

THE ADOPTION OF NURSING PRACTICES
BY PARTICIPANTS IN A CONTINUING
EDUCATION PROGRAMME

by

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ABSTRACT

Programmes in continuing education are necessary to help practitioners keep their skills and knowledge current. The purpose of this study was two-fold: to evaluate the effectiveness of a nursing institute as a means of introducing new practices by using the adoption concept as a criterion of measurement, and to determine whether certain characteristics of individual nurses are significantly related to the adoption of practices recommended in a continuing education programme. The population was drawn from 122 nurses who attended the Nursing Assessment Institute held in Vancouver, British Columbia on February 12-14, 1969. Seventy nine participants included in the sample were interviewed. The innovations included six steps in the nursing process, (1) writing a nursing history using a standardized guide form, (2) using the nursing history to formulate objectives for nursing care, (3) devising specific nursing methods to achieve the objectives, (4) evaluating the objectives and methods through the use of progress notes, (5) modifying the objectives and methods in terms of the patient's progress, and (6) preparing a nursing discharge summary. An adoption score was computed for each participant by assigning a score for each reported stage in the adoption process - awareness, interest, evaluation, trial and adoption. Three adoption scores were computed for each participant: the extent to which the recommended practices were in use prior to the study, the extent to which the practices were adopted as a result of learning about them at the institute and the total adoption from all sources. The adoption scores provide a basis for dividing participants into adopter categories ranging from those first to accept an idea or practice to those who are last or never adopt. Certain socio-economic characteristics, age, educational background, community participation, occupational position, years of practice, income, job satisfaction

and participation in continuing education were collected about each participant. Interrelationships between the socio-economic characteristics and interrelationships between socio-economic characteristics and adoption scores were computed using zero order and partial correlations and a multiple regression analysis was performed.

The adoption concept can be used as a criterion to assess learning that occurs at an institute by measuring the degree to which participants have incorporated into their practice those innovations which have been recommended. The institute on Nursing Assessment produced a considerable total amount of change in the participants, a 581 per cent increase in adoption, and this change seems to have been fairly consistent from person to person within the group. The participants were more prone to adopt the practices when they were relevant to their present nursing activities. The adopter categories showed the following percentages: innovator 1.27, early adopter 11.39, early majority 36.71, late majority 37.98, and laggard 12.66. Although previous research suggests a variety of characteristics which have been associated with the acceptance of new ideas, this study found education and occupational position to be the only characteristics that were significant at the .05 level. A significant coefficient of determination showed that some 30 per cent of the variation could be explained by these two variables.

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CHAPTER I

THE STUDY

The expansion of knowledge, technological developments and the complexity of social change have been identified as the most important and persistent social forces affecting society as a whole and creating particular educational needs for the adults within that society.¹ The need for continuing education in the health professions is particularly acute due to the rapid expansion of health services and the increasing complexity of health care. In nursing not only has the essential knowledge needed for practice increased but also there has been a change in the nature of the knowledge, skills and abilities that are necessary for competent practice. It is generally agreed that no basic preparation for a profession, regardless of how well founded, will equip the practitioner for a life time of practice. The Canadian Nurses' Association focuses attention on this need to improve patient care by updating nurses' knowledge: "For continuing practice of nursing it is essential that each practitioner keep skills and knowledge current with the newer developments. Continuing education should be

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Coolie Verner and Alan Booth, Adult Education, New York, The Center for Applied Research in Education, Inc., 1964, pp. 5-7.

focused on the improvement of the quality of nursing practice and the development of the individual nurse practitioner."² Stated simply, the purpose of continuing education is to help nurses improve their practice and to cope with the problems of their profession more intelligently and creatively.

Education is an extensive, diverse and complex enterprise in terms of its nature and its process. If we believe that the purpose of education is not only to accumulate knowledge, but also to change behaviour then the measurement of educational outcomes must be made in terms of observable differences in behaviour. Evaluation is fundamentally a two-step process: (1) determining exactly what is to be measured; (2) selecting or developing an instrument that will best do the measuring. The measurement of the learning achieved by participants in a particular programme can be made in four major areas: knowledge or information acquired, attitude change, skill-learning, and the acceptance of adoption of ideas and practices.³

How can we determine whether a programme in continuing education has, in fact, helped nurses to improve their practice? The measurement of the adoption

² Beliefs About Nursing, mimeographed report, Ottawa, Canadian Nurses' Association, 1968, p. 2.

³ Verner and Booth, op. cit., p. 98.

of ideas or practices may provide the best assessment of the learning achieved in programmes of continuing education. This procedure has been used effectively in relation to agricultural practices, the dissemination of information, and the use of drugs by practicing physicians, among other things, but there has been little application of the concept of adoption to nursing practice.

Purpose of the Study

In recognition of the important need for continuing education for nurses and the concomitant need for evaluating the effectiveness of programmes of continuing education, this study has a two-fold purpose:

1. to evaluate the effectiveness of a nursing institute as a means of introducing new practices by using the adoption concept as a criterion of measurement.
2. to determine whether certain characteristics of individual nurses are significantly related to the adoption of practices recommended in continuing education programmes.

Hypothesis

There is no statistically significant difference in the adoption of recommended nursing practices between individual nurses with varying socio-economic characteristics.

Definition of Terms

Adoption - The integration of an idea or practice recommended by an educational agent into the normal behaviour pattern of an adult learner.

Degree of Adoption - The extent to which an individual learner has achieved the successive steps of awareness, interest, active search for additional information, willingness to try, and actual trial of an idea or practice recommended by an educational agent. It is an index of the individual's progress toward the complete integration of the recommended idea or practice into his normal behaviour pattern.

Adoption Score - (1) The score achieved by an individual by his degree of adoption of a recommended practice.

(2) The sum of the adoption scores of an individual for each of the recommended ideas or practices in a discrete series.

Adoption Score for Discrete Study Source (ASs) - That portion of a total adoption score determined as having resulted from a discrete educational process. ($AS_t - AS_p = AS_s$)

Adoption Score from Prior Sources (ASp) - That portion of a total adoption score determined to have existed prior to the exposure of an individual to a discrete educational process. ($AS_t - AS_s = AS_p$).

Total Adoption Score - The total adoption score of an individual for a discrete recommended practice or series

of practices resulting from all influences. (ASp+ASs=ASt)⁴

The Institute on Nursing Assessment

In 1968, the School of Nursing at the University of British Columbia embarked on a programme of continuing education for the nurse population in the province. This venture was made possible largely by a grant from the Registered Nurses Association of British Columbia of \$5,000.00 a year for a period of five years providing the University appoint a full-time faculty member from the School of Nursing to assume this responsibility. The institute reported on in this study was one of the ten educational programmes made available to nurses in B. C. in the academic year 1968-1969.

For each institute a local planning committee was formed to work with the Director of Continuing Nursing Education to determine the needs of the prospective participants and to suggest a tentative programme. The committee for this particular institute was unanimous in wishing to select a topic for the institute which would be applicable to nursing practice in any setting, whether acute or chronic, hospital or home, generalized or specialized.

4

John M. Welch, "An Evaluation of Three Adult Education Methods for Disseminating Trade Information to Missouri Restaurant Operators," Unpublished Ph.D. dissertation, Florida State University, 1961.

After several exploratory discussions the topic "nursing assessment" was decided upon and a qualified resource person able to meet the request from the committee was sought. Dean Dorothy M. Smith, College of Nursing and Chief of Nursing Practice at the J. Hillis Miller Health Center, University of Florida in Gainesville was selected as the resource person to conduct the institute. The institute on Nursing Assessment was held in Vancouver, British Columbia on February 12 - 14, 1969.

The two-day institute was designed to enable participants to explore the nature of nursing practice with particular emphasis on the techniques of assessing needs and planning nursing care for individual patients. A systematic approach to identifying nursing care needs through the use of the nursing history guide was presented. The nursing history guide, developed at the University of Florida, consists of two main parts: a guide to elicit and organize certain information about the patient that will be used to plan nursing care, and a guide to facilitate the process of clinical thinking used by the nurse in the planning and evaluating of nursing care.

The programme was designed to provide opportunity for a variety of learning activities for the registrants. Arrangements were made for each nurse to visit a patient and collect a nursing history using the standardized guide form. They were then to use the information collected to

write objectives for nursing care and the specific nursing methods which could be used to achieve these objectives. Using these resources, Dean Smith further elaborated, discussed and clarified the process for the group. The institute ended with a discussion of strategies for introducing new ideas into practice settings.

Short-term educational activities, such as institutes, are often evaluated by using a reaction form at the end of the programme. The Kropp-Verner Attitude Scale which was designed to measure the general attitude of the participants at the conclusion of an organized educational experience was used to evaluate the institute.⁵ This scale measures participant satisfaction and is not a measure of the learning achieved.

Population

The population for this study was drawn from the 122 nurses who attended the Nursing Assessment Institute. Ninety nurses who were employed within a thirty mile radius of Vancouver were selected for this study but of that number four could not be contacted because they had moved from the area, five were ill and not available, and two were eliminated because they were consultants on nursing

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Russell Kropp and Coolie Verner, "An Attitude Scale Technique for Evaluating Meetings," Adult Education, 7: 212-215, (Summer, 1957).

practice and familiar with the material presented at the Institute. The remaining seventy-nine nurse participants in the Institute were interviewed for purposes of this study.

The Procedure

Data Collection

Personal interviews were conducted between December 1, 1969 and February 3, 1970. An interview schedule, which had been pre-tested on five nurses not in the study population, was used to record the data. After editing for consistency of response, the data were keypunched for analysis on automatic data processing equipment.

Data Analysis

The IBM 360/67 computer at the University of British Columbia was used for analysis of the data. The t-test and chi-square statistical tests of significance were used, zero-order and partial correlations between all variables were computed and a multiple regression analysis was done.

The Innovations

The innovations consisted of a series of practices focussed on the process of nursing intervention. The six steps in this nursing process are: 1) writing a nursing history using a standardized guide form, 2) using

the nursing history to write objectives for nursing care, 3) using the objectives to write specific nursing methods to achieve them, 4) evaluating the objectives and nursing methods through the use of progress notes, 5) modifying the objectives and nursing methods in terms of the patient's progress, and 6) writing a nursing discharge summary. These six innovations differ in complexity and this factor may influence the acceptance or rejection of the innovations.

Stages in the Adoption Process

The decision to accept or reject an innovation is not based on a simple dichotomy but involves a complex mental process that has been segregated into five stages summarized by Lionberger as awareness, interest, evaluation, trial and adoption.⁶ Beal, et al, conclude that this concept of stages in the adoption process is valid from evidence that it appears meaningful to adopters, and that they are aware that they do go through a series of sequential stages in the progress toward adoption.⁷ Rogers

6

Herbert Lionberger, The Adoption of New Ideas and Practices, Ames, Iowa, State University Press, 1960, pp. 21-23.

7

George Beal, Everett Rogers, and J. M. Bohlen, "Validity of the Concept of Stages in the Adoption Process," Rural Sociology, 22:166-168, June, 1957.

indicates that these stages are consistent with the nature of the phenomenon and potentially useful for practical application.⁸ These five stages are used as the basis for the analysis of the data.

Adoption Score

On the basis of the data collected about the innovations, an adoption score was computed for each participant by assigning a score for each reported stage in the adoption process. The values assigned each stage were: 0 for not aware, 1 for awareness, 2 for interest, 3 for evaluation, 4 for trial and 5 for adoption. This degree of adoption score was computed for each respondent with respect to: 1) the extent to which the recommended practices were in use by the nurse prior to the study, therefore attributable to prior influences (ASp); 2) the extent to which the practices were adopted as a result of learning about them at the institute (ASs); and 3) the total adoption from all sources (ASt).⁹

Adopter Categories

The adoption score for each participant provides a basis for dividing them into categories which identify

⁸ Everett M. Rogers, Diffusion of Innovations, New York, The Free Press, 1962, pp. 152-158.

⁹ Welch, op. cit., p. 6-7.

the rate of response to innovations, ranging from those first to accept an idea or practice to those who are last or never adopt. Rogers uses five categories which are identified as follows: innovators, early adopters, early majority, late majority and laggards.¹⁰ These categories provide a useful tool for making gross differentiations among the nurses with respect to the time of adoption.

These three measures, the stages in the adoption process, the adoption score and the adopter categories were used as a framework for the analysis of the data.

Socio-economic Characteristics

Certain socio-economic characteristics, such as age, educational background, community participation, occupational position, years of practice, income, job satisfaction, and participation in continuing education were collected about each nurse. These separate items were tested for interrelationships by the use of correlation coefficients, and they were tested for significant differences between adoption scores, chi square values for the distributions were calculated at the .05 level of confidence.

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Rogers, op. cit., pp. 152-158.

CHAPTER II

REVIEW OF LITERATURE

Research studies on the diffusion of innovations can be found in many disciplines including agriculture, anthropology, education, market research, mass communication, medicine, public health, sociology, and technical assistance. In fact, almost every behavioural science has some interest in the diffusion of new ideas. The exchange of research findings between disciplines is scanty if not nonexistent. Summaries of diffusion research findings have been made in agriculture¹¹ and education,¹² and cross-disciplinary in a synthesis and evaluation of over 500 research studies from six disciplines on the diffusion of innovations.¹³

This review of the literature attempts to highlight the main research findings in three major areas: the individual adoption process, time and the adoption process,

¹¹ Lionberger, op. cit.

¹² Donald H. Ross, Administration for Adaptability. A Source Book Drawing Together the Results of More Than 150 Individual Studies Related to the Question of Why and How Schools Improve, New York, Metropolitan School Study Council, 1958.

¹³ Rogers, op. cit.

and the characteristics of adopters. The use of the adoption concept as a criterion of measurement will be outlined.

The Individual Adoption Process

People do not ordinarily accept new ideas or practices immediately upon hearing about them. The time from initial knowledge to final acceptance may range from a few days to many years. The decision to change is ordinarily the product of a sequence of events and influences operating through time. The adoption process has been described as the mental process through which an individual passes from first hearing about an innovation to final adoption.¹⁴ Various stimuli about the innovation reach the individual from communication sources and as these communications accumulate the individual responds to the messages and eventually adopts or rejects the innovation. This process should be distinguished from the diffusion process which is the spread of a new idea from its source of invention or creation to its ultimate users or adopters.¹⁵

The research tradition of rural sociology has produced the greatest number of research studies using the

¹⁴ Rogers, op. cit., pp. 12-20.

¹⁵ Loc. cit.

adoption concept. An investigation of the diffusion of hybrid seed corn was, perhaps, the first to use a stage concept to study the adoption of a farm practice.¹⁶ Ryan and Gross recognized three stages in the adoption process: awareness or first hearing about the new idea, trial or first use and adoption or complete acceptance and use of the innovation.

Wilkening noted that an individual's decision to adopt an innovation was composed of stages which he described as learning, deciding and acting over a period of time. The adoption of a specific practice, therefore, is not the result of a single decision to act, but the result of a series of action and thought decisions. He identified four stages in the adoption process consisting of initial knowledge, acceptance of the practice as a good idea, acceptance on a trial basis and adoption of the practice on his own farm.¹⁷

A committee of rural sociologists subsequently

16

Bryce Ryan and Neal Gross, "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," Rural Sociology, 8: 15-24, 1943.

17

Eugene A. Wilkening, Acceptance of Improved Farm Practices, Raleigh, North Carolina Agricultural Experiment Station Technical Bulletin 98, 1952.

added a fifth stage to the sequence.¹⁸ Both Rogers¹⁹ and Lionberger²⁰ have refined the five stages in the adoption process and these have been generally accepted for purposes of research. Two major investigations of the validity of the stages concept concluded they were a valid conceptualization of the adoption process.^{21 22}

Stages in the Adoption Process

Awareness: The stage at which an individual knows of the existence of an idea or practice but lacks details concerning its intrinsic nature and use. Awareness may begin as an involuntary act or an accidental discovery.

Information: The stage at which the individual becomes

18

North Central Rural Sociological Sub-committee for the Study of Diffusion of Farm Practices, How Farm People Accept New Ideas, Ames, Iowa Agricultural Extension Service Special Report 15, 1955.

19

Rogers, op. cit., p. 17.

20

Lionberger, op. cit., pp. 21-32.

21

G. M. Beal, E. M. Rogers and I. M. Bohlen, "Validity of the Concept of Stages in the Adoption Process," Rural Sociology, 22: 166-168, June, 1957.

22

James H. Copp, Maurice L. Sill and Emory J. Brown, "The Function of Information Sources in the Farm Practice Adoption Process," Rural Sociology, 23: 146-157, 1958.

interested in the idea. He seeks further basic information of a general nature regarding it. He wants to know why and how it works, how much it costs and how it compares with other ideas or practices purported to perform the same or similar functions. He is concerned with knowing the conditions of use and the resources necessary to get optimum benefits from its use.

Evaluation: The individual takes the knowledge he has about the idea and weighs the alternatives in terms of his own use. He considers his own resources of land, labor, capital and management ability and decides whether or not he has the necessary resources to adopt the idea. He also evaluates the idea in terms of the alternatives available and of his overall goal structure. He considers whether or not the adoption of the idea will help him maximize his goal and objectives. If he thinks it will, in most cases, he makes the decision to give the idea or practice a physical trial.

Trial: The stage at which the individual has the empirical experience of observing the idea in use. The trial stage is characteristically one of small-scale use by the potential adopter or his observation of use under conditions which simulate those of his own situation. At this stage the individual is concerned with the specifics of application and use and the mechanics and actions related to how to use the idea.

Adoption: The stage at which the individual uses the idea on a full-scale basis in his operations and is satisfied with it. He is no longer trying to decide whether or not the idea is good for him in his operation but has accepted it as an integral part of the particular operation into which he has incorporated it.

Time and the Adoption Process

All people do not adopt a new idea or practice at the same time. Ordinarily adoptions are very slow at first then increase at a faster rate until approximately half of the target population have accepted the innovation. After this, acceptance continues but at a decreasing rate. A characteristic "S" or growth curve may be obtained by plotting the number of persons accepting a specific change against a scale of successive time. This curve was found in the cumulative proportions of farmers using hybrid seed,²³ and in the adoption of a new drug by the medical profession,²⁴ as well as in other studies.

Characteristically, first adoptions take much longer from awareness to final adoption than subsequent

23

B. Ryan, "A Study of Technological Diffusion," Rural Sociology, 13: 273-283, September, 1948.

24

J. Coleman, E. Katz, and H. Menzel, "The Diffusion of an Innovation Among Physicians," Sociometry, 20: 253-270, December, 1957.

ones. Typically it may take as long for the first five to six per cent to adopt as it does for the next 80 per cent.²⁵ The time for completing the adoption cycle varies, depending partly on the nature of the innovation, however, when the rate of change in other aspects of culture is considered, changes appear to be coming at an increasing rate. The adoption cycle for most things may in fact be shorter now than a generation ago and may continue to shorten in future.²⁶

Classification of Adopters

The fact that people adopt new ideas or practices at different times means that they can be classified in terms of their position in the adoption pattern by time. A classification system that divides people on the basis of the time of adoption relative to each other has been developed.²⁷ Since adoption of specific changes tends to conform to the normal curve, standard units were used to classify the categories of innovators, early adopters, early majority, late majority and laggards.

Characteristics of Adopters

In research studies on adoption and diffusion,

²⁵ Lionberger, op. cit., p. 35.

²⁶ Loc. cit.

²⁷ Rogers, op. cit., p. 162.

variables relating to social, cultural, personal and situational factors have been selected by investigators attempting to categorize adopters in the various categories. Many of the researchers correlate innovativeness with generally similar variables. A number of the more important and well researched characteristics will be presented in the form of generalizations.²⁸

Age. Earlier adopters are younger in age than later adopters.

Social Status. Earlier adopters have higher social status than later adopters.

Financial Position. Earlier adopters have a more favorable financial position than later adopters.

Specialization. Earlier adopters have a more specialized operation than later adopters.

Information Sources. Earlier adopters tend to use impersonal sources, as well as those outside their particular social system, such as those sources in closer contact with the origin of new ideas, than do later adopters. Earlier adopters use a greater number of different sources than do later adopters.

Social Relationships. Earlier adopters have a broader spatial orientation than have later adopters and they have

more opinion leadership. The extent to which an individual shares in the social life of his community through interaction has been found to be significantly related to his adoption of practices recommended through educational experiences.^{29 30}

Enjoyment of Work. An individual's enjoyment of his occupation should affect his relationship to it by making him more or less susceptible to innovations according to his involvement with his work. Those individuals reporting the greater enjoyment of work have also been found to have achieved higher scores on the adoption of new practices.^{31 32}

Adoption Concept as a Criterion of Measurement

Welch, applying the adoption concept as a criterion of measurement, evaluated three adult education processes

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Herbert Menzel and Elihu Katz, "Social Relationships and Innovation in the Medical Profession: The Epidemiology of a New Drug," Public Opinion Quarterly, 19: 337-352, Winter, 1955.

30

C. F. Carter and B. R. Williams, "The Characteristics of Technically Progressive Firms," Journal of Industrial Economics, 7: 87-104, 1959.

31

C. Verner and P. M. Gubbels, The Adoption or Rejection of Innovations by Dairy Farm Operators in the Lower Fraser Valley, Agricultural Economics Research Council of Canada, 1967.

32

C. Verner and F. Millerd, Adult Education and the Adoption of Innovations, Vancouver, Department of Agricultural Economics, University of British Columbia, 1966.

for disseminating trade information to Missouri restaurant operators.³³ He selected for testing three adult education processes: 1) an adult educational group method; 2) a mass communication method; and 3) a combination of both. Using four sample groups to test the relative effectiveness of the selected processes scales were developed and used to test 1) the socio-economic status of respondents, 2) the extent of each respondent's participation in those formal organizations open to members of the restaurant industry, and 3) the degree of adoption of seven recommended practices by each respondent. The Degree of Adoption Scale enabled the investigator to compute three types of adoption scores for each respondent: the extent to which recommended practices were in use prior to the study and therefore attributable to prior influences (ASp); the extent to which practices were adopted as a result of the method used (ASs); and the total adoption from all sources (ASt).

Findings regarding the relationship of personal characteristics of respondents to adoption of the recommended practices may be summarized as follows. Socio-economic status was significantly related to total adoption score and to the adoption score from prior influences in all groups. Social participation score was significantly related

33

Welch, op. cit., pp. 98-107.

to total adoption and to adoption from prior influences for the group receiving the circular only, but not for the group method groups. Neither age, nor managerial experience was significantly related to adoption, but education was significantly related to total adoption score.

The concept of adoption was utilized to determine the degree to which respondents made use of specific skills and techniques taught in three courses in a business management training programme.³⁴ There was found to be a significant increase in the degree of adoption among respondents in all courses following participation in the programme although the degree of adoption was not uniform among the techniques. Three characteristics, education, the relationship of the respondent to the business and the number of employees in the business, were found to relate significantly to the degree of adoption.

34

Gordon Bell, "The Adoption of Business Practices by Participants in the Small Business Management Training Programme," Unpublished M. A. thesis, University of British Columbia, June, 1968.

CHAPTER III

ANALYSIS OF THE DATA

The data were collected, compiled, tabulated and subjected to statistical analysis. This chapter presents a detailed analysis of adoption scores and adopter categories, the socio-economic characteristics of the participants and their response to the institute. The relationships between the socio-economic characteristics of the participants and adoption are analysed.

ADOPTION SCORES

Establishing a Base Line

The base line for measuring the effectiveness of the institute was established by measuring the degree of adoption of each of the recommended practices prior to attending the institute and scoring the responses on the interview schedule. The resulting score is termed the adoption score due to prior influences. (ASp) The range of scores was 0 to 12, the mean was 2.53 and the standard deviation was 2.04. (Table I) The distribution shows 59.2 per cent of the participants were not aware of the nursing practices which were presented at the institute. Although 40 per cent of the participants were aware of the practices which were presented at the institute they had not incorporated them into their nursing practice.

TABLE I

DISTRIBUTION OF PARTICIPANTS BY ADOPTION
SCORES DUE TO PRIOR INFLUENCES FOR EACH
OF THE SIX RECOMMENDED PRACTICES

Recommended Practice	DEGREE OF ADOPTION					
	Not Aware 0	Aware 1	Interest 2	Evaluation 3	Trial 4	Adoption 5
Writing nursing history using guide form	44	35				
Using nursing history to write objectives for nursing care	33	46				
Using the objectives to write specific nursing methods	45	34				
Evaluating objectives and methods by using progress notes	58	20			1	
Modifying objectives and methods by the patient's progress	37	40	2			
Writing a nursing discharge summary	65	13			1	
Range of scores	0 - 12					
Mean	2.53					
S.D.	2.04					

The adoption scores from prior influences were used as a base line from which adoption resulting from learning at the institute was measured.

Adoption Resulting from the Institute

The degree of adoption of innovations was established at the time of the interview by questioning the participants and by observing the use of the recommended practices. Responses were scored on the interview schedule in terms of the degree of adoption scale. The degree of adoption at the time of the interview was entered as the total adoption score (AS_t) (Table II).

The total adoption score minus the adoption score from prior influences provides the adoption score resulting from learning at the institute. ($AS_t - AS_p = AS_s$) The range of the adoption scores due to learning at the institute was 7 to 30 with a mean score of 14.72 and a standard deviation of 4.60.

A comparison of the percentage distributions of participants by degree of adoption of all practices prior to the institute and as a result of learning at the institute is shown in Table III. The distribution of participants according to their degree of adoption for all practices has shown considerable movement toward the acceptance and full use of the recommended practice end of the degree of adoption scale. Although only 1 per cent

TABLE II

DISTRIBUTION OF PARTICIPANTS BY ADOPTION
SCORES AT THE TIME OF THE INTERVIEW FOR
EACH OF THE SIX RECOMMENDED PRACTICES

Recommended Practice	DEGREE OF ADOPTION					
	Not Aware 0	Aware 1	Interest 2	Evaluation 3	Trial 4	Adoption 5
Writing nursing history using guide form			19	2	57	1
Using nursing history to write objectives for nursing care			40	14	24	1
Using the objectives to write specific nursing methods			39	15	23	2
Evaluating objectives and methods by using progress notes			44	17	17	1
Modifying objectives and methods by the patient's progress			41	14	23	1
Writing a nursing discharge summary		1	49	11	17	1
Range of scores	12 - 30					
Mean	17.25					
S.D.	4.63					

of participants report complete adoption of the practices, 14 per cent have moved to the point where they are using the recommended practices on a trial basis, another 67 per cent of participants continue to gather more information about the practices and to evaluate their potential usefulness. Eighteen per cent of the participants have remained at the awareness stage without having progressed beyond this point.

A comparison of the percentage distributions of participants by degree of adoption of all practices prior to the institute and as a result of learning at the institute is shown in Table III. The percentage increase for all practices is 581. (Table IV) This percentage increase in adoption is considerably greater than the 113 per cent increase found by Welch in his study of Missouri restaurant operators.³⁵ The mean of the adoption scores due to prior influences were roughly similar in both studies, 2.64 in Welch's study, and 2.53 in this study. A possible explanation for this difference might be due to an economic factor which might have resulted in the restaurant operators being less willing to risk adoption of certain recommended practices than nurses where this factor was not present, however, this finding cannot be satisfactorily explained on the basis of the data available.

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Welch, op. cit., p. 86.

TABLE III

A COMPARISON OF PERCENTAGE DISTRIBUTIONS
OF PARTICIPANTS BY DEGREE OF ADOPTION FOR
ALL PRACTICES PRIOR TO THE INSTITUTE AND
DUE TO LEARNING AT THE INSTITUTE

Degree of Adoption	Prior to Institute ASp	Due to Learning at Institute ASs
0. Not aware	59.2	
1. Aware	40.0	18.0
2. Interest	.4	34.0
3. Evaluation		33.0
4. Trial	.4	14.0
5. Adoption		1.0
Total	100.0	100.0

TABLE IV

PERCENT INCREASE IN ADOPTION AS A
RESULT OF THE INSTITUTE

Mean Adoption Score at Interview	-	Mean Adoption Score due to Prior Influence	=	Mean Adoption Score due to Institute	$\frac{ASs \times 100}{ASp} = \% \text{ increase}$
17.25	-	2.53	=	14.72	$\frac{14.72}{2.53} = 581$

CLASSIFICATION OF PARTICIPANTS INTO
ADOPTER CATEGORIES

The total adoption score for each participant was used to determine adopter categories using the method proposed by Rogers.³⁶ Rogers suggests any given group of adopters will approximate a normal curve in the distribution into adopter categories. No significant difference was found by a chi-square test at the .05 level between a normal distribution and the distribution of the participants' adoption scores. (Table V)

Socio-economic Characteristics

Information about certain socio-economic characteristics was collected for each participant. This information included age, sex, marital status, number of children, education, participation in continuing education, occupational position, years of nursing practice, income, job satisfaction and community participation.

³⁶ Rogers, op. cit., p. 162

TABLE V
CLASSIFICATION OF PARTICIPANTS INTO
ADOPTER CATEGORIES

Adopter Category	Class Boun- daries	No. of S.D. from mean	Percentage of Participants in Each Category		$\frac{(o-e)^2}{e}$
			Expected (e)	Observed (o)	
Innovator	25-30	+2	2.5	1.27	.6051
Early Adopter	20-24	+1	13.5	11.39	.3297
Early Majority	15-19	0	34	36.71	.2160
Late Majority	10-14	-1	34	37.98	.4658
Laggard	5- 9	-2	16	12.66	.6972
chi-square value					2.3138

NOTE: The null hypothesis that the sample frequency distribution approximated the normal curve distribution was tested at the .05 level of significance. The hypothesis was accepted since the calculated chi-square value was below the critical value of 3.841.

Each of the nurses had completed an evaluation sheet, the Kropp-Verner Attitude Scale, at the institute which was scored to give the individual's reaction to the institute.

Socio-economic characteristics were tested against the classification of participants into adopter categories using the chi-square test with a null hypothesis of no significant difference at the .05 level of significance. In order to test for any gross differences between earlier and later adopters the five adopter categories were combined into two categories; the innovator, early adopter and early majority formed the earlier adopter category and the late majority and laggard formed the later adopter category.

Age

The age range of the participants was from 21 to 60 years. Twenty-one per cent were in the 36 to 40 year category which was the median group. (Table VI) As Table VII indicates, there was no statistically significant difference in the distribution of participants by adopter category and age.

TABLE VI
 PERCENTAGE DISTRIBUTION OF
 PARTICIPANTS BY AGE CATEGORY

Age in years	N	Percentage
21-25	9	11.4
26-30	6	7.6
31-35	10	12.7
36-40	17	21.5
41-45	9	11.4
46-50	14	17.7
51-55	11	13.9
56-60	3	3.8
Total	79	100.0

TABLE VII
 PERCENTAGE DISTRIBUTION OF PARTICIPANTS' AGE
 BY COMBINED ADOPTER CATEGORY

Age Category	Total		Early Adopter		Late Adopter	
	No.	%	No.	%	No.	%
21 - 40	42	53.0	21	54.0	21	52.5
41 - 60	37	47.0	18	46.0	19	47.5
Total	79	100.0	39	100.0	40	100.0

$x^2 = 0.012$, d.f.1., not significant.

Sex

There were 78 female nurses and 1 male nurse in the sample. In view of this distribution no further analysis by sex is reported.

Marital Status

There were 41 single nurses, 32 married and 6 who were separated, widowed, or divorced.

Number of Children

Fifty-three nurses (67%) had no children, while 16 had one or two, and 10 had three or four.

Education

The educational preparation in nursing was measured by the type of programme from which the nurse graduated: diploma school of nursing, diploma school of nursing plus one year certificate programme in a university, baccalaureate degree in nursing or master's degree. Nearly half of the nurses, 49.4 per cent, were graduates of a diploma school of nursing, while 26.6 per cent were diploma school graduates with a one year university certificate. The number of nurses with a university degree accounted for 24 per cent of the total and 18 nurses reported the baccalaureate and one had a master's degree. (Table VIII) As Table IX indicates, there was a statistically significant difference in the distribution of participants by combined education and adopter categories.

Two-thirds of the later adopters reported a nursing diploma while two-thirds of the earlier adopters had a university degree. The chi-square value obtained in an analysis by four adopter categories (Table X) was also statistically significant. The majority of diploma nurses were found in the late majority category whereas the bulk of the university graduates were classified as early majority. The data suggest that the different type of educational programme engaged in by the university graduates results in more receptiveness to new ideas and practices.

Participation in Continuing Education

The number of short courses attended in the past two years was taken into account as an additional measure that might be related to the adoption of new practices. The median number of courses attended was two with 37 per cent of the participants in this category. The remaining nurses were fairly evenly distributed among the other categories ranging from no courses to more than three. (Table XI) There was no statistically significant difference in the distribution by combined adopter category and number of continuing education courses taken.

TABLE VIII
 PERCENTAGE DISTRIBUTION OF
 PARTICIPANTS BY EDUCATION

Type of Programme	N	Percentage
Diploma	39	49.4
Diploma plus University certificate	21	26.6
Baccalaureate	18	22.8
Master's	1	1.2
Total	79	100.0

TABLE IX

PERCENTAGE DISTRIBUTION OF PARTICIPANTS'
 EDUCATION BY COMBINED ADOPTER CATEGORY

Type of Programme	Total		Early Adopter		Late Adopter	
	No.	%	No.	%	No.	%
Diploma	39	49.4	13	33.3	26	65.0
University	40	50.6	26	66.7	14	35.0
Total	79	100.0	39	100.0	40	100.0

$$x^2 = 7.920, \text{ d. f. 1., p. } < .01.$$

TABLE X

PERCENTAGE DISTRIBUTION OF PARTICIPANTS BY
EDUCATION AND BY FOUR ADOPTER CATEGORIES

Type of Programme	Total No.	Total %	Early Adopter No.	Early Adopter %	Early Majority No.	Early Majority %	Late Majority No.	Late Majority %	Laggard No.	Laggard %
Diploma	39	49.4	4	40.0	9	31.0	23	77.0	3	30.0
University	40	50.6	6	60.0	20	69.0	7	23.0	7	70.0
Total	79	100.0	10	100.0	29	100.0	30	100.0	10	100.0

$$x^2 = \underline{24.828}, \text{ d.f. } 3, \text{ p. } <.001$$

TABLE XI

PERCENTAGE DISTRIBUTION OF NUMBER
OF CONTINUING EDUCATION COURSES ATTENDED BY
PARTICIPANTS BY COMBINED ADOPTER CATEGORY

Number of Courses	Total No.	Total %	Early Adopter No.	Early Adopter %	Late Adopter No.	Late Adopter %
None	11	14.0	6	15.4	5	12.0
1	13	16.0	6	15.4	7	17.5
2	29	37.0	13	33.3	16	40.0
3	12	15.0	8	20.5	4	10.0
More 3	14	18.0	6	15.4	8	20.5
Total	79	100.0	39	100.0	40	100.0

$$x^2 = \underline{2.076}, \text{ d.f. } 4, \text{ not significant}$$

Employing Agencies

Fifteen hospitals and 3 public health agencies represented the employing institutions for the nurses who attended the institute. There were ten general hospitals varying in size from 103 to 1749 beds, one veteran's hospital of 1157 beds, two psychiatric hospitals of 3091 beds and 60 beds, and two extended care hospitals of 70 and 91 beds respectively. The numbers of nurses attending the institute from one institution tended to be small except for three large hospitals which were represented by 31, 11 and 8 nurses. One nurse attended from each of eight agencies, two nurses from two hospitals and three to four nurses from the remaining five hospitals. Although a larger number of nurses attended from the 3 larger hospitals in the district the nurses were from various wards and units within these large institutions which in effect produced the same situation as one nurse attending from the smaller hospital, that is the relative isolation of that nurse from others who had attended the institute when she returned to her work. When asked about the number of other nurses from their unit or ward who had attended the institute, 56% of the nurses reported that no one else had attended, 24% reported one other nurse attending, 14% reported two nurses attending and 6% reported more than this number, although these latter were nurses in supervisory positions who were responsible for a number of wards or areas within the hospital.

In view of the fact that the innovations presented at the institute were ones which are not part of current nursing practice or hospital policy, the fact that the nurse who had attended the institute was separated from other nurses who had similar knowledge and understanding undoubtedly created strains for the nurse who was trying to introduce new practices. In an attempt to overcome this situation the nurses in several hospitals formed groups of those who had attended the institute in order to gain support for each other and for their attempts to get new practices started. These groups were formally sanctioned by administration, were frequently chaired by nurses in administrative positions and met at regular times for a number of months. The nurses used these meetings to discuss their personal involvement in the use of the nursing practices and to discuss possible ways to get these practices adopted in their respective institutions. These group meetings provided a group feeling which helped offset the isolation that individual nurses had felt, however, perhaps because they were adhoc groups within the administrative structure they did not prove to be influential in the diffusion of the practices. Gradually the purpose of the groups meeting seemed less relevant and they were no longer held.

Sources of Information

The source of information about the nursing practices that the nurses found most helpful was reported

to be the institute itself by 95% of the nurses while the remaining 5% cited previous educational experiences or the group meetings. Considering the fact that the institute was held in a two day time period and that the resource person was not available for further help, the majority of the nurses were thrown back to their own resources and to the help that they could get from each other. The adoption of new practices by an individual is often difficult, however, the problems inherent in introducing new practices into a complex bureaucratic organization which has strong traditional norms of behaviour is a much more difficult task.

Occupational Position

Nurses holding a head nurse position accounted for 50 per cent of the participants, while another 37 per cent occupied positions of supervisors, directors of nursing, or instructors. A small number of participants (13 per cent) were in the staff nurse position. (Table XII)

The particular nursing practices discussed in the institute were those which are carried out by the nurse responsible for direct patient care. In view of the distribution by position of the population studies, only a small percentage were staff nurses consequently the adoption of the recommended practices would apt to be less than had that portion of the population been larger. The distributions by occupational position and adopter category show more staff nurses to be early adopters than nurses in

other occupational positions although the difference in the distribution by adopter category was not statistically significant. (Table XII)

TABLE XII
PERCENTAGE DISTRIBUTION OF
PARTICIPANTS' OCCUPATION BY
COMBINED ADOPTER CATEGORY

Position	Total		Early Adopter		Late Adopter	
	No.	%	No.	%	No.	%
Staff Nurse	10	13.0	6	15.0	4	10.0
Head Nurse	40	50.0	18	46.0	22	55.0
Supervisor	18	23.0	10	26.0	8	20.0
Director	4	5.0	2	5.0	2	5.0
Instructor	7	9.0	3	8.0	4	10.0
Total	79	100.0	39	100.0	40	100.0

$\chi^2 = 1.148$, d.f. 4, not significant

Years of Practice in Nursing

Most of the participants at the institute were experienced nurse practitioners. The median was in the 15 to 19 years of practice category which accounted for 24 per cent of the group and another 30 per cent had practiced for twenty years or more. (Table XIII) As Table XIV indicates, there was no statistically significant difference in the distribution of participants by adopter category and years of practice.

Income

Income was determined on the basis of the monthly salary and was recorded in categories. Monthly salaries ranged from \$500 to \$999 and the median category was \$600 to \$699. (Table XV) There was no statistically significant difference in the distribution of participants by adopter category and income. (Table XVI)

TABLE XIII
PERCENTAGE DISTRIBUTION BY
YEARS OF PRACTICE FOR ALL PARTICIPANTS

Years	N	Percentage
0 - 4	9	11.3
5 - 9	9	11.3
10 - 14	18	23.1
15 - 19	19	24.0*
20 or more	24	30.3
Total	79	100.0

* Median

TABLE XIV
 PERCENTAGE DISTRIBUTION OF YEARS OF
 PRACTICE BY COMBINED ADOPTER CATEGORY

Years of Practice	Total		Early Adopter		Late Adopter	
	No.	%	No.	%	No.	%
0 - 9	19	24.0	11	28.2	8	20.0
10 - 19	36	45.7	17	43.6	19	47.5
20 or more	24	30.3	11	28.2	13	32.5
Total	79	100.0	39	100.0	40	100.0

$x^2 = 0.732$, d.f.1, not significant.

TABLE XV
 PERCENTAGE DISTRIBUTION BY MONTHLY SALARY
 FOR ALL PARTICIPANTS

Monthly Salary	N	Percentage
\$500 - \$599	21	26.6
\$600 - \$699	23	29.1*
\$700 - \$799	30	38.0
\$800 - \$899	3	3.8
\$900 - \$999	2	2.5
Total	79	100.0

* Median

TABLE XVI
 PERCENTAGE DISTRIBUTION OF
 PARTICIPANTS' MONTHLY SALARY BY
 ADOPTER CATEGORY

Monthly Salary	Total		Early Adopter		Late Adopter	
	No.	%	No.	%	No.	%
\$500 - \$699	44	55.7	19	49.0	25	62.5
\$700 - \$999	35	44.3	20	51.0	15	37.5
Total	79	100.0	39	100.0	40	100.0

$x^2 = 1.516$, d.f.1, not significant.

Community Participation

Chapin's Social Participation Scale³⁷ was used to measure the degree of participation in community groups and institutions. The extent of participation is measured by the number of memberships held during the previous year and each membership counts as one point toward the total scale score. Intensity or degree of involvement is measured by attendance at meetings, financial contributions, committee memberships, and the holding of offices. A high scale score reflects a high rate of participation. Standard

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F. Stuart Chapin, Experimental Designs in Sociological Research, New York, Harper, 1955, Appendix B., pp. 275-278.

scores have been computed for various occupational groups with the mean score for professional groups being 20.³⁸

The range of scores for the nurses was between 10 and 55, with the median falling in the 16 to 20 score category. (Table XVII) Membership in no organizations was reported by 40.5 per cent of the sample with 33 per cent indicating membership in two or more local organizations.³⁹ The maximum number of memberships was held in four organizations but this was reported by 0.9 per cent of the participants.

The acceptance of leadership responsibility is not characteristic of the nurses studied. No committee memberships were reported by 80 per cent, while 16.4 per cent reported membership on one committee and 3.9 per cent two or more committee positions. Similarly no offices in local organizations were held by 77.2 per cent, while 20.5 per cent reported holding one office and 2.5 per cent holding a maximum of three offices. No financial contributions were reported by 45.5 per cent, while 45.5 per cent reported contributing to one or two organizations and 9 per cent contributed to three to five organizations. As Table XVIII indicates, there was no statistically significant

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Delbert C. Miller, Handbook of Research Design and Social Measurement, New York, David McKay Co., Inc., 1964, p. 209.

39

Membership in the professional nurses' associations was excluded as all nurses reported this.

difference in the distribution of participants by adopter category and social participation.

TABLE XVII
PERCENTAGE DISTRIBUTION OF PARTICIPANTS
BY SOCIAL PARTICIPATION SCORE (CHAPIN SCALE)

Score	N	Percentage
6 - 10	1	1.3
11 - 15	25	31.6
16 - 20	19	24.0*
21 - 25	13	16.5
26 - 30	3	4.0
31 - 35	9	11.3
36 or more	9	11.3
Total	79	100.0

* Median

TABLE XVIII
PERCENTAGE DISTRIBUTION OF
PARTICIPANTS' COMBINED SOCIAL PARTICIPATION SCORES
BY COMBINED ADOPTER CATEGORY

Scores	Total		Early Adopter		Late Adopter	
	No.	%	No.	%	No.	%
6 - 20	45	57.0	21	54.0	24	60.0
21 - 36	34	43.0	18	46.0	16	40.0
Total	79	100.0	39	100.0	40	100.0

$x^2 = 0.304$, d.f.1, not significant.

Job Satisfaction

The Brayfield and Rothe Index is a general measure of job satisfaction.⁴⁰ A shortened version of this index using nine of the eighteen items was administered. Five responses ranging from "strongly agree" to "strongly disagree" were available for each item and a response was scored from one to five points. A maximum scale score of 45 would indicate a highly favorable attitude whereas a minimum score of 9 would be indicative of extreme dissatisfaction.

The distribution of scores showed a range from 25 to 40 with the median in the 33 to 36 point class. (Table XIX) Since over half of the nurses were in the median category this would indicate that they are generally satisfied with their jobs. There was no statistically significant difference in the distribution of participants by adopter category and job satisfaction. (Table XX)

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A. H. Brayfield and H. F. Rothe, "An Index of Job Satisfaction," Journal of Applied Psychology, 35: 307-311, October, 1951.

TABLE XIX
 PERCENTAGE DISTRIBUTION OF PARTICIPANTS BY
 JOB SATISFACTION SCORES

Score	N	Percentage
25 - 28	1	1.3
29 - 32	21	26.6
33 - 36	47	59.5*
37 - 40	10	12.6
Total	79	100.0

* Median

TABLE XX
 PERCENTAGE DISTRIBUTION OF
 PARTICIPANTS' JOB SATISFACTION SCORES BY
 COMBINED ADOPTER CATEGORY

Score	Total		Early Adopter		Late Adopter	
	No.	%	No.	%	No.	%
25 - 32	22	28.0	10	26.0	12	30.0
33 - 40	57	72.0	29	74.0	28	70.0
Total	79	100.0	39	100.0	40	100.0

$x^2 = 0.184$, d.f.1, not significant.

Participants Reaction to the Institute

The Kropp-Verner Attitude Scale was used to measure participants' attitudes to the course. Each participant completed an evaluation sheet at the end of the institute which was subsequently scored.⁴¹ The measurement of the response to the institute is made by comparing the median value of all scores to the eleven point scale. On this scale the lower the score the more favorable the reaction.⁴²

Reactions ranged from the most favorable, "It was one of the most rewarding experiences I have had" to statement 12 "It was not exactly what I needed." The mean score for the institute was 2.91 which suggests that the participants were generally pleased with the institute and felt that it was helpful. The range of scores was 2.1 to 4.7. Nearly half of the participants (48 per cent) rated the conference toward the favorable end of the scale. (Table XXI) As Table XXII indicates, there was no statistically significant difference in the distribution of participants by adopter category and attitude scale score.

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See Appendix A., Statements Describing Reactions to Course.

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Kropp and Verner, op. cit., pp. 212-215.

TABLE XXI
 PERCENTAGE DISTRIBUTION BY KROPP-VERNER
 ATTITUDE SCALE FOR ALL PARTICIPANTS

K-V Score	N	Percentage
2.0 - 2.9	48	61.0
3.0 - 3.9	28	35.4
4.0 - 4.9	3	3.8
Total	79	100.0

TABLE XXII
 PERCENTAGE DISTRIBUTION OF
 PARTICIPANTS' KROPP-VERNER ATTITUDE SCORES
 BY COMBINED ADOPTER CATEGORY

K-V Score	Total		Early Adopter		Late Adopter	
	No.	%	No.	%	No.	%
2.1 - 3.2	62	78.5	31	79.5	31	77.5
3.3 - 4.7	17	21.5	8	20.5	9	22.5
Total	79	100.0	39	100.0	40	100.0

$x^2 = 0.044$, d.f.1, not significant.

CORRELATIONS BETWEEN ADOPTION SCORES AND SOCIO-ECONOMIC CHARACTERISTICS

Zero order correlation coefficients among the variables were computed and tested for statistical significance.⁴³ To control for interaction effects, partial correlation coefficients were also computed. A multiple regression analysis was performed to determine the combined ability of all of the socio-economic characteristics studied to account for variations in the adoption score.

ZERO ORDER CORRELATIONS

Zero order correlation coefficients were computed to measure the relationships between adoption score, socio-economic characteristics and attitude scale. This procedure provides a numerical estimate of the magnitude of the relationship between two sets of data. A number of relationships were found to exist as shown in Table XXIII. Age and years of practice were strongly related indicating that older nurses had practiced nursing for

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As the data consisted of ordinal and interval variables this factor was considered in the selection of the correct correlation formula to be used for any pair of variables. Jaspens's Coefficient of Multiserial Correlation (ordinal-interval), Pearson's Coefficient of Correlation (interval-interval), and Goodman's and Kruskal's Coefficient of Rank Association (ordinal-ordinal) were used with the F tests and G test of significance.

longer periods of time. The relationship between a nurse's income and her position on the occupational scale was reflected in the correlation, obviously advancement in the hierarchy is rewarded by financial recompense indicating that financial reward in the nursing profession does not accrue from the number of years practice or experience in bedside nursing, but rather from moving into administrative or teaching positions. It was also evident, however, that those nurses with more years of practice did receive more income than those who had practiced for a shorter period of time. A direct relationship existed between the nurse's position in the organizational structure and the educational level that she had achieved, those nurses with more education tending to occupy higher positions. As the length of time that the nurse had practiced increased so did her participation in programmes of continuing education. Those nurses who had practiced for the longest time period and who were, therefore, farther away from their initial educational preparation apparently recognized the need to keep up-to-date with current practices and as a result enrolled in a greater number of courses in continuing education than did those nurses who had more recently completed the educational experience. None of the socio-economic characteristics showed a significant zero order correlation in relation to the adoption score.

TABLE XXIII
CORRELATION COEFFICIENTS

	1	2	3	4	5	6	7	8	9	10
1. Adoption Score	1.00									
2. Attitude Scale	-0.1320	1.00								
3. Job Satisfaction	0.0819	-0.0437	1.00							
4. Social Participation	0.0560	0.1239	-0.0634	1.00						
5. Continuing Education	-0.0494	-0.0377	0.1507	0.1630	1.00					
6. Income	-0.0245	-0.1183	0.2305	0.0258	0.2063	1.00				
7. Years of Practice	-0.0102	-0.0225	0.0548	0.1885	<u>0.4932</u>	<u>0.4452</u>	1.00			
8. Occupational Position	-0.2022	-0.0830	-0.1465	0.2272	0.2991	<u>0.6895</u>	0.4160	1.00		
9. Education	0.1544	-0.1681	-0.1191	0.2332	-0.2182	0.2792	-0.2625	<u>0.5172</u>	1.00	
10. Age	0.0005	0.0121	0.0184	0.0520	0.3094	0.4256	<u>0.7850</u>	0.3086	-0.3510	1.00
	1	2	3	4	5	6	7	8	9	10

NOTE: Underlined values indicate a significant degree of association. For the tests of significance a null hypothesis of no correlation was used with a .05 level of significance. The criterion is to reject the null hypothesis if the correlation coefficient is less than $-.43$ or greater than $.43$.

PARTIAL CORRELATIONS

Partial correlation coefficients were computed as a means of isolating underlying relationships between variables. Essentially this is a computational procedure for removing or partialling out the tendency other variables have to inflate the correlation between two variables when they are related to each of the two. The partial correlation coefficient indicates the degree of association among all variables with each variable held constant in turn, and therefore, is an indication of those variables which assume most importance in relation to the variable being tested.

The partial correlation coefficients revealed two variables which were significantly related to adoption score. (Table XXIV) Those nurses who had achieved a higher level of education were those who achieved higher adoption scores, indicating that nurses with more education were more receptive to the adoption of new practices. That is, nurses who had graduated from baccalaureate or master's degree programmes in nursing were found in the innovator and early adopter categories to a greater extent than were nurses who had graduated from diploma programmes in nursing. This was not an unexpected finding in view of previous research studies which have found education to be significantly related to the adoption of new practices.

A negative correlation coefficient existed between occupational position and adoption score which means that

TABLE XXIV
PARTIAL CORRELATION COEFFICIENTS

	1	2	3	4	5
1. Adoption Score	-1.000				
2. Attitude Scale	-0.128	-1.000			
3. Job Satisfaction	0.073	0.008	-1.000		
4. Social Participation	0.080	0.210	-0.104	-1.000	
5. Continuing Education	0.030	-0.068	0.113	0.143	-1.000
6. Income	0.015	-0.056	<u>0.240</u>	-0.054	-0.022
7. Years of Practice	-0.053	-0.084	0.090	0.177	<u>0.258</u>
8. Occupational Position	<u>-0.278</u>	-0.004	-0.129	0.054	<u>0.231</u>
9. Education	<u>0.236</u>	-0.120	-0.072	0.162	<u>-0.249</u>
10. Age	0.109	0.075	-0.154	-0.081	-0.052
	1	2	3	4	5

TABLE XXIV (cont'd)
PARTIAL CORRELATION COEFFICIENTS

	6	7	8	9	10
6. Income	-1.000				
7. Years of Practice	0.010	-1.000			
8. Occupational Position	<u>0.390</u>	0.004	-1.000		
9. Education	0.203	0.063	<u>0.407</u>	-1.000	
10. Age	<u>0.318</u>	<u>0.691</u>	0.022	<u>-0.318</u>	-1.000

NOTE: Underlined coefficients show a significant degree of association. A significance test for r was carried out using the null hypothesis of no correlation with a .05 level of significance. The test is based on the assumption that under the null hypothesis of no correlation, the sampling distribution of the correlation coefficient can be approximated closely with a normal curve having the mean 0 and the standard deviation $\frac{1}{\sqrt{n-1}}$ where n equals the sample size. Therefore, the criterion is to reject the null hypothesis if $r < -\frac{1.96}{\sqrt{n-1}}$ or $r > \frac{1.96}{\sqrt{n-1}}$ (i.e. if the partial correlation coefficient is less than $-.217$ or greater than $.217$)

nurses who were in higher occupational positions tended to adopt the recommended practices to a lesser degree than did those nurses who were in staff positions. This finding is not surprising in that the nursing practices which were presented in the institute were those which would be most likely carried out by the nurse providing direct patient care. Head nurses and supervisors are usually more occupied with administrative functions than with the nursing process described in this institute. Directors of nursing and instructors are likely to be equally removed from direct patient care activities.

The significant relationships among the remaining socio-economic characteristics were similar to those found in the zero order correlations with the following additional findings. The age of the nurse was related to her income and to her educational level, that is as age increased so did income. The reverse was true for age and education, older nurses tended to have less educational preparation than did younger ones. An unexpected finding was that those nurses with more education had attended fewer courses in continuing education. This finding may be linked to another finding in this study that the nurses with more education were younger and therefore closer to their educational preparation than the older nurses who had less education and who participated more in programmes of continuing education. Another finding in relation to participation in programmes of continuing education was

that nurses in higher occupational positions attended more courses than did nurses at the staff level. Whether this finding reflects more interest in continuing education, or that staff nurses find it less easy to get away to attend these courses, is not possible to say. The amount of income and the degree of job satisfaction were found to be congruent factors in the population studied, for as the income increased so did the degree of job satisfaction reported.

MULTIPLE REGRESSION ANALYSIS

The multiple regression analysis provides an estimate of the value of the adoption score on the basis of a set of measurements of the socio-economic characteristics. This analysis indicates the combined ability of all the socio-economic characteristics studied to account for variations in the adoption score. This analysis identified two characteristics, education and occupational position, as significantly related to adoption score. (Table XXV) The coefficient of determination (.297) indicated that some 30 per cent of the variation in adoption was explained by these two variables.

These findings are not wholly in agreement with the results of other research. Rogers notes that earlier adopters tended to be younger than later adopters, but he

TABLE XXV
 REGRESSION ANALYSIS SELECTED VARIABLES
 AGAINST ADOPTION SCORE

Variable	Coefficient	Std Err	F-Ratio	F Prob.
Education	0.6625	0.3102	4.5608	0.0340
Position	-1.2718	0.5220	5.9364	0.0164

RSQ = 0.0884
 F Prob. = 0.0290
 Std Err Y = 4.4539
 r = .297 (multiple correlation coefficient)

does indicate a lack of agreement on this point.⁴⁴ Age was not found to be a significant characteristic in this study. The relationship between adoption and education is equally unclear, Lionberger found the relationship likely to be indirect, however, he indicated that more years of schooling was associated with higher rates of adoption than fewer years.⁴⁵ On the other hand, Rogers considers educational level as one factor in social status and notes studies in which education was significantly related to adoption.⁴⁶ Those individuals reporting greater enjoyment of work were found to have achieved higher scores in the adoption of new practices.^{47 48} Social participation has been found to be significantly related to the adoption of new practices.^{49 50} It is not possible to say whether the findings in this study are unique to a nurse population or whether they are unique to the nurses in this study as there have not been other studies of the adoption of new practices by nurses.

⁴⁴ Rogers, op. cit., p. 172.

⁴⁵ Lionberger, op. cit., p. 91.

⁴⁶ Rogers, op. cit., p. 175.

⁴⁷ Verner and Gubbels, op. cit., p. 11.

⁴⁸ Verner and Millerd, op. cit., p. 19.

⁴⁹ Menzel and Katz, op. cit., pp. 337-352.

⁵⁰ Carter and Williams, op. cit., pp. 87-104.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The need for a method of evaluating the effectiveness of a nursing institute was the motivating factor in undertaking this study. The question was posed as to how it can be determined whether a programme in continuing education has helped nurses to improve their practice. This study reports on the results of applying the adoption concept as a criterion to measure learning that occurred at one institute attended by 122 nurse participants from whom a sample of 79 were selected.

ADOPTION

Three kinds of adoption scores for each participant in relation to the practices recommended at the institute were computed: adoption score resulting from prior influences; adoption score at the time of interview; and adoption score resulting from learning at the institute. The adoption score was determined by assigning values to each stage of the adoption process: 0 for not aware, 1 for awareness, 2 for interest, 3 for evaluation, 4 for trial and 5 for adoption.

A comparison between adoption scores prior to the institute and the adoption scores due to learning at the

institute shows the percentage increase to be 581. This percentage increase was very much greater than was found by Welch in his study of Missouri restaurant operators. In his study the per cent increase in adoption due to an institute was 113. This finding cannot be satisfactorily explained from the data available.

The adoption concept can be used as a criterion to measure learning that occurs at an institute. The adoption concept can be used to measure degree of adoption of recommended practices, and therefore, can measure the degree to which nurses have incorporated into their nursing practice those practices which have been recommended at an institute.

The classification of participants into adopter categories was shown to approximate the normal curve with the following percentages of participants in each category: Innovator 1.27; Early Adopter 11.39; Early Majority 36.71; Late Majority 37.98; and Laggard 12.66.

SUMMARY OF FINDINGS

Socio-economic characteristics and the attitude of the participants to the institute were measured against adopter categories to determine what relationships existed. In order to test for gross differences between earlier and later adopters the five adopter categories were combined into two categories: the innovator, early adopter, and

early majority forming the "early" adopter category, and the late majority and laggard forming the "late" adopter category.

Education was the only characteristic which was shown to have a significant relationship to the combined adopter category using the chi-square test. Education was significantly related to a two adopter category, early and late, at the .01 level of significance and to a four adopter category made up of the innovator and early adopter category combined, early majority, late majority and laggard at the .001 level of significance.

The review of the literature on adoption showed that early adoption of new practices was frequently correlated with younger age, more favorable financial position, greater social participation and enjoyment of work. In the present study, zero order correlations, partial correlations and a multiple regression analysis were performed to determine the relationship of such characteristics to adoption. Some of the findings were in agreement with other research studies and other findings were in disagreement. Age was not significantly related to adoption, although on the basis of the literature it was expected to find early adopters to be younger. A multiple regression analysis included education which was positively correlated with adoption, and occupational position, which was negatively associated with

adoption. A significant coefficient of determination showed that some 30 per cent of the variation in adoption could be explained by these two variables. Previous research studies have found education to be associated with higher rates of adoption.

It was not surprising to find a negative correlation between adoption and occupational position since the nursing practices presented at the institute were those most likely to be carried out by the staff nurse providing direct patient care. The fact that job satisfaction was not associated with higher adoption scores is contrary to other research findings, however, the other studies were done on dairy farmers and orchardists. These farmers and orchardists had a financial investment in the operation and improved practices might be more readily reflected in the prosperity of the operation than a group of nurses who are salaried employees and where rewards for improved practices are intangible at best or not present at least. In such a situation job satisfaction might, in fact, be a deterrent to the adoption of new practices. Social participation was not associated with adoption scores in this study although others have found that the extent to which an individual shares in the social life of his community has been significantly related to his adoption of new practices.

Other relationships between the variables were those which might well be expected. Older nurses had practiced nursing for more years and received higher salaries than younger nurses. Those occupying higher positions on the occupational scale received more income, reflecting the financial rewards provided for positions in education or administration. Nurses, who had more education, tended to occupy higher positions within the profession. The nurses participation in programmes in continuing education increased in relation to the number of years practiced, those having practiced the longest were the ones who attended the greatest number of courses in continuing education. Another finding indicated that nurses in higher occupational positions attended more programmes in continuing education than nurses in staff positions. An unexpected finding was that those nurses with more education attended fewer courses in continuing education, however, as these nurses were also younger they had more recently completed their educational preparation and therefore perhaps felt less need to attend. Nurses receiving a higher income reported greater job satisfaction than the others. The Kropp-Verner Attitude Scale and the Social Participation Scale were the only two variables that did not correlate significantly with any of the other variables. The Kropp-Verner Scale showed participants to be generally pleased with the

institute and to have found it helpful. The Social Participation Scale showed that acceptance of leadership responsibility was not characteristic of the nurses studied. No committee memberships were reported by 80 per cent and no offices in local organizations were held by 77 per cent of the sample.

CONCLUSIONS

The adoption concept can be used as a criterion to assess learning that occurs at an institute by measuring the degree to which participants have incorporated into their practice those innovations which have been recommended. The institute on Nursing Assessment produced a considerable total amount of change in the participants, a 581 per cent increase in adoption, and this change seems to have been fairly consistent from person to person within the group. The participants were more prone to adopt the practices when they were relevant to their nursing activities. Although previous research suggests a variety of characteristics which have been associated with the acceptance of new ideas, this study found education and occupational position to be the only characteristics that were significant.

It is interesting to speculate on what factors in the nursing environment contribute to making this population different from those farmers, restaurant

operators, and physicians who have made up other study populations. One major difference between these populations is that nurses are employees in institutions rather than independent workers as the others are. Traditional norms of behavior would influence all of these workers, but the influence of the institution where the nurses work should be taken into account. These institutions are usually complex bureaucratic organizations which assign authority according to position within the administrative hierarchy rather than according to competence within a profession. A study of the adoption of new practices by a nurse population should perhaps examine institutional characteristics as well as the individual characteristics of the nurse.

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APPENDIX A

Item I: Socio-economic data sheet

Item II: Interview Schedule

Item I

The University of British Columbia

Health Sciences Centre

Continuing Education in the Health Sciences

School of Nursing

The faculty responsible for continuing education in the Health Sciences Centre wish to collect certain information concerning registrants in non-credit nursing courses in order to:

1. assist in course planning;
2. improve program design;
3. analyze trends in participation;
4. prepare annual reports;
5. provide data for research studies.

You are asked to take a few minutes to fill out the attached data sheet by checking in the appropriate brackets. The information collected in this questionnaire will not be made available to licensing bodies or employing agencies unless the registrant authorizes release of the information. Nurses and nursing personnel are requested to complete Form A. Persons in other health professions are requested to complete Form B. Your co-operation will be greatly appreciated.

Age Group	41 - 45	()
(cont'd.)	46 - 50	()
	51 - 55	()
	56 - 60	()
	61 - 65	()
	Over 65	()

III MEMBERSHIP IN PROFESSIONAL ASSOCIATION

Member of Registered Nurses' Association of B. C.	()
Member of Psychiatric Nurses' Association	()
Other _____ (please specify)	()

IV EDUCATIONAL PREPARATION IN NURSING

(a) Graduate from non-university school	- Vocational school	()
	- General hospital	()
	- Institute of technology	()
	- Other _____ (please specify)	()
(b) Graduate from university school	- Diploma or certificate	()
	- Baccalaureate degree	()
	- Master's degree	()
	- Doctoral degree	()

V EMPLOYING AGENCY

General hospital	- 201 beds or over	()
	- 75 to 200 beds	()
	- 30 to 74 beds	()
	- Under 30 beds	()
Specialized hospital	- Geriatric	()
	- Paediatric	()
	- Psychiatric	()
	- Rehabilitative	()
Public health agency		()
Private hospital		()

V EMPLOYING AGENCY (Cont'd.)

- School of Nursing ()
- Mental health clinic ()
- Correctional services ()
- Physician ()
- Self ()
- Not presently employed ()
- Other _____ ()
(please specify)

VI POSITION IN AGENCY

- Nurse's aide ()
- Practical nurse ()
- Orderly ()
- Staff nurse ()
- Head nurse ()
- Supervisor ()
- Director ()
- Instructor ()
- Consultant ()

VII YEARS OF PRACTICE IN NURSING

- 0 - 4 ()
- 5 - 9 ()
- 10 - 14 ()
- 15 - 19 ()
- 20 or more ()

VIII NUMBER OF YEARS DURING WHICH I HAVE NOT PRACTICED AS A NURSE SINCE GRADUATION

- 0 - 4 ()
- 5 - 9 ()
- 10 - 14 ()
- 15 - 19 ()
- 20 or more ()

**XII COST OF COURSE (FEES, TRAVEL, LIVING EXPENSES ETC.)
WAS PAID BY**

- Self ()
- Employer ()
- Shared by above ()
- Professional association ()
- Other _____ ()
(please specify)

XIII NUMBER OF SHORT COURSES ATTENDED IN LAST 2 YEARS

- 0 ()
- 1 ()
- 2 ()
- 3 ()
- more than 3 ()

**XIV SUBJECTS ON WHICH I WOULD LIKE TO SEE A COURSE
OFFERED IN THE NEXT YEAR INCLUDE**

- 1. _____
- 2. _____
- 3. _____

TO BE COMPLETED BY NON B. C. GRADUATES ONLY

XV I GRADUATED IN

- Another Canadian province ()
- Great Britain ()
- Phillipines ()
- Australia ()
- Other _____ ()
(please specify)

I HAVE PRACTICED IN B. C.

- 0 - 4 years ()
- 5 - 9 years ()
- 10 - 14 years ()
- 15 - 19 years ()
- 20 years or more ()

Item II

INTERVIEW GUIDE

Respondent's No. _____

Record of Adoption of Recommended Practices

I would like to find out your use of certain nursing practices. Please reply to each statement by selecting one of the six phrases listed on the answer sheet.

- | | | | |
|---|--------|----|-------|
| 1. Writing a nursing history using standardized guide form | Before | 19 | _____ |
| | After | 20 | _____ |
| | Total | 21 | _____ |
| 2. Using the nursing history to write nursing goals | Before | 22 | _____ |
| | After | 23 | _____ |
| | Total | 24 | _____ |
| 3. Using the nursing goals to write nursing methods (orders) | Before | 25 | _____ |
| | After | 26 | _____ |
| | Total | 27 | _____ |
| 4. Evaluating the goals and methods through the use of progress notes | Before | 28 | _____ |
| | After | 29 | _____ |
| | Total | 30 | _____ |
| 5. Modifying the goals and methods in terms of patient's progress | Before | 31 | _____ |
| | After | 32 | _____ |
| | Total | 33 | _____ |
| 6. Writing a nursing discharge summary | Before | 34 | _____ |
| | After | 35 | _____ |
| | Total | 36 | _____ |

Note: Score the "before" column to indicate the degree of practice before the institute. Score the "after" column with 0.2 for all practices not showing higher degree of adoption.

-2-

Use of Source of Information

I would like to find out the source of information which has been most helpful to you for each of the nursing practices. Please select one source for each from the answer sheet.

- | | | |
|--|----|-------|
| 7. Writing a nursing history using standardized guide form | 37 | _____ |
| 8. Using the nursing history to write nursing goals | 38 | _____ |
| 9. Using the nursing goals to write nursing methods (orders) | 39 | _____ |
| 10. Evaluating the goals and methods through the use of progress notes | 40 | _____ |
| 11. Modifying the goals and methods in terms of patient's progress | 41 | _____ |
| 12. Writing a nursing discharge summary | 42 | _____ |

Factors Influencing Adoption

13. Name the three most important factors that facilitated your use of new practices.
- a)
- b)
- c)
14. Name the three most important factors that inhibited your use of new practices.
- a)
- b)
- c)

Information About Nursing Unit

- | | | |
|---|--------|-------|
| 15. How many patients (approx) on unit | 43, 44 | _____ |
| 16. Number of nurses on days | 45, 46 | _____ |
| 17. Number of patients on nurses daily assignment | 47, 48 | _____ |
| 18. Number of other nurses on your unit attending institute on nursing assessment similar to one you attended | 49 | _____ |

-3-

19. Participation in Community Groups (Chapin Scale)

I would like you to recall the names of all the organizations that you have belonged to in the past year. (Do not include attendance at church)

Total Score 50, 51 _____

Name of Organization	Atten- dance	Financial Contribution	Member of Committee	Offices Held	Score	
1. _____					0 52	1
2. _____					1-5	2
3. _____					6-10	3
4. _____					11-15	4
5. _____					16-20	5
6. _____					21-25	6
7. _____					26-30	7
8. _____					31-35	8
Total (x1)	(x2)	(x3)	(x4)	(x5)	Over 35	9

Index of Job Satisfaction (rev. Brayfield and Roth)

I would like to find out how you feel about your job. Please reply to each statement using one of the five phrases on the answer sheet.

		Strongly agree	Agree	Undecided	Disagree	Strongly disagree
20. My job is like a hobby to me.	53	5	4	3	2	1
21. It seems that my friends are more interested in their jobs than I am.	54	1	2	3	4	5
22. I enjoy my work more than my leisure time	55	5	4	3	2	1
23. I am often bored with my job.	56	1	2	3	4	5
24. I feel fairly well satisfied with my job.	57	5	4	3	2	1
25. I feel that my job is no more interesting than others I could get.	58	1	2	3	4	5
26. I definitely dislike my work.	59	1	2	3	4	5
27. Each day of work seems like it will never end.	60	1	2	3	4	5
28. I find real enjoyment in my work.	61	5	4	3	2	1

Total Score 62, 63 _____

<u>Total Scale Score</u>	<u>Code</u>
9-12	1
13-16	2
17-20	3
21-24	4
25-28	5
29-32	6
33-36	7
37-40	8
41 and over	9

Answer Sheet for Respondent's UseUSE OF NURSING PRACTICES

0. Not aware of practice
1. Aware of practice but lack specific details
2. Interested in the practice
3. Search for information on the practice
4. Willingness to try the recommended practice
5. Trial of the recommended practice

SOURCE OF INFORMATION

1. institute on nursing assessment
2. nursing text
3. nursing journal
4. staff nurse
5. Head nurse/supervisor
6. inservice coordinator
7. inservice programme
8. staff meeting
9. other (specify)

JOB SATISFACTION

Strongly agree

Agree

Undecided

Disagree

Strongly disagree

APPENDIX B

Item I: Statements describing reactions to course

Statements Describing Reactions to Course

Please check off only those statements which most accurately describe your personal reaction to the total course.

It was one of the most rewarding experiences I have ever had

Exactly what I wanted

I hope that we can have another in the near future

It provided the kind of experience that I can apply to my own situation

It helped me personally

It solves some problems for me

I think it served its purpose

It had some merits

It was fair

It was neither very good nor very poor

I was mildly disappointed

It was not exactly what I needed

It was too general

I am not taking any new ideas away

It didn't hold my interest

It was much too superficial

I leave dissatisfied

It was very poorly planned

I didn't learn a thing

It was a complete waste of time