A STUDY OF INSTRUCTIONAL DEVELOPMENT KNOWLEDGE AND USE DURING INSTRUCTIONAL PLANNING BY NURSE EDUCATORS IN NEWFOUNDLAND AND LABRADOR

CENTRE FOR NEWFOUNDLAND STUDIES

TOTAL OF 10 PAGES ONLY
MAY BE XEROXED

(Without Author's Permission)

SHERIDA R. HEALY

A STUDY OF INSTRUCTIONAL DEVELOPMENT KNOWLEDGE AND USE DURING INSTRUCTIONAL PLANNING BY NURSE EDUCATORS IN NEWFOUNDLAND AND LABRADOR

by

Sherida R. Healy, B.Voc.Ed.,R.N.

A thesis submitted to the School of Graduate Studies
in partial fulfilment of the requirements
for the degree of Master of Education

Faculty of Education
Memorial University of Newfoundland
March, 1994

St. John's Newfoundland

National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-315-91629-X

Canada

Abstract

The purpose of this descriptive study is to elicit data from nurse educators in Newfoundland and Labrador concerning their knowledge and use of instructional development during instructional planning. The study is a continuation of previous studies undertaken in the school system and within nursing education. Gallant (1989), Tobin (1989), Thomey (1991), and Graham (1991) studied primary and elementary teachers, high school teachers, and teacher-librarians and determined that the groups studied did not have a comprehensive knowledge of and competency in instructional development. Gorman (1994) conducted an ethnographic study of five nurse educators and concluded that this group did have a functional knowledge of instructional development and planned instruction systematically.

This study was executed during the Fall of 1993 and utilized a survey design with a written questionnaire. Respondents consisted of twenty-nine nurse educators from the five provincial schools of nursing. Results of the study indicate that the nurse educators who participated in the study have a functional knowledge of instructional development.

Acknowledgements

The researcher would like to extend her appreciation to those individuals who helped to make the completion of this work a reality.

A special gratitude is extended to my thesis advisor, Dr. Mary Kennedy, for her continued assistance, guidance and patience at home and by distance in good times and bad.

I would like to acknowledge the assistance of all faculty, staff and fellow students in the Learning Resources program during the course of my graduate studies.

A special note of thanks is extended to all nurse educators who participated in the study during a period of profound change within our profession, and especially to my colleagues and friends at the General Hospital School of Nursing. Their constant encouragement and support was gratefully appreciated. Thank you Christine and all the rest!

Finally I would like to acknowledge the patience and understanding of my significant others: Mom, Dad, Bernard, Mark, Paul, Peter, David, Melita and family. I have given them just cause for concern over the last two years. Maybe now life will return to normal!

Table of Contents

Page

Abstract ii

Acknowledgements iii

List of Tables viii

List of Figures x

CHAPTER 1: Nature of the Study

Introduction 1

Purpose of the Study 2

Significance of the Study 3

Limitations of the Study 6

Definition of Terms 7

Organization of the Study 9

CHAPTER 2: Review of the Literature

Nursing Education

History of Nursing Education 10

Nursing Education at the Diploma Level 19

Nursing Education at the Baccalaureate Level 24

Curriculum Development 29

The Future of Nursing Education 31

Summary 39

Instructional Development

Introduction 40

History of Instructional Development 44

Theories of Learning 51
Theories of Instruction and Instructional Design . . 63
The Systems Approach 71
Instructional Development Models 75
The Future of Instructional Development 80
Summary 82
Nursing Education and Instructional Development 84

CHAPTER 3: Design of the Study
Introduction 89
The Population 91
Research Question 92
Development of the Research Instrument 94
Administration of the Study 97
Data Analysis Procedures 97

CHAPTER 4: Report and Analysis of Results
Introduction 100
Organization of the Findings 100
Demographic Information 101
Instructional Development Knowledge and Use 105
Instructional development 105
Curriculum development 106

Educational technology 108

Needs assessment 110

Learner analysis 112

Theories of learning 115

Behavioral objectives 117

Concept/task analysis 120

Sequencing of content 121

Measurement of student learning 122

Development of criterion-refererced tests 125

Development of instructional strategies and materials 127

Teaching strategies 130

Evaluation 133

Advanced Instructional Development Knowledge 139

General systems theory 140

Systematic versus systemic approach 141

Algorithms and heuristics 141

Summary 144

CHAPTER 5: Conclusion and Recommendations

Summary of the Study 153

Conclusions 159

Recommendations 161

References 162

APPENDIX A: CNA Standards for Nursing Education in Canada (1978) 170

APPENDIX B: APNN Standards for Schools of Nursing (1991) 176

APPENDIX C: Research Instrument 181

APPENDIX D: Correspondence 204

List of Tables

Table		Page
1	Respondents' Demographic Information . .	102
2	Respondents' Knowledge of Instructional Development and Curriculum Development Processes	104
3	Respondents' Knowledge of Instructional Development Definition and Theory Base	106
4	Respondents' Perceived Difference Between Instructional Development and Curriculum Development	107
5	Respondents' Knowledge of Educational Technology	109
6	Respondents' Perceptions of Instructional Development's Fit Within Curriculum Stages	110
7	Respondents' Knowledge and Use of Needs Assessment	112
8	Respondents' Knowledge and Use of Learner Analysis	113
9	Respondents' Perceptions of Important Learner Characteristics	114
10	Respondents' Knowledge and Use of Theories of Learning	116
11	Respondents' Knowledge and Use of Behavioral Objectives	119
12	Respondents' Knowledge and Use of Concept/Task Analysis	121
13	Respondents' Methods for Sequencing Teaching Content	122

14	Respondents' Use of Tests to Measure Student Learning	124
15	Respondents' Knowledge and Use of Criterion-Referenced Tests	126
16	Respondents' Knowledge and Use of Instructional Strategies	128
17	Respondents' Methods of Selecting Instructional Materials	129
18	Respondents' Self-Developed Instructional Materials	130
19	Respondents' Regularly Used Teaching Strategies	132
20	Respondents' Method/Guide for Selecting Learning Activities	133
21	Respondents' Knowledge and Use of Evaluation	135
22	Respondents' Basis for Evaluation of Instruction	136
23	Respondents' Views of What to Evaluate in an Instructional Program	137
24	Respondents' Views as to Most Appropriate Time to Develop Testing Mechanisms	138
25	Respondents' Source and Use of Feedback on Instruction	139
26	Respondents' Knowledge of Advanced Instructional Development Concepts . . .	143
27	Summary of Respondents' Knowledge of Discrete Instructional Development Tasks/Skills	151
28	Summary of Respondents' Use of Discrete Instructional Development Tasks/Skills .	152

List of Figures

Figure		Page
1	Stages and Tasks Common to System Design models	74
2	Components Common to Instructional Design Models	77
3	Dick and Carey's Model of Instructional Design	78

CHAPTER 1

Nature of the Study

Introduction

According to Wagner (1986) there are several reasons for encouraging research into instructional design and development:

> ...less efficient planning is likely to yield less efficient products, whereas more efficient planning is likely to yield more efficient, cost-effective products...it will heighten both practitioner and general public awareness of the significance of process related activities within each component of the [sic] entire educational technology system. (p.39)

The issues of cost-effective production and awareness of process-related activities are applicable to all levels of education, including post-secondary education, and, specifically, to nursing education.

This study took place within the basic nursing education programs within the province of Newfoundland and Labrador. Presently, there are four programs leading to diploma certification and one baccalaureate program at Memorial University of Newfoundland.

The educators who teach in these programs, with few exceptions, are nurses. These educators are responsible for not only the academic aspect of education, but also clinical

teaching. In keeping with standards set by the professional governing body of nursing within the province, the Association of Registered Nurses of Newfoundland (ARNN), the majority of nurse educators within each diploma school have to possess a baccalaureate degree in nursing and the majority of faculty members teaching at the university level have to have achieved a Master's degree in nursing. As well all instructors require clinical nursing competency (ARNN, 1991, p.24). The nurse educators who have not achieved the minimum academic requirements for their position are currently studying at varying levels in educational programs to arrive at the standard, which was originally set in 1986.

Purpose of the Study

The curriculum committee in each school of nursing sets the guidelines for content for each course within its curriculum. These guidelines are in keeping with recommendations set down by the Canadian Nurses' Association (CNA) and ARNN standards for schools of nursing. Nurse educators are responsible for the planning of instruction for each course of study which adheres to the individual school's philosophy, goals and conceptual framework. The planning of instruction in most instances involves

development of course and content objectives, teaching/learning methods, and methods of student and course evaluation.

Therefore the purpose of this study is to determine nurse educators' knowledge and use of the instructional development process during instructional planning.

Significance of the Study

The Association of Registered Nurses of Newfoundland (ARNN) oversees specific regulations governing the education and licensure of nurses in the province. The ARNN (1991) outlines the minimum clinical and theoretical components which are required of the nursing programs. As well, the Nursing Education Consultant with the ARNN is a member of the curriculum committee in each school of nursing.

All provincial diploma schools of nursing undergo an approval or accreditation process, as do their respective affiliating hospitals. The approval process for the diploma schools of nursing is conducted by the ARNN. The university nursing program participates in the Canadian Association of University Schools of Nursing Accreditation Program (1987).

Nursing education is currently undergoing major restructuring in response to the changing needs of society and, as well, to the changes being made by government in

health care funding. All schools of nursing are presently collaborating to develop a curriculum for future nursing education in the province. This program will permit students to exit with a nursing diploma after three years of study, or continue for one additional year to obtain a baccalaureate in nursing (B.N.). This new collaborative curriculum offers dynamic challenges for both students and nurse educators.

With the many changes and challenges that are now evident in nursing education, a definitive approach to the development of instruction would help ensure that the curriculum is as effective and as productive as possible. Educational technology can be seen to be invaluable in achieving this end.

Wagner (1986) writes:

> If one looks to improve learning and performance outcomes through the application of educational technology based solutions, it may be most appropriate to consider educational technology as the means through which educational systems analysis may be enabled. This broad based perspective provides a continuum which includes not only the "high tech" issues which typify educational technology endeavors, but also accommodates exant strengths of the interdisciplinary foundation upon which educational technology is based. (p.36)

Educational technology was conceived in a systems-based model, and contains theoretical elements from a number of disciplines. "In its broadest sense, the predetermined purpose of educational technology is to maximize learning and/or performance outcomes through the development, design, delivery, and evaluation of instructional and/or training programs, procedures, and materials" (Wagner, 1986, p.36).

Instructional development is a subset of educational technology, and Heinich (1970) views instructional development as entering into the total instructional process at the curriculum planning level, following curriculum determination and before classroom implementation (p.170).

The collaborative curriculum for future nursing education in Newfoundland is now at the stage of curriculum planning.

Snelbecker (1988) states:

> ..., the classroom teacher need not have the high level of expertise we might expect from full-time professional instructional designers but teachers do need at least fundamental instructional design strategies to plan, evaluate and modify instruction as a regular and continuing part of their classroom work. (p.35)

A series of studies on instructional development knowledge and competencies of specific groups of

Newfoundland teachers has been completed by Gallant (1989), Tobin (1989), Thomey (1991) and Graham (1991). These studies concluded that teachers do not possess significant explicit levels of knowledge or competency in instructional development.

Gorman (1994) conducted an ethnographic case study of five nurse educators' knowledge of instructional development and the instructional planning process. Results of this study indicated that the five nurse educators who participated in the study had a functional knowledge of instructional development and planned instruction systematically. She recommended that a further study be undertaken to determine nurse educators' knowledge base of discrete instructional development components (p.135). This present study, designed as a follow-up to Gorman's ethnographic research, was carried out during the Fall of 1993.

Limitations of the Study

While implementing this study, the following limitations were recognized:

The study was conducted within the five basic nursing education programs in the province of Newfoundland and Labrador. The response rate to the questionnaire was

thirty-nine percent (39%). Therefore, the applications and conclusions can only be made within the limits of this minority group. It should be noted, however, that the nurse educators who responded were representative in educational backgrounds and teaching experiences of the majority of the nurse educators registered with the ARNN.

This study sought to determine nurse educators' knowledge and use of instructional development only. No attempt was made, within the parameters of this study, to determine whether or not instructional development knowledge and use had any impact on the efficiency or effectiveness of instruction within the schools of nursing.

Definition of Terms

For the purpose of this study, the following terms and definitions apply.

Basic Nursing Education: Refers to diploma or baccalaureate programs that prepare candidates to apply for initial registration or licensure as professional nurses (Canadian Nurses Association (CNA), 1978, p.7).

Curriculum: A systematic and comprehensive plan of learning activities (CNA, 1978, p.7).

Educational Technology: A complex, integrated process for analyzing problems and devising, implementing,

evaluating and managing solutions to those problems involved in all aspects of human learning (Association of Educational Communications and Technology (AECT), 1977, p.12).

Instructional Development: A systematic approach to the design, production, evaluation, and utilization of complete systems of instruction, including all appropriate components and a management pattern for using them; instructional development is larger than instructional product development, which is concerned with only isolated products, and is larger than instructional design, which is only one phase of instructional development (AECT, 1977, p. 20).

Nursing Education: The process that facilitates acquisition and modification of nursing knowledge, skills and attitudes to prepare beginning practitioners of nursing and to enhance the competence of experienced nurses (CNA, 1978, p.7).

Nurse Educator: One who facilitates acquisition and modification of nursing knowledge, skills and attitudes to prepare beginning practitioners of nursing and enhances the competence of experienced nurses.

Organization of the Study

The report of this study on the knowledge and use of the instructional development process during instructional planning by nurse educators is organized in the following manner.

Chapter 2 discusses a review of the relevant literature regarding nursing education and instructional development. It also presents an overview of the instructional development process.

Chapter 3 profiles the methodology used in the implementation of this study.

Chapter 4 reports and analyzes the results of the data gathered during the study.

Chapter 5 draws conclusions from the study and makes recommendations for future study.

CHAPTER 2

Review of the Literature

Nursing Education

History of Nursing Education

The history of the nursing profession is irrevocably linked to that of the education of its practitioners, who have traditionally been women.

Griffin and Griffin (1969) see the historical perspectives of nursing in terms of:

> ...the evolution of an organized group within society who have received a recognized preparation for their work, devoting the major part of their time and effort to the systematic pursuit of a task - with recognition as a social group devoted to this task. (p.5)

These authors divide nursing's historical development into three main categories:

(1) from early times to the latter part of the eighteenth century;

(2) from the latter part of the eighteenth century to the establishment of the first modern school for nurses at St. Thomas' Hospital, England, in 1860;

(3) from 1860 to the present.

Reverby (1990) writes that nursing was a duty that was specific to females in the home throughout history. It was

common for women to care for members of the family in times of illness. "Embedded in the seemingly natural or ordained character of women, it became an important manifestation of women's expression of love of others, and was thus integral to the female sense of self" (p.4).

When hospitals became popular, workers who provided care were labelled "nurses". Griffin and Griffin (1969) cite that there was no special training, other than practical experience at the bedside, given to women. A natural ability, intuition, or affiliation with one of the religious orders who ministered to the sick and the poor were the standards by which the ability to nurse was measured. Sometimes just being in the right place meant delegation of nursing responsibilities, as Reverby denotes in her story of the hospital laundress advanced to a nursing position because of lack of staff. Baumgart and Kirkwood (1990) note that this mind-set of womanhood as nurturing and caring mothers, moral and spiritual guiders and household managers fitted within the sphere of natural nursing ability.

Yet, Nutting and Dock, 1907 (cited in Palmer, 1985) document that:

> Dr. Valentine Seaman, a physician at the New York Hospital, is generally recognized as the initiator of the first systematic attempt to provide instruction for

> nursing attendants. In 1798, before Nightingale, he organized the first regular training of nurses; gave them a series of 24 lectures, which included anatomy, physiology, the care of children, and midwifery. (p.102)

While the humanitarian philosophy was the driving force behind the provision of this form of nursing service, it was not until the work of Florence Nightingale that the modern concept of nursing and nursing education evolved. Palmer (1985) cites that Nightingale had sufficient insight to know that special training was needed for those caring for the sick, and her efforts towards this goal were fostered by certain social factors of the time: (1) a grateful British public honored her services in the Crimean War with a large amount of money and pressured her to establish a school for nurse training; and (2) nurses of the time were held in disrespect. Illiteracy, drunkenness, and a lack of skill were identified as problematic in these individuals.

As well, Miss Nightingale had certain notions concerning women's needs of the era. She saw the necessity for creating the means for a useful occupation for women who had to support themselves, and of improving the moral atmosphere. Therefore, the cardinal principles of which the Nightingale School (1860) at St. Thomas' Hospital were as follows:

1. Nurses should be technically trained in hospitals organized for that purpose.
2. Nurses should live in "homes" fit to form their moral lives and discipline. (Griffin & Griffin, 1969, p.77)

The School, which was financed by the Nightingale Fund, was independent of St. Thomas' Hospital in terms of budget, although the nurses provided services to the hospital. Prince (1984) describes the graduates of the school as "Nightingale nurses" and states that these graduates went on to establish schools and to become matrons throughout England and the colonies. These nurses found that they could not totally remain apart from the hospitals in terms of finances, so few schools ultimately remained as separate entities. In this aspect, Miss Nightingale's ideal that the school be an educational and not a service institution was not upheld. In the United States and Canada, as well as England, this system of providing low cost service to hospitals took precedence over educational requirements.

The Nightingale system of nurses' training was duplicated throughout England and North America, incorporating both the positive and negative elements. The first training school for nurses in Canada was established by Dr. Theophilus Mack in St. Catherines's, Ontario, in 1874, one year after the first "Nightingale School" was

opened in the United States (Mussallem, 1965, p.6). Palmer (1985) summarizes the effects upon nursing:

> As a consequence of Miss Nightingale's influence, nursing began as a service to the sick in hospitals, with the duties and responsibilities of nurses subject to the approval of physicians who also determined, to a large extent, what nurses would be taught. Moreover, students were used,..., as the hospital's main labor force. Another impact of Miss Nightingale's authority was the exclusion of men from nursing work, thereby setting up the sexist bias and paternalistic attitude toward nurses which persist to this day. (p.109)

Reverby (1990) refers to several reasons why the exploitation of students was tolerated in this way: a caring attitude, self-sacrifice, and submission were expected and encouraged; the training emphasized discipline, order and practical skills; and there were no standards to indicate what was an acceptable workload for students. "In this kind of environment, nurses were trained. But they were not educated" (p.8).

The period encompassing the turn of the century was a time of growth for nursing education. This evolved mainly from the scientific progress being made through the work of people such as Pasteur and Lister. The numbers of physicians, surgeons, and hospital facilities grew and, with

these, inevitably grew the demand for more trained nurses. The one year of training advocated by Miss Nightingale now stretched into three year programs, with emphasis being placed in teaching students not only how to do things, but why also. But Griffin & Griffin (1969) cite a pervasive attitude, among members of the medical profession at the time, that modern nurses were being overtrained.

> It was argued that by knowing too much the nurses became unfit for the essential nursing task or that we were wasting our time educating a group of "semiprofessionals". This attitude among members of the medical profession and among others upon whom the nurses must rely for advancing their standing has been the chief obstacle against which they have had to fight. However, it rather strengthened than weakened their fight, because it made it necessary for every advance to possess the vitality of inherent value to survive. Since 1872 the education of nurses has advanced in spite of this opposition. (p.104)

To further highlight this notion Hunter (cited in Baumgart and Kirkwood, 1990) is quoted as emphasizing that good health and a pleasant personality in 1905 were more important qualities in the nurse than scientific knowledge and skill (p.512).

By 1893, a group representing prominent nursing schools

had banded together and formed **The American Society of Superintendents of Training Schools of the United States and Canada** in order to provide leadership to improve educational standards. This group later divided to form the National League for Nursing in the United States and the Canadian Nurses' Association.

The concept of the apprenticeship-training ethic was prevalent throughout the early 1900s, yet it "was not even a respectably run apprenticeship, because novices learned from their peers and not from skilled masters" (Keddy and Lukan, 1985, p.41).

In 1917 the curriculum committee of the National League of Nursing Education published a guide entitled **A Standard Curriculum for Schools of Nursing.** This guide made suggestions on improvements to be made in nursing schools regarding theoretical courses, and it outlined the classwork required for a three year program. This curriculum was used widely also in Canada.

Mussallem (1965) describes four main types of formal programs for the education of differing levels of nursing practitioners existing in Canada by 1963: 16 university schools of nursing leading to a baccalaureate degree, 170 hospital diploma schools, 79 programs for the preparation of nursing assistants and seven programs for the preparation of psychiatric nurses. The university schools were within the

formal educational system, and the hospital schools, which provided the main supply of skilled manpower for the nursing service, were under the control of the individual operating agencies.

Educational reform for nursing in Canada eventually took on four main themes:

(1) development of a scientific and humanistic knowledge base;

(2) recruiting of a higher calibre of student;

(3) changing of the work image of nursing;

(4) improving the training schools which made up the main bulk of the nursing education system (Russell, 1950 cited in Baumgart & Kirkwood, 1990).

In the 1940s several events helped to direct the focus of change in nursing. A book by Mary Ella Chayer entitled **Nursing in Modern Society**, made the profession aware of the critical analysis of nursing and nursing education that was needed:

> A revolution is needed in nursing today. One is being experienced whether it is being recognized or not. Our time-honored methods of serving the public are no longer adequate...What was good enough, or at least tolerated at one stage of development is not good enough for another. The "horse and buggy age" gives place to the "atomic age," with its new

> responsibilities and dangers. (Chayer, 1947 cited in Dolan, 1968, p.346)

In 1942 a study of nursing education was commissioned by the National Nursing Council of the United States. Deficiencies in the quantity and quality of nursing service, as documented in previous nursing studies, were attributed to the prevailing system of nursing education. This study, known as the Brown Report, emphasized the necessity of education to prepare nurses to meet the needs of society in the second half of the twentieth century. The recommendations for the future of nursing education can be seen in the definition of nursing as given in this report:

> Nursing in its broadest sense may be defined as an art and a science which involves the whole patient - body, mind and spirit; promotes his spiritual, mental, and physical health by teaching and by example; stresses health education and health preservation, as well as ministration to the sick; involves the care of the patient's environment - social and spiritual as well as physical; and gives health service to the family and community as well as to the individual. (Brown, 1948 cited in Dolan, 1968, p.349)

Nursing Education at the Diploma Level

Because of the Nightingale tradition, nursing education developed within the hospital-controlled environment, essentially based on the apprenticeship system. The student worked in the hospital, and by doing so, paid for her room and board and part of her training. She received a small stipend for her efforts. Students were admitted to the school, and immediately went to work. Teaching was incidental and done sporadically by physicians. It is within this structure that the diploma schools of nursing evolved and flourished. Mussallem (1965) reports that by 1909, there were 70 such schools in Canada.

McQuarrie (1955), writing for the fiftieth anniversary of the journal, **The Canadian Nurse**, cites that "the tug-of-war between the service needs of the hospital and the education of the student remains a major issue..." (p.194). This still continues to be problematic, even today, with hospital-based diploma education.

Training schools for nurses, although expanded in numbers in the first quarter of the twentieth century, were under the total control of the individual hospitals who supported them financially. Some of the smaller schools provided no regular theoretical courses, accepted students without high school entrance requirements and appeared to exist solely for economic reasons. Many of the larger

schools developed good programs, incorporating theory with practice. Most programs offered one to two years of scant education mixed with service, and the final year as internship or total service.

In 1927 the Canadian Nurses' Association (CNA) and the Canadian Medical Association (CMA) formed a joint committee to investigate the problems in nursing education. Professor George Weir, head of the Department of Education of the University of British Columbia, was given the task of conducting a detailed survey of nursing education in Canada and making recommendations. The report was published in 1932, and as a result of the findings of weaknesses in administrative policies and overall educational programs, the CNA organized a National Curriculum Committee which developed **A Proposed Curriculum for Schools of Nursing in Canada** in 1936. This proposal was updated in 1940 to include clinical experiences also.

McQuarrie (1955) lists the following positive outcomes on nursing education of these curriculum proposals:

(1) A greater emphasis on the development of curriculum, both planned courses and clinical experiences;

(2) An increase in the number of qualified classroom and clinical instructors;

(3) Better teaching facilities;

(4) Better school of nursing records;

(5) Better health facilities for students;

(6) Closure of those small schools with inadequate clinical experience facilities;

(7) Increased responsibility of student organizations for their own non-professional activities;

(8) Establishment of minimum curriculum standards for registration on a provincial level; facilities for providing guidance to schools; active nursing education committees.

These particular areas came under the provincial registered nurses' associations, since the standards of nursing education were maintained by the ten provincial nurses' registration or licensing acts in Canada.

Some of the recommendations from Professor Weir's **Survey of Nursing Education in Canada** which were not implemented by 1955, thereby remaining major issues included:

(1) Hospitals conducting approved training schools should budget separately for the school.

(2) The school of nursing should be considered as an educational institution and not an economic asset to the hospital.

(3) The theory component of curriculum should be revised, but not reduced, as students are given too little time to study the theory.

(4) Greater attention should be given, both in curriculum content and teaching methods, to individual differences in abilities and achievements of the students.

(5) There is a need for better correlation between theory and practice.

(6) Education should be liberal, as well as technical.

(7) There should be greater use of the problem method of teaching.

(8) Student nurses should be given more time for independent study.

(9) Students should have more experience in mental health and neurological nursing (McQuarrie, 1955).

Mussallem (1965) discusses the authority for nursing and nursing education in Canada:

> Canadian legislation requires that nursing affairs come under provincial control within the general category of health. In most of the provinces, the provincial nurses' association is authorized by legislation to deal with matters concerning the educational practice of nursing and the granting of registration...
> In Canada, unlike most countries, the provincial nurses' associations (except in Ontario) actually administer the nursing practice acts. This authority is granted to the nurses' association by provincial legislatures. (p.11)

The Canadian Nurses' Association (CNA) is a federation of the ten provincial associations and acts in an advisory capacity. These provincial associations are self-governing units, and are free to accept or reject any advice offered by the CNA. In 1978, the CNA Board of Directors approved the **Standards For Nursing Education In Canada** (see Appendix A). These standards define the basic criteria for accreditation of schools of nursing. The specific criteria used for accreditation can be found in the Policies, Procedures And Standards For Approval Of Schools Of Nursing In Newfoundland (ARNN, 1991). Individual schools of nursing are still free to structure their theoretical and clinical components according to their own conceptual model and perceived needs, as long as the curriculum structure follows the guidelines set down by the Association of Registered Nurses of Newfoundland (ARNN).

These guidelines also cite the qualifications needed for faculty to teach in a diploma school of nursing. At least 75% of the nursing faculty must have a baccalaureate in nursing or its equivalent, as well as at least two years of clinical nursing experience (ARNN, 1991, p.23-24).

Presently there are four diploma schools of nursing in the province of Newfoundland: Western Memorial Regional Hospital School of Nursing, Corner Brook; Grace General Hospital, St. Clare's Mercy Hospital and the General

Hospital Schools of Nursing, all in St. John's. Courses of study include basic sciences and nursing courses, as well as comprehensive clinical experiences within the first two years, and an internship, or service year for Year 3. Corner Brook's program is completed shortly after two years. All these programs offer the student opportunity to write the national licensure examinations for nurse registration upon successful completion of the diploma program.

Diploma nursing education in Newfoundland is presently going through major change in terms of financial responsibility for education and the service requirements expected of students. Government is gradually decreasing the specialized funding for this post-secondary education that has been historically in place; Year 3 is becoming an educationally based year instead of a service year; and tuition payments are being set for students.

Nursing Education at the Baccalaureate Level

Minnesota is credited with having the first school of nursing organized as an integral part of a university in the Unites States in 1909. Two years previously, Mary Adelaide Nutting became the "first nurse in the world to become a professor in a university (Griffin & Griffin, 1969, p.125). A special department of household administration which included the division of hospital economics was struck to

offer advanced courses for those nurses seeking positions in teaching and administration.

Baumgart and Kirkwood (1990) state that nurses have had a difficult struggle to maintain parity with other professional groups regarding higher education. This struggle was, in part, due to cultural views of women and ultimate social inequality:

> Nursing education in Canada and, particularly, the development of nursing scholarship, has been constrained by the cultural views of women and of the proper uses of higher education for women. The "ghettoization" of nursing within the university illustrates the limitations of the promise of equality wherein scholarly pursuits have been made subservient to training for domesticity, motherhood and women's assigned responsibilities for protecting the moral fibre and social well-being of society. (p.511)

Nurses, as indeed all women at the turn of the century, viewed higher education as a way of trying to overcome the social inequalities that were prevalent. The goal of nursing was ultimately to be professional status, and with this status attained, the old ideas of women's intellectual inferiority and biological roles of mother and housekeeper could be eradicated. Seigel (1984) agrees that nurses, both practitioners and educators, have struggled to attain

recognition as professionals. "The combination of women, nursing, and higher education resulted in a self-perpetuating cycle of low status, low pay, and no professionalization, that is until all three areas worked on their own sense of worth" (p.114). The hallmarks of a profession (strong level of commitment, long and disciplined educational process, unique body of knowledge, discretionary authority and judgement, cohesive professional organization and acknowledged social worth and contribution) are within the grasp of nurses due to a number of factors:

(1) the baccalaureate degree as minimal requirement for entry to practice;

(2) improvement in the quality of nursing curricula through university placement;

(3) unification of nursing service and nursing education;

(4) autonomy of staff nurses because of the responsibility for total patient care;

(5) increase in the number of doctorally-prepared nurses;

(6) more flexible and accessible educational programs which can accommodate working and non-traditional students;

(7) emphasis on continuing education to maintain clinical and theoretical expertise;

(8) recognition of clinical expertise;

(9) continuation of national licensure examination;

(10) the increase in numbers and percent of women in higher education (Seigel, 1984 p.116).

University nursing education was aided in Canada from 1919 -1923 by the Red Cross. This organization recognized the need for increased public health services and addressed the need by financing courses for selected graduate nurses already working in the public health field.

Mussallem (1965) notes that there were sixteen university schools of nursing offering basic courses leading to a baccalaureate degree in Canada at the time of her study. She lists the objectives of these schools as:

(1) The professional preparation of a nurse who is technically efficient, well-grounded in the scientific knowledge essential in her field, and who possesses those understandings and insights that make for good human relationships and social effectiveness.

(2) The professional preparation of a nurse who can make decisions which involve some understanding of the basic principles of economics, religion, sociology, political and biological sciences,etc.

(3) The preparation of a nurse who can accept nursing responsibilities in hospitals and other community health services, and with experience assume positions of leadership in the profession. (p.80)

In her report on nursing education, Mussallem makes these recommendations regarding university and diploma nursing programmes:

> The university programme should be entirely planned and controlled by the university using hospitals and health agencies as teaching laboratories. The baccalaureate degree awarded should represent a sound educational programme in the liberal arts as well as in professional education. This group would be prepared to provide leadership roles in nursing practice. Preparation for administration, teaching, consultation and research should be provided at the post-baccalaureate level. The diploma school of nursing should be introduced into the educational systems of the country and be designed to prepare practitioners to assist the professional nurse. Present evidence indicates that the professional nurse and the graduate of the diploma programme should be prepared in a ratio of one to three. (p.138)

Many of these recommendations relating to the university programs have been instituted in some provinces in Canada, as well as the placing of diploma schools into the community college system. The latter has not been initiated in Newfoundland.

The baccalaureate programs offered at Memorial

University of Newfoundland are "designed to provide students with a liberal education which prepares them to be direct care-givers, teachers, counsellors and advocates for their clients" (Memorial University, 1992-93 p.265). Two programs of study are offered: a Bachelor of Nursing (B.N.) for basic students which requires the completion of 54 credits and a Bachelor of Nursing following completion of Registered Nurse (R.N.) licensure which requires the completion of 45 credits, of which 15 are awarded as unspecified transfer nursing credits on the basis of successful completion of a diploma program in nursing.

The minimum requirement for nursing faculty teaching in the baccalaureate programs is that at least 75% of faculty have a Master's Degree in Nursing (M.N.) (or its equivalent) (ARNN, 1991, p.23).

Curriculum Development

ARNN (1991) outlines specific policies, procedures and standards that are required in order for Schools of Nursing in Newfoundland to be accredited. Standard II addresses development and implementation of the nursing education program (see APPENDIX B). This standard provides the foundation for curriculum development within nursing education. In addition to references to written statements of philosophy and objectives, each school is expected to

adhere to a conceptual framework or model of nursing which serves as a basis for the development of the curriculum in that school and provides a rationale for the selection and organization of the program content and learning experiences for the students. The curriculum is expected to provide the direction for achieving the overall program objectives. The curriculum design is expected to integrate nursing knowledge and nursing practice, reflect current trends in health, demonstrate evidence of curricular revision in response to changes occurring in education, nursing practice and the health care system, provide an ordered progression of content and learning experiences which are reflected in all course and level objectives, and provide direction for the evaluation of student achievement of objectives. The curriculum content must include content areas essential to the practice of nursing as outlined by the Canadian Nurses' Association, but is not restricted to those areas alone (ARNN, 1991, p.21).

To ensure that these standards are addressed, each school of nursing has a curriculum committee. In the diploma schools, all faculty must submit course outlines to their respective curriculum committee for approval of course content, course objectives, teaching/learning methods to be utilized, evaluation criteria and recommended textbooks. In the baccalaureate program, the curriculum committee provides

guidance for general content and broad objectives, as well as approving overall course content.

The Future of Nursing Education

McQuarrie (1955) writes:

> One of the most significant conflicts in our society during the past decade has been the mounting argument over education. On one hand stand the forces of specialization, firm in their belief that education must be practical training and a preparation of the student to perform specific roles. On the other hand rank the forces advocating education of the all-round person capable of flexible and imaginative performance in a world which is in a state of constant change. (p.199)

Mussallem (1965) also shows awareness of the need for change as she states in her Royal Commission Report on Nursing Education in Canada:

> The majority of educational nursing programmes are in hospitals and are largely based on a poor apprenticeship system. Poor utilization of nurses is still carried on and does not provide them with the knowledge or skills needed. Preparation for service in hospitals alone is a very narrow and limited approach to the education of nurses and is outdated approach to

the total health needs of the community. (p.136)

It was not until 1982 that the Canadian Nurses' Association (CNA) adopted a formal position on the future educational requirements for entry into nursing practice. Based upon studies of trends in health care and health care delivery systems, it was determined that baccalaureate preparation will be required for all nurses entering the profession by the year 2000, in order to provide quality nursing care, both in the hospital and in the community.

> The rationale for the change in minimal level of educational preparation for entry into nursing practice from a diploma in nursing to a baccalaureate degree in nursing lies in the belief that the nurse of the future will require the latter preparation to better meet the nursing needs of the public and to continue to function competently in the ever changing and increasingly complex health care system. Changes in the health status of the public and the health care delivery system indicate that both the role expectations and performance capabilities of the nurse are changing. (ARNN, 1988, p.4)

A "National Plan" was developed in 1984 which specified national objectives, strategies, accountable organizations and target groups, and it was from this plan that all provincial organizations have taken direction (ARNN, 1988,

p.9).

In April 1986, the Association of Registered Nurses of Newfoundland (ARNN) struck a Task Force on Entry to Practice to develop a more comprehensive provincial blueprint to achieve the B.N. 2000. Since that time, various committees have worked on a collaborative nursing education model that would meet the basic education needs of future graduates of Newfoundland.

In 1992, the Liaison Committee on Future Nursing Education completed their paper on the **Strategic Plan for Future Nursing Education** and outlined the basic elements of a preferred model:

(1) The curriculum would be jointly developed by all schools of nursing. Diploma schools would be affiliated with Memorial University.

(2) The curriculum would have two exits, both a diploma and a degree exit initially. The diploma school would grant the diploma; the university would grant the degree. The diploma exit would be a transitory and time-limited measure.

(3) The sharing of resources among schools would be negotiated (ARNN, 1992).

In June 1993 the Future Nursing Education Curriculum Development Committee, comprised of representatives of all five schools of nursing in the province, completed its

report on Phase 1 on the development of the new collaborative curriculum. To date, the philosophy and conceptual framework based on a behaviorist/humanist model, characteristics of the graduate, levelled objectives, content map and basic course outlines have been completed. This proposed curriculum design was presented to government in January 1994 for approval (ARNN, 1993).

The structure of nursing education is only one measure of the change that is currently evolving in the profession. Tanner (1990) writes of the "curriculum revolution" that has been occurring since the 1980s. Nursing curricula, traditionally content-laden and disease-oriented, have not prepared nurses for the societal changes and responsibility of the approaching twenty-first century.

Tanner relates the term "revolution" to the writing of Thomas Kuhn on scientific revolutions, implying a developmental change occurring as the old paradigm, or world view, is replaced by a new one. "Hence, a revolution in this sense would occur when the community of nurse educators tacitly or explicitly agrees to a new world view of our educational practices" (p.296). Tanner sees the change related to the discontent with the continued use of the behaviorist model of education for nursing, with its rational-technical view:

If the analogy of the curriculum revolution to a

> scientific revolution holds, it is likely that a new model and world view will replace the old. And this possibility presents a major dilemma as we strive for change; none of us wish to adopt a new equally enslaving model of education, but rather encourage the diversity necessary to achieve our goals of responding to our social responsibility as a health profession and maintaining local control over curricular decision making. (p.298)

Tanner calls this "emancipation" from using one view of education as "theoretical pluralism", one of the major themes of the current curriculum revolution, along with the sense of social responsibility, caring as a central core value, an interpretive stance on the assumptions and meanings of nursing practice, and the primacy of the student-teacher relationship.

Bevis and Clayton (1988) also criticize nursing's historical dependence upon the behavioristic Tylerian model of curriculum design. "We were at a crossroads and needed structure and guidance to continue to grow, to increase the quality of educational programs, and to be congruent with the very pragmatic age of post-World War II" (p.14). Because behavioristic models worked efficiently in delineating specific objectives and evaluating accomplishments, they became the ends and not the means of

curriculum design:

> Using only one model for all nursing programs, especially one that emphasizes such restrictive and behaviorist learning theory products, is too limiting for professional nursing. It keeps nursing education focused on training not education. (p.15).

Bevis and Watson (1989) present a curriculum paradigm for nursing education based on a humanistic view. They see the Tylerian/behaviorist model, which has directed the profession for nearly forty years, as unable to address the needs of nurses in an increasingly changing society, if it is used to guide all of nursing education. Their central theses involves five positions:

(1) The curriculum is seen as the egalitarian "interactions and transactions that occur between and among students and teachers with the intent that learning occur" (p.5).

(2) Active learning which challenges the intellectual abilities of both student and teacher is necessary to develop the creative thinking hallmark of the educated individual.

(3) Curricular teaching strategies must inspire students to take a mature responsibility for their own learning needs.

(4) No one theory can explain the complexities of the

learning process as the types of learning fall into two distinctive categories: training and education.

(5) All curriculum development begins with the development of the faculty, and most faculty are prepared for only the behaviorist viewpoint.

The educative model proposed by Bevis and Watson and endorsed by numerous others is called "the Caring Curriculum".

Most nurse educators recognize that the behavioristic model has application in some elements, such as in technical skill acquisition and memorization.

Coulter (1990) sees the adoption of a theory of learning contingent upon the situation. She notes that Gagnè's behavioristic approach, with the conditions of learning and his theory of instruction, is applicable to psychomotor skills learning, while the humanistic view of Rogers is appropriate for development of interpersonal skills and self-awareness. "A nursing curriculum that is too heavily biased in favour of one approach may restrict the educational development of students" (p.336).
de Tornyay (1990) also agrees that it is imperative that what has proved to be functional and effective continue to be utilized.

Condell and Elliott (1989) view Gagnè's theory of instruction as relevant to nursing education because of its

systematic approach. His three dimensions of motor skill and skill analysis have applicability in the procedural-laden clinical practice environment.

Byrnes (1986) compares the behaviorist and humanistic views on teaching and learning in nursing education. While she finds behaviorism mechanistic and restrictive, there are elements that are beneficial in training students to perform specific tasks. A humanistic perspective, on the other hand, allows students to take responsibility for their own learning, while fostering affective as well as cognitive growth.

> Nursing has both an intellectual and practical aspect. If we expect the student to achieve a certain level of cognitive development and mastery of pragmatic skills, we must be able to use observable behavioral outcomes as part of our objective evaluation of fulfilment of those expectations. Likewise, nurses have a particular caring relationship with humans. If we expect the student to practice nursing from a holistic and humanistic frame of reference, surely we must attend to her personal development with a humanistic orientation. (p.305)

de Tornyay (1990) foresees the future of nursing education also in terms of a curriculum revolution:

> The curriculum revolution is about teacher-student

> partnerships. It is about flexibility and individual differences in how and what one learns. It is about instructors spending their time doing what no text, no program of learning, no computer, or learning resource can accomplish: developing the mind of the individual student through intimate give and take based on sound knowledge and understanding. (p.293)

Summary

Education and nursing have common historical elements: both were influenced by the Church early in their development; both lacked status in society; both had little career advancement opportunities (Seigel, 1984).

Davies (1978) documents awareness of the pervasive notion that behavioristic objectivity is the valued paradigm in education:

> This has led to a suspicion amongst educators that the notion of objectivity is the **only** paradigm possible in educational technology, especially in the areas of curriculum, course and instructional development... Yet an alternative is available, and an alternative that is particularly valuable in the domain of educational technology. This alternative involves the notion that there is available a subjective paradigm, and that both objectivity and subjectivity are themselves

assumptions. (p.19)

Nursing education is undergoing radical change in the 1990s, both in its structure with the entry to practice issue of baccalaureate education as minimal requirement, and in its philosophy of teaching/learning which is moving away from total reliance on the behaviorist model. The emphasis is shifting from the training of a purely technically competent hospital-based practitioner to the education of a professional nurse prepared to function in all areas of the health care environment.

Consequently, instructional development has a significant role to play in the preparation of nurses to meet the challenges awaiting the profession in the twenty-first century.

Instructional Development

Introduction

> Educational technology is a complex, integrated process involving people, procedures, ideas, devices and organization for analyzing problems and devising, implementing, evaluating and managing solutions to those problems involved in all aspects of human learning... (AECT, 1977 p.12)

Beckwith (1988) defines the goal of educational

technology as "the transformation of learning and learning process" and puts forth a statement of philosophy as follows: "We believe that all learners can be transformed to the highest level of cognitive ability" (p.15). He envisions educational technology as assuming the responsibility for management of the learner and for the transforming of learning.

Educational technology has its theory base in several communities: psychology with the different views on human behavior and learning of the behaviorist, Gestalt and cognitive psychologists; educational psychology with theories of learning and instruction, motivation and human growth and development which provide the theoretical foundation upon which strategies to maximize learning outcomes can be developed; hardware technology which provides means of transmitting instructional messages; ergonomics and human factors engineering which provides guidelines for strategies to improve human performance; organizational management and administration which provide a framework for the dissemination of instruction; and communication theory which is expanded to encompass aspects of perception and information-processing theory.

Davies (1978) delineates three different educational technologies. Educational Technology One is a hardware approach, whose roots lie in the "application of the

physical sciences and engineering to the problems of education", and which emphasizes the importance of aids for teaching (p.13). Educational Technology Two is a software approach, whose origins are founded in the "application of behavioral science to the problems of education", and which highlight the importance of aids to learning (p.13). Educational Technology Three combines the two previous techniques with a systemic approach and focuses on the processes as well as the products of teaching and learning.

> Whilst Technology One is largely concerned with transmission-reception problems, and Technology Two with purposeful shaping of behaviour, Technology Three is warmly human in its total and integrated approach. Its emphasis is on a range of contrasting skills, from which selections can be made depending upon the nature of the problem posed. It is fundamentally a problem-solving approach, heavy in its diagnostic interest and inquiry orientation. (p.14)

One of the sub-sets of educational technology is instructional development.

Several definitions of this sub-set appear in the literature. Kemp and Smellie (1989) define instructional development as the "process of designing an instructional program employing an objective, systematic procedure, such as an instructional design plan" (p.381). Sachs (1981)

provides a definition:

> a systematic approach for improving instruction by making instructional design decisions that take into account many factors including principles of learning, student characteristics, instructor skills, developer skills, resources, content, time and evaluation data. (p.8)

The Association for Educational Communications and Technology (AECT, 1977) defines instructional development as:

> a systematic approach to the design, production, evaluation and utilization of complete systems of instruction, including all appropriate components and a management pattern for using them; instructional development is larger than instructional product development, which is concerned with only isolated products, and is larger than instructional design, which is only one phase of instructional development. (p.20)

Robert Heinich (1970) sees instructional development entering into the total instructional process at the curriculum planning level, following curriculum determination and before classroom implementation:

> Instructional development is the term used in knowledgeable circles in higher education to describe

> attempts to enter the instructional process at the level of curriculum planning...instructional development seeks to design instruction rather than supplement it. (p.170)

History of Instructional Development

> Instructional theory and method have an ancient heritage that can be traced to the time when tribal priests systematized bodies of knowledge and early cultures invented pictographs or sign writing to record, preserve, transmit, and reproduce information. (Saettler, 1990, p.24)

Edward Thorndike (1874-1949), an educational psychologist, "fashioned the first scientific learning theory and established empirical investigation as the basis for a science of instruction" (Saettler, 1968, p.48). His three primary laws of learning (the law of exercise or repetition, the law of effect, and the law of readiness) were all based on the stimulus-response hypothesis. The basic principles underlying his technology of instruction included: (1) self-activity; (2) interest (motivation); (3) preparation and mental set; (4) individualization; and (5) socialization. His studies on instructional media design, the organization of instruction, individual differences, evaluation methods and empirical-inductive

research made his place in history as the first modern instructional technologist (Saettler, 1968).

John Dewey's (1859-1952) intellectual focus on analysis of thinking in reflective, problem-solving terms had a profound influence on American education. He believed that learning involved interaction or two-way action between the learner and his environment, and that the experiences which learners have with their environment become the foundations upon which meaning is made. Dewey believed that the primary goal of instruction was the improvement of intelligence, and to him all worthwhile thinking was reflection. He saw problem-solving as central to the instructional process (Saettler, 1968, p.53-56).

An Italian educator, Maria Montessori (1870-1952), developed a teaching methodology with two basic principles - respect for the learner's individuality and encouragement of his/her freedom. Her technology of instruction had these characteristics:

> adaptation of schoolwork to the individuality of each learner; provision for freedom in which the teacher did not dominate the learner nor did the learner become overly dependent on the teacher; and emphasis on sensory discrimination... (Saettler, 1968, p.60)

Montessori's instructional system was one of the first to be scientifically based. As well, "she was the first to

develop graded instructional materials in accordance with specific instructional design" (Saettler, 1990, p.343).

During the 1920s there was increased interest in the use of the scientific method with empirical evidence to help solve educational problems, but this interest waned with the coming of the Great Depression during the 1930s.

The advent of World War ll brought renewed interest in the use of empirical methods to solve educational problems in the form of the audio-visual movement. During the war, psychologists and educators, who were adept at conducting experimental research, were utilized to develop training materials for military personnel.

> These individuals, who exerted considerable influence on the characteristics of the training materials that were developed, based much of their work upon instructional principles derived from research and theory on instruction, learning and human behavior. (Reiser, 1987, p.22)

Three of the pioneers in instructional development during the 1940s and 1950s were James Finn, Leslie J.Briggs and Robert Gagnè. Finn was called a "father of the instructional design movement because he linked the theory of systems design to educational technology, and thus encouraged the integrated growth of these related fields of study" (Seels, 1989, p.11).

The psychologists, Briggs and Gagnè, identified areas for further research in types of learning, learning conditions, media characteristics and task analysis while they were developing practical training methods for the military.

Davies (1978) describes this period of educational technology as "the first archetype" or "audio-visual one" (p.20). The audio-visual hardware were developed as primarily an aid to classroom instruction. According to Saettler (1990), specialists were preoccupied "with the effects of devices and procedures rather than with the differences in individual learners or the selection or design of instructional content" which he called the "physical science or media approach to Educational Technology" (p.8).

During the late 1950s, the focus shifted from purely a media or devices approach to one centered on the entire process of communication. Communication models were developed which were meant to describe the total teaching-learning process. As well, the systems concept, which viewed media as a component of an instructional system rather than an isolated entity, helped to alter the theoretical framework of the field (Saettler, 1990, p.9).

Davies (1978) portrays the impact of the behavioral sciences on educational technology in the 1960s and 1970s as

the "Engineering Archetype" because of its mechanistic character (p.22). As well, Saettler (1990) documents the contribution of the behaviorial psychologists:

> Skinner's notions of reinforcement and its application to teaching machines and programmed instruction has begun to influence the development of a science-based technology of instruction. When behavioral objectives were applied to Skinner's contingency management techniques, it served as a foundation to the systems approach to instruction. (p.14)

Kemp (1985) also appreciates the significance of the behaviorists' contribution to the concept of instructional design, again, particularly the work of B.F. Skinner (1904-1990):

> Of all the developments in recent years, the theoretical view of learning proposed by Skinner and its applications through programmed instruction have been most influential for the emergence of the instructional design process. (p.4)

A selection of critical elements were identified by psychologists and educators of the time as necessary for the designing of comprehensive instruction:

> ...writing objectives (see Bloom, Krathwohl, Mager, Popham); organizing subject content, analyzing tasks, encoding and decoding

> information, and setting conditions for learning (see Gagnè, Glaser, Travers); recognizing contributions of audiovisual media and other forms of technology for instruction (see Dale, Finn, Hoban, Allen); devising self-paced and individualized learning methods (see Postlewait, Keller); and evaluating learning (see Bloom, Stufflebeam, Popham). (Kemp, 1985, p.4-5)

Jean Piaget (1896-1980) of Switzerland was known as the foremost developmental psychologist of the twentieth century. He was most interested in epistemology, that branch of philosophy dealing with the nature of knowledge, but his models of human cognitive development provided guidelines for a new approach to the problems of instructional design (Saettler, 1990, p.72).

By the early 1980s, the cognitive approach to educational technology began to unfold, particularly in the instructional design process. This approach viewed the learner as an active participant in the teaching-learning interaction.

Wittrock (cited in Saettler,1990) discusses the implications of the cognitive approach to educational technology:

> The art of instruction begins with an understanding and a diagnosis of the cognitive and

> affective processes and aptitudes of the learners. From these one designs different treatments for different students in different situations to actively induce mental elaborations that related previous learning and schemata to stimuli. In this conception the learners are active, responsible, and accountable for their role in generative learning. (p.14)

Seels (1989) describes the cognitive constructivist paradigm as having impacted on instructional design. This focus sees learning as personal discovery based on insight; views learning as problem-solving; and it regards instructional strategies as providing for activity and self-regulation (p.14).

Diamond (1980) defines the role of the instructional developer as :

> a facilitator of change, a questioner, a supporter, and individual who helps a faculty member...get where he or she wants to go. An instructional developer, among other things, must be able to lead the faculty through the design process, asking the necessary questions, exploring all options..., helping to establish a framework for evaluation, and assisting in and/or directing the production of instructional materials. This

> process requires a wide range of human skills: an understanding of the politics of change; a knowledge of system design; an understanding of the use and production of instructional media; an awareness of what evaluation can and cannot do, and at times, the ability to serve as evaluator; a knowledge of what represents effective software; and, finally, the developer must possess an ego that allows others to accept the credit for whatever success is accomplished. (p.51)

Theories of Learning

> A learning theory is a systematic integrated outlook in regard to the nature of the process whereby people relate to their environments in such a way as to enhance their ability to use both themselves and their environments more effectively. (Bigge, 1982, p.3)

Landa (1983) delineates the focus of learning theories as:

> the lawful connections between learning operations and their psychological outcomes; **descriptive learning theories** deal with 'if..., then' propositions stating what happens psychologically if such and such learning actions are performed,

> and **prescriptive learning theories** prescribe what learning operations should be performed (as necessary, sufficient, or both) in order for a certain psychological process to happen. (p.65)

Landa (1983) also distinguishes between learning theories and instructional theories:

> ...instructional theories and programs deal with the relationships between **teachers'** -or teaching - actions as causes and students' psychological and/or behavioral processes as effects (outcomes), whereas learning theories and programs deal with relationships between **learners'**-or learning-actions as causes and psychological or behavioral processes as effects (outcomes)... (p.63)

The leading nineteenth century learning theories consisted of those relating to mental discipline, humanism, natural unfoldment or self-actualization, and apperception or Herbartianism. Although these theories were developed prior to the twentieth century, some "continue to be highly influential in today's schools" (Bigge, 1982, p.8).

The systematic learning theories that have had the most impact upon education in this century are classified into two main categories: the S-R (stimulus-response) conditioning theories of the behavioristic orientation and the cognitive theories.

The behaviorists believe that "learning is a change in observable behavior, which occurs through stimuli and responses becoming related according to mechanistic principles" (Bigge, 1982, p.9).

The principles emphasized in the S-R or behavioristic theory include: activity (learning progresses better if the learner is active in the process rather than passive); repetition, generalization, and discrimination (frequent practice in varied contexts is necessary for learning to take place); and reinforcement (as the motivator, as the effects of consequences on subsequent behavior are important) (Hartley, 1978, p.31).

Behaviorism's impact upon educational technology began in the 1960s with Skinner, and includes: the behavioral objectives movement; the teaching machine phase; the programmed instruction movement; individualized instruction approaches; and computer-assisted instruction (Saettler, 1990, p.286). Several of these areas are prominent in post-secondary education today, especially nursing education.

Ralph Tyler is well known for his use of behaviorial description in the development of curriculum. Beginning in 1929 at the University of Ohio, he defined educational course objectives in behavioral language, and then developed specific tests to measure whether these behaviors had been accomplished.

The Tyler rationale consists of four questions, which basically represent a four-step sequence of:
(1) identify objectives; (2) select the means to attain these objectives; (3) organize the means; and (4) evaluate the outcomes.

> Tyler's conception of educational objectives is consistent with the experimentalist view of the learner as an autonomous, thinking individual and in conflict with the behavioristic conception of the learner as a response system, but his definition of education 'as a process of changing the behavior patterns of people' is behavioristic. And, as a consequence, Tyler's rationale has been used extensively by behaviorists. (Saettler, 1990, p.289)

The development of the behavioral objective movement has also been associated with the advent of levelling of objectives into taxonomies. "This effort had its beginning at the 1948 convention of the American Psychological Association, when those interested in test development and construction expressed a need for standardized terminology regarding human behavioral characteristics" (Saettler, 1990, p.289).

Benjamin Bloom developed the first complete taxonomy in the domains of cognitive, affective and psychomotor learning in 1956, while Robert Gagnè proposed another taxonomy with

categories in verbal information, intellectual skill, cognitive strategy, attitude, and motor skill in 1972.

The shift in terminology from educational to instructional objectives and finally to behavioral performance objectives was due to the entry into the educational system of a number of individuals who came from military and industrial backgrounds in the late 1950s. Mager, whose previous experiences were in the areas of military and industrial psychology, published a classic set of instructions for writing objectives in 1962.

Mager proposed three components for a well written objective:

(1) identify the action the learner will be taking when he has achieved the objective (e.g., to write, to speak);

(2) describe the relevant conditions under which the learner will be acting (e.g.,without the use of references);

(3) specify how well the learner must perform the action (e.g.,100 percent correct). (Saettler, 1990, p. 290)

Words such as "appreciate", "understand" were not acceptable to use in the writing of objectives according to the behaviorist viewpoint, because the behaviors could not be observed or measured.

Behaviorists such as McAshan and Popham refer to well-written behavioral outcomes as criterion-referenced behavioral objectives, and argue that tests based on criterion-referenced measures assess student competencies better than standardized norm-referenced tests.

Programmed learning is an application of Skinner's approach to learning with its "emphasis on presenting sequences of small amounts of subject content, requiring an appropriate response to each item, and then followed by knowledge of results - feedback" (Kemp and Smellie, 1989, p.16). Individualized instruction used in teaching basic skills via the computer utilizes the behavioristic theory of operant conditioning.

This revival of programmed instruction by Skinner "set the stage for a closer relationship between the behavioral sciences and educational technology" (Saettler, 1990, p.296).

> It revived the early ideas of individualizing instruction ... in the 1960s and 1970s. Programmed instruction also fostered the growth of sounder technology in the development of instructional materials and in the evaluation of instruction on the basis of behavioral objectives rather than on the instructional techniques used. Finally, the programmed instruction movement set the

> technological stage for the development of computer- assisted instruction and the systems approach to instruction. (Saettler, 1990, p.304)

The rise of individualized instruction, which recognizes individual differences,and computer-assisted instruction (CAI) came about in educational circles in the late 1950s and early 1960s. These approaches to instruction reflect behavioristic concepts and are derivatives of the basic behavioristic programmed instruction. But by the late 1970s modern cognitive psychology was becoming the dominant theoretical orientation in psychological science. "The impact of the Skinnerian behavioristic approach still dominated educational technology, but behaviors of human performance being studied in the context of cognitive psychology suggested new approaches to educational technology" (Saettler, 1990, p.311).

The psychological theories of learning of the Gestalt-field family, which include insight, goal-insight and cognitive-field theory, emphasize cognition in learning. These theorists see learning as a process of attaining or altering insights, outlooks, expectations, or thought processes in order to gain understanding. Whereas the behavioristic approach views the learner as a passive or reactive individual, the Gestalt-field assumption is that learners are interactive with their environments. Their one

area of commonality is that they are both scientific approaches to the study of human beings.

Gestalt psychology was first introduced in 1912 by the German philosopher-psychologist, Max Wertheimer (1880-1943). His central point of view was that an organized whole is greater than the sum of its parts. Kurt Lewin (1890-1947) added new concepts to the essence of the Gestalt theory and developed a field psychology. "Cognitive-field psychologists find the clue to the meaning of learning in the aspects of a situation within which a person and his psychological environment come together in a psychological field or space" (Bigge, 1982, p.60). They view learning as a purposive, exploratory, imaginative and creative experience. Motivation, as characterized by an individual's desire to do something, and gaining of insight are key tenets of Gestalt-field theory.

> Gestalt-field psychologists interpret thinking to be a reflective process within which persons either develop new or change existing tested generalized insights or understandings. So construed, reflective thinking combines both inductive - fact gathering - and deductive processes in such a way as to find, elaborate, and test hypotheses. Thus, there is no essential difference between reflective thinking and

scientific processes, broadly defined. (Bigge, 1982, p.105)

Hartley (1978) outlines five principles related to learning that are emphasized in cognitive theory:

(1) organization and structure (material to be learned needs to be organized and show logical relationships between ideas or concepts);

(2) perceptual features (the way in which a concept or problem is presented is important because human beings attend selectively to different features of the environment);

(3) learning with understanding (to learn something new, the person must fit it in with what he already knows, and not just memorize);

(4) cognitive feedback (providing the learner with knowledge of results concerning his success or failure);

(5) differences between individuals (recognition of differences both in intellectual ability, personality and cognitive style). (p.31-32)

Saettler (1990) discusses four primary influences that impacted on the emergence of modern cognitive psychology:

(1) the development of the information processing approach which evolved from the work of Weiner, Shannon, and Miller on information theory;

(2) the impact of the computer, which created, among other things, a new sub-field called artificial intelligence;

(3) the shift in the field of linguistics " from behaviorist theories of language towards analyzing the structures underlying comprehension and production of utterance";

(4) the theory and research of Jean Piaget with cognitive developmental psychology (p.321).

Cognitive Science, as a discipline in itself, emerged in the 1970s. In an effort to define the field and to legitimize its research paradigm, Gardner poses an explanation of human knowledge with five features:

(1) mental representations in human cognitive activities are to be separated from the biological/neurological or sociological/cultural influences;

(2) the human mind as an electronic computer;

(3) a deliberate de-emphasis of the influence of affective factors or emotions, and historical or cultural factors as important for cognitive functioning;

(4) much can be gained from interdisciplinary studies with fields such as philosophy, psychology, artificial intelligence, linguistics, anthropology, and neuroscience;

(5) a key ingredient in contemporary cognitive science is the 'agenda of issues', the significance of the

> philosophical tradition of the Greeks (Saettler, 1990, p.322).
>
> Clearly, the impact of cognitive science has brought about a distinctly new approach to educational technology and has shifted the emphasis from a strictly behavioristic view with its emphasis on external behavior to a concern with internal mental processes and their enhancement in learning and instruction. (Saettler, 1990, p.322)

"The basic premise from cognitive science that can well guide the (instructional) designer is 'know what the learner knows and what the learner is doing'... and use instructional activities that maximize the capabilities of the information processing system" (Divesta & Rieber, 1987, p.214).

Cognitive theories of learning are reflected in such areas of the instructional development process as assessment of the learners (what are the relevant features or characteristics of human learners who are about to receive instruction?); task/concept analysis which attempts to organize content in a meaningful way (what activities must learners perform in order to understand the essential features of the area of study?); and development of behavioral objectives (how is knowledge manifested and how do we detect and measure learning?) ...(Wildman, 1981,

p.18).

Although there are differences in opinions expressed within the various schools of thought on learning, Kemp and Smellie (1989) provide a number of generalizations which can be classified as psychological conditions and general principles to guide the instructional developer:

1. There must be a need, interest or desire to learn (Motivation);
2. Persons learn at various rates and in different ways (Individual differences);
3. When learners know what is expected of them, their chances for success are greater (Learning objectives);
4. Learning is easier when content and procedures to be learned are organized into meaningful sequences (Organization of content);
5. Learners should have reached an expected level of prerequisite preparation before advancing (Prelearning preparation);
6. Learning that involves emotions and personal feelings as well as intellect is lasting (Emotions);
7. Learning requires active participation, mental or physical (Participation);
8. Learning is increased with frequent information on progress (Feedback);
9. Encouragement is rewarding and a confidence builder

(Reinforcement);

10. Frequent practice and repetition, often in different contexts, contributes to long-term retention (Practice and repetition);
11. Learners need to apply or transfer the learning to new problems or situations (Application). (p.19)

These psychological conditions and general principles, derived from theories of learning, have implications both in the realm of theories of instruction and in instructional development models.

Theories of Instruction and Instructional Design

Gagnè and Briggs (1979) define instruction as a "set of events which affect learners in such a way that learning is facilitated" (p.3). As well, they differentiate between instruction and teaching:

> ...we wish to describe **all** of the events which may have a direct effect on the learning of a human being, not just those set in motion by an individual who is a teacher. Instruction may include events that are generated by a page of print, by a picture, by a television program, or by a combination of physical objects, among other things. Of course, a teacher may play an essential role in the arrangement of any of these events. Or,...the learners may be able to manage

> instructional events themselves. Teaching, then, may be considered as only one form of instruction,... (p.3)

Reigeluth (1987) defines the purpose of instructional theory as addressing two main questions: [What methods should be used in the design of instruction? When should each be used?] (p.1-2). He further classifies theories of instruction into two main categories:

> A descriptive theory of instruction describes the effects of a whole model of instruction (integrated set of strategy components), instead of just the effects of a single strategy component. A **prescriptive** theory of instruction prescribes when a given model or set of models should be used. It identifies the instructional model that should be used for a given desired outcome and condition(s). The more comprehensive an instructional theory is, the more models it prescribes for different kinds of desired outcomes and conditions. (p.2)

Heinich (1970) attributes the willingness of psychologists to address problems in learning in relation to higher mental processes to be a result of the influence of information theory and computer technology. "The impact of information theory on psychology has been extremely broad. It would be difficult to find an area in cognition or

perception that has not been affected" (p.84). He believes that information theory may provide an essential link between theories of learning and theories of instruction, and that the relationship can be broadened to include the management of instruction, as well as science in its pure and applied forms, and systems. "Learning theories are transduced into instructional theories... which are in turn interrelated along with other factors into instructional management systems. Developments in instructional theories have progressed to the point at which specific technologies of instruction... are predictably effective" (p.107-108).

Several theories of instruction have had significant influence upon the development of instructional design.

The Gagnè-Briggs theory of instruction, first developed in the 1960s, was considered the foundation of instructional theories because it was "the first major attempt to integrate a wide range of knowledge about learning and instruction (from many theoretical perspectives) into a comprehensive theory of instruction" (Petry, Mouton & Reigeluth, 1987, p.11). This model was regarded as distinct because of its use of information processing theories of learning as well as the human modelling concept introduced by Bandura.

This theory consists of three major sets of prescriptions:

(1) different methods of instruction for each of the five categories of learned capabilities (verbal information, intellectual skills, cognitive strategies, attitudes and motor skills);

(2) identification of nine events of instruction (gaining attention, informing the learner of the lesson objective, stimulating recall of prior learning, presenting the stimulus material with distinctive features, providing learning guidance, eliciting performance, providing informative feedback, assessing performance, and enhancing retention and learning transfer);

(3) provision of a way to sequence instruction based on intellectual skills (Petry et al., 1987, p.13-17).

This instructional theory utilizes the hierarchical task analysis approach:

> Gagnè suggested that instructional principles and instructional theory could best be developed after the completion of an intensive task analysis of the educational objectives. He identified eight different types of learning and described both the environmental events and the stages of information processing required for each learning category. Briggs used Gagnè's conditions and types of learning as a basis for developing procedures for instructional design.

(Saettler, 1990, p.344)

A theory of instruction based on behavioral tradition is that of George Gropper. This theory prescribes the strategy components of learner practice in the appropriate context of discriminative stimuli, eliciting cues for learning guidance, shaping of component skills such as discriminations, generalizations, associations and chains, identifying conditions and matching treatments to those conditions.

> It identifies types of objectives with which most practitioners are familiar. It analyzes each type of objective for its behavioral component skills. It identifies subject matter characteristics that could make it difficult to learn those skills. And it labels all these parameters as conditions - conditions for which suitable instructional treatments would be needed...The theory explicitly matches treatments with conditions. All this is done from a behavioral point of view. (Gropper, 1987, p.50-51)

Jerome Bruner postulates that a theory of instruction should address the nature of individuals as knowers, the nature of knowledge itself, and the nature of the knowledge-acquisition process (Bigge, 1982). Although considered to be of a cognitive affiliation, Bruner's theory contains behaviorist features. In 1966, he listed the specifications

that must be included in a theory of instruction:

(1) It must be concerned with experiences and contexts aimed at encouraging the student's predisposition to learn;

(2) It must be concerned with structuring knowledge so that it can be readily learned;

(3) It must have effective sequencing of material;

(4) It must contain a mechanism for extrinsic and intrinsic rewards as reinforcement (Saettler, 1990, p.345-346).

David Ausubel also stresses the importance of cognitive processes in the planning of instruction, as well as elements of information processing theory. His theory of instruction addresses a hierarchical organization of cognitive structure organized according to level of abstraction. Advance organizers, usually broad introductory statements given to organize the concepts and anchor a framework for the learning, are a unique aspect of his theory. Two types of advance organizers are utilized: expository organizers help explain new material, while comparative organizers are used with familiar material. Ausubel's approach is a deductive one, advocating that instruction proceed from general ideas to specific information (Saettler, 1990, p.331-332).

Lev Landa's Algo-Heuristic theory of instruction looks at "instruction from a cybernetic viewpoint in which the

learner receives feedback concerning his success in achieving a specific goal and uses that feedback to make necessary corrections for future behavior. Thus, instruction is a self-regulatory, self-correcting, goal-seeking system" (Saettler, 1990, p.349). His approach to creative thinking and problem-solving utilizes two types of procedures, algorithms (precise, unambiguous, sequential, prescribed rules) and heuristics (creative problem-solving methods, or rules of thumb). Instructional strategies are then selected to encourage the student to develop and apply the algorithms and heuristics in a sequential, step-by-step manner. This is called the "snowball method" which states that "after each step has been mastered, it should be practiced together with all the preceding steps in the algorithm" (Landa, 1987, p.113).

This algo-heuristic approach is considered a learning theory as it "analyzes and builds explanatory models of the cognitive processes that underlie expert performance, learning and decision making" and an instructional theory as it "prescribes specific methods of instruction for purposeful and accelerated development of such processes in students and novices"; and an instructional development procedure because it is a system of techniques for accomplishing these goals (Landa, 1987, p.115).

A theory of instruction which incorporates elements

from the behavioral, cognitive and humanistic psychological perspectives is the Component Display Theory of M.David Merrill. This theory classifies outcomes of learning in a two dimensional way: by content (facts, concepts, procedures, and principles) and by performance (remembering, using, and generality finding). In the delivery of instruction, attention is paid to primary presentation forms (expository presentation of general rules, specific examples, recall, and practice), and secondary presentation forms (prerequisite material, attention-focusing, mnemonics, and feedback). This theory "provides detailed guidelines for presenting stimuli, contributing to learner guidance, and promoting transfer of learning" (Kemp & Smellie, 1989, p.17).

Similar to the Component Display Theory in its multiperspective approach to prescriptive theory is Reigeluth's Elaboration Theory of Instruction, which focuses on instruction as ordered in terms of increasing complexity. This theory is innovative in its emphasis on strategies to teach the interrelationships within subject content, and its ability to allow the learner a measure of control over the selection and sequencing of content (Reigeluth, 1983).

The question is raised after reviewing a sample of instructional theories: "Is it appropriate to select one theory when designing instruction or to incorporate elements

of several?" Snelbecker (1987) suggests that for researchers and theorists, it is "best to focus on one theory when conducting research or delineating principles" (p.323). For practitioners and designers of instruction, he suggests a "systematic eclecticism" - choosing what is appropriate from a given theory or theories depending upon the range of variables and conditions in the given practical situation.

> In a sense, these theories and our efforts (as designers or as practitioners) - no matter what rationales we have to guide them - are only as 'good' as they prove to be in facilitating learning for our students, whether in education or training contexts. (Snelbecker, 1987, p.337)

The Systems Approach

Logan (1982) defines a system as a set of parts, individually and collectively relating to each other, which operate in an environment to some purpose (p.3).

The concept of a systems approach was conceived in the field of systems engineering, and found its first applications in the design of electronic, mechanical, military and space systems of the 1960s (Romiszowski, 1981).

Ludwig von Bertalanffy, the founder of general systems theory, describes the theory as a "science of wholeness or holistic entities..." (Saettler, 1990, p.353). Applications

of general systems concepts can be seen in a variety of fields:

> ...cybernetics (the study of feedback-providing mechanisms for goal-seeking behavior), systems engineering (scientific planning, design, evaluation, and development of man-machine systems), operations research (scientific control of existing man-machine systems), human factors engineering (the matching of machine requirements with user capabilities), and instructional systems design (the use of systems models specifically oriented to the production of effective and replicable instructional programs). (Salisbury, 1989, p.42)

The systems approach, as it applies to teaching and learning, draws upon concepts not only from general systems theory, but also from information science, communication, and learning theory. Systems models of instruction all contain three fundamental steps: defining of needs, stating of objectives, and developing, evaluating, and implementing the instruction (Knirk & Gustafson, 1986).

"Instructional systems design [ISD] is a relatively new concept in educational technology and has, to date, been applied primarily in industrial and military settings" (Saettler, 1990, p.350). Logan (1982) offers a definition of ISD as "a general systems approach with multiple

components called phases that, operating among a certain set of constraints, are used to produce an instructional system" (p.3).

ISD attempts to assimilate knowledge from a variety of areas, such as cognitive psychology, behavioral psychology, management theory, instructional design theory, media research, and computer technology for the ultimate purpose of improving instruction.

Briggs (cited in Saettler, 1990), as well as Gustafson and Tillman (1991), describe certain characteristics or techniques that instructional systems designs share: an integrated plan of all the components designed to solve a problem or meet a need; the planned analysis of all components in logical order; an orderly planning process with flexibility of sequencing; research-based design procedures; empirical testing (actual tryout) with revision of instruction if necessary; and evaluation of the design model.

Instructional systems models have varying numbers of steps or stages in their systems design, and may be used to develop a single lesson or an entire curriculum. Briggs and Wager (cited in Saettler, 1990) describe fourteen stages which incorporate most tasks found in system design models used to develop an entire curriculum (p.352-353) (see Figure 1).

Stage	Task
1	Analysis of needs, goals and priorities by all stakeholders.
2	Analysis of resources and constraints.
3	Selection of a delivery system.
4	Preparation of curriculum goals.
5	Design of the organization of courses.
6	Design of the organization of course units.
7	Analysis of objectives.
8	Organization of lessons.
9	Design of lessons.
10	Assessment of learner performance.
11	Development of instructional materials.
12	Empirical tryout and revision.
13	Summative evaluation.
14	Planning of teacher preparation and diffusion.

Figure 1. Stages and Tasks Common to System Design Models (Briggs and Wager, cited in Saettler, 1990, p.352-353)

The instructional system aptly fits with von Bertalanffy's notion of "system", as it "dynamically interacts with its environment - teachers, learners... Moreover, the instructional system is a system of interrelated parts that work in conjunction with each other to accomplish a number of goals" (Saettler, 1990, p.354).

Theories of instruction and theories of instructional design are similar in that they attempt to relate specific instructional events to learning outcomes. Instructional design focuses more on the broader process of developing instruction, while instructional systems theories are more concerned with the context within which instruction takes place. "Instructional theory can therefore be considered as a subset of instructional design theory, which is a subset of instructional systems theory" (Knirk & Gustafson, 1986, p.102).

Instructional Development Models

Gagnè, Briggs and Wager (1988) distinguish between the confusing use of terminology in the literature:

> Instructional systems design is the **systematic** process of planning instructional systems, and instructional development is the process of implementing the plans. Together, these two functions are components of what is

> referred to as **instructional technology**...a broader term than instructional systems and may be defined as the systematic application of theory and other organized knowledge to the task of instructional design and development. (p.20)

There are a variety of instructional design/development models seen in the literature. All models have essentially the same basic elements. Andrews and Goodson, 1980, (cited in Dick, 1981) conducted an extensive analysis of 40 instructional design models and came to a consensus that ten components were similar in all models (p.29). (see Figure 2).

Component	Description
1	Assessment of needs, possible alternative solutions to instruction, formulation of a system, identification of constraints.
2	Formulation of broad goals and detailed, observable subgoals.
3	Development of pre and postest which match goals and subgoals.
4	Analysis of goals and subgoals for types and subskill sequencing.
5	Determination of learner characteristics such as age, special aptitudes, specific entry level behaviors.
6	Formulation of instructional strategies to match subject matter and learner requirements.
7	Selection of media to implement strategies.
8	Development of courseware based on strategies.
9	Formative evaluation, diagnosis of difficulties and revision.
10	Development of materials and procedures for installing, maintaining, and periodically repairing the instructional program.

Figure 2: Components Common to Instructional Design Models (Andrews and Goodson, 1980, cited in Dick, 1981, p. 29).

One of the most widely used models of instructional design is that of Dick and Carey, 1985 (see Figure 3).

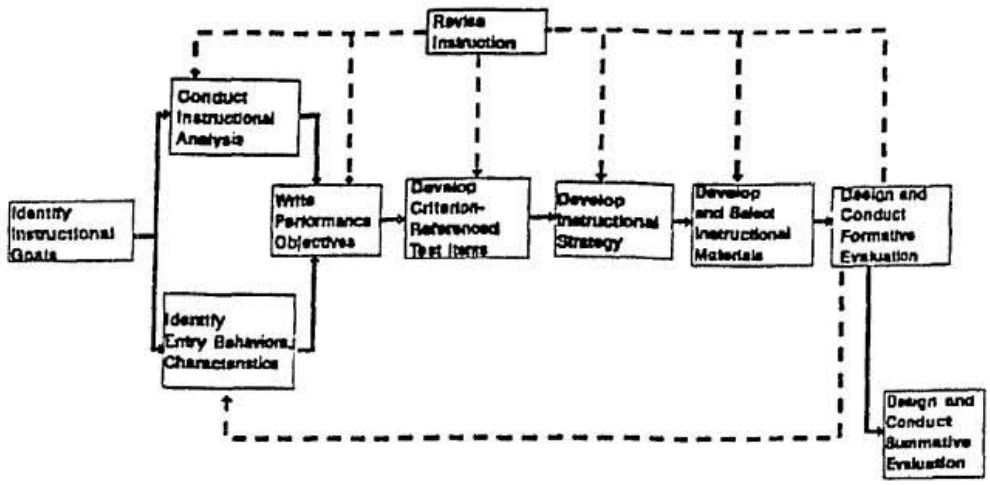


Figure 3: Dick and Carey's Model of Instructional Design (Dick and Carey, 1985, p. 2-3).

Their systems approach model for the design, development, implementation, and evaluation of instruction is based upon theory, research and considerable experience in practical application. The model includes eight interconnected boxes and a major line that shows feedback from the last box to the earlier boxes. The components of this model consist of ten sequential steps as follows:

(1) Identifying an Instructional Goal: what the learners are expected to be able to do when instruction is completed.

(2) Conducting an Instructional Analysis: a determination of what type of learning is required of the learner by identifying and analyzing subgoals into a hierarchy of procedural steps. This process is usually depicted in chart or diagram format. The purpose of the instructional analysis is to determine the skills needed to reach the instructional goal. This is also called task analysis by other designers.

(3) Identifying Entry Behaviors and Characteristics: a determination of skills that the learners must have in order to begin the program of study, and any specific characteristics that might have impact on the design of the instruction.

(4) Writing Performance Objectives: the writing of specific statements describing exactly what the learners will be able to do following the instruction.

(5) Developing Criterion-Referenced Test Items: the preparation of assessment items based directly upon the written objectives.

(6) Developing an Instructional Strategy: the development of the most appropriate methods to achieve the terminal objective. Included in this section are activities related to pre-instruction, presentation of the content, practice and feedback, and follow-through.

(7) Developing and Selecting Instruction: the production

of or acquisition of materials to be utilized in the instructional process. The word "materials" refers to printed or other media intended to convey the events of the instruction.

(8) Designing and Conducting the Formative Evaluation: conducting of a series of evaluations (one-to-one, small-group and field) with data collected to improve the instruction.

(9) Revising Instruction: data from the formative evaluation is used to re-examine the validity of the first six steps in the design plan with revisions as necessary. This is considered the final step and the first step in a repeat cycle.

(10) Conducting Summative Evaluation: this is an evaluation of the ultimate worth of the instruction, not usually performed by the designer, and is not considered a part of the design process.

The Future of Instructional Development

Gustafson, Tillman and Childs (1991) see the future of instructional development (called instructional design by these authors) intertwined with the changes that will occur within all aspects of society. "The demand for effective and efficient instruction to provide the knowledge and skill necessary for economic well-being should cause the increased

application of instructional design and the search for new knowledge of the instructional design process worldwide" (p.452).

Their prediction for the future of instructional design is organized around six main themes:

(1) Instructional design paradigms will change to accommodate future technological learning environments.

(2) Instructional design models will be altered to enhance individuals ability to become expert learners. There will be a shift from 'knowing how'or'about' to 'knowing where' and 'knowing when' (p.454).

(3) The conceptual bases upon which instructional design is founded will be broadened. There will be a shift from an emphasis on teaching to an emphasis on learning; a shift from behavioristic to cognitive approaches; a shift from procedural linear models to conceptual models that foster critical analyses. This will ultimately lead toward a theory of instructional design.

(4) Advances in the technology of information dissemination will necessitate change in the technology of delivery systems. The key to understanding the logistics of this technology will lie in understanding how humans will think and work in these technology-based environments.

(5) There will be an increased demand for individuals skilled at planning and organizing technology-based learning environments, especially related to distance education. The greatest increase will be seen in higher education, business and industry.

(6) The training of instructional designers will combine educational theory with practical experience.

Beckwith (1988) sees educational technology itself as a vehicle of social change:

> With the power of the systems approach, the promise of mastery learning and the potential to subsume and redirect all relevant resources, educational technology can effect the transformation of learning processes and learning outcomes. Further, if it is accepted that improved learning can improve individuals and that improved individuals can effect improved environments, educational technology is a vanguard of social transformation. (p.3)

Summary

Instructional development, as a subset of educational technology, derives its theory base from the historical perspectives related to learning, instruction, communication, and the systems approach.

McCombs (1986) notes that Instructional Systems

Development (ISD) models have a wide application in the worlds of education and training because of their generalized and logical flow of steps in the problem-solving process, but Davies (1981) argues that instructional development offers more that just a means to solve problems. He postulates that instructional development provides opportunities to "significantly reduce the probabilities of error both in the acquisition and execution of human performance" (p.4).

Noel and Hewlett (1981) and Medsker (1981) see instructional development as craft because of its use of heuristics, which help the various phases flow together in a systematic method. Reigeluth, Van Patten and Doughty (1981) envision the scientific approach, which relies on both science as a product and process, as valid. Sachs (1981) views instructional development as an art because of the "interaction of people, ideas, things and events" involved in the process.

> It is the developer's judgement, sensitivity and inventiveness that leads to success. Thus, even though the developer may apply principles of learning and may use various techniques or tools during a project, putting all the factors into perspective and integrating them successfully is a very personal process. It is this process involved in applying

science and craft that makes instructional development an art. (p.8)

In any event, to attain its full potential, as Davies asserts, instructional development needs an interplay of its three faces - craft, science, and art.

Nursing Education and Instructional Development

The foundation of nursing practice is the nursing process. The nursing process is a scientific problem-solving approach that nurses use when planning client care and making decisions in the clinical area. It is important that nurses be able to define problems accurately, make the best choice from the possible alternatives, safely implement a plan of care, and evaluate the effectiveness of the interventions.

The nursing process is a systematic framework composed of five phases: assessment, diagnosis, planning, implementation, and evaluation (some sources combine diagnosis and planning resulting in four components). The theoretical basis for the nursing process can be found in the systems theory, problem-solving process, decision-making process, diagnostic reasoning process, and information processing theory (Craven and Hirnle, 1992).

The nursing process is composed of a set of components

which interact together to form an orderly whole. The phases have cyclical patterns. Each of the components interact with and influence subsequent components. The phases are subsystems that merge to create a whole which is greater than the sum of its parts. Input includes assessing the patient/client and the environment. From this assessment, the nurse identifies nursing diagnoses and plans and implements nursing care. Output is the patient/client's resulting health status. Evaluation of the goals provides feedback to resulting revisions (Craven & Hirnle, 1992). Nurses must be proficient in this process to be considered effective practitioners.

Nursing education must consider not only the current social climate but a forecast of future health care needs. To further confound the planning of nursing education programs the role of nursing as a profession is changing.

> The changing demographics of the population, the changing work environment, and the changing student body call for a restructuring of nursing education. Nurses are needed who can introduce changes in nursing practice and in the organization of a resource-driven health care system, can add to the knowledge of nursing science, and can influence and shape national and local health policies. These goals call for an upgrading of professional nursing education and the construction of

> an educational system that makes sense. (Aydelotte, 1992, p.475-476)

There is also the added challenge to prepare empowered nurses for the profession. Hawks (1992) defines empowerment as "the interpersonal process of providing the proper tools, resources, and environment to build, develop and increase the ability and effectiveness of others to set and reach goals for individual and social ends" (p.609). To educate empowered nurses:

> presupposes that the learner is involved in the learning process...Practice or action is critical to empowerment...A college of nursing that accepts a philosophy of pragmatism has student interests as a primary focus. The interests and needs a student brings to college are acknowledged and constitute a starting place for learning to begin. The student is seen as capable of growth and as a participant in the learning process. The student is encouraged actively to identify problems and develop projects for study...Such a teacher is flexible, versatile, and responds to student's needs. (Hawks, 1992, p.613-614)

Reilly and Oermann (1985) (cited in Oermann & Jamison, 1989) state, "Knowledge of the subject matter and clinical competence are critical, but knowing how to teach is as

important. A teacher with knowledge and expertise in clinical practice is not a teacher if unable to communicate that knowledge to students and facilitate their learning." (p.255). Wong and Wong (1987) discuss the assumption made by some within higher educational institutions that academic qualifications within a subject area are entitlement to teach that subject. These authors believe that there is not enough emphasis placed on the specialized skills of teaching and the facilitation of learning. Kemp and Rodriguez (1992) also speculate that nurse educators may not have the necessary skills to provide instruction that is consistent, systematic, and effective, as they are usually hired to teach because of their strong clinical and academic backgrounds in nursing. These authors believe that an instructional development model is particularly suitable for nursing and can provide the means for accomplishing effective instruction and the means for meeting the future challenges of nursing education.

There are many benefits to applying the instructional development process. Once applied, the principles of instructional development assure congruence of objectives, instruction, and evaluation. Instructional development increases the effectiveness, efficiency,and relevance of instruction. Effectiveness means that more of the objectives are met. Efficiency means that the objectives

are met quickly and this can be related to cost savings. Relevance means the learners are learning what they need to learn. The careful sequencing of objectives assures learners have prerequisite knowledge and skills (Gustafson & Tillman, 1991). These benefits are fundamental to the process of analyzing educational problems and devising solutions to those problems. The process of instructional development can greatly enhance the ability of nursing education to meet the challenges of future nursing education.

According to Kuhn (1970), "During the period when the paradigm is successful, the profession will have solved problems that its members could scarcely have imagined and would never have undertaken without commitment to the paradigm. And at least part of that achievement always proves to be permanent" (p.24-25). According to the future trends, the paradigms of instructional development and of nursing education are both changing and the new paradigm of instructional development may play an even bigger role in the new paradigm for nursing education.

CHAPTER 3

Design of the Study

Introduction

A study was undertaken in order to determine whether nurse educators possessed knowledge of instructional development and utilized this knowledge base during instructional planning. This study used a social science survey research design, with a written survey instrument which questioned respondents on a selected number of the instructional development competency areas as outlined in the Competencies for the Instructional/Training Development Professional (AECT, 1982).

LoBiondo-Wood and Haber (1990) state that " the broadest category of non-experimental research is the survey study. Survey studies collect detailed descriptions of existing phenomena and use the data to justify and assess current conditions and practices or to make more intelligent plans for improving them" (p.167).

There are a number of advantages to the use of surveys as a means of research. A significant amount of information can be obtained from the population. "If a sample is representative of the population, a relatively small number of respondents can provide an accurate picture of the target

population" (LoBiondo-Wood & Haber, 1990, p.168). Properly constructed surveys also allow for respondent anonymity and reduce the possibility of interviewer bias. "Questionnaires and paper and pencil tests are most useful when there is a finite set of questions to be asked and the researcher can be assured of the clarity and specificity of the items" (Lobiondo-Wood & Haber, 1990, p.236). Polit and Hungler (1993) cite one of the main advantages of using questionnaires to conduct research as "the opportunity for careful construction and validation of questions in advance of conducting the study" (p.62).

But survey research also poses distinct problems, that of responses made due to social desirability (the need to make a favorable impression) and refusal of subjects to complete and/or return the questionnaire. "All methods that involve verbal reports, however, share a problem with accuracy. There is often no way to know whether what we are told is indeed true" (LoBiondo-Wood & Haber, 1990, p.236).

Atkinson (1991) states:

> By their very nature, descriptive survey findings do not allow statements of 'fact' to be made about a population parameter. Indeed, any statement about a population, based on sample findings, can only be a probability statement, meaning that there is a chance that it could be wrong. The challenge is to reduce the

> chance of this final statement being wrong to an acceptable and calculable level. This can only be achieved by giving attention to the design of surveys...(p.196)

Merriam and Simpson (1989) also concur that the major limitation to descriptive research is the lack of predictive power. " The researcher discovers and describes 'what is', but is unable to generalize or predict 'what will be'" (p.63).

Borg and Gall (1989) summarize the value of survey research by stating that "while it cannot establish causal relationships with any degree of certainty, it can be used to explore a variety of relationships... in a relatively economical way" (p.421).

The Population

According to the ARNN, there were approximately 130 full and part-time nurse educators licensed and practicing in 1992. Since a number of these educators teach within the staff development departments of institutions, a number are hired on a sessional basis to teach courses at Memorial University, and others are hired to work only in the clinical setting and do not have involvement in classroom teaching and course development, a population number of 75

was deemed accurate - approximately 15 located at each of the five schools of nursing in the province.

Fifteen questionnaires (see APPENDIX C) were sent to the Directors of each of the five schools with a letter explaining the purpose of the study (see APPENDIX D for sample correspondence). An explanatory letter was included within each questionnaire to also define the purpose of the study and to give directions for return of the document to the prospective respondents. Participation in the study was entirely voluntary.

Twenty-nine questionnaires (39%) were returned completed.

Research Question

Brown and Kennedy (1988) distinguish between two types of instructional development - functional which is a step-by-step, algorithmic approach and conceptual which is a problem-solving, heuristic approach.

> Differentiating between the functional and conceptual levels of instructional development is not easy. The differentiation is not related to the size or scope of the instructional development activity, nor is it related to the number of people involved in the activity. Rather than discrete levels, functional and

> conceptual instructional development lie along a continuum. The differentiating variable is the mind-set which the instructional developer brings to the activity. (p.1)

Brown and Kennedy (1988) document that "conceptual instructional development is, then, the logical application of the notion of systems approach" (p.3). At this level, the focus is on the how and why of the process - awareness of theories of learning and instruction and how they can be applied when developing solutions to instructional problems. At this level also, instructional development becomes systemic rather than systematic. The main research question in this study is therefore: What is the level of nurse educators' knowledge and use of the instructional development process during instructional planning?

Several questions are subsumed within this main research question:

1. If nurse educators use instructional development, is it a functional or conceptual approach?
2. If nurse educators possess instructional development knowledge, from where did they acquire this knowledge?

Development of the Research Instrument

This study is one of a series of studies that has assessed instructional development knowledge and competency levels among different groups of educators in Newfoundland.

Gallant (1989), Graham (1991), and Gorman (1994) utilized interview guides to collect data for their research. Tobin (1989) and Thomey (1991) developed written survey instruments. These tools were used as a basic framework for the development of the instrument used in this study.

The AECT Division of Instructional Development published a list of sixteen core competencies for the instructional/training development professional in August, 1982. This list of competencies was developed over a three year period by a specially appointed task force within the Association for Educational Communications and Technology. For the purposes of this study it was felt that some of these competencies, such as the planning and monitoring of instructional development projects and the promoting the diffusion and adoption of the instructional development process for example, were not applicable to nurse educators.

Other competencies were incorporated in the research instrument, as well as most of the components of Dick and

Carey's model of instructional design (1985).

Polit and Hungler (1993) define validity as "the degree to which an instrument measures what it is supposed to measure" (p.249). As well, they explain:

> Content validity is concerned with the sampling adequacy of the content area being measured. Content validity is of particular relevance to people designing tests of knowledge in a specific content area. (p.250)

A content analysis of the two sources, the AECT list of core competencies and the instructional design model of Dick and Carey (1985) provided the framework for the establishment of content validity for the questions on the research instrument.

Barker (1991) cites that the first requirement of a questionnaire is its suitability to collect data which can be used to test the research hypothesis or answer the research question (p.215). As well," the central role of language, and the general context in which the questions are set (the frame of reference), and the nature of the responses expected (the information level) " must be acknowledged (p.216).

Sudman and Bradburn (1985) and Barker (1991) were reviewed for specific guidelines for the development of the format of the questionnaire. Assessment of demographic information was elicited through a closed -

response format with pre-assigned categories of responses. In order to assess nurse educators' discrete knowledge and use of instructional development constructs, an open-ended question format was developed. Open-ended questions permit the respondent to discuss personal feelings, recollections or views on the topic, and permit the researcher to evaluate both attitude and information levels of the respondent (Barker, 1991, p.217-218).

The initial draft of the instrument with 65 questions was pilot-tested in October of 1993 with three nurse educators employed in the Department of Staff Development at a local hospital. These individuals were comparable in educational preparation and nursing experience to the research population. These nurses also had experience in course development, although within the hospital staff courses are usually of shorter duration than those for full-time students.

As a result of the pilot-test, two questions in the demographic information section were deleted as unnecessary, one question was reworded because its meaning was unclear, and one question was deleted because it was redundant.

The final result was a survey instrument of 62 questions (see APPENDIX C).

Administration of the Study

Fifteen questionnaires were sent to the Directors of each of the schools of nursing in the province during the second and third weeks of November, 1993. Explanatory letters were included for the Director and each prospective respondent. A contact person was located in each of the schools who agreed to collect the completed forms and return them to the researcher by December 10th, 1993. These individuals were contacted by telephone on December 20th, 1993 to remind them about the study and necessity of encouraging their colleagues to complete the form. A "Thank You" card was sent to the Director of each school on January 6th, 1994. This message thanked those who had taken time from their busy schedules to participate, and also encouraged those who had not done so to complete the questionnaire. Twenty-nine of the seventy-five questionnaires were returned completed.

Data Analysis Procedures

Polit and Hungler (1993) state:

Statistics are classified as either descriptive or inferential. **Descriptive statistics** are used to

> describe and synthesize data. Averages and percentages are examples of descriptive statistics. Actually, when such indexes are calculated on data from a population, they are referred to as **parameters**. (p.272)

For the purposes of this study, data were analyzed and reported utilizing frequencies and percentages. A list of key terms was developed for each of the survey questions related to the instructional development constructs. Presence of these terms or synonyms in the response indicated that the nurse educator had knowledge of the construct.

McLaughlin and Marascuilo (1990) state:

> A test of reliability can be done by using a second researcher. This second reader would follow the stated rules and match the verbal, behavioral, or pictorial information to the categories used by the original researcher. The original researcher would then check to see how well they agreed in their classifications. In quantitative research, it is the rule rather than the exception for different researchers to separately examine the identical data and independently assign the information to mutually exclusive and exhaustive categories. (p.152)

A test of inter-rater reliability was conducted with two individuals - a nurse educator with experience in

instructional development and an instructional developer at Memorial University. The results of these reviews indicated that the categories of responses and themes selected by the researcher were appropriate.

CHAPTER 4

Report and Analysis of Results

Introduction

The purpose of this study was to determine nurse educators' knowledge and use of the instructional development process during instructional planning. This data was collected by means of a survey questionnaire.

Organization of the Findings

Results of this study were analyzed according to a selected number of the Division of Instructional Development Competencies for the Instructional/Training Development Professional (AECT, 1982) which included conducting of a needs assessment, analysis of learner characteristics, the writing of behavioral objectives, analysis of tasks/concepts, measurement of student learning, development of instructional strategies and materials, and evaluation. In addition data were collected on nurse educators' knowledge of curriculum development and educational technology, as well as use of theories of learning, criterion-referenced testing, and teaching strategies.

The findings are organized into three sections. Section A describes respondents' demographic information.

Section B delineates respondents' knowledge and use of discrete instructional development components. Section C describes respondents' advanced knowledge of instructional development constructs.

The results are reported in table format, in terms of frequencies and percentages. In cases where the frequency of respondents do not total 29 or the percentages do not total 100%, the causes are failure of the sample population to reply to the specific question or respondents's utilizing multiple responses.

Demographic Information

Twenty-nine nurse educators responded to Section A of the questionnaire. The majority of respondents hold a baccalaureate in nursing, and have been teaching for 10 or more years (see Table 1). Of the three degrees held in education, two are in Vocational Education. One respondent has undergraduate degrees in both nursing and education. Seven respondents (24%) have completed Master's programs. Of the Master of Education degrees cited one was Educational Psychology, one was Educational Administration and one was Learning Resources. More than 80% of respondents have completed a variety of courses in education, both at the undergraduate and graduate levels. The most frequently cited were Curriculum/Program Development (5), Exceptional

Children (4), and Instructional Development (3). One respondent commented that educational concepts, such as theories of learning, were incorporated into many of the nursing courses in the undergraduate program.

Table 1

Respondents' Demographic Information (N=29)

Demographics	Frequency	%
Degrees held		
B.N.	25	86
B.Ed.	3	10
B.Sc.	2	7
M.Ed.	3	10
M.N.	2	7
M.Sc.	2	7
Years of teaching experience		
0-5	6	21
6-9	5	17
10-14	9	31
15-19	5	17
20+	4	14
Completed education courses		
Yes	25	86
No	4	14

More than 30% of respondents attested to having formal knowledge of the instructional development process. Almost all knowledge was obtained through university courses, inservice education and professional literature.

More than 75% of respondents stated that they had formal knowledge of the curriculum development process. This knowledge had also been obtained through multiple sources - professional literature, inservice education, experience on curriculum committees, and university courses (see Table 2).

Table 2

Respondents' Knowledge of Instructional Development and Curriculum Development Processes (N=29)

Respondents' Knowledge	Frequency	%
Instructional development (ID) (N=29)		
No	18	62
Yes	11	38
ID knowledge obtained from (N=11)		
University courses	8	73
Inservice education	8	73
Professional literature	7	64
Curriculum development (CD) (N=29)		
Yes	22	76
No	7	24
CD knowledge obtained from (N=22)		
Professional literature	17	77
Inservice education	16	73
Experience on curriculum committees	15	68
University courses	11	50

Note: A discrepancy is noted between the number of reported courses completed in Instructional and Curriculum Development (Question 4) and the number of respondents reporting knowledge obtained from university courses (Questions 6 and 8).

Instructional Development Knowledge and Use

Instructional development.

Section B of the survey instrument asked nurse educators to respond to discrete instructional development concepts in an open-ended response format.

Definitions of the term "instructional development" by nurse educators took on three distinct meanings (see Table 3). Only three responses were considered to resemble the global definition of instructional development, as defined: "a systematic approach to the design, production, evaluation, and utilization of complete systems of instruction, including all components and a management pattern for using them;..." (AECT, 1977, p.20). The other responses were focused upon the how of teaching, and knowledge of theory of teaching.

Eighteen nurse educators (62%) listed theories that they felt would have application to the instructional development process. Theories of learning and human development we the most frequently cited as applicable (see Table 3).

Table 3

Respondents' Knowledge of Instructional Development Definition and Theory Base

Concept	Frequency	%
Meaning of ID (N=29)		
Planning/development of how to teach	15	52
Knowledge/theory of teaching	11	38
Systematic planning and application of theories	3	10
Underlying theories (N=18)		
Learning	16	89
Human development	15	83
Teaching/learning	4	22
Systems	3	17
Instructional	3	17
Communication	1	6
Educational psychology	1	6

Curriculum development.

All nurse educators who responded differentiated between curriculum and instructional development (see Table 4). Almost all respondents viewed curriculum development in a broad spectrum, which incorporated philosophy and goals as

well as objectives and content. All respondents indicated that instructional development took on a more focused approach to actual teaching. Only one nurse educator described curriculum development as revolving around a philosophical perspective, and instructional development having a psychological focus.

Table 4

Respondents' Perceived Difference Between Instructional Development and Curriculum Development

Perceptions	Frequency	%
ID (N=26)		
Delivery/methods	18	69
More focused than CD	3	12
Interactions/content/ application	3	12
Framework for the educator	2	8
CD (N=29)		
Content/concepts	11	38
Philosophy/goals/ objectives/content map/decision-making	9	31
Broad/whole picture	7	24
Course development	2	7

Educational technology.

More than 50% of the respondents documented that they were familiar with the term "educational technology" (see Table 5). Fifteen nurse educators (52%) supplied their meaning for the term, and almost all these respondents defined educational technology in terms of the use of audio-visual resources as an adjunct to teaching. Only one respondent gave the conceptual definition as a process for analyzing educational problems and developing solutions to those problems (AECT, 1977). Almost all respondents saw educational technology as an aid or means for instructional development. Again, only one nurse educator was aware that instructional development is also considered by some educators to be a subset, theory-based application of educational technology.

Table 5

Respondents' Knowledge of Educational Technology

Knowledge	Frequency	%
Familiarity with term (N=29)		
Yes	15	52
No	14	48
Definition (N=15)		
Use of resources/ AV aids	14	93
Process for analyzing educational problems and developing solutions	1	7
Relationship to ID (N=15)		
Technological means	12	80
Component of ID	2	13
ID subsystem of educational technology	1	7

Twenty-five percent of respondents felt that instructional development would best be fitted at the curriculum development stage and 25% at the curriculum implementation stage (see Table 6). More than 30% of the remaining respondents felt that instructional development

had impact on more than one curricular stage.

Table 6

Respondents' Perceptions of Instructional Development's Fit Within the Curriculum Stages (N=28)

Stage	Frequency	%
Curriculum development	7	25
Curriculum implementation	7	25
Impact on all three stages	6	21
Both development and implementation	4	14
Curriculum determination	3	11
Planning stage	1	4

Needs assessment.

Almost all nurse educators in the sample group were familiar with the term "needs assessment" (see Table 7). More than 50% of respondents focused on the analysis of needs specific to learners and the remainder highlighted an analysis of a general learning need. This analogy is congruent with Dick and Carey's (1985) definition of needs assessment as problem identification - "a gap between the way we would like things to be and the way they presently

are" (p.13). No one discussed the need to consult with all stakeholders in the educational process, such as the community as well as the students. All respondents proposed to conduct a needs assessment through formal means with interviews, surveys and questionnaires. Eleven nurse educators in the sample group had actually participated in such a process.

Table 7

Respondents' Knowledge and Use of Needs Assessment

Needs Assessment	Frequency	%
Familiarity (N=29)		
Yes	28	97
No	1	3
Definition (N=27)		
Analysis specific to learners	14	52
Analysis of general need	13	48
Process (N=26)		
Assess through survey/ interview/ questionnaire	26	100
Participation (N=28)		
No	17	61
Yes	11	39

Learner analysis.

Thirty-two percent of respondents verified that they were familiar with the term "learner analysis" (see Table 8). Forty-one percent of nurse educators responded to further questions on learner analysis. Those who responded

to the definition and proposed process gave appropriate answers. Learner characteristics such as age, educational background, motivational level, learning style, past experience and knowledge level were felt by nurse educators to be important and were considered during the planning of their instruction (see Table 9).

Table 8

Respondents' Knowledge and Use of Learner Analysis

Learner Analysis	Frequency	%
Familiarity (N=28)		
No	19	68
Yes	9	32
Definition (N=12)		
Assessment of learner characteristics/ needs	12	100
Process (N=12)		
Use of interviews/ transcripts/pretests/ surveys	12	100

Table 9

Respondents' Perceptions of Important Learner Characteristics

Characteristic	Frequency	%
Important (N=27)		
Age	16	59
Educational background	16	59
Motivational level	12	44
Learning style	11	41
Past experience	9	33
Developmental stage	7	26
Knowledge level	6	22
Actually considered (N=27)		
Educational background	14	52
Age	11	41
Motivational level	10	37
Past experience	10	37
Learning style	8	30
Knowledge level	5	19
Developmental stage	2	7

Theories of learning

Approximately 70% of nurse educators who responded documented that they were familiar with theories of learning (see Table 10). Approximately half of the nurse educators cited certain theories as applicable to the instructional development process, and approximately 40% noted that they used learning theories in their instructional planning processes. The most frequently cited theories in relation to instructional development were those of the humanistic/caring, behaviorist, and cognitive, as well as adult learning. The most frequently cites theories actually utilized by nurse educators were Knowles' adult learning theory, Bloom's taxonomy of educational objectives and Kolb's experiential learning theory. Several nurse educators commented that the focus of theories used depended on the particular curriculum development process being implemented.

Table 10

Respondents' Knowledge and Use of Theories of Learning

Theory of Learning	Frequency	%
Familiarity (N=27)		
Yes	19	70
No	8	30
Applicable to ID (N=15)		
Humanistic/caring	10	67
Behaviorist	7	47
Cognitive	6	40
Adult learning	5	33
Experiential	5	33
Social learning	3	20
Memory/cognition/ language	3	20
Growth & development	3	20
Used in instructional planning (N=12)		
Knowles/adult learning	5	42
Bloom	3	25
Kolb	3	25
Skinner	2	17
Piaget/Ausabel/Bruner/ Gagnè/Rogers/ Experiential	1	8

Behavioral objectives.

Almost all nurse educators who responded attested to familiarity with the term "behavioral objectives" (see Table 11). Dick and Carey (1985) discuss several other terms that have been substituted for the word "behavioral". These terms seen in the literature are "performance objective" and "instructional objective" (p.99). Mager (1962) delineates three components to a well-written objective: identify the specific behavior; describe the important conditions under which the behavior will be expected to occur; and specify the criteria of acceptable performance by describing how well the learner must perform to be considered acceptable (p.12).

All nurse educators who responded were knowledgeable concerning the behavioral component of objectives, however less than 20% mentioned the need for specific conditions to be included, and less than 10% discussed criteria for acceptable performance. A review of sample behavioral objectives listed by respondents indicated better results in terms of the presence of the three components. All respondents described a specific behavior; almost 50% listed specific conditions; and more than 25% included criteria for acceptable performance.

Fifty percent of respondents cited Bloom's Taxonomy as their method for classifying/sequencing objectives. This

taxonomy is known to many nurse educators as it is the foundation used by the Canadian Nurses' Association Testing Service (CNATS) to classify cognitive abilities required of candidates for the comprehensive licensure examination (CNA, 1977, p.7). More than 90% of respondents cited familiarity with the objective hierarchies of Bloom and listed the three domains of cognitive, affective and psychomotor, or the six categories of the cognitive domain (knowledge, comprehension, application, analysis, synthesis and evaluation). The nursing process utilizes these categories and refines them into three divisions : knowledge/ comprehension, application and critical thinking. Only one nurse educator attested to knowledge of Gagnè's conditions of learning. Of 23 respondents, 19 (83%) felt that behavioral objectives were useful as a guide for instructors to plan content, teaching methods and evaluative measures, and as a means of direction for students. Two nurse educators said that they found it difficult to write objectives that were observable and measurable.

Table 11

Respondents' Knowledge and Use of Behavioral Objectives

Behavioral Objectives	Frequency	%
Familiarity (N=29)		
Yes	26	90
No	3	10
Definition (N=26)		
Behavior/expectations	26	100
Conditions	5	19
Criterion	2	8
Use (N=27)		
Behavior	26	100
Conditions	12	46
Criterion	7	27
Method of classifying/sequencing (N=18)		
Bloom's taxonomy	9	50
Skill/competency	4	22
Nursing process	2	11
Curriculum committee	2	11
Knowledge of hierarchies (N=23)		
Bloom/nursing process	22	96
Gagnè	1	4

Concept/task analysis.

Only 11 respondents (39%) attested to familiarity with the terms "concept" or "task analysis" (see Table 12) while only eight nurse educators attempted to define the meaning of the terms. Of the eight respondents all described a process of breaking down concepts or tasks in component parts of theory, principles and skills. This is congruent with the definition given by Dick and Carey (1985), although these authors use the term "instructional analysis" to describe "the identification of relevant subordinate skills required for a student to achieve the goal" (p.32). Dick and Carey also classify the goal into one of Gagnè's domains of learning - psychomotor skills, intellectual skills, verbal information and attitudes.

Twenty-eight percent of the respondents documented that they had participated in a process of concept/task analysis. Three-quarters of these respondents described breakdown of skill(s) into component parts, from the simple to the complex, which is a fundamental part of teaching psychomotor skills in nursing education. Two nurse educators described an academic exercise involving defining a concept in nursing, reviewing the literature and assessing its relevance to nursing knowledge development.

Table 12

Respondents' Knowledge and Use of Concept/Task Analysis

Concept/Task Analysis	Frequency	%
Familiarity (N=28)		
No	17	61
Yes	11	39
Definition (N=8)		
Breaking down into component parts/steps	7	88
Evaluation of idea/ behavior	1	13
Participation (N=13)		
Yes	8	62
No	5	38
Process (N=8)		
Simple to complex hierarchy of tasks	6	75
Literature/concept review	2	25

Sequencing of content.

When asked to describe their method(s) for sequencing the content of the material they had to teach, 17 respondents (63%) delineated a procedure for building from simple concepts to complex content, or basic to advanced

nursing care (see Table 13). Five nurse educators (19%) preferred to follow the textbook or course outline when sequencing content, as this gave the course a sense of order and progression. Four respondents (15%) utilized a method of outlining theory and then giving practical examples to show the application.

Table 13

Respondents' Methods for Sequencing Teaching Content

(N=27)

Method	Frequency	%
Proceed from simple to complex	17	63
Follow textbook/course outline	5	19
Proceed from theory to application	4	15
Use the nursing process	1	4

Measurement of student learning.

More than 90% of nurse educators documented that they developed their own tests to measure student learning (see Table 14). The most frequently cited paper and pencil tests were multiple choice and short answer. Assignments and

group activities were also discussed. More than 30% of those responding had also developed psychomotor/skills mastery testing mechanisms as well. Three nurse educators listed use of the National League for Nursing examination, which is a standardized test from the United States.

The most frequently cited guide(s) used to develop tests were listed as individual school policy/guides and the Canadian Nurses' Association (CNA) blueprint for comprehensive examination for nurse registration/licensure (CNA, 1977). Since most schools of nursing utilize this blueprint on a regular basis, the guide appears to be the most widely acceptable. Two respondents cited objectives as their guide in test development.

Table 14

Respondents' Use of Tests to Measure Student Learning

Tests	Frequency	%
Self-developed (N=29)		
Yes	27	93
No	2	7
Self-developed types (N=27)		
Multiple choice	25	93
Short answer	14	52
Psychomotor/skills mastery	9	37
Assignments/group activities	4	15
Guides used to develop (N=27)		
School policy/guide	11	41
CNA blueprint	10	37
Test banks/experience	6	22
Nursing process	4	15
Bloom's taxonomy	2	7
Objectives	2	7

Development of criterion-referenced tests.

The Canadian Nurses' Association recently released its blueprint for the development of criterion-referenced registration examinations (CNA, 1993) and all schools of nursing are beginning to prepare for the implementation of this type of licensure mechanism in 1995. Therefore, the majority of nurse educators in the survey attested to familiarity with the term "criterion-referenced tests". All nurse educators who responded to the definition delineated the meaning in terms of achievement that is related specifically to objectives or to competencies. These definitions are in keeping with the definition of criterion-referenced examination as " a test that measures the degree of command of a specified content/skills domain or list of instructional objectives (CNA, 1993, p.17), and Dick and Carey (1985) as a "test composed or items that directly measure the behaviors in a given set of behavioral objectives (p.108).

Although only three nurse educators affirmed that they had developed criterion-referenced tests, five responded to the discussion of the process. Again, all of those responding described a procedure for development of tests based on objectives or necessary skills/competencies.

It is interesting to note that in Table 14 only two respondents used objectives to guide test construction.

Table 15

Respondents' Knowledge and Use of Criterion-Referenced Tests

Criterion-Referenced Tests	Frequency	%
Familiarity (N=29)		
Yes	27	93
No	2	7
Definition (N=21)		
Competency-based achievement	15	71
Objectives-related achievement	6	29
Participation (N=28)		
No	25	89
Yes	3	11
Process (N=5)		
Developed based on necessary skills/ competencies	3	60
Developed based on course objectives	2	40

Development of instructional strategies and materials.

Dick and Carey (1985) define instructional strategy as "the general components of a set of instructional materials and the procedures that will be used with those materials to elicit particular learning outcomes from students" (p.136). They list five major components to an instructional strategy: preinstructional activities, information presentation, student participation, testing, and follow through.

Seven respondents indicated that they were familiar with the term "instructional strategy" (see Table 16). Of the 14 nurse educators who defined their meaning of the term, 12 (86%) considered it to relate to the techniques/ methods of teaching. Two respondents felt that the term was synonymous with instructional development. No one discussed preinstructional activities, testing and follow through as part of the instructional strategy development process.

Table 16

Respondents' Knowledge of Instructional Strategies

Instructional Strategies	Frequency	%
Familiarity (N=26)		
No	19	73
Yes	7	27
Definition (N=14)		
Techniques/methods for teaching	12	86
Synonymous with ID	2	14

The most frequently cited methods of selecting instructional materials by nurse educators were utilization of library, school and community resources, and materials specific to type of content and type of learners (see Table 17). Several respondents commented that the choice of instructional materials depended on the circumstances, time constraints, applicability to the situation, and the domain of learning most relevant to the topic. These responses indicate a problem-solving approach to the choosing of the most appropriate instructional materials for the situation. Only one respondent used objectives as a basis for the selection of instructional materials.

Table 17

Respondents' Methods of Selecting Instructional Materials

(N=28)

Method	Frequency	%
Library/school/community resources	10	36
Based on content	7	25
Based on learners	6	21
Based on experience	4	14
Availability of resources	4	14
Consultation with colleagues	4	14
AV aids review	3	11
Instructor guides	1	4
Based on objectives	1	4

Nurse educators participating in the study listed a wide variety of self-developed instructional materials (See Table 18). The most frequently cited were games, overhead transparencies, handouts/worksheets, slide/tapes and scenarios/case studies. There were a number of samples of materials cited by only one respondent each, which were not included in the table representation. Examples of these materials included graphs, cartoons, computer-assisted

instruction, role-plays, puzzles, group discussion guides, reference kits.

Table 18

Respondents' Self-Developed Instructional Materials

(N=27)

Instructional Materials	Frequency	%
Games	13	48
Overhead transparencies	12	44
Summary sheets/handouts	10	37
Scenarios/case studies	8	30
Slide/tapes	7	26
Self-learning modules	5	19
Skills/lab. guides	4	15
Posters/flip charts	4	15
Videos	4	15
Simulations	3	11

Teaching strategies.

Nurse educators regularly employed an assortment of teaching strategies (see Table 19). Use of audio-visual resources, lectures of varying lengths, group discussion, games and case studies were the most frequently cited. Although group work and games were delineated most often as

superior teaching strategies because of smaller group size and active participation by students, fifteen respondents (52%) commented that the choice of strategy was definitely situation-specific and depended on the topic to be taught.

Table 20 lists respondents' method/guide for selecting learning activities. The most frequently listed were related to the specific content and the specific learners involved, which again indicates that choice of learning activities is specific to the circumstances.

Table 19

Respondents' Regularly Used Teaching Strategies

(N=29)

Teaching Strategies	Frequency	%
Audio/visual resources	24	83
Lecture	22	76
Group discussion	17	59
Games	15	52
Case studies	10	34
Small group projects	9	31
Role-playing	8	28
Independent study	7	24
Question/answer periods	6	21
Simulations	5	17
Guest speakers	5	17
Demonstration	4	14
Superior teaching strategies		
Group work and games	5	17
Discussion, role play, audio-visual usage	4	14
Demonstrations	3	10
Case studies	2	7

Table 20

Respondents' Method/Guide for Selecting Learning Activities

(N=20)

Method/Guide	Frequency	%
Based on content	6	30
Based on learners	5	25
Based on objectives	3	15
Based on previous experience	3	15
Based on teaching/ learning theory	2	10
Based on instructor's guide	2	10
Based on needs assessment	1	5
Based on situation	1	5

Evaluation.

AECT (1977) defines evaluation as "the making of judgments about the value, for some purpose, of ideas, works, solutions, methods, materials, etc." (p.64). Dick and Carey (1985) and Knirk and Gustafson (1986) delineate evaluation in terms of two main types, formative and summative.

> **Formative** evaluation looks at the process of learning and teaching while the instructional design is being developed and the materials produced...**Summative** evaluation is performed near the conclusion of the teaching/learning process to draw inferences or conclusions about the effectiveness of the instruction. Some say formative evaluation is to improve, whereas summative evaluation is to prove. (Knirk & Gustafson, 1986, p.215-216)

Nurse educators in the study defined evaluation globally in terms of assessment of objectives met, assessment of learning, measurement of student performance and collection of information (see Table 21). In the types of evaluation used, examinations ranked highest while the categories of formative and summative evaluation followed. Examples of formative evaluation included direct observation of students, use of assignments, term examinations and students' self-evaluation. Examples of summative evaluation included student feedback on course and instructor, final examinations and written clinical progress reports.

By far the most important basis that nurse educators described for the evaluation of their instruction is the student feedback that is received in classroom and clinical evaluation (see Table 22). Respondents also relied on objectives, test results and peer review to give them

indications as to the effectiveness and efficiency of their instruction.

Table 21

Respondents' Knowledge and Use of Evaluation

Evaluation	Frequency	%
Definition (N=29)		
Assessment of objectives met	9	31
Assessment of learning	8	28
Measurement of performance/behavior	8	28
Collection of information	4	14
Types used (N=29)		
Examinations	13	45
Summative	11	38
Formative	9	31
Direct observation	9	31
Course/instructor	9	31
Assignments	8	28
Student self-evaluation	7	24
Clinical progress	7	24
Lab. tests	4	14
Individual feedback	4	14

Table 22

Respondents' Basis for Evaluation of Instruction

(N=28)

Basis for Evaluation	Frequency	%
Student feedback (classroom and clinical evaluation tools)	27	96
Objectives	7	25
Test results	5	18
Colleagues/peer review	4	14

When asked what they felt should be evaluated in an instructional program, respondents listed a comprehensive description of all aspects of a program (see Table 23). As well, over 80% of respondents felt that testing mechanisms should be developed before instruction begins (see Table 24), which is advocated by Dick and Carey, and in fact by all instructional development theorists.

Table 23

Respondents' Views of What to Evaluate in an Instructional Program (N=28)

Components of Instructional Program	Frequency	%
Program objectives	16	57
Prcgram content	13	46
Evaluation methods (student, instructor, course)	13	46
Teaching strategies/ methods	12	43
Learners	12	43
Instructors	7	25
Purpose/goals/philosophy	5	18
Resources	4	14
Student/teacher interactions	3	11

Table 24

Respondents' Views as to Most Appropriate Time to Develop Testing Mechanisms (N=29)

Time	Frequency	%
Before instruction	24	83
During instruction	3	10
After instruction	2	7

Nurse educators received feedback on their instruction through three main sources, the most predominant of which is student feedback (see Table 25). This information is used primarily as a guide for change and a means to improve or modify the instruction.

Table 25

Respondents' Source and Use of Feedback on Instruction

(N=29)

Feedback on Instruction	Frequency	%
Source		
By students (classroom and clinical)	27	93
By management (performance appraisal)	12	41
By peers	5	17
Use		
Guide for change	13	45
Improve/modify instruction	10	34
Course revisions	3	10

Advanced Instructional Development Knowledge

Dick and Carey (1985) define a system as "a set of interrelated parts, all of which are working together toward a defined goal" (p.2). These authors further relate systems theory to instruction:

> First, the instructional process itself can be viewed as a system. The purpose of the system is

> to bring about learning. The components of the system are the learners, the instructor, the instructional materials, and the learning environment. These components interact in order to achieve the goal. (p.3)

Brown and Kennedy (1988) describe functional instructional development as algorithmic, a step-by-step approach to instructional development activity, and conceptual instructional development as a problem-solving activity or heuristic. In the problem-solving approach there is no one best solution. Everything is situation-specific (p.1).

Section C of the survey instrument asked those nurse educators who felt that they had a good foundation in instructional development to respond to four questions considered to indicate advanced knowledge of instructional development. Of the twenty-nine nurse educators participating in the study, a total of eight attempted to complete Section C. Only five and four, respectively, responded to parts two and three of Section C.

General systems theory.

Eight nurse educators replied that were familiar with General Systems Theory (see Table 26). Seven of the respondents (88%) discussed the interrelationship and

interconnectness of various parts within a whole. No one mentioned any theorists associated with General Systems Theory. Several nurse educators gave an example of the systems of the human body to show their awareness of the concept.

Six nurse educators attempted to identify a relationship between General Systems Theory and instructional development. Four (67%) were able to see the instructional process as a system itself, although no one identified all the components (learners, instructor, instructional materials and learning environment).

Systematic versus systemic approach.

All five respondents who replied to the differentiation between systematic and systemic approaches to the development of instruction were in agreement that systematic referred to a step-by-step, methodological approach. Three nurse educators (60%) related their definition of systemic back to systems theory and discussed the interrelationship of the parts with the whole. Two respondents (40%) discussed a functional method of putting all the steps of the process together.

Algorithms and heuristics.

Four nurse educators differentiated between the terms

algorithms and heuristics. All of these respondents were knowledgeable concerning algorithms, and described these in terms of the following of a set of rules, which is congruent with Landa (1987). All respondents also demonstrated a knowledge of the term heuristic as well, although two nurse educators discussed trial and error as a methodology, and two discussed the use of analysis and critical thinking in a problem-solving process.

Table 26

Respondents' Knowledge of Advanced Instructional Development Concepts

Knowledge	Frequency	%
General Systems Theory		
Definition (N=8)		
Interrelationship parts and whole	7	88
People within environment	1	13
Relationship to ID (N=6)		
Instructional process as a system	4	67
Interrelated knowledge	2	33
Systematic approach (N=5)		
Step-by-step/ methodical	5	100
Systemic approach (N=5)		
Whole and interrelated/ interacting parts	3	60
Putting steps together/functional	2	40
Algorithms (N=4)		
Using sets of rules	4	100
Heuristics (N=4)		
Analysis/critical thinking	2	50
Trial and error	2	50

Summary

The majority of nurse educators who responded to the questionnaire are experienced educators of 10 or more years (62%). Most possess undergraduate degrees in nursing (86%), and have completed at least one course in education (86%). Three respondents (10%) have a baccalaureate degree in education, and seven (24%) have attained a master's level education.

Eleven nurse educators (38%) reported familiarity with the instructional development process, and acquisition of this knowledge was almost evenly split among formal university courses, inservice education and professional literature. Twenty-two nurse educators (76%) reported familiarity with the curriculum development process. As well as acquiring this knowledge through the categories of professional literature, inservice education and university courses, 15 of the respondents (68%) documented actual experience on curriculum committees.

The majority of nurse educators (90%) delineated functional definitions of instructional development (ID) as the planning and developing of <u>how</u> to teach, or having knowledge of the theory of teaching. Two respondents alluded to the conceptual notion of instructional development as the systematic planning of instruction through application of theory and ultimately a problem-

solving process. Only one respondent provided an exact definition.

The majority of nurse educators (89%) who responded were aware of the relevance of learning theory to instructional development, but only three (17%) made reference to systems and instructional theory. Only one individual completed the theory base by referencing communication and educational psychology as relevant theories.

All nurses educators demonstrated awareness that curriculum development (CD) included a broader perspective than instructional development (ID).

Only one nurse educator of the fifteen responding (7%) could identify a conceptual definition of educational technology as a complex process for analyzing educational problems and developing solutions to those problems. All other respondents visualized educational technology as the hardware approach delineated by Davies (1978), by discussing use of resources and audio-visual aids to teaching. As well, almost all respondents focused on the relationship between the two terms as related to tools, aids or means. Only one respondent was aware that instructional development was a subset of educational technology.

Nurse educators in the sample group were divided as to the placement of instructional development within the

curriculum process. Heinich (1970) sees it fitting in after curriculum determination, but before implementation. All but three respondents (11%) placed instructional development within either the development or implementation stages.

All nurse educators who responded delineated a definition of needs assessment and described a proposed process appropriately. Eleven nurse educators (38%) documented actual participation in the needs assessment process.

Approximately 40% of respondents supplied a relevant definition of learner analysis and described appropriate characteristics of the learner to be assessed. The characteristics viewed as important to nurse educators were, for the most part, congruent with those actually being considered during instructional planning.

Approximately one half of the respondents demonstrated a measure of knowledge concerning theories of learning applicable to the instructional development process. The most frequently cited theory was humanism/caring, followed by behaviorism. The current trend within nursing education is a move away from a behaviorist model of education toward a humanistic approach, and this emphasis was reflected in nurse educators' responses. Instructional development's historical, functional roots, though, are heavily aligned to behaviorist learning theory.

Less than one-half of the respondents discussed use of a theoretical basis when planning their instruction. Those who did cite theory listed Knowles' adult learning theory and Kolb's experiential learning theory as their base. Bloom's taxonomy of educational objectives was given by three respondents, but this is not considered a learning theory.

Almost all nurse educators (90%) demonstrated a functional knowledge of behavioral objectives. The behavioral component was evident in all samples of objectives given, but less than 20% of respondents included reference to conditions and criterion in their definitions, and less than 50% showed evidence of these areas in the actual writing of objectives. Most nurse educators said they utilized Bloom's taxonomy when classifying or sequencing behavioral objectives. This is the framework upon which the national licensure examinations and school examinations are based.

Less than half of the sample group reported familiarity with concept/task analysis. Almost all who listed a definition were accurate in their description, and 75% of these individuals described a psychomotor skill task analysis as the process they would use. Only eight (28%) of the sample group affirmed actual participation in the process.

Nurse educators discussed definitive methods that they used to sequence content. More than half of respondents (63%) proceeded from the simple to the complex.

Almost all nurse educators documented development of their own tests to measure student learning, with paper and pencil tests being the most popular. Most nurse educators said they utilized school policy and the CNA blueprint as guides in test development. Although not all nurse educators in the survey were familiar with the term "criterion-referenced test", all definitions supplied were congruent with that of CNA (1993) and Dick and Carey (1985), as well the process involved in development.

Less than one-third of the respondents attested to knowledge of the term "instructional strategy", and those who supplied a definition (N=14) described techniques and methods of teaching, but did not include all key aspects as described by Dick and Carey (1985).

Nurse educators said they utilized library/school and community resources most often as their method of selecting instructional materials. Selection was also content and learner specific. They documented a wide variety of self-developed instructional materials. Use of audio-visual resources, lectures of varying lengths and group discussions were the most commonly used teaching strategies. Nurse educators selected their learning activities most often

based on the content of what they had to teach.

Almost all nurse educators' definitions of evaluation (86%) related to the making of a judgement, whether it was related to objectives, learning or performance. The most frequently cited type of evaluation was examinations, which could be categorized into either a formative or summative type. Almost all nurse educators (93%) said that they utilized student feedback as a basis for evaluation of their instruction. More than one-half of nurse educators said they would address program objectives if asked to evaluate an instructional program, although program content, evaluation methods and teaching strategies followed closely. Program evaluation is ongoing in schools of nursing at present, due to the upcoming accreditation process to be conducted by ARNN. Feedback received from students, as well as that received from management and peers, is used by most nurse educators as a guide for change or a way to improve and modify instruction.

Less than one-third of the sample group responded to the questions on advanced instructional development concepts. The majority of these respondents evidenced a functional knowledge of the concepts of systems theory and the relationship to instructional development, systematic versus systemic approaches, and the terms algorithm and heuristic (see Tables 27 and 28 for a summary).

Eight nurse educators (28%) wrote comments following Section B of the questionnaire. Five of these comments related to the questionnaire being lengthy and time-consuming, and one discussed the nurse educator's unfamiliarity with terms. Two nurse educators commented that they now realized that their knowledge base in teaching/learning was very limited.

Table 27

Summary of Respondents' Knowledge of Discrete Instructional Development Concepts/Tasks/Skills (N=29)

ID Task/Skill	Frequency	%
Needs assessment	27	93
Learner analysis	12	41
Theories of learning		
Behaviorist	7	24
Cognitive	6	21
Growth & development	3	10
Behavioral objectives		
Behavior	26	90
Conditions	5	17
Criterion	2	7
Concept/task analysis	8	28
Sequencing of content	27	93
Measurement of student learning	27	93
Instructional strategies	14	48
Evaluation	25	86

Table 28

Summary of Respondents' Use of Discrete Instructional Development Tasks/Skills (N=29)

ID Task/Skill	Frequency	%
Conducts needs assessment	11	38
Conducts learner analysis	27	93
Applies theories of learning	12	41
Writes behavioral objectives	26	90
Conducts concept/task analysis	8	28
Sequences content	27	93
Measures student learning	27	93
Develops criterion-referenced tests	5	17
Formulates instructional strategies	12	41
Develops instructional materials	27	93
Evaluates formatively and summatively	29	100

CHAPTER 5

Conclusion and Recommendations

Summary of the Study

A descriptive study utilizing a social science survey research design attempted to determine nurse educators' knowledge and use of discrete instructional development concepts. A written survey instrument was distributed to the five schools of nursing within the province of Newfoundland and Labrador. An open-ended response format was used throughout the instrument, with the exception of the section on demographic information. Twenty-nine of the seventy-five questionnaires (39%) were completed and returned. The data obtained from these questionnaires were analyzed and reported using frequencies and percentages.

The results obtained from this study were compared to a selection of the competencies listed by the Division of Instructional Development (AECT, 1982) and to the components of the Dick and Carey (1985) model of instructional design.

Demographic Information

All respondents hold a baccalaureate degree, almost 90% of which are in nursing, and the majority are experienced educators. Nearly 25% have educational preparation at the master's level. Less than 50% of respondents attest to

having formal knowledge of the instructional development process, and this knowledge was obtained through university courses, inservice education and/or professional literature. More than 75% of respondents documented knowledge of the curriculum development process, again having gained the knowledge from the same areas as with instructional development, as well as with experience on school curriculum committees. Respondents' knowledge of concepts and theory underlying instructional development is apparent, but not all-inclusive. Respondents' knowledge of educational technology is very limited.

Needs Assessment

The basic theoretical and clinical requirements for nursing education are set by the national association, the Canadian Nurses Association, and by the provincial governing body, the Association of Registered Nurses of Newfoundland. Each school of nursing has the freedom to prepare its curriculum content based on guidelines from these bodies and evaluation of societal needs and trends.

Nurse educators in the study have a working knowledge of needs assessment, both definition and process, although the majority of respondents relate needs assessment specifically to learners and not to overall curricular needs.

Learner Analysis

All students entering diploma schools of nursing write a Scholastic Aptitude Test. Students entering the baccalaureate program at Memorial University of Newfoundland complete a General Studies year. Basic academic prerequisite skills are therefore assessed. All students in both programs complete extensive application forms, which give data on age, past experience and educational background. Nurse educators document that they consider these characteristics when planning instruction, as well as students' motivational level, learning style and developmental stage.

Theories of Learning

Nurse educators have a limited knowledge base concerning many of the theories underlying the instructional development process, such as those of behaviorism and cognition. Respondents emphasized the role of humanism and caring and adult learning as theoretical bases presumably because of the focus of the profession and the current change occurring in development of a model for the future in nursing education.

Behavioral Objectives

Nurse educators rely heavily on behavioral objectives when planning and implementing instruction. All respondents have explicit knowledge and use of the behavioral aspect of objective-writing. Use of conditions and criterion in the actual objectives is limited.

Nurse educators have definitive knowledge of Bloom's taxonomy of educational objectives and use this framework when classifying and sequencing their objectives. They use behavioral objectives as a guide to plan content, teaching methods and evaluative measures, but rarely use objectives as a basis for test construction.

Concept/Task Analysis

Nurse educators have limited knowledge of the concept/task analysis process. The small number who reported knowledge and use most often applied the process with psychomotor skill acquisition.

Sequencing of Content

The majority of nurse educators in the study elucidated a method for sequencing of content. This method, for the most part, involves sequencing content from the simple to the complex.

Measurement of Student Learning

Nurse educators utilize self-developed paper and pencil tests predominantly to measure student learning. School policy and the CNA blueprint guide nurse educators in the development of these tests.

Development of Criterion-Referenced Tests

The majority of nurse educators in the sample group demonstrated knowledge of the theory of criterion-referenced test development, but few have actually had experience in formulating such tests. Since this method of testing for licensure examinations will be implemented by CNA in 1995, nurse educators require practical experience in this area.

Development of Instructional Strategies and Materials

Nurse educators define instructional strategies as techniques and methods of teaching and do not address the entire process. Their methods of selecting instructional materials are based upon the resources available in libraries, schools and community, on the content to be taught and on the learners present. A significant amount of their instructional materials are self-developed.

Teaching Strategies

The regularly used teaching strategies by nurse educators are those that can accommodate large numbers of students, such as use of audio-visual resources, lectures of varying lengths and group discussion, yet they perceive superior strategies to be those geared to smaller groups which allow for more active participation by students. The majority of nurse educators perceive the choice of teaching strategy to be contingent upon the situation.

Evaluation

Nurse educators have an explicit knowledge of the evaluation process. A variety of methods are used to evaluate students formatively and summatively in classroom and clinical environments. They utilize feedback received from students primarily as the basis for the evaluation of their instruction, but also receive feedback from management and peers. This feedback is used as a guide for change.

Advanced Instructional Development Knowledge

A small number of nurse educators exhibited conceptual knowledge of advanced instructional development concepts. Systems theory is discussed in terms of its relevance to the human body.

Conclusions

The data collected indicates that nurse educators have a functional knowledge of the instructional development process and the rudimentary constructs are applied when they plan, implement and evaluate instruction, although not necessarily deliberately. Since their knowledge base has not been acquired through formal academic preparation, it is presumed that the ability to utilize the constructs has evolved through practical experience. There are obvious similarities between instructional development and the steps of the nursing process, if considered from a systems perspective. The nursing process is used extensively as a major concept in all nursing education programs and this may have enabled nurse educators to utilize a systems approach to the development of instruction.

However nurse educators do not exhibit a solid foundation in the theoretical basis for instructional development. Although they are able to list some of the underlying theories, such as behaviorist and cognitive learning and developmental theories, nurse educators do not globally apply these theories during instructional planning. Those who use adult learning theory do so because of the student population, and they use experiential theory because nursing is a practice-based profession.

Nurse educators demonstrate knowledge of the curriculum development process and this knowledge base is evident in the number of respondents who have completed course work in that area and those who have had experience on curriculum committees with development of new courses of study and yearly revisions. This experience is felt to have contributed to their extensive use of behavioral objectives and diverse evaluation methods and awareness of program evaluation. It is interesting to note that all five schools of nursing have gone through major curricular changes over the last five years. As well, all nurse educators have been exposed to the curriculum development process in recent months with the advent of development of the collaborative curriculum for future nursing education. The Curriculum Development Committee for this project has continuously kept the faculties at the five schools informed of their progress through circulation of documents for review, questionnaires for opinions and feedback, and workshops.

Recommendations

Based upon the analysis of the data gathered during this study, the following recommendations are made:

1. That continuing education sessions on instructional development be made available for nurse educators which would provide an introduction to the framework and theoretical basis for the systems approach.

2. That inservice education sessions be conducted to assist nurse educators to become familiar with criterion-referenced test construction.

3. That nurse educators who are contemplating commencement of master's programs be encouraged to consider the new Master of Nursing program designed specifically for nursing education. This program of study, begun in 1993 at Memorial University, has required courses in instructional development and curriculum development, both taught through the Faculty of Education.

4. That a further study of nursing education explore the correlation between the use of the instructional development approach and the efficiency and effectiveness of instruction.

References

AECT (1977). Educational technology: Definition and glossary of terms. Washington, DC: Association for Educational Communications and Technology.

AECT Division of Instructional Development (1982). Competencies for the instructional/training development professional. DID Newsletter, 13 (1), 3-4.

ARNN (1988). Report of the taskforce on entry to practice and council recommendations. St. John's: Author.

ARNN (1991). Policies, procedures and standards for approval of schools of nursing in Newfoundland. St.John's: Author.

ARNN (1992). Strategic plan for future nursing education. St. John's: Author.

ARNN (1993). Report phase 1 of the future nursing education curriculum development committee. St. John's: Author.

Atkinson, F.I. (1991). Survey design and sampling. In D.F.S. Cormack (Ed.). The research process in nursing (2nd ed.) (pp. 196-205). London: Blackwell Scientific Publications.

Aydelotte, M.K. (1992). Nursing education: Shaping the future. In L. Aiken and C. Fagin (Eds.). Charting nursing's future. Agenda for the 1990s (pp.462-484). Philadelphia: Lippincott.

Barker, P.J. (1991). Questionnaire. In D.F.S. Cormack. The research process in nursing (2nd ed.) (pp.215-227). Boston: Blackwell Scientific Publications.

Baumgart, A.J., & Kirkwood,R. (1990). Social reform versus education reform: University nursing education in Canada, 1919-1960. Journal of Advanced Nursing, 15, 510-516.

Beckwith, D. (1988). The future of educational technology. Canadian Journal of Educational Communications, 17 (1), 3-20.

Bevis, E.O., & Clayton,G. (1988). Needed: A new curriculum development design. Nurse Educator, 13 (4), 14-18.

Bevis, E.O., & Watson,J. (1989). Toward a caring curriculum. A new pedagogy for nursing. New York: National League for Nursing.

Bigge, M.L. (1982). Theories of learning for teachers (4th ed.). New York: Harper & Row.

Borg, W.R., & Gall, M.D. (1989). Educational research. An introduction (5th ed.). New York: Longman.

Brown, J., & Kennedy, M. (1988, June). Instructional development: A conceptual approach. Paper presented at AMTEC, the 18th National Conference on Instructional Technology, Halifax, Nova Scotia. (ERIC Document Reproduction Service No. ED 318 456)

Byrnes, A.K. (1986). Bridging the gap between humanism and behaviorism in nursing education. Journal of Nursing Education, 25 (7), 304-306.

Canadian Association of University Schools of Nursing. (1987). Accreditation program. Ottawa: Author.

CNA (1977). A blueprint for a comprehensive examination for nurse registration/licensure. Ottawa: Author.

CNA (1978). Standards for nursing education in Canada. Ottawa: Author.

CNA (1993). Blueprint for the criterion-referenced nurse registration/licensure examination. Ottawa: Author.

Condell, S.L., & Elliott.N. (1989). Gagnè's theory of instruction. It's relevance to nurse education. Nurse Education Today, 9, 281-284.

Coulter, M.A. (1990). A review of two theories of learning and their application in the practice of nurse education. Nurse Education Today, 10, 333-338.

Craven, R.F., & Hirnle, C.J. (1992). Fundamentals of nursing: Human health and function. Philadelphia: Lippincott.

Davies, I.K. (1978). Prologue: Educational technology: Archetypes, paradigms and models. In J.Hartley & I.K. Davies (Eds.). Contributions to an educational technology. Vol.2 (pp.9-24). New York: Kogan Page.

Davies, I.K.(1981). Instructional development as an art: One of the three faces of ID. Performance and Instruction Journal, 20 (7), 4-7.

de Tornyay, R. (1990). The curriculum revolution. Journal of Nursing Education, 29 (7), 292-294.

Diamond, R.M. (1980). Instructional development: One biased view. (Problems, issues, and the future). Educational Technology, 20 (2), 51-54.

Dick, W. (1981). Instructional design models: Future trends and issues. Educational Technology, 21 (7), 29-32.

Dick, W., & Carey,L. (1985). The systematic design of instruction. Glenview, Illinois: Scott, Foresman.

Divesta, F.J., & Reiber,L.P. (1987). Characteristics of cognitive engineering: The next generation of instructional systems. Educational Communications and Technology Journal, 35 (4), 213-230.

Dolan, J.A. (1968). History of nursing (12th ed.). Philadelphia: W.B.Saunders.

Gagnè, R.M., & Briggs, L.J. (1979). Principles of instructional design (2nd. ed.). Toronto: Holt, Rinehart & Winston.

Gagnè, R.M., Briggs,L.J., & Wager,W.W. (1988). Principles of instructional design (3rd ed.). Toronto: Holt, Rinehart & Winston.

Gallant, G.M. (1989). A study of instructional development knowledge and competency among teacher-librarians in Newfoundland. Unpublished master's thesis, Memorial University of Newfoundland, St. John's.

Gorman, C. (1994). An ethnographic study of knowledge of instructional development and the instructional planning process used by nurse educators in Newfoundland. Unpublished master's thesis, Memorial University of Newfoundland, St. John's.

Graham, I.D. (1991). An ethnographic study of high school teachers' knowledge and use of instructional development in instructional planning in the province of Newfoundland. Unpublished master's thesis, Memorial University of Newfoundland, St. John's.

Griffin, G.J., & Griffin,J.K. (1969). Jensen's history and trends of professional nursing (6th ed.). St. Louis: C.V. Mosby.

Gropper, G.L. (1987). A lesson based on a behavioral approach to instructional design. In C.M. Reigeluth (Ed.). Instructional theories in action (pp.45-112). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Gustafson, K.L., & Tillman,M.H. (1991). Introduction. In L.J. Briggs, K.L. Gustafson & M.H. Tillman (Eds.). Instructional design. Principles and applications (2nd ed.). (pp.3-16). Englewood Cliffs, New Jersey: Educational Technology Publications

Gustafson, K.L., Tillman, M.H., & Childs, J.W. (1991). The future of instructional design. In L.J. Briggs, K.L. Gustafson & M.H. Tillman (Eds.). Instructional design. Principles and applications (2nd ed.) (pp. 451-467). Englewood Cliffs, New Jersey: Educational Technology Publications.

Hartley, J. (1978). Learning theory in practice. In J. Hartley & I.K. Davies (Eds.). Contributions to an educational technology: Vol.2 (pp.30-45). New York: Kogan Page.

Hawks, J.H. (1992). Empowerment in nursing education: Concept analysis and application to philosophy, learning and instruction. Journal of Advanced Nursing, 17, 609-618.

Heinich, R. (1970). Technology and the management of instruction. Washington, DC: Association for Educational Communications and Technology.

Keddy, B., & Lukan, E. (1985). The nursing apprentice: An historical perspective. Nursing Papers, 17 (1), 35-46.

Kemp, J.E. (1985). The instructional design process. Philadelphia: Harper & Row.

Kemp, J.E., & Rodriguez, L. (1992). The basics of instructional design. The Journal of Continuing Education in Nursing, 23 (6), 282-284.

Kemp, J.E., & Smellie, D.C. (1989). Planning, producing and using instructional media (6th ed.). Philadelphia: Harper & Row.

Knirk, F.G., & Gustafson, K.L. (1986). Instructional technology. A systematic approach to education. Toronto: Holt, Rinehart & Winston.

Kuhn, T. (1970). The structure of scientific revolutions (2nd ed.). Chicago: University of Chicago Press.

Landa, L.N. (1983). Descriptive and prescriptive theories of learning and instruction: An analysis of their relationship and interactions. In C.M. Reigeluth (Ed.). Instructional-design theories and models (pp.55-69). Hillsdale, New Jersey: Lawrence Erlaum Associates.

Landa, L.N. (1987). A fragment of a lesson based on the algo - heuristic theory of instruction. In C.M. Reigeluth (Ed.). Instructional theories in action (pp.113-159). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

LoBiondo-Wood, G., & Haber, J. (1990). Nursing research. Methods, critical appraisal, and utilization (2nd ed.). Toronto: C.V. Mosby.

Logan, R.S. (1982). Instructional systems development: An international view of theory and practice. Toronto: Academic Press.

Mager, R.F. (1962). Preparing instructional objectives. Belmont, California: Lear Siegler.

McCombs, B.L. (1986). The instructional systems development (ISD) model: A review of those factors critical to its successful implementation. Educational Communications and Technology Journal, 34 (2), 67-81.

McLaughlin, F.E., & Marascuilo, L.A. (1990). Advanced nursing and health care research. Quantitification approaches. Toronto: W.B. Saunders.

McQuarrie, F. (1955). The evolution of nursing education. The Canadian Nurse, 51 (3), 194-199.

Medsker, K.L. (1981). Instructional development as a craft. Performance and Instruction Journal, 20 (7), 11-14.

Memorial University of Newfoundland (1992). Calendar 1992-93. St. John's: Author.

Merriam, S.B., & Simpson, E.L. (1989). A guide to research for educators and trainers of adults. Malabar, Florida: Robert E. Krieger Publishing.

Mussallem, H.K. (1965). Royal commission on health services. Nursing education in Canada. Ottawa: Roger Duhamel, Queen's Printer.

Noel, K.L., & Hewlett, B. (1981). Plying your craft: Instructional development and the use of heuristics. Performance and Instruction Journal, 20 (7), 15-18.

Oermann, M.H., & Jamison, M.T. (1989). Nursing education component in Master's programs. Journal of Nursing Education, 28 (6), 252-255.

Palmer, I.S. (1985). Origins of education for nurses. Nursing Forum, 22 (3), 102-110.

Petry, B., Mouton, H., & Reigeluth, C.M. (1987). A lesson based on the Gagnè-Briggs theory of instruction. In C.M. Reigeluth (Ed.). Instructional theories in action (pp.11-43). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Polit, D.F., & Hungler, B.P. (1993). Essentials of nursing research. Methods, appraisal, and utilization (3rd ed.). Philadelphia: J.B. Lippincott.

Prince, J. (1984). Education for a profession: Some lessons from history. International Journal of Nursing Studies, 21 (3), 153-163).

Reigeluth, C.M. (1983). The elaboration theory of instruction. In C.M. Reigeluth (Ed.). Instructional-design theories and models (pp.338- 379). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Reigeluth, C.M. (Ed.). (1987). Instructional theories in action. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Reigeluth, C.M., Van Patten, J., & Doughty, P. (1981). Science approach to instructional development. Performance and Instruction Journal, 20 (7), 19-22.

Reiser, R.A. (1987). Instructional technology: A history. In R.M.Gagnè (Ed.). Instructional technology: Foundations (pp.12-40). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Reverby, S. (1990). A caring dilemma. In E.C.Hein & M.J. Nicholson (Eds.). Contemporary leadership behavior. Selected readings (2nd ed.). (pp.3-13). Glenview, Illinois: Scott, Foresman.

Romiszowski, A.J. (1981). Designing instructional systems. New York: Nichols.

Sachs, S.G. (1981). Practicing the art of instructional development. Performance and Instruction Journal, 20 (7), 8-10, 35.

Saettler, P. (1968). A history of instructional technology. New York: McGraw-Hill.

Saettler, P. (1990). The evolution of American educational technology (2nd ed.). Englewood, Co: Libraries Unlimited.

Salisbury, D.F. (1989). What should instructional designers know about general systems theory? Educational Technology, 29 (8), 42-45.

Seels, B. (1989). The instructional design movement in educational technology. Educational Technology, 29 (5), 11-15.

Seigel, H. (1984). Up the down staircase in nursing education: An analysis of the nurse educator as a professional. Journal of Nursing Education, 23 (3), 114-117.

Snelbecker, G.E. (1987). Contrasting and complementary approaches to instructional design. In C.M.Reigeluth (Ed.). Instructional theories in action (pp.321-337). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Snelbecker, G.E. (1988). Instructional design skills for classroom teachers. Journal of Instructional Development, 10 (4), 33-40.

Sudman, S., & Bradburn, N.M. (1985). Asking questions. A practical guide to questionnaire design. San Francisco: Jossey-Bass Publisher.

Tanner, C.A. (1990). Reflections on the curriculum revolution. Journal of Nursing Education, 29 (7), 295-299.

Thomey, M.E. (1991). A study of instructional development knowledge and competency among secondary teachers in the Roman Catholic School Board Humber-St.Barbe and the Deer Lake-St. Barbe South Integrated School District. Unpublished master's thesis, Memorial University of Newfoundland, St. John's.

Tobin, J.M. (1989). A study of instructional development knowledge and competency among primary and elementary teachers in the Roman Catholic School Board for St. John's, Newfoundland. Unpublished master's thesis, Memorial University of Newfoundland, St. John's.

Wagner, E.D. (1986). Educational technology process systems: The role of instructional development. Educational Technology, 26 (5), 36-39.

Wildman, T.M. (1981). Cognitive theory and the design of instruction. Educational Technology, 21 (7), 14-20.

Wong, J., & Wong, S. (1987). Towards effective clinical teaching in nursing. Journal of Advanced Nursing, 12, 505-513.

APPENDIX A

CNA Standards for Nursing Education in Canada (1978)

Standard I:

The agency sponsoring a nursing education program shall develop a comprehensive plan for the program that:

1. reflects an examination of the society or community in which the program is located;
2. identifies the health and nursing care needs of the society or community and the resources that are available to meet these needs;
3. demonstrates that a program is needed in that particular setting;
4. describes the characteristics of the population from which learners are to selected;
5. provides a rationale for the type of program selected;
6. demonstrates that the purposes and objectives of the program are not inconsistent with the purposes and objectives of the sponsoring agency;
7. demonstrates that the program is compatible with other nursing education programs in the society or community;
8. demonstrates that the environment within which the program takes place is appropriate to the learning needs of the learners and that the program does not compromise the responsibilities of cooperating agencies;
9. demonstrates that the program is compatible with

statutory and other regulations that have implications for the learners, the teachers and the graduates of the programs;

10. demonstrates that in the development of the program there was consultation with the statutory body that governs nursing practice, with relevant educational authorities in the sponsoring agency and in the jurisdiction and with employers, other groups and/or individuals whose support has significance for the program; and
11. identifies the physical, human and fiscal resources and limitations that have implications for the program.

Standard II:

The nursing division of the sponsoring agency shall provide a statement of its beliefs about the nursing of individuals, families and communities that:

1. identifies the phenomena with which nursing is concerned and the interrelationships among these phenomena;
2. explains the conceptual framework upon which its nursing practice is based;
3. identifies relationships between theory and practice in nursing;
4. identifies nursing roles and functions;

5. identifies the relationship of the practice of nursing to the practice of other health care professions;
6. identifies settings in which nursing is practiced.

Standard III:

The nursing division of the sponsoring agency shall provide a description of:

1. the philosophy and objectives of the program;
2. the cognitive, affective and psychomotor skills and abilities that graduates will be able to demonstrate; and
3. the situations in which and the circumstances under which the graduates will be prepared to practice.

Standard IV:

The sponsoring agency shall provide an overall plan for the program that:

1. describes the organizational structure of the sponsoring agency and the place of the program in that agency;
2. demonstrates logical timing and sequencing of content and process;
3. states specific objectives of the program and the strategies, methods and materials that will be used to meet these objectives;

4. describes relevant learning experiences for students and identifies suitable facilities and resources;
5. specifies criteria and methods for selection and admission of learners;
6. specifies criteria and methods for selection and professional development of teachers and other program personnel; and
7. describes the organization and functions of program personnel and learners.

Standard V:

The sponsoring agency shall provide a statement of the ways by which learners, teachers and the program are to be evaluated that describes:

1. the criteria and methods by which the performance or learners will be assessed, concurrently and terminally, in terms of objectives of the program;
2. the criteria and methods for progression in the program and graduation from the program;
3. the criteria and methods by which the performance of the teachers will be assessed in terms of objectives of the program and policies of the sponsoring agency;
4. the criteria and methods by which the effectiveness of the program will be assessed; and
5. the methods by which results of the evaluations will be

used to plan and implement modifications of the program. (CNA, 1978, pp. 3-6).

APPENDIX B

ARNN Standards for Schools of Nursing (1991)

Standard I

The school of nursing provide a nursing education program which responds to major national/provincial trends that impact on health needs.

Standard II

The philosophy and objectives of the School of Nursing provide the basis necessary for the development and implementation of the nursing education program.

1. There is a written statement of philosophy which contains beliefs about:
   - 1.1 Nursing.
   - 1.2 Education.
   - 1.3 Society and/or environment.
   - 1.4 Health.
2. There is a written statement of objectives which:
   - 2.1 Is compatible with the statement of philosophy.
   - 2.2 Is attainable.
   - 2.3 Provides direction for the program.
   - 2.4 Recognizes the nurse's independent, interdependent, collaborative and advocacy roles as a member of the health care team.
   - 2.5 States the anticipated roles/functions of the graduate.
   - 2.6 Identifies the settings in which the graduate is

prepared to practice.

2.7 Is reviewed, dated, and if necessary revised at regular intervals (at least every five years).

3. There is a conceptual framework/model which serves as a basis for curriculum development.

3.1 The curriculum is based on a clearly stated conceptual framework/model.

3.2 The conceptual framework/model is congruent with the philosophy and objectives of the School of Nursing.

3.3 The conceptual framework/model provides a rationale for the selection and organization of program content and learning experiences.

3.4 A sample of faculty is able to discuss the concepts and relationships inherent in the conceptual framework/model.

3.5 A sample of students is able to apply to nursing concepts inherent in the framework/model to nursing practice.

4. The curriculum provides direction for achieving the objectives of the nursing program. The curriculum design:

4.1 Integrates nursing knowledge and nursing practice.

4.2 Reflects current trends in health.

4.3 There is evidence of curricular revision in response to changes in:

4.3.1 Education

4.3.2 Nursing practice

4.3.3 Health care system

4.4 Provides an ordered progression of content and learning experiences:

4.4.1 Course/level objectives reflect an increase in complexity and knowledge to attain the program objectives.

4.4.2 Course/level objectives are attainable and measurable.

4.4.3 Content and learning experiences are sufficient to meet program objectives.

4.5 Provides direction for evaluating student achievement of objectives.

5. The curriculum content includes, but is not restricted to, content areas essential to the practice of nursing and required of the beginning graduate (CNA, 1986):

5.1 Nursing competencies shall include:

5.1.1 Nursing process/decision making process.

5.1.2 Professional responsibilities (legal, ethical, collaborative, administrative).

5.1.3 Application to learning experiences.

5.2 Critical periods in a human being's life to which nursing interventions are directed include:

5.2.1 Stages and tasks in growth and development.

5.2.2 Lifestyles patterns (activity, eating, elimination, living, coping, personal habits, sexuality, social).

5.2.3 Disorders or occurrences unanticipated by a human being (cell aberration, congenital disorder, degenerative process, immunologic disorder, infectious process, mental disorder, metabolic disorder, separation, trauma).

5.2.4 Application to learning experiences.

Standard III

The administration, organization and policies of the School of Nursing facilitate the development and implementation of the nursing program.

Standard IV

There is a plan for evaluation of the nursing education program for purposes of program improvement. (ARNN, 1991).

APPENDIX C

Research Instrument

A STUDY OF INSTRUCTIONAL DEVELOPMENT KNOWLEDGE AND USE DURING INSTRUCTIONAL PLANNING BY NURSE EDUCATORS IN NEWFOUNDLAND AND LABRADOR

QUESTIONNAIRE

November, 1993

Dear Colleague,

This questionnaire is part of a research study on the diffusion of instructional development knowledge and use throughout the school system and into post-secondary education. This study is currently focusing on nurse educators in Newfoundland and Labrador.

As nurse educators, we are continuously involved in the development and implementation of courses of study for our students. We arrive at our teaching expertise through knowledge of nursing and the nursing process, even though we may or may not have a formal background in educational theory.

Instructional Development (ID) is a relatively new phenomenon and its constructs are not taught at the baccalaureate level. At present there is only one course in the graduate program in the Faculty of Education which formerly addresses the instructional development process. Recently this course has been included in a graduate program in Nursing as well.

The questions which follow, apart from the demographic data, address the various aspects of Instructional Development. Would you take time from your busy schedule to participate in the research by completing this questionnaire?

The questionnaire will take approximately 45-60 minutes of your time. I apologize for the length of the survey instrument. However, in order to gain a comprehensive understanding of nurse educators' functional and conceptual knowledge and use of ID, it was necessary to structure the questions with short answer responses.

Please forward the completed questionnaire to _____ by _____. It will then be passed on to me.

Thank you for your consideration.

Yours truly,

Sherida Healy

SECTION A

Demographic Information

Please respond to the following background items by placing a in the appropriate section.

1. Do you have an undergraduate degree?

   Nursing Yes_____ No_____

   Education Yes_____ No_____

   (If you answered Yes, would you please specify which Education degree? _____)

   Other Yes_____ No_____

   (If you answered Yes, would you please specify which degree? _____)

2. Do you have a Master's degree?

   Nursing Yes_____ No_____

   Education Yes_____ No_____

   (If you answered Yes, would you please specify which Education degree? _____)

   Other Yes_____ No_____

   (If you answered Yes, would you please specify which degree? _____)

3. How many years of teaching experience do you have?

   0-5_____

   6-9_____

   10-14_____

   15-19_____

   20+ _____

4. Have you completed any education courses?

   Yes_____ No_____

   (If you answered Yes, would you please list the courses, both undergraduate and graduate.)

_____

_____

_____

_____

_____

5. Do you have any formal knowledge of the Instructional Development process?

   Yes_____ No_____

6. If you answered Yes to #5, where did you obtain your knowledge?

   Formal University Course(s)_____

   Inservice Education_____

   Professional Literature_____

   Other _____

   (Please specify Other).

7. Do you have any formal knowledge of the curriculum development process?

   Yes _____ No _____

8. If you answered Yes to #7, where did you obtain your knowledge?

   Formal University Courses ____

   Inservice Education _____

   Professional Literature _____

   Experience on Curriculum Committees _____

   Other _____

   (Please specify Other)

SECTION B

Instructional Development Components

This section contains a number of items relating to the instructional development process. A short written response is required. Please complete the items which are appropriate for you.

9. Could you please tell me what the term "instructional development" means to you.

   _____

   _____

   _____

10. Instructional development is based on a number of underlying theories. What theories do you feel would have application to the instructional development process?

_____

_____

_____

_____

11. What do you perceive to be the difference between curriculum development and instructional development?

_____

_____

_____

_____

12. Are you familiar with the term "educational technology"?

Yes_____ No_____

(If you answered Yes, please complete #13 and #14. If you answered No, please go to #15).

13. Could you please tell me what the term "educational technology" means to you.

_____

_____

_____

_____

14. What do you think is the relationship between instructional development and educational technology?

15. If you think of the curriculum as progressing through three different stages (Curriculum Determination, Curriculum Development and Curriculum Implementation), where do you feel instructional development would fit into the scheme?

16. Are you familiar with the term "needs assessment"?

Yes_____ No_____

(If you answered Yes, please proceed to #17,18,19 and 20. If you answered No, please go to #21).

17. Could you please tell me what the term "needs assessment" means to you.

18. If you were asked to conduct a needs assessment, briefly describe how would you go about it.

_____

_____

_____

_____

19. Have you ever been involved in the conduction of a needs assessment?

Yes_____ No_____

(If you answered Yes, proceed to #20. If you answered No, proceed to #21.)

20. Describe briefly the process which was undertaken in the needs assessment, if it differs significantly from the process you described in # 18.

_____

_____

_____

_____

21. Are you familiar with the term "learner analysis"?

Yes____ No_____

(If you answered Yes, proceed to #22 and 23. If you answered No, proceed to #24).

22. Could you please tell me what the term "learner analysis" means to you.

23. If you were asked to conduct a learner analysis, how would you go about it?

24. What characteristics of learners do you feel are most important for you to consider when planning your instruction?

25. Of the characteristics you listed in #24, which ones do you regularly consider each time you plan your instruction?

_____

_____

_____

_____

26. Are you familiar with theories of learning?

Yes_____ No_____

(If you answered Yes, proceed to #27 and 28. If you answered No, proceed to #29).

27. Which theories of learning do you feel would be applicable in the instructional development process?

_____

_____

_____

_____

28. Do you rely on any particular learning theorists when planning your instruction? If so, would you please name them.

_____

_____

_____

_____

29. Are you familiar with the term "behavioral objectives"?

Yes____ No_____

(If you answered Yes, proceed to #30,31,32,33,34 and 35. If you answered No, proceed to #36).

30. Could you please tell me what the term "behavioral objective" means to you.

_____

_____

_____

_____

31. Could you please provide a sample of the type of behavioral objectives that you regularly write.

_____

_____

_____

_____

32. We are all aware that objectives should reflect various levels of knowledge and skill. Do you have a method or system for classifying or sequencing your objectives to ensure that they cover the various levels? If so, could you please describe your method?

_____

_____

_____

_____

33. Are you familiar with objective hierarchies, such as those developed by Bloom and Gagnè?

Yes_____ No_____

(If you answered Yes, proceed to #34. If you answered No, proceed to #35).

34. Could you please tell me about the hierarchies of either Bloom or Gagnè.

_____

_____

_____

_____

35. Please tell me how you feel about the use of behavioral objectives when planning instruction.

_____

_____

_____

_____

36. Are you familiar with the terms "concept analysis" and "task analysis"?

Yes_____ No_____

(If you answered Yes, proceed to #37 and 38. If you answered No, proceed to #39).

37. Could you please tell me what the terms "concept analysis" and "task analysis" mean to you.

38. Have you ever had the opportunity to perform a concept or task analysis? If so, could you briefly describe the process that you went through.

39. Could you please tell me how you sequence the content of the material you are going to teach.

40. Do you develop your own tests to measure your students' learning?

Yes_____ No_____

(If you answered Yes, what types of tests do you **develop**?) _____

_____

_____

_____

(If you answered No, what types of tests do you **use**?)

_____

_____

_____

_____

41. Do you use anything to guide you in development of your tests? If so, could you please describe the guide(s)?

_____

_____

_____

_____

42. Are you familiar with the term "criterion-referenced tests"?

Yes_____

No_____

(If you answered Yes, proceed to #43 and 44. If you answered No, proceed to #45).

43. Could you please tell me what the term "criterion-referenced tests" means to you.

_____

_____

_____

_____

44. Have you ever developed criterion-referenced tests?

Yes_____ No_____

(If you answered Yes, could you tell me how you developed the tests?)

_____

_____

_____

_____

45. Are you familiar with the term "instructional strategy"?

Yes_____ No_____

(If you answered Yes, proceed to #46. If you answered No, proceed to #47).

46. Could you please tell me what the term "instructional strategy" means to you.

_____

_____

_____

_____

47. Could you please tell me how you select your instructional materials.

48. Do you develop your own instructional materials? If so, could you please list some examples of the materials that you have developed?

49. Could you please tell me about some of the teaching strategies that you use on a regular basis.

50. Do you feel that any of these teaching strategies are superior to the others? If so, could you list the ones that you feel are superior.

51. When selecting learning activities for your students, would you use a method or guide for selection? If so, could you please describe the method or guide.

52. Could you please tell me what the word "evaluation" means to you.

53. Could you please tell me about the types of evaluation that you use.

54. Do you use anything as the basis for the evaluation of your instruction? If so, could you describe what you use.

55. If you had to evaluate an instructional program, what do you feel should be examined?

56. When developing instructional units, when do you feel is the most appropriate time to develop the testing mechanisms?

57. Do you receive feedback on your instruction? If so, could you describe how you receive this feedback?

58. How would you make use of the feedback that you receive from the evaluation of your instruction?

COMMENTS: Please feel free to make any additional comments on the questions.

SECTION C

Advanced Instructional Development Knowledge

Many nurse educators have gained extensive knowledge of instructional development during their careers, either through practical application or through continuing education. If you feel that you have a good basis in the instructional development process, would you answer the following questions? If you do not feel that you have this knowledge base, please leave this section blank. Again "Thank You" for your time and support in this research!

59. Are you familiar with General Systems Theory?

Yes_____ No_____

(If you answered Yes, could you tell me what General Systems Theory means to you).

_____

_____

_____ _____

_____

60. How do you feel that General Systems Theory is related to instructional development?

_____

_____

_____

_____

61. Can you differentiate between a systematic approach and a systemic approach to the development of instruction?

Yes_____ No_____

(If you answered Yes, could you briefly explain what you feel the difference is).

_____

_____

_____

_____

62. Can you differentiate between the terms "algorithms" and "heuristics"? Yes_____ No_____

(If you answered Yes, could you briefly explain the difference).

_____

_____

_____

_____

Thank you again for your input!

APPENDIX D

Correspondence

93.11.08

Ms. Linda Norman-Robbins
Director
Western Memorial Hospital
School of Nursing
Corner Brook, Nfld.

Dear Ms. Norman-Robbins,

During this past summer, one of your Faculty graciously participated in the thesis research of Christine Gorman by being interviewed concerning the planning of her instruction. I am presently extending that research now to include all nurse educators in schools of nursing in the province.

My methodology consists of a survey with a series of short answer response questions. Would you kindly circulate the enclosed questionnaires to your Faculty? I fully realize that this is a particularly busy period for all nurse educators, but I would ask for their cooperation and time in answering the questionnaire.

Paula Didham has consented to be my contact person at your School, and the letter on the front of the questionnaire gives instructions as to when the form has to be completed.

If you wish to contact me concerning any aspect of this research, I can be reached during the day at 737-6486 and during the evening at 364-5943.

Thank you for your consideration.

Yours truly,

Sherida Healy
Nursing Instructor