospital \_\_\_\_\_
- (4) letter from Social Work contact person \_\_\_\_\_
- (5) telephone call from Social Work contact person \_\_\_\_\_
- (6) informed in person by Social Work contact person \_\_\_\_\_
- (7) informed at a meeting \_\_\_\_\_
- (8) saw introductory tape-slide presentation \_\_\_\_\_
- (9) saw notice on hospital bulletin board \_\_\_\_\_

- (10) told by someone who had used it \_\_\_\_\_
- (11) saw M.I.R.C. beside hospital \_\_\_\_\_
- (12) read article in local newspaper \_\_\_\_\_
- (13) received information from U.B.C. \_\_\_\_\_
- (14) heard about it on the radio \_\_\_\_\_
- (15) Other (specify) \_\_\_\_\_

6. How many weeks ago did you first hear about the M.I.R.C.? \_\_\_\_\_

7. Did you know that the M.I.R.C. was in your community last week? (1) yes \_\_\_\_\_ (2) no \_\_\_\_\_

---

IF YOUR ANSWER TO QUESTION 7 WAS "NO" PLEASE SKIP QUESTION 8.

---

8. Please indicate why you did not use the M.I.R.C. by checking one of the following alternatives.

- (1) My work schedule was too demanding \_\_\_\_\_
- (2) I was away on holidays \_\_\_\_\_
- (3) I was unable to find a babysitter \_\_\_\_\_
- (4) Family responsibilities took up too much  
of my leisure time \_\_\_\_\_
- (5) Community responsibilities took up too much  
of my leisure time \_\_\_\_\_
- (6) The M.I.R.C. was not at a convenient location \_\_\_\_\_
- (7) The hours of M.I.R.C. operation were not  
convenient \_\_\_\_\_



(8) Negative reports from M.I.R.C. users led me to  
believe that participation in the M.I.R.C. would  
not be worthwhile \_\_\_\_\_

(9) I was ill \_\_\_\_\_

(10) Other (specify) \_\_\_\_\_

9. Please help us to understand your feelings about the M.I.R.C.  
project by checking the responses that best indicate your  
reactions to the following statements. (Answer all items).

|  | strongly<br>agree | agree | undecided | disagree | strongly<br>disagree |
|--|-------------------|-------|-----------|----------|----------------------|
| (1) I feel that I<br>do not require<br>further pro-<br>fessional edu-<br>cation                          | _____             | _____ | _____     | _____    | _____                |
| (2) I prefer to<br>learn as a<br>member of a<br>group  | _____             | _____ | _____     | _____    | _____                |
| (3) I prefer to<br>learn on my<br>own (eg. read-<br>ing, journals)                                       | _____             | _____ | _____     | _____    | _____                |
| (4) I feel that<br>audio visual<br>devices do not<br>facilitate ef-<br>fective learn-<br>ing experiences | _____             | _____ | _____     | _____    | _____                |
| (5) I would like to<br>have made use<br>of the M.I.R.C.<br>this week                                     | _____             | _____ | _____     | _____    | _____                |

10. COMMENTS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

11. SEX: (1) male \_\_\_\_\_ (2) female \_\_\_\_\_

12. What is your age? \_\_\_\_\_

13. What is your marital status?

(1) single \_\_\_\_\_ (3) widowed, divorced or  
(2) married \_\_\_\_\_ separated \_\_\_\_\_

14. a. In what country did you obtain your professional  
education? \_\_\_\_\_

b. If Canada, in what Province? \_\_\_\_\_

15. What is your current health profession or occupation?

|                        |                            |
|------------------------|----------------------------|
| (1) Dentistry _____    | (7) Social Work _____      |
| (2) Dietetics _____    | (8) LPN _____              |
| (3) Medicine _____     | (9) X-Ray _____            |
| (4) Nursing (RN) _____ | (10) Med. Lab. _____       |
| (5) Pharmacy _____     | (11) Med. Library _____    |
| (6) Rehab. Med. _____  | (12) Other (specify) _____ |

16. What is your field of employment?

(check one)

- |                                |                           |
|--------------------------------|---------------------------|
| a. (1) hospital _____          | (5) child welfare _____   |
| (2) public health agency _____ | (6) mental health _____   |
| (3) private practice _____     | (7) corrections _____     |
| (4) public welfare _____       | (8) Other (specify) _____ |

b. If you are employed by a hospital, how many beds does it have? \_\_\_\_\_

17. Are you employed?

- |                     |                          |
|---------------------|--------------------------|
| (1) full time _____ | (3) not at present _____ |
| (2) part time _____ |                          |

18. In what year did you graduate from the course that gave you your professional qualifications? \_\_\_\_\_

19. How many years have you practiced since graduating? \_\_\_\_\_

20. Have you practiced each year since graduation?

- (1) yes \_\_\_\_\_ (2) no \_\_\_\_\_

21. How many years have you practiced in British Columbia? \_\_\_\_\_

22. What are your employment plans? Do you intend to:

(check one)

- |   |  |
|---|--|
| (1) continue working until retirement _____ |  |
| (2) stop working when you marry _____       |  |

- (3) stop working when you have a family \_\_\_\_\_
- (4) stop working for an interval of time for personal  
reasons but plan to return to full or part time  
employment later \_\_\_\_\_
- (5) undecided \_\_\_\_\_

23. Approximately how many professional workshops, short courses  
and conferences have you attended in the past year? \_\_\_\_\_  
(number)

24. Approximately how many books (including reference books) have  
you read in the past year? \_\_\_\_\_  
(number)

25. Approximately how many issues of professionals journals have  
you read in the past year? \_\_\_\_\_  
(number)

26. Which of the following aids to learning have you used in the  
past year? (check each item)

- |   |               |              |
|---|---------------|--------------|
| (i) tape recorder:                                  | (1) yes _____ | (2) no _____ |
| (ii) tape-slide programme:                          | (1) yes _____ | (2) no _____ |
| (iii) video tape:<br>(television film)              | (1) yes _____ | (2) no _____ |
| (iv) 8 mm films or film loops:<br>(home movie size) | (1) yes _____ | (2) no _____ |
| (v) 16 mm films:<br>(full length movie size)        | (1) yes _____ | (2) no _____ |
| (vi) programmed instruction:                        | (1) yes _____ | (2) no _____ |

27. At present, the M.I.R.C. visits approximately 40 communities on a one-week per location basis.

Do you feel that (check one)

- (1) one week per year is satisfactory \_\_\_\_\_
- (2) visits should be one week in length but more frequent \_\_\_\_\_
- (3) visits should continue to once per year, but longer than one week \_\_\_\_\_
- (4) visits should be longer and more frequent \_\_\_\_\_

28. In order to facilitate planning of continuing education experiences on a long-term basis, we would like to determine what your preferences are.

Please rank the following methods of continuing education in order of your preference by placing the numeral "1" beside the method that you feel best suits your needs, "2" beside the one that seems second best and so on up to "8".

Please rank each item.

RANKING

- (1) A hospital library equipped with books, journals, brochures, etc. suitable for and available to all members of the health care team. \_\_\_\_\_
- (2) A learning station in the hospital equipped with a tape recorder, slide projector, video tape hookup and with appropriate audio visual materials for these devices. \_\_\_\_\_
- (3) Lectures, seminars, group discussions, etc. given or led by members of the local health care community. \_\_\_\_\_
- (4) Lectures, seminars, group discussions, etc. given or led by qualified people from outside the local health care community. \_\_\_\_\_
- (5) Conferences, workshops and short courses held in larger centres. \_\_\_\_\_

- (6) A correspondence system that would make available by mail on a short term loan basis tapes, slides, video tapes and films for use by individuals or groups. \_\_\_\_\_
- (7) A correspondence system that would make available by mail on a short term loan basis pertinent books, journals, brochures, etc. \_\_\_\_\_
- (8) Continued visits by the P.A. Woodward Mobile Instructional Resource Centre. \_\_\_\_\_

## APPENDIX B

Specifications For The Vehicle,  
Its Major Mechanical Equipment,  
And For The Audio Visual Equipment  
Carried By The MIRC

## SPECIFICATIONS FOR THE VEHICLE AND MAJOR EQUIPMENT

BUS - Model IC3741 Brill Bus manufactured by Canadian Car and Foundry Limited in Fort William, Ontario in 1947. It is powered by a 210 Hall Scott pancake gasoline engine. (See accompanying schematic, page 32).

GENERATOR - Onan model 10.0 CCKB - # CR 10 KW, 42 120/240 volt, single phase, 60 cycle gasoline powered generator unit.

AIR CONDITIONER - 24,000 BTU, 230/1/60, 17.9 amps, electrical comfort air conditioner.

HEATER - 8 KW, 240 volt electric heater.

FAN - Model A 1232 LECO fan with 120 volt, 1/6 horse power motor.

## SPECIFICATIONS FOR AUDIO-VISUAL EQUIPMENT

VIDEOTAPE RECORDER - 1 Sony AV 3600 half inch videocorder.

TELEVISION MONITORS - 2 Sony CVM 1100 Monitor/Receivers (Black and White).

TAPE RECORDERS - 3 Wollensak 2550 A/V tape recorders.

SLIDE PROJECTORS - 3 Kodak Model "Ektagraphic" AV-343 slide projectors with 3" lens.

FILM PROJECTOR - 1 Fairchild "Seventy-31" super 8 mm film projector.

AUTOTUTOR - 1 Sargent Welch Scientific Mark III Autotutor.



## APPENDIX C

Communities Included In The  
Itinerary Of The MIRC Project  
Between August 1, 1973 and  
March 31, 1974

COMMUNITIES INCLUDED IN THE ITINERARY OF THE MIRC PROJECT  
BETWEEN AUGUST 1, 1973 AND MARCH 31, 1974

|  |                              |
|--|------------------------------|
| Armstrong  | August 13 to August 18       |
| Enderby  | August 20 to August 25       |
| Golden   | August 27 to September 1     |
| Revelstoke   | September 4 to September 8   |
| Salmon Arm   | September 10 to September 15 |
| Lillooet   | October 1 to October 6       |
| Lytton   | October 9 to October 13      |
| Ashcroft   | October 15 to October 20     |
| Squamish   | October 29 to November 3     |
| Sechelt  | November 5 to November 10    |
| Powell River   | November 12 to November 17   |
| Break for Christmas holiday,<br>preparation of an interim<br>report, and repairs to<br>vehicle and equipment | November 19 to January 11    |
| Campbell River   | January 14 to January 20     |
| Comox  | January 22 to January 27     |
| Ladysmith  | January 29 to February 3     |
| Chemainus  | February 5 to February 10    |
| Ganges   | February 12 to February 17   |
| Alert Bay  | March 5 to March 10          |

## APPENDIX D

## Schedules of Operation

## SCHEDULES OF OPERATION

## SCHEDULE I

## ARMSTRONG AND ENDERBY

| DAY OF THE WEEK   | TIMES OF DAY           | NUMBER<br>OF HOURS | DISTRIBUTION<br>OF VISITS |
|-------------------|------------------------|--------------------|---------------------------|
| Monday            | Noon to 9:00 p.m.      | 3                  | 8.42%                     |
| Tuesday to Friday | 9:00 a.m. to 9:00 p.m. | 48                 | 84.21%                    |
| Saturday          | 9:00 a.m. to Noon      | 3                  | 7.37%                     |
| TOTALS            |                        | 54                 | 100.00%                   |

## SCHEDULE II

## GOLDEN TO POWELL RIVER

| DAY OF THE WEEK   | TIMES OF DAY             | NUMBER<br>OF HOURS | DISTRIBUTION<br>OF VISITS |
|-------------------|--------------------------|--------------------|---------------------------|
| Tuesday to Friday | Noon to 10:00 p.m.       | 40                 | 66.97%                    |
| Saturday          | 10:00 a.m. to 10:00 p.m. | 12                 | 18.05%                    |
| Sunday            | 9:00 a.m. to Noon        | 3                  | 14.98%                    |
| TOTALS            |                          | 55                 | 100.00%                   |

## SCHEDULE III

## CAMPBELL RIVER TO ALERT BAY

| DAY OF THE WEEK   | TIMES OF DAY             | NUMBER<br>OF HOURS | DISTRIBUTION<br>OF VISITS |
|-------------------|--------------------------|--------------------|---------------------------|
| Tuesday to Friday | Noon to 10:00 p.m.       | 40                 | 66.97%                    |
| Saturday          | 9:00 a.m. to 9:00 p.m.   | 12                 | 18.05%                    |
| Sunday            | 12:00 Noon to 10:00 p.m. | 10                 | 14.98%                    |
| TOTALS            |                          | 62                 | 100.00%                   |