

NURSE EDUCATION

AN EXPERIMENT IN INTEGRATION OF THEORY AND PRACTICE IN NURSING

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I declare that this thesis has been written by me, and that
the work is entirely my own.

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ABSTRACT

An experiment in integration of theory and practice in nursing is described. It took place within the apprenticeship programme of general nurse education and training in Scotland, 1978/79, and was evaluated by student nurses, nurse teachers and ward trained staff.

The research approach was that of illuminative evaluation, incorporating a pre-test/post-test control group design, with an added retention of learning test. In regard to nursing of patients with gastro-intestinal disease, experimental group students received a planned programme of concurrent theory and directly relevant and supervised nursing practice, while control group students received teaching of the same subject matter by entirely college-based methods. Prior to their random allocation to experimental or control groups, students were paired on the basis of their results on a multiple choice test, the construction and validation of which is described.

Following an exploratory survey and pilot study, the main study took place in five colleges of nursing and their associated hospitals. Data collection methods were pre- and post-experiment opinion questionnaires, the multiple choice test and college-set essay format tests, and student study diaries.

Opinions as to aspects of the learning milieu in nurse education and training were obtained from 119 student nurses, 224 ward staff and 72 teachers. It was concluded that there was considerable evidence of practice which differed from theory, and that, when ward trained staff and trained teachers of nursing were compared, the latter made the least contribution to ward teaching of student nurses in general medical and surgical wards.

Test scores were available from 32 matched pairs of experimental and control group students and an additional 11 experimental group students. It was concluded that both experimental and control methods of instruction were effective as both resulted in statistically significant gain scores from pre-test to post-test and from pre-test to retention test. However, when the relative instructional effectiveness of the two methods of instruction was examined, there was no statistically significant difference within the pairs. There was a consistent trend, very small at post-test, but more marked at retention test for students in the experimental group to have higher scores than those in the control group. There was no statistically significant difference in retention test scores between students, in either group, for whom intervening practical experience had been relevant to the subject matter of the experiment, and those for whom it had not.

From post-experiment opinions of 51 student nurses, 58 ward trained staff and 11 teachers who had been directly involved, it was concluded that the objectives of the experiment in regard to various aspects of integration of theory and practice in nursing had received a very positive evaluation. Recommendations made were based upon evidence in the pre-experiment qualitative data, upon the strong endorsement of the experiment by student nurses, teachers and ward staff, upon its reported benefits to the patients, and notwithstanding the lack of a statistically significant result on the test scores - which latter result was considered to be not unrealistic in view of the brevity of the intervention. These recommendations included that nurse teachers should endeavour to teach nursing where nursing is carried out, with students who are temporarily freed from the responsibilities for providing service, and that ward staff and student nurses should be taught how to teach.

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PART I

INTRODUCTION AND LITERATURE REVIEW

CHAPTER 1

INTRODUCTION

How can the integration of theory and practice in nursing be facilitated? To seek an answer to this question was the raison d'être for this research.

There is evidence in abundance, in nursing literature, and in debate and discussion among nurses, to indicate that integration of theory and practice is a cause of concern in nurse education and training. The lack of integration, the gap between theory and practice, is seen, by many, as an important and pressing problem in nursing. It was the recognition of this problem, by the researcher, while a nurse teacher, which led to her eventual decision to carry out the research herein reported.

This is a study about the integration of theory and practice in nursing; it is a study about teaching and learning to nurse. The research, although it included an examination of some of the issues considered relevant to the above-mentioned debate, had as its specific aim the planning, construction, implementation and evaluation of an experiment in education. That experiment was the creation of a situation in which student nurses were given the opportunity to carry out supervised nursing care of patients whose illnesses related directly to the theoretical course of teaching they (the student nurses) were currently receiving. The experiment thus created conditions, as close to the optimal as was possible, to enable integration to take place, to foster an

appreciation of positive connections, to forge links between what was taught and what was practised in nursing.

If there is any one underlying theme in this research, it is that of the importance, to nursing, of the individual; the importance of accepting, encouraging and capitalising on individuality in learner, teacher, nurse and patient.

Integration, the putting together of relevant parts to make a coherent and meaningful whole, is ultimately an individual matter. The integration of theory and practice in nursing is something which, if it does occur, is achieved by the individual learner. The formal organisation of nurse education and training, the introduction of modular programmes, hospital/college of nursing links, various teaching methods are but some of the aids, the facilitators of integration. In the opinion of the researcher, the actual achievement of integration is an active, continuing process, a part of the whole process of learning, and learning is and always will be a fascinatingly unique and individual phenomenon.

Definition of Terms

The General Nursing Council (Scotland),* in their introduction to "Syllabuses for Nursing" (1973) state:

"The syllabuses set out in general terms the subjects which have to be studied ... Subjects must be studied both from textbooks and by lectures, but of equal importance is what is learned by working in the hospital and in the community". (p.2)

* May be found in text as GNC (S)

In effect, this statement embodies what is meant in this research by 'theory' and 'practice'.

Theory is the subject matter of nursing as it is taught in the classroom, block, or college of nursing. It is the material of the formal, or overt curriculum.

Practice is what is done when the nurse is engaged in giving nursing care in the wards. It is what in present day parlance is termed the "hidden curriculum" (Whitty and Young, 1976, p.63), the curriculum which, in nursing, is a potent force in transmitting the values, the beliefs about 'the way nursing is'. The Oxford English Dictionary defines and distinguishes between theory and practice as follows:

Theory is "that department of an art or technical subject which consists in the knowledge or statement of the facts on which it depends, or of its principles or methods, as distinguished from the practice of it".

Practice is "the action of doing something; performance, execution, method of action or working. Actually engaged in the practice of some occupation".

There is no absolute dividing line between theory and practice in nursing, in that, while practising her occupation of nursing, the student will at times be the recipient of ad hoc instruction or demonstration in some of the facts or methods of nursing. Although of a certain relevance to the research, such ad hoc instruction is not the focus or the prime concern. That concern is with integration of the subject matter of nursing as it is taught in the college with the practice of nursing as it is done in the wards.

Integration is defined in the Oxford English Dictionary as "the making up or composition of a whole by adding together or combining the separate parts or elements; a making whole or entire". In this study this is defined as the combining of theory and practice to form a coherent whole, a process which may be facilitated by the programme organisation and by the teacher, but which, essentially, takes place within the individual student, and is a part of the process of learning.

Learning and teaching are defined in the Oxford English Dictionary in somewhat narrow perspective. Learning is said to be "the action of receiving instruction or acquiring knowledge" and to teach is "to show by way of information or instruction". Although the word 'action' appears in the definition of learning, there is a suggestion that the role of the learner is passive and that of the teacher is the reverse. In this study, the view of learning is of a process in which the student uniquely and actively is involved, at times directing and at times accepting. It is a process which results in some change taking place in the students' knowledge, and in her "ways of thinking, feeling and acting" (Bloom, in Gage, 1963, p.386). The view of the teacher is that of the "facilitator of learning" (Rogers, 1969, p.166). Two further definitions are given below:

The students in this study are student nurses in the education and training programme leading to the qualification of Registered General Nurse (RGN) in Scotland. Normally, where students are any other than those undertaking this training as a first qualification in nursing, this will be stated in the text.

Block is a term used to describe the periods of consecutive weeks spent in the college of nursing, i.e. the theoretical component of nurse education and training. As distinct from Study Days which students spend in the college, Blocks of four, six or eight consecutive weeks of teaching form the most common method of organising the theoretical component, and these Blocks are interspersed with periods of practical experience.

The Setting for the Research

This research took place within the nurse education and training programme in Scotland. It was conducted within the apprenticeship programme by means of which 96% * of learners are prepared for either Registration or Enrolment, in particular, within that part of the programme in which student nurses are prepared for the qualification of Registered General Nurse (RGN), i.e. the 'traditional' College of Nursing and Hospital based programme. This is the programme in which the student nurses experience:

- a theoretical component of 26 weeks in 'Block' or the College of Nursing, and
- a practical component of 118 weeks of nursing in the wards and departments of the hospital(s)

a total of 144 weeks

* Figure obtained from GNC (Scotland) Quarterly Returns, 1978

Figure 1 The Setting for the Research

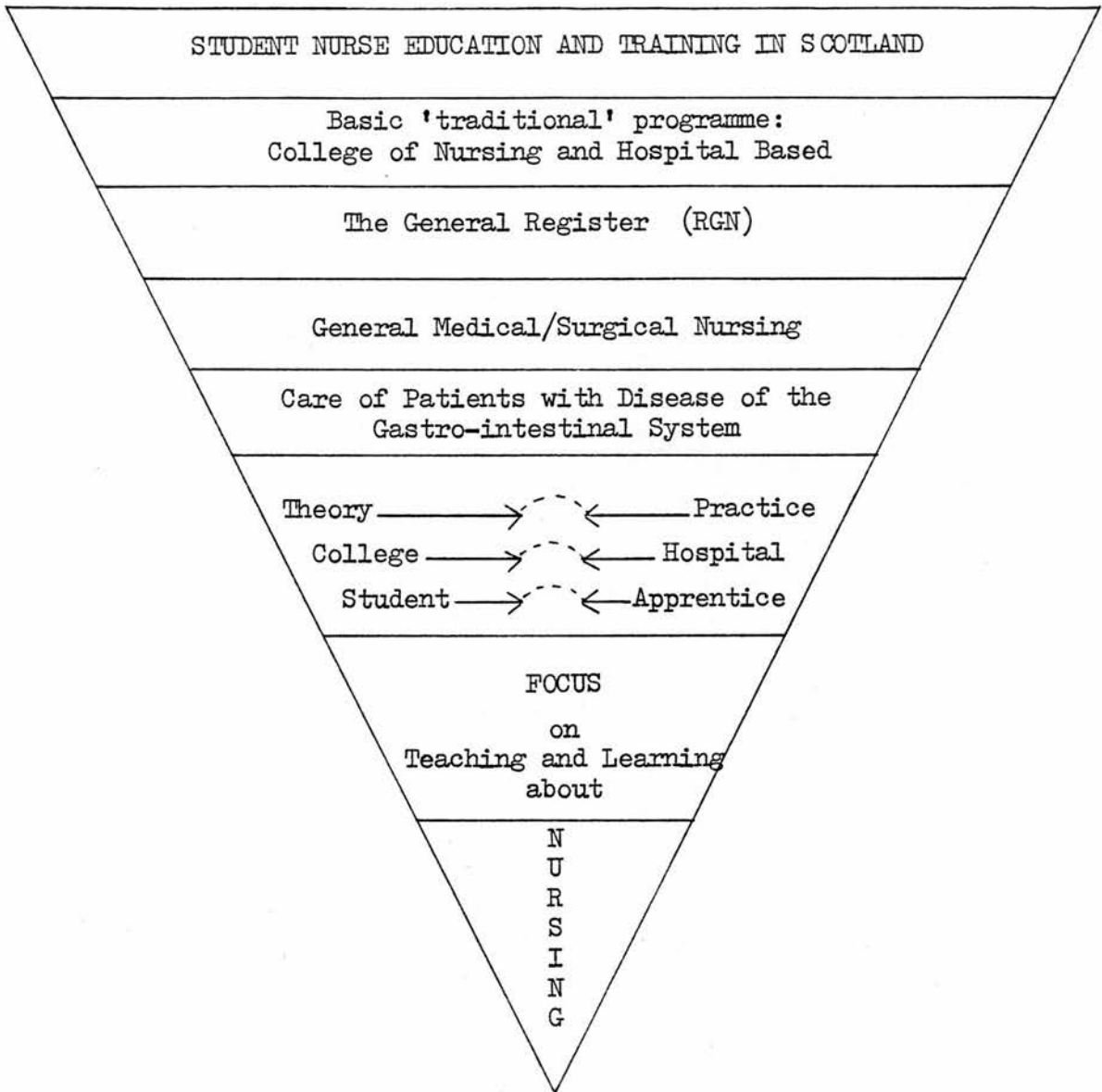


Figure 1 depicts this research setting. Although the basic traditional programme incorporates two separate types of training for general nursing, i.e. it prepares both student nurses for general registration and pupil nurses for enrolment, it is with only the former group that this research is concerned.

The choice of subject for the experimental course was influenced by a number of equally important points. It should be a part of the general medical and surgical nursing course in the General Nursing Council (Scotland) for RGN training, and not a specialist subject such as, for example, obstetrics. There is evidence both in the literature (Harrison et al, 1977) and in the researcher's experience, that specialist subjects tend to be perceived as well-integrated by most students, whereas general medicine and surgery is perceived as least well-integrated. The subject should deal, mainly, with common disorders and diseases affecting men and women, and there should be available, in the different wards, a sufficient number of patients suffering from such diseases so as to make it likely that sufficient relevant experience would be available to the students and their teachers. In addition, the number of curriculum hours devoted to the subject should be sufficient to permit some comparison of the treatment with the traditional method of teaching and learning experienced by the student nurses.

Taking all of this into account, there appeared to be two main subject areas of the syllabus which should be considered, i.e. "Cardio-vascular system" and "Digestive Tract and Abdomen" (GNC

(Scotland) 1973, pp.23-25). Both were taught at a reasonably early stage of training, usually in the second eight week period of theoretical instruction, i.e. after the Introductory Block, but prior to any teaching of specialist subjects. On closer examination, it was realised that cardio-vascular system nursing, although general in nature for much of the medical nursing, was highly specialised in terms of surgical nursing. The final choice therefore was the care of patients who had disease of the digestive tract and abdomen, or, alternatively phrased, disease of the gastro-intestinal tract. Thus, for the student nurse who was meeting this subject matter for the first time in her nursing education, i.e. not the previously trained student nurse, the experimental teaching method would, in a planned and controlled way, link the theory with the practice of nursing of patients with disease of the gastro-intestinal tract. It would take the nurse, while she was a student and therefore supernumerary to the ward staff, out from the college and into the ward, as an apprentice together with her teacher, there to be taught and to learn about nursing by giving nursing care.

The Problem - in Subjective and Objective Perspective

The researcher's own background, prior to undertaking the research, was one of involvement with the registered general nurse education and training programme - first as a ward sister, where one of her responsibilities had been supervision and teaching of student nurses who were a part of her ward staff, and latterly as a nurse teacher, where her main responsibility was for the theoretical aspects of nurse education and training.

It was during this time as a teacher in the basic general nurse training programme that the researcher's desire to carry out research in the field of nurse education gradually arose. A majority of the teachers in the college of nursing, ostensibly teaching student nurses to nurse, were never, or only rarely, in the wards where the nursing was carried out. Students returning to Block from ward experience frequently complained that what was taught in the college was not done in the wards of the hospital. The same students often became restless at what they saw as the restrictions of remaining in the classroom, when what they wanted was to be back on the wards. There, they felt, the theory became real and meaningful, yet when they were working on the wards, there was so little time to step back from their responsibilities for giving patient care, and read or ask questions, or really think through what they had been doing. Teachers from the college found it difficult to work with the students in the wards in any regular pattern, due to lecture commitments and administrative, counselling and preparation for teaching responsibilities. They also felt that some ward staff (ward sisters and staff nurses) did not always welcome them in the ward. In one sense, this latter fact was very understandable, as, when the teacher was in the ward, she was working with a student nurse who was a member of the ward staff, under sister's jurisdiction and being relied upon to complete a certain amount of work. Conflict of interests was inevitable in such a system, as to teach, whether it be a skill or knowledge, took time, and staffing and pressure of work did not always make that time available. To plan

and organise learning experiences specifically to encourage the student to integrate her classroom teaching with her ward practice of nursing was fraught with problems and oft-times doomed to failure, and stressful for all concerned. The researcher, along with her colleagues, was caught up within this system, and in the early stages of teaching became more and more involved in classroom work, to the exclusion of ward teaching. Concern at her isolation from her students' world of work led her back eventually to experiment with ways of combining college and ward teaching, and it was during this latter period of her teaching experience that the problem of integration, and some of its contributory factors, became gradually more and more apparent to the researcher.

In the outlining of these factors which follows below, as indeed in the description in the paragraph above, the first limitation of this study is immediately apparent. It is the very personal perception of what constitute factors in the problem, and the inevitable influence of personal values and beliefs in the structuring of the experiment which is an integral part of this research. However:

"the very choice of any research project ... inevitably presumes an act of judgment in which personal values and personal history play their own - perhaps deep-hidden role. The true science lies in recognising this, not in avoiding the terrain where involvement is most perceptible". (Jackson and Marsden, 1969, p.17).

(1) Clearly, within the prevailing system of education and training, it was quite impossible for every student nurse to leave Block and proceed to directly relevant clinical experience. In a system where students were employees, apprentices, and as such an essential part of the work force on a ward, it was necessary that they be distributed as evenly as possible over all the wards and departments. This meant inevitably that some would go to wards for which they felt they were not specifically prepared. Although it was clear to many of their teachers that it was not possible to provide them with all the knowledge they would ever require, this was not so clear to these young students. This problem of allocation, essentially one of the formal organisation of the programme for each individual student/apprentice, was aggravated by another factor.

(2) In the majority of colleges of nursing, the organisation of the nurse education was "syllabus bound ... subjects given in Block were organised with little thought for what clinical experience the learner may have had, or may be about to have" (Bendall, 1977, p.173). There were a few colleges, both in Scotland and in England and Wales where experimental modular schemes of training existed, with the express aim of linking theory with the practical experience which was to follow, but these were the exceptions. For most student nurses, and for their teachers, the arrangement of the teaching followed the organisation of the subject matter of the syllabus, i.e. it was divided into the various body systems and the diseases related thereto.

(3) The allocation of students to particularly labelled clinical areas such as 'medical wards' and 'surgical wards', did not constitute any precise guide as to the experience thus made available to the student. Roper (1976) pointed to inconsistencies in the labelling of wards when compared with the diagnoses of some of the patients within these wards. In her report of a survey of clinical nursing experience available in wards to which students were allocated, she stated:

"The implication for nurse education would seem to be that since there were innumerable learning and teaching opportunities in most clinical areas over and above that which could be expected from the labels, use of such labels as surgical ward and surgical nursing is misleading". (p.72)

(4) Quite apart from the availability of experience within the wards, a majority of student nurses were unable to learn from the myriad opportunities for learning present in their daily work with patients. Much of the evidence for this statement came from the work experience of the researcher, and from discussions with colleagues, some of whom were clinical teachers. The following comment is from a student nurse, who said, of bed-bathing a 56 year old man, who was cachectic and in the terminal stages of illness caused by gastric carcinoma - "he was too ill to know who was bed-bathing him - I learnt nothing".

(5) The majority of the trained teachers in nursing were never, or at best only very rarely present in the wards where the nursing was carried out. They were thus never seen to be practising nursing, nor did they teach nursing by doing nursing. Henderson (1966)

speaking of her own training days, many years earlier than the date of her book entitled "The Nature of Nursing", stated:

"I seldom, if ever, saw graduate nurses practise nursing - never my teachers. Their teaching was in the classroom". (p.7)

The situation is little different today. The registered nurse teacher remains, for the most part, cloistered within the college walls. Her colleague, the clinical teacher, attempts to create a bridge between what is taught and what is practised, between the theoretician in the college and the practitioner in the ward - an uneasy position, but one which was created in the 1950s specifically to respond to the needs of the student nurses for teaching while they were working in the wards. But the clinical teachers are too few, many do not remain long in post but move on to take the further qualification necessary to become a registered nurse teacher, and many who wish to remain as clinical teachers are required to spend time teaching in the classroom of the college of nursing - time which must be subtracted from their time in the wards.

(6) As the clinical teacher was drawn into the college of nursing, the subject which she was most often asked to teach was that of 'nursing'. Status for the registered nurse teacher became linked to the teaching of such subjects as human biology, microbiology, and other nursing-related subjects, but not to the teaching of nursing. The insidious effect of this state of affairs was the final factor which, in the opinion of the researcher, led to a widening gap between theory and practice in nursing, and to signs that nursing

per se was becoming undervalued by many student nurses. The phrase - 'oh, it's just nursing' heard many times in the corridors of the college of nursing was a clue to the fact that all was not well in nurse education.

These, then, were some of the factors which led to the research and the experiment - an experiment which was so structured as to be capable of execution within the current system of nurse education, an experiment which was, in effect, simply a different way of teaching and learning about nursing.

Ethical Considerations

There were a number of very important ethical issues implicit in this study, involving as it did an educational experiment. The details of how these issues were dealt with are given in Part II of the thesis, as the explanation of the design and methodology unfolds, but the main areas of ethical consideration are outlined below.

There were obligations to the student. Part of the theoretical component of her training was manipulated and, although her consent to the experiment was requested, the nature of the experiment dictated that it was not possible to inform her fully beforehand of all that was involved. In discussions and negotiations with the college staff, the experimental method of teaching/learning could be defended by reference to established theories of learning. In addition, in the event of any student on the experimental course not reaching the required standard for her college, the researcher, an experienced nurse teacher, gave a

guarantee to the Director that she would be responsible for giving any remedial teaching considered necessary.

There were obligations to the teachers. For them, involvement meant disruption to their normal working schedule, but also responsibility for the teaching. For some, those who taught the experimental group, this meant teaching in the wards and supervising patient care, with the concomitant responsibilities.

There were obligations to the ward staff. The experimental teaching method set out to use the ward and its facilities primarily for the education of the student nurse, thus involving and requiring co-operation from the large group of trained nurses whose first priority is the care of the patient, and only after that, the education of the learner. There were considerable obligations to the patient, not least because for some it was not possible, or was deemed unwise, to ask for their consent to participation in the research. There were others who were fully informed and consenting recipients of care. Steps were taken to ensure confidentiality for all patients involved. Students, for example, were asked to be particularly careful about any notes they made, and to use no identifying features which could be traced back to any patient, and the researcher too was careful to ensure that nowhere in the research report was any particular patient identified.

The advice given in Part I of the booklet "Ethics Related to Research in Nursing" (RCN,* 1977) provided clear guidelines for the researcher, and as far as possible that advice was followed. In this study it was particularly applicable in regard to explanation,

*RCN - Royal College of Nursing

consent, confidentiality and the protection of all four groups involved - the students, the teachers, the ward staff and the patients.

"Research subjects must be assured protection against physical, mental, emotional or social injury. No harm must come to them as a result of being involved in the study insofar as the present state of knowledge allows". (RCN, 1977, p.3)

The Research Approach

The Gestalt concept, that the whole is more than the sum of the constituent parts, was basic to the approach adopted in this research. A study which has as its aim the facilitation of integration of theory and practice in nursing cannot but involve four distinct groups of people, student nurses, nurse teachers, ward staff and patients, and two separate environments, i.e. service and education, or hospital and college, each with their own particular ethos.

The appropriate techniques for evaluation of such a complex scenario were deemed to be those of illuminative evaluation.

Parlett and Hamilton (1972) state:

"Illuminative evaluation is not a standard methodological package but a general research strategy (which) aims to be both adaptable and eclectic. The choice of research tactics follows not from research doctrine, but from decisions in each case as to the best available techniques". (p.15)

Over the last decade the emphasis in educational research has tended to move away from the 'clean and tidy', strictly controlled setting of the psychological laboratory, using what has been termed the

'agricultural-botany' paradigm, and into the much more 'untidy' world of the reality of the educational scene (Tuckman, 1978). That reality tends to be even more untidy if it includes, as it does in nursing education, the world of work. With the change in emphasis came the 'alternative' paradigm which made use of ethnographic techniques, developed by anthropologists and community-study sociologists. Wilson (1977) describes the rationale underlying the ethnographic methodology as based on two sets of hypotheses about human behaviour:

- (a) the naturalistic-ecological hypothesis that human behaviour is significantly influenced by the settings in which it occurs, from which it follows that it is essential to study events in their natural settings, and
- (b) the qualitative-phenomenological hypothesis that human behaviour often has more meaning than its observable 'facts'.

From this it follows that the researcher can only understand human behaviour insofar as he has an understanding of the framework within which the subjects interpret their thoughts, feelings and actions. Taken to its extreme, this particular approach could become as unwieldy and as unrealistic in the furtherance of educational research as its predecessor, the strictly controlled pure research of the traditional approach. Where the latter stressed objectivity, measurement and proven facts, the former, in the endeavour to gain a wider understanding, required prior knowledge of the setting and/or close observation of it by the researcher, and thus introduced many problems of subjectivity of interpretation. However, with the realisation of this threat to any subsequent generalisation of

research findings resulting from the approach, came the development of a considerable number of different techniques of design, data gathering and data analysis.

Illuminative evaluation, by taking account of the wider contexts within which educational programmes function, has been placed within the alternative paradigm. It is by definition a more eclectic approach in which no one particular research method or technique is paramount. The problem is said to define the methods used, and such an approach seemed particularly apposite to this research. Just as the design of the educational experiment had to be such that it was sufficiently flexible to fit into the different college of nursing adaptations of the nurse education and training programme, so the evaluation techniques had to be adaptable and capable of use in the different settings.

The aims of illuminative evaluation are to study the innovatory programme, and were in this case applied to the experiment in teaching and learning to nurse. Parlett and Hamilton (1972) state these aims as follows:

"to study ... how it operates; how it is influenced by the various school situations in which it is applied; what those directly concerned regard as its advantages and disadvantages; and how students' intellectual tasks and academic experience are most affected. It aims to discover and document what it is like to be participating in the scheme, whether as teacher or pupil". (p.9)

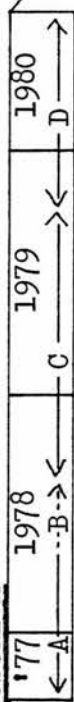
Translated into the situation in nurse education, and in this research, this approach required that account be taken of aspects of the physical, organisational and educational milieux of college and

hospital, and of the pre-experiment opinions of student nurses, college staff, i.e. the officially designated teachers in nursing, and ward trained staff - ward sisters, staff nurses and enrolled nurses. It required documentation and description of the day to day conduct of the experiment which was organised by the researcher in a form of participant observation. Following the experiment, traditional outcome measures such as test scores were not ignored, but the focal point was the evaluation of the goals and objectives of the experimental teaching/learning method, and opinions of the involved staff (both teachers and ward staff) and students about the advantages and disadvantages of the innovation as they saw it, i.e. what it was like to be participating in it.

Figure 2 outlines the stages of the study. Initial exploratory work led to reading which had as its focus three areas felt to contribute significantly to the setting or context of the research. These were:

- (a) the prevailing system of nurse education and training in Scotland at the close of the 1970s, including an examination of the development of the problem under investigation, i.e. the lack of integration of theory and practice in nursing,
- (b) learning in relation to nursing - some tried and tested theories, other newer concepts such as meaningful and experiential learning, freedom to learn and the importance of recognition and development of individual differences and styles in learning, and
- (c) measurement and evaluation in education generally and in nursing education in particular.

Figure 2 The Stages of the Research



Early exploratory work and Literature Search

The Survey - The Present Position
in Colleges of Nursing

Development of Research Design and Instruments
including

Construction, then Validation of Multiple Choice Test

The Pilot Study

The Main Study

Pre-experiment	Experiment	Post-experiment	Retention of Learning
E 0 ¹	T	0 ²	0 ³
C 0 ⁴		0 ⁵	0 ⁶
<u>Student Nurses:</u> Background data Opinions Multiple choice pre-test <u>College Teaching Staff:</u> Background data Opinions <u>Ward Trained Staff:</u> Background data Opinions	<u>Case-study Approach:</u> Recording daily by: Researcher - Patients chosen Student movement Teacher movement Ward involvement Students - Nursing Care Plans Study Diaries Teachers - Classes - Subject and Teaching Methods used	<u>Student Nurses:</u> Opinions Study diaries Multiple choice post-test College-set essay test <u>College Teaching Staff:</u> Opinions <u>Ward Trained Staff:</u> Opinions	<u>Student Nurses:</u> Opinions Multiple choice retention test College-set essay test

Data Analysis and Writing of Thesis

Simultaneously with the gradual evolvement of the design of the research and the experiment, a survey of a number of colleges of nursing was carried out, which yielded descriptive background data relevant to the system of nurse education. This supplemented and up-dated the researcher's own knowledge of the system. Prior to the pilot and main studies, various research tools were designed and pre-piloted. These included questionnaires and a multiple-choice test of knowledge of the subject matter of the course. The latter was validated prior to use in the pilot and main studies by a procedure which will be explained in Part II of the thesis. Following the Pilot Study in one college of nursing and its associated hospital, the Main study was conducted in five colleges of nursing in Scotland.

In accord with the tenet of illuminative evaluation that the problem should dictate the methods used, the design incorporated features associated with both the traditional and the alternative paradigms. Reference to Figure 2 will show the use of what Campbell and Stanley (1966) refer to as a "true experimental design ... the pretest-posttest control group design" (p.13). This was the part of the research in which traditional methods were used in order to attain a measure of control over certain relevant variables. Quantitative data were obtained in the form of test scores from the students, which, although recognised as not entirely objective data, made possible the calculation of learning gains for the students in the control and experimental groups. The subjective assessment by all the participants completed the evaluation of the experiment.

Thus, the somewhat eclectic research approach has endeavoured to bring together some of the parts which together contribute to the whole, the Gestalt, which is the milieu within which student nurses are taught and learn about nursing.

Aims and Objectives of the Research

The general aim of the study, derived from the question on Page Two of the thesis, was the facilitation of integration of theory and practice in nursing. The specific objective was to plan, construct, implement and evaluate an experiment in which, in regard to one subject in the GNC (Scotland) syllabus for general nurse training, theoretical teaching and ward practice of nursing occurred concurrently. The experiment was the means towards the achievement of the general aim and as such had a number of objectives.

Goodwin and Klausmeier (1975) differentiate between objectives in education in terms of their degree of generality or of specificity. They state that first level objectives are of high generality and low specificity - such objectives are formulated at national level, with the purposes of providing objectives for local educational agencies to consider. A parallel in nursing is the GNC (Scotland), the national body who provide the syllabus and general guidelines for the colleges of nursing to follow in compiling their own programmes for education and training in this case for general registration. At level 2, Goodwin and Klausmeier consider the degrees of generality and of specificity to

be moderate. This is the level concerned with implicit instructional objectives formulated at local level with the purpose of suggesting objectives for classroom teachers to consider. There is a parallel here with certain of the objectives the researcher formulated for the experiment in regard to factors in the integration problem. Such factors could be considered neither wholly general nor wholly specific, as they will operate to a certain extent in many, though not all, of the colleges of nursing. Objectives on this second level dealt with the facilitation of integration and referred to such matters as:

communication between those in college and hospital, i.e. education and service;

a realistic preparation of the student nurse for what is required of her as an apprentice in the wards;

the difficulties experienced by nurse teachers in incorporating ward teaching into their work schedules;

the difficulties for student nurses in learning on the job; and

standards of nursing care.

The third level in Goodwin and Klausmeier's classification was that of low generality but high specificity. These were the explicit instructional objectives familiar to most teachers acquainted with the writings of Benjamin Bloom (1956) and R.F. Mager (1962). Such objectives are normally formulated at classroom level, by the teacher or occasionally nowadays by both teacher and students (Boydell, 1976). They state, using precise action-type terminology, the specific behaviour to be demonstrated by a student following a course of instruction. It is claimed in this research

that integration is essentially a function of individual learning and there were therefore specific cognitive objectives which related to the course content of the experiment, i.e. the care of patients with diseases of the gastro-intestinal tract. These objectives stated clearly what the student would be able to do at the end of the course of instruction. In addition to the cognitive objectives, there were also affective objectives concerned with students' attitudes, values and feelings about nursing care as a result of their exposure to the experimental course. Although the cognitive objectives were unequivocally at level 3 in Goodwin and Klausmeier's trilogy, the affective objectives of this experiment dealt with ways of thinking and acting and therefore with a process which was potentially generalizable to other teaching/learning situations and other nursing situations. They were thus capable of contributing to the general aim of the research at a slightly higher level than were the knowledge objectives.

The formulation and use of objectives were a vital part of the research. Objectives are concerned with communication and evaluation. They helped clarify the researcher's thinking and served as guidelines for the planning and conduct of the teaching/learning experiment. They were also useful to the nurse teachers in the different colleges who carried out the teaching of the control and experimental groups of students. They provided information to the students as to what was to be learned and what was expected of them. In addition, by prescribing specific outcomes, they

facilitated the assessment of the students' progress. Because objectives are an efficient method of communication of intent, it was considered important to withhold information about certain of them from the participants in the early stages of the experiment. The cognitive and affective objectives related to the course of instruction were known to students and staff before the course began, and provided the guidelines for the teaching, learning and the end-of-course assessment. All other objectives were disclosed only after the experiment was complete, lest they influence participants' opinions and therefore their evaluation of the experiment.

Assumptions of the Study

A number of assumptions underlie this research. These are:

- (1) that extraneous measures, such as the juxtaposition of theory and practice in the curriculum, the presence of nurse teachers on the wards with supernumerary students, the use of more active rather than passive methods of teaching, will facilitate what is essentially an internal process in the learner, i.e. the process of integration of theory and practice in nursing;
- (2) that an apprenticeship system of nurse education and training is the preferred method of preparing the greatest number of those who are, or can be, recruited to a labour-intensive service such as nursing is, and no doubt will remain for some considerable time in our society;
- (3) that the apprenticeship system within this country is a system which is sufficiently flexible to accommodate innovation and change - both large and small scale;
- (4) that the introduction to the wards of supernumerary, teacher-supervised students whose nursing work is primarily dictated by their needs as students and not primarily by the needs of the ward is not detrimental to the needs of the patients;

- (5) that problems of perceived lack of integration of theory and practice in nursing are more likely to be a function of the methods of teaching and learning, than of the formal organisation of the training programme. From this premise it follows that ways of facilitating integration should be sought, and can be found, within the current system, rather than by rejecting the entire system; and
- (6) that the experimental method of teaching/learning would result in a more relevant and more realistic preparation for the daily work of nursing than is achieved by the present predominantly college-based methods.

Limitations of the Research

In research, as in life, limitations can be viewed in two ways. The more usual view is of limitations as restrictions - restrictions to interpretation of findings, to generalisation of results. The recognition of such limitations and the creation of a methodology which goes some way towards dealing with them, are essential components of the design of a study. This type of limitation is appropriately discussed at the point in the thesis where the design is described, in this case in Part II. The alternative view of limitation as a challenge pervades this study. There is the challenge of experiment in such a value-laden area as education; there is the challenge inherent in the attempt to measure learning. Whereas it is relatively straightforward to measure before and after knowledge of a subject, and this was done in this study, it is problematic if not impossible to measure accurately ways of thinking and feeling, opinions and attitudes, yet it is the view of learning as an individual process involving both the cognitive and affective domains which is at the core of this research. The brevity of the experiment in each college, and thus of the

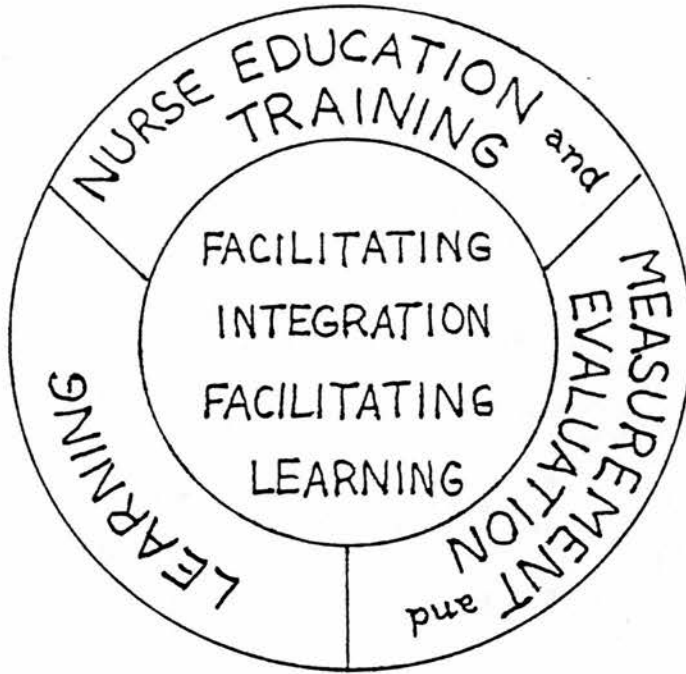
individual participants' exposure to the altered teaching method and way of learning would militate against any change in ways of thinking or opinions. Indeed if such changes were, in some cases, initiated, they would prove elusive to identify, more especially as it was not within the scope of the present study to observe behaviour of any of the participants after the experiment took place. Education and values are inextricably mixed, such is the mix which provides the restriction and the challenge to this research.

LITERATURE REVIEW PREAMBLE

Introduction

There are three parts to the review of literature. Figure 3 shows that each part is related to the central aim of the research which is the facilitation of integration of theory and practice in nursing. Integration is considered to be a dynamic process, essentially a part of the process of learning. Learning has been described herein as an intrinsically individual process, resulting in changes to ways of thinking, feeling, and acting. It is postulated that to facilitate integration is, in essence, to facilitate learning. Hence, the three areas chosen for reading relate to integration and also to learning in nursing. First, the system by means of which students learn to become nurses is examined - the system of nurse education and training within which the problems of integration of theory and practice have arisen. Secondly, the concept of learning is explored. The third part of the literature review deals with measurement and evaluation, matters which are of relevance to, and have an influence upon integration and learning, but in addition, are of importance in the design and methodology of this research.

Figure 3 Components of the Literature Review



CHAPTER 2

NURSE EDUCATION AND TRAINING : THE DEVELOPMENT
AND DILEMMAS OF THE APPRENTICESHIP SYSTEM

Introduction

Learning to nurse, for the majority of aspiring nurses in this country takes place in two separate institutions - colleges of nursing and midwifery, and hospitals. In the former, approximately one-sixth of a basic three year training programme is spent in formal instruction about nursing and related subjects, and in the latter, the remaining five-sixths is spent in working and thereby gaining practical experience of nursing.

Since November 1976 in Scotland, the formal instruction of the student nurse has taken place in colleges of nursing and midwifery which came into being as a result of the gradual amalgamation of several of the existing hospital schools of nursing and schools of midwifery. Within these newly formed colleges a number of different training programmes were in force leading, for student nurses, to qualification on one or more of the four Registers maintained by the General Nursing Council, i.e. the General, Mental, Sick Children's or Mental Subnormality Registers; for pupil nurses to Enrolment; and for pupil midwives to qualification as a midwife. A few of these colleges brought staff and students together under one roof, but others were a 'college' in name only. Although there was one person in administrative charge, the Director of Nurse Education, the component parts of the college were in buildings

widely separated from each other geographically. In these cases, staff and students from the different parts of the college might never, or only very occasionally meet. For many colleges, the areas where their students gained their practical experience were quite widespread - even perhaps in different towns.

The training programme with which this study is concerned is that which most student nurses experience in preparing for registration on the general part of the Register. It is the Phase I programme of Comprehensive Training of the General Nursing Council for Scotland. In this programme, the student must spend a minimum of 24 weeks in Study Blocks, 8 of which must be completed within the first 16 weeks of training, and it is recommended that the remainder be completed by 18 months of training. While on secondment to psychiatric, obstetric, paediatric and community nursing, which secondment is an integral part of the programme, a further minimum of 16 days, in Block, study days, or equivalent periods of study is mandatory. This theoretical component is contained within the statutory 144 week training which must be satisfactorily completed prior to Registration. Appendix I shows the requirements for that training and includes a list of the areas within which practical experience should be gained.

Although there exist a number of variations to the above pattern, nursing education and training in Scotland, as in the United Kingdom, is predominantly based upon the apprenticeship model above described. It is within that model that many of the difficulties related to integration of theory and practice are rooted, yet it is within the same model that the potentials for integration are strong.

Early Days

The advent of organised nurse training in the United Kingdom one hundred and twenty years ago was accompanied by opposition and argument. Miss Nightingale had insisted that her nurses "were to have a course of class instruction and practical training in hospital" (Jamieson and Sewall, 1954, p.337) and the doctors of the time, sensing in these revolutionary proposals a criticism of their own arrangements for the nursing care of their patients countered with the statement that "nurses were in the position of housemaids and needed only the simplest instruction" (Baly, 1973, p.72). Swords were drawn and many would say are still unsheathed, although nowadays the protagonists and antagonists of the various arguments and proposals are to be found much more within the ranks of nursing, and the battle is not over whether any education is necessary, but over what is a relevant education and training for nursing, and of where, when and by whom it should be provided.

The origins of the system of nurse education and training which we in this country know today, can therefore be accurately traced to the late 19th century and the ideas and vision of Florence Nightingale. Although at that time the extent of nurse education was minimal by the standards of today, the principle was established and "in Miss Nightingale's opinion both education and service were integral and equally important aspects of the probationer's training" (SHHD, 1963, p.1). Professor Scott Wright in the Report she compiled for the Scottish Home and Health Department on the Experimental Nurse Training at Glasgow Royal

Infirmary, wrote of Florence Nightingale, that in appreciating the need for theoretical as well as practical experience, she saw the significance of one of the main problems affecting basic nurse education today. Scott Wright went on to outline the progress of nurse education and to note the effect upon it of changes in society and in medicine. She cited the development of anaesthetics, and of aseptic surgical techniques as advances which led to demands for many more nurses, which in turn led to a lengthening of the then two year course of training. This change was made under the pretext of giving greater experience, but the labour of young women was very cheap in those days and their services were exploited in a training which had been extended to three years. Brown, writing of this period in 1948, commented "if practice made perfect then much could be expected" (p.49). This emphasis on the practical or apprenticeship aspects of nursing training, and the resulting impoverishment of the educational component, continued until the outbreak of World War I. Nursing, so much a part of the fabric of society, was caught up in the enormous social convulsion which occurred during and as a result of that devastating war, and its aftermath. The demand had again been for more and more nurses, and for skilled nurses because further advances in medicine had made it possible to attempt more for the patients. There were insufficient trained and competent nurses to cope with the numbers of sick and injured, but nursing was beginning to reacquire status - to become fashionable again. There was an influx of untrained, or partially trained

ladies, anxious to serve their country at a time of such need. Nursing emerged from that War, a profession, but every bit as turbulent and divided amongst its members as the rest of the society of which it was a part.

The Influential Middle Years

In 1919, just after the War, and in an atmosphere of some acrimony, the General Nursing Councils were created. These were statutory bodies, formed to exercise control over the standards in nursing and with the following duties:

- "1. To compile a syllabus of instruction
2. To compile a syllabus of subjects for examination
3. To compile a register of qualified nurses"
(Baly, 1973, pp.140-1).

However, it was not from the statutory bodies that the challenge came, in that immediate post-war era. The first post-1919 recommendations for nursing were from the other side of the Atlantic, to which the Nightingale system of nurse education had been exported, in unexpurgated form, some fifty years previously. From the United States of America, the Goldmark Report, dated 1923, recommended a reduction of the three year basic course, by approximately a quarter, to be achieved by the removal of unnecessary repetition and non-teaching time on the wards. It also broached the idea of college or university-based education for some nurses. This Report preceded the earliest post-World War I evidence in Britain that all was not well with nursing, but in the first Report to be

published in this country, that of the Lancet Commission in 1932, there was a rejection of any possibility of a shorter training because it would be detrimental to the hospitals who required the 'probationers' to give service. The Commission did, however, suggest that ward sisters be relieved of some of their duties to enable them to spend more time teaching nurses, but they also stated unequivocally that "nursing is essentially a craft" (Lancet Commission, p.162). Seventy years on, as this Report was, there was almost no sign of Miss Nightingale's plan for a systematic and thorough education for nurses. Although the Lancet Report, of itself, did little to improve the education of the nurse, it became, indirectly, of key importance in nursing because of the considerable reaction and public and professional debate which it stimulated. Many were apparently very dissatisfied with nursing at that time, but then it might have been said that disappointment with developments in nursing was part and parcel of the general disillusionment and disappointment which permeated all of British society in those post-1918 decades. However, for nursing, the decade of the thirties produced two particularly interesting publications - interesting because of the comprehensive comment they provided upon the contemporary nursing scene and remarkable because, had their publication dates been concealed from a 1980 reviewer, it seems very likely that the concluding summary might have read - 'these books provide a comprehensive comment upon the contemporary nursing scene'.

The books were written by a British doctor and a British nurse, who had herself, some eight years before the publication of her book, given evidence to the Lancet Commission. Dr Balme, writing in 1937, must have been a courageous medical man to write as he did so convincingly, of the necessity to improve the education of nurses. He commented upon the lack of integration of theory with practice, upon the overriding claims of service before education, of the very inadequate provision of bedside teaching, of a crowded syllabus which ignored the social sciences and put a major emphasis on tasks, and of the need for the tutor of nurses to teach her students on the wards, to superintend their work there and to link the symptoms exhibited by the patient with the special nursing application-the nurse should learn why, not just how. He compared nursing preparation to its detriment, with that for physicians, engineers and architects, where a wise combination of practical work and expert instruction gave, in his opinion, better results.

"As a system of education, it (nursing) is almost doomed to failure from the outset, owing to the intense preoccupation of those from whom the young nurse should be receiving the bulk of her instruction". (p.15)

He was here referring to the ward sister who was so busy that her inexperienced helpers received 'short shrift'. It was not so, he said, for the aspiring doctor.

For the medical student, every effort was made to make him understand why things were being done, but this was a privilege

seldom accorded the student nurse - he did not know of a single hospital in which regular bedside instruction was given to the nurses, concerning the illnesses and the special nursing methods applicable to each.

"It is only by a happy accident that a lecture will have a direct bearing upon some particular case which a nurse is attending at the moment". (p.17)

The only anachronism in Dr Balme's text is the use of the terms case, or illness, rather than the term patient, and yet he wrote, almost half a century ago, that the nurse soon discovers it is far more important that she learn about people rather than things:

"to understand how to handle human beings (rather) than surgical instruments, but what chance has she of studying psychology in such a crowded syllabus, and what of the social sciences?" (p.20)

He made many recommendations, seeing the need for college or university-type education, perhaps even for grants in the effort to create separation of education from the responsibility for giving service, for more tutors, for faith, finance and a far-sighted philanthropist to accomplish the major improvements, but he stressed that much could be done while awaiting radical change:

"It is what is seen on the wards which sticks, and it is a great pity the instruction of nurses is not at present based upon that fact". (p.54)

Miss Carter, two years later, was preoccupied with many of the problems Dr Balme had mentioned. She too stressed teaching at the

bedside and regretted that the Nightingale idea of clinical instruction as "the bedrock of nurse training" (Carter, 1939, p.101) had been overlaid by pressure of ward duties, and that:

"the sister tutor, with her time fully occupied by the exigencies of the syllabus, has ... too often been separated from the wards, and in consequence clinical teaching has suffered and with it the bedside care of patients". (p.111)

She anticipated the present-day Block system in recommending that:

"alternation of work in the wards with periods of study and practice in the school would probably be necessary, but there should never be a complete divorce between theory and practice". (p.165)

"The wards would never be shut to her (the student nurse) even while she was taking a course of lectures". (p.166)

Miss Carter would seem to be a key figure, whose own vision linked the aspirations and ideals of Florence Nightingale with those of present-day nurses and nurse educationists. There were striking parallels between 1860 and today in four matters of which she wrote. These were: (1) of the necessity to precede reforms by careful survey and documentation of the needs of the country for nursing, both preventive and curative; (2) of the importance to nursing of experiment and research:

"there is urgent need now, as there was in 1860, for experiment and research into new methods of nurse training". (p.130)

(3) of her opinion that education for nursing must be such as to develop reason, the power of association, the faculty of self-expression, and that students should learn principles which they could

then apply throughout their training:

"the student nurse has yet to be taught
responsibility for her own mind". (p.168)

and (4) - and in this she pre-empts some of the findings of this particular study:

"a reform which would be very attractive to nurses ...
would be the allotting of patients rather than duties
to the nurse". (p.148)

Such were the issues of the thirties in nursing - such are the issues, almost every one of the important issues, at the threshold to the eighties in nursing.

Several major landmarks mark the intervening years in nursing, and throughout, in the mass of paper and words, can be distinguished the thread of concern as to what was the most appropriate preparation for the work of nursing. The Horder Committee, reporting in 1943, in the midst of the Second World War, recommended a separation between training and the obligations to provide service for hospital patients, in order that the educational needs of the nurses could take priority and dictate the hospital experience, rather than the reverse, but the Committee emphasised, in heavy type, that they saw "nothing incompatible between apprenticeship and studentship" (Edwards, 1962, p.9).

The twin problems of balance between education and service, between theory and practice, were to come under scrutiny from a slightly different angle. The perspective of the fifties was that

of job analysis, and the work which nurses did was observed meticulously. The resulting report - the Nuffield Report on the Work of Nurses in Hospital Wards - shocked the nursing world, and that of the interested public, by its findings. Student nurses were said to be students in name only - "teaching as such was not found to take up more than a negligible amount of ward time" (Nuffield Provincial Hospitals Trust, 1953, p.121). During a ward sister's nine hour working day, tuition to student nurses was observed to occupy on average five minutes only, thus:

"assuming that the bulk of formal tuition is given to student nurses outside the ward, there is still the question of how the practical work is taught and how it is related to the theory learnt elsewhere". (p.121)

In the search for, and the finding of an answer to that very question, there was created in nursing a new post, and a new, subtle and far-reaching problem. The struggle for a better balance between education and service, between theory and practice, which until this point had focused upon two key figures in the student nurses' world, the ward sister and the sister tutor; and upon the problems of time and teaching preparation for the former and the isolation from the wards of the latter, changed direction. In a sense, defeat was accepted, and the clinical teacher was born. Between the expert practitioner, the ward sister, and the trained teacher, the sister tutor, came the third figure, also a nurse, and one who was charged with the responsibility to integrate theory and practice, to help the student nurse make the link between what was

taught and the necessary application of that to practice, between what went on in the classroom and what went on in the hospital. While the positive aspects of the clinical teacher role and function were considerable, her existence almost as an emissary between two opposing camps confirmed the existence of these two camps and in many ways would seem to have increased the area of no-mans-land between them, an area occupied somewhat uneasily by the nurse - some time student, some time apprentice, and by the teacher who was also a practitioner and expected to combine the skills required of both roles.

The year 1956, which in Scotland saw the creation of the post of clinical teacher, saw another important development as a direct result of recommendations arising from a study of the Nuffield Job Analysis. This was a pioneering experimental scheme of nurse training conducted in Glasgow Royal Infirmary. The main problem which that experiment sought to solve was one germane to nursing for many years:

"how may the education of the student nurse be improved without upsetting service obligations to the patient". (Scott Wright, 1961, p.1)

The direct and principal objective of the experiment was the improvement of patient care, and this was to be attained indirectly by making the training more attractive to the nurse both professionally and personally. The experiment was established on three basic principles - the students should be supernumerary, the whole course should provide the opportunity for linking the theory

and practice of nursing and the school of nursing should be economically independent of the hospital. There was a complete break with the usual apprenticeship system of training in that patient care was given only in conformity with the needs of the students for practical experience and not in answer to the needs of the hospital. The students were supervised in giving patient care by their tutors and clinical teachers. The experimental course reduced the time taken to train to two years, instead of the usual three years, and was the first example in this country of a broad-based evaluation of results in terms of the original objectives of the experiment. In common with many evaluation studies today, Professor Scott Wright and the Assessment Committee set up to evaluate the experiment found it difficult to measure the subjective objectives, in terms of the contribution made by the experimental nurses to improved patient care, and relatively easy to measure success in tests and Final State Examinations, and effects upon wastage rates. They had been a little disappointed to find that, on the whole, the experimental course students did not perform so adequately as staff nurses in their third or 'interne' year, as did students who were a product of the conventional form of training. This was attributed to a lack of progressive responsibility and of clinical experience in the experimental course. In their efforts to diminish "the 'evils' of the apprenticeship form of training .. and to educate students for service rather than by service the curriculum planners have over-emphasised the theoretical at the cost of the practical aspect

of the course" (SHHD, 1963, p.147). However, they demonstrated that it was possible successfully to prepare student nurses for the Final Examinations in two years, given control of their education and the integration of theory with practice, although it should be pointed out that the student nurses in the experimental course did have 'above average ability' as measured by previous examination successes and/or standard intelligence tests. In some part due to the success of the Glasgow experiment, and in part due to the considered inadequacy of the existing pattern of nurse education to meet the needs of society in that time of accelerating rate of change, the Platt Committee was set up by the Royal College of Nursing in 1961 with the very wide remit to consider the whole field of nurse education. Platt's recommendations, made in 1964, were extensive, and in many ways followed on from the results of experiments both in Canadian nursing and in Glasgow. They supported the view that the school of nursing should be independent of the hospital, with an identity separate from the hospital, and that there should be controlled integration of theory and practice in a course of training which took two years, followed by a third year in which the student gained practical experience. They differentiated between the education of the student nurse and that of the pupil nurse, the former to be concerned more with principles and their applications, and made recommendations to raise the standard of entry qualification for students. However, their most talked-of and controversial recommendation, for which, as it transpired, neither the profession nor the country was ready, was that nurses in

training should receive an educational grant throughout their first two years of training - the division should be clear. They were to be students and not apprentices. Platt was 'shelved'. Experimental schemes however continued, building upon not only the Glasgow experiment but also upon some aspects of Platt, notably the "2 plus 1" format of two years of education plus one year of practical experience, but without the independence inherent in a student grant. Also, somewhat surprisingly, almost all of the developments or experiments were carried out with students of above average educational attainment. Why solutions to the problems in nursing education and training should have been sought in experiments not readily translatable into the everyday world of nursing is, in retrospect, a little difficult to understand, but this may have been a function of the fact that this was a fairly early stage of research in nursing.

Searching for Synthesis in the Seventies

Nursing education and nursing service entered the decade of the seventies divided, confused, and at odds with each other, rather than as two co-operating and interdependent groups within nursing, and the profession as a whole faced the prospect of yet another official enquiry - this time commissioned by the then Government and with terms of reference which read:

"to review the role of the nurse and midwife in the hospital and the community and the education and training required for that role, so that the best use is made of available manpower to meet present needs and the needs of an integrated health service".
(HMSO, 1972, p.1)

The Briggs Committee, for so it came to be named (after the chairman, Professor Asa Briggs) saw the last phrase of their remit as distinguishing their enquiry from that of previous groups. From this it can be inferred that the needs of the society had become articulated as a need for integration, for putting together the fragmented parts of the Health Service into an integrated structure for health care.

Within this Committee's most comprehensive Report and recommendations published in 1972, the theme of integration is paramount, from what amounted to what might be termed a macro-concept of integration in terms of the National Health Service as a whole, to a micro-concept in terms of details related to nursing education and training. They state:

"Since nurses and midwives constitute the largest group of National Health Service staff, the success of integration policies will depend substantially on their effective education and deployment". (p.1)

Within a new pattern of education, they clearly indicate their belief in nursing education as a process of continuing learning which should take place in a variety of clinical settings, i.e. hospital and community, and include the care of all age groups. Apart from confirming the necessity for a small number of entrants to nursing to be educated at University, or College of Further Education level, they recommend a basic course, common to all entrants to nursing in which "theoretical instruction should be related step by step to the relevant practical instruction" (p.86).

"Basic skills can be learnt thoroughly, we believe, only in clinical practice" (p.86). The Briggs Committee saw it as essential to nursing to attract, and appropriately educate, entrants of very different temperament and ability, and thus, for those more able, there was to be a post-certificate course, which in the case of general nursing would lead to Registration and the possibility of further more advanced courses and specialisation.

"We wish to stress that Registration is not the end of the story for the modern nurse and midwife or for the nurse and midwife of the future. The education of nurses and midwives is a continuous process". (p.93)

The formal organisation of nursing education was recommended to be within a "modular system in which each module of training involves concurrent theoretical and practical work. After being given theoretical instruction, students go on to wards to practise what they have learned before they learn something else" (p.68). The proposed modular system, along with the principle of continuing education, presupposed teaching in or close to the clinical situation and to this end they comment upon the preparation and responsibilities of nurse teachers. They recommend:

"direct interrelationships under the modular system of learning between teaching in the colleges of nursing and midwifery and in the ward and the community. No teacher would be entirely based in college or in the clinical situation ... we also wish to get completely away from what has become the traditional conception of the nurse tutor, a maid of all work required to teach all subjects in the nursing syllabus. We believe that this conception is inapplicable in present and future circumstances. It can no longer satisfy the individual concerned nor provide the right approach to teaching for students". (p.111)

In pinpointing the generalist role of the nurse teacher, the Briggs Committee, on the one hand, highlight one of the major difficulties for the nurse teacher in undertaking ward teaching, and on the other, take account of the increasing incidence of highly specialised nursing required today. They do not consider that the nurse teacher alone should be responsible for nurse teaching, but recommend that clinical nurses at ward and community level should teach both in the clinical situation and in the college.

Briggs' far-reaching recommendations for nursing education stemmed from their identification of certain fundamental problems, three of which have direct relevance to this study. These were:

"the ambivalent position of the nurse in training both as learner and worker; determining the balance of theoretical and practical work in the learning process itself; and the dual role of the hospital as the provider of nursing care for patients and the provider of education for nurses". (p.64)

In expressing these three dichotomies, Briggs brought into focus once more matters which had bedevilled nurse education since its inception.

Why are these divisions so resistant to the passage of time and the changing resources and needs of society? To a great extent, it must be because they are inherent in the concept of nursing, nursing which means so many different things to different people in different circumstances. Fundamentally, nursing means caring, yet caring with sufficient insight so as not to diminish but if possible enhance the independence and self-respect of the recipient of that care; nursing means teaching, teaching patients, their

relatives and teaching their own colleagues; and nursing means organising, organising the appropriate ways and means to achieve the two former elements of the task which is nursing. It is not the intention in this thesis to enter the debate in regard to 'what is nursing' - suffice to state that it is one of the most diverse occupations in our society. There are nurses in acute wards and fast-moving, highly technical intensive care areas in hospitals, there are nurses in tranquil hospices for the care of those terminally ill, there are nurses in the sterile, impersonal atmosphere of the operating theatre, and nurses in the very personal atmosphere of the patient's own home. The only common denominator is that nurses work with people, healthy and ill, young and old, in this process of caring and teaching. To do this well, there is consensus that nurses must be educated. Beyond that, there is no consensus.

The Dichotomies Discussed

Nursing literature abounds with evidence of the three dichotomies, of the gap, nay the gulf between (a) theory and practice, or what is taught and what is practised in nursing, (b) education and service, or the college of nursing and the hospital, and (c) the position of the nurse as a student and as an apprentice.

From 1960 onwards research into nursing began to make an increasing contribution to the literature on the above-mentioned dichotomies. Early pre-occupations in nursing research were with reasons for withdrawal from training, or excessive absenteeism, and

one of the causative factors was considered to be the discrepancy between what was taught and what was practised. Dalton (1969), in a study of those who had withdrawn from training for the mental subnormality register, reported that over 60% of her respondents found that teaching was generally inconsistent with practice on the wards. In the same year, MacGuire had documented similar complaints by student nurses, and some three years later Birch (1972) associated withdrawal with, among other factors, stress and conflict for the learner arising from differences between classroom and ward practices of which he commented - "conflict in this area appears to be one of the greatest undermining influences in training" (p.108). He also felt that "it was totally unjustifiable to close one's eyes to this complex matter ... (and suggested that) all teaching of nursing care be done on the wards rather than in the practical room" (p.169). Hunt, in 1971, found disturbing evidence of potentially dangerous nursing practice in the carrying out of surgical dressings. Not only did practice in a number of cases differ from the theoretical procedure taught in the classroom, but the differences violated aseptic principles. An equally disturbing study, by Jones (1975), exposed differences between teaching and practice in regard to feeding of unconscious patients which resulted, not only in patients receiving inadequate nutrition, but also in very dangerous technique in the procedure of administering the feeds. Many have been the reasons put forward to account for the discrepancies. Roper in 1976 blamed the system to a certain extent: "The Block system seemed to have produced

increasing disparity between theory and practice" (p.2). Abdel-Al (1975) found "theory and practice unrelated in terms of administration, time sequence and distribution of content and sometimes of principles" (p.545) - a complex matter indeed. She went on to define the problem more fundamentally as a lack of representation of the reality of the practical situation in teaching.

There are two aspects to the problem of differences between classroom teaching and ward practice. If the reality is of low standards of nursing care, and unsatisfactory practice, then it is undesirable that teaching should reflect that reality, and the solution to the problem of differences should be sought in the wards and with the ward staff. In such circumstances, the teacher may be correct and the ward incorrect. On the other hand, teaching may be unrelated to ward practice which is perfectly satisfactory and sufficiently flexible to cope with changing demands and nursing problems. In these circumstances, the solution should be sought in the college and with the teachers, and measures instituted to promote more relevant teaching.

The existence of an ideal and a quite separate reality had been described in 1973, by Bendall, then Registrar of the General Nursing Council for England and Wales, and a prolific writer and researcher in nursing education. In a study which was to prove very influential in nursing, Bendall (1973) produced data which indicated that, for many nurses, what they wrote in examinations did not predict what they would subsequently do in practice in the wards,



i.e. their recall of theory was at variance with their application of that theory. This was very disturbing evidence of a widening gap between theory and practice, the ideal and the reality of nursing. Bendall did not find that correlation between what was written and what was practised was aided by relevant theory given at the same time as practice, but she did claim that "if the school's teaching is reasonably in harmony with what goes on in the ward, correlation is more likely" (Bendall, 1973, p.127). Hutchings (1979) contends that Bendall's statistical analysis does not support the conclusions she makes, although he does not dispute that written examinations are of only limited value in predicting practical performance in nursing.

Could it be that nurse education was becoming an end in itself, building up a body of knowledge unrelated to the actual practice of nursing?

Hughes et al (1973) state, with reference to the preparation of students for the professions of medicine, law, theology and social welfare, that the goals of education and service do not always mesh and that pressures of work may lead to 'bad habits'. Different priorities and different values held by those in education and service have been the subject matter of many other writers. Martin (1973) quotes a student nurse comment in this respect:

"It is the hospital not the school which is the dominant influence in the student nurse's existence".
(p.114)

Dodd (1974) considered the school and the nurse teacher as almost irrelevant to the student nurse, who valued the ward as the 'real'

situation. Harrison et al (1977) in a report describing factors influencing integration of theory and practice in modular schemes of training state:

"a fundamental assumption underlying the idea of integration is that whilst teachers and service staff by necessity have different priorities, they can come together and agree the main educational aims and ways of attaining them. We should not underestimate the ward sister's ability to influence the student's education. She can not only modify the student's behaviour in the ward, but influence her whole attitude to the value of the educational process". (p.508)

Kramer (1974) in San Francisco, published results of an eight year study into the 'shock' effects upon newly graduated nurses of the discovery of discrepant value systems between school and hospital. In this country, the equivalent would be not the newly registered nurse, but, because of our apprenticeship system of training, the student, fresh from the Introductory Block, who emerges to work on the wards, prepared in the school for an ideal which does not materialise in practice. It is her resulting disillusionment, or 'shock' which has, to some extent, prompted both of the investigations by Birch (1972 and 1978) and which was the stimulus to at least one ongoing study by Gott (1979).

One factor thought by many to be contributory to the existence of disparate values between education and service is that of the virtual seclusion of the nurse teachers within the college setting, and the fact that the other very important teachers of nurses, the ward sisters, are almost equally secluded within their own setting of the hospital. Few of the latter group are to be found teaching in

the college, and, in a situation where teachers are almost completely absent from the scene of real nursing, variations in views on nursing practice such as Lamond found in 1970, in her examination of the process of becoming a nurse, are inevitable.

The General Nursing Council for Scotland, in 1976, reported on evidence they had submitted to the Royal Commission on the National Health Service, and said:

"We do not believe that any teacher of the practical activity of nursing should be so divorced from the practical situation as this group (the Registered Nurse Teacher) is at present. This opinion is shared by student nurses who have stated that their teachers do not come sufficiently often to the wards". (General Nursing Council (Scotland) 1976, p.21)

Altschul (1978) stated that nursing education was becoming almost irrelevant to patient care, that the teacher of nurses "away from the ward and unable to obtain any feedback from the students of the effect of her teaching" made no significant input to patient care. Ferguson (1976) queried "If nursing is essentially practical, can it properly be taught by people who do not nurse".

To return to the realities of practice would not be easy for many nurse teachers. Many are themselves the product of the pre-Block days in nurse training when lectures often were attended in the students' precious off-duty hours and the struggle was to attain a separation between the educational component of training and the practical experience. Many such teachers fear a loss of hard-won 'rights' in a return to teaching in the wards. In addition, the longer a teacher has remained in the school, perfecting her

skills as a classroom teacher, the less she has utilised those skills which are paramount in the ward. There are other difficulties entailed in the transfer of some of the teaching/learning experiences from the classroom into the ward. Abdel-Al (1975) found when introducing her 'reality-based' instruction in a school of nursing that tutors did not have time to teach on the ward "due to other commitments" (p.255) for example the formal organisation of work in a school of nursing can make it impossible for tutors to have any regular pattern of attending wards. The straitjacket of the syllabus and the timetable can however give a measure of security to the tutor which is absent from the unpredictable though rich variety of learning experiences available in the wards. Hoŕe (1978), following a study of ten nursing schools in this country, considers one major disincentive to teaching in the wards derives from the generalist role of most teachers in colleges of nursing, and she contrasts this with the specialist role of their colleagues who teach in University courses or Colleges of Higher Education. She states:

"While teachers in Universities and Colleges of Higher Education teach mainly within their field of interest and skill, and teach in the wards as well as in the classrooms, this is not the common role of the teacher in a hospital-based school. These teachers are not working as specialists but are expected to teach a number of different subjects and these they teach almost entirely in the classrooms; very few have teaching commitments in the wards". (p.88)

However, coming as she does from another of the EEC countries, Denmark, where there is only one grade of nurse teacher, and where her own

particular experience is of teachers who teach nursing in both college and ward, Houe concludes her brief discussion of the gap between theory and practice, education and service in this country, with the simple question - "why two types of nurse teacher?" (p.89).

Clinical teachers arrived on the scene of nursing education in the mid-fifties, as has been previously mentioned. Robertson (1979) considers they were introduced in an attempt to integrate theory and practice and "in response to the need for more systematic ward teaching and a shortage of nurse tutors to provide it", and that they indeed make a crucial contribution to integration. Kirkwood (1979), on the other hand, points to the many anomalies current in the role of the clinical teacher and queries whether, although she has served nursing education through a difficult period, this period is not now over and the nurse teacher of the future "must combine the skills of both roles; that of theoretician and clinician".

The current situation in nurse education is certainly changed since the 1950s, in particular in regard to the increased numbers of those whose first responsibility is to the learner and her teaching. Ratios of teachers to learners in Scotland have steadily improved to a present figure of 1 : 19, and there are many more experimental training schemes. In addition the climate of opinion within nursing generally is such that some are beginning to question the continued necessity for the clinical teacher. The General Nursing Council (England and Wales) has agreed to the gradual replacement of the present system of two grades of nurse teacher with a single post

of 'teacher of nursing', although their Scottish counterparts remain committed to the continuance of the two grades.

The most recent efforts of the General Nursing Councils in both England and Scotland, in pursuit of their general aim to bring theory and practice, education and service closer together, have been directed towards the promotion of modular schemes of training.

A widely acknowledged fault of the Block system was that periods of theory and of relevant practice had often been widely separated (General Nursing Council (Scotland) p.2). In 1971, Bendall had published research which dealt with the sequencing of theory and practice, and the influence of the ordering of these aspects of nurse education upon student learning. She had investigated the policy, practice and opinions in regard to the relationship of theory to practice in a random sample of training schools in England. Tutors, ward sisters and student nurses were strongly in favour of theory before practice (72% to 85% in favour in the three groups), and although a policy in this regard existed in a majority of the schools studied, in actual practice a high proportion of student nurses (95% in second year and 87.5% in third year) had worked in wards prior to having any theoretical preparation. Thus, she concluded, there may be "considerable discrepancy in many hospitals between what is said to be done and what is done; ... and students are caught between training and service" (Bendall, 1971, p.171). It seemed logical to test whether there was any difference in learning between groups

of students having a different order of theory and practice and between groups having a different time interval between theory and practice. Bendall's results showed that order was of value in terms of learning efficiency provided the time interval between theory and practice was not more than six months, and where some form of sandwich, i.e. theory, practice, theory, could be devised, learning would be further enhanced. Learning was assessed in this study using objective tests which had been devised and tested for reliability by the researcher.

Already at the time of Bendall's research, experimental modular schemes of training were being planned and implemented both north and south of the Border and in 1972, The Briggs Committee clearly recommended the system. In December 1978, in Scotland, the General Nursing Council, following extensive consultations with both nursing education and nursing service personnel issued new schemes of training which were to apply to all four parts of the Register of Nurses, i.e. General, Mental, Sick Children's and Mental Deficiency. These schemes were wholly committed to the principles of modular instruction, and to the joint responsibility of education and service staff to provide for the education of the learners.

"The new scheme requires that periods of clinical experience should be immediately preceded by periods of relevant instruction. The close association of theory and practice should lead to the achievement of a continuous educational programme. Council considers it of the highest importance that the educational nature of the student nurse's clinical experience should be realised, as her employee status is acceptable only on this understanding". (General Nursing Council for Scotland, 1978, p.4)

Council recommended that both grades of teacher and members of the service staff should be involved in formulating objectives for each clinical period, thus acknowledging the necessity for information about, and understanding of, the concept inherent in the new scheme of education to be shared between the two groups from the beginning. But new schemes, and recommendations, just as reports, are not self-executive.* The close association of theory and practice will not necessarily lead to more realistic teaching, nor to the use of teaching methods which aim to promote integration of theory and practice. Perhaps most importantly of all, the modular schemes do not require that the teacher of nursing in the college should also practise nursing. In this regard, a most interesting experiment in nurse education and training, which would appear to be the first of its kind in England and Wales, and in which the work of the clinical teacher and the registered nurse teacher was identical, has been recently reported. The experiment took place within the introductory course in a college of nursing and entailed the greatest amount of the course content being taught by the teachers, not in college, but in the hospital, and on the wards, while supervising the introductory course students. In a comprehensive evaluation of the scheme, Taylor stated that although "the New Style Course has more than trebled the time spent

* Marginalia on the Draft of the Sanitary Commission on the Health of the Army. F. Nightingale, July 1857. Quoted by Baly (1973)

on clinical experience in previous courses, yet no suggestion of any reduction in this area was received" (Taylor, 1979, p.79). The writer was here commenting on the post-course opinions of the involved teachers. She continued - "in this study the work of tutors and clinical teachers is seen as identical. Meeting the needs of a student in Introductory Course does not lend itself to a differentiation of duties" (p.87). This particular scheme of education and training was of considerable personal interest to the researcher as it had several features which were akin to the experiment which was the subject of this research, e.g. the identical roles of the two grades of teacher, the intention in the evaluation to obtain the views of all three groups of participants, and not least that the nurse teachers were present and teaching in the wards, helping the students make the link between practice and theory. The success of "Bolton's Introductory Course" (Kelly 1980) is confirmed by the fact that it is still extant, two and a half years after it commenced, and that it was deemed of advantage by students, ward staff and teachers. A majority of the students felt more confident and better prepared to begin their practical nursing experience after this course; the teachers, though 'tired', valued the method and felt that they were better able to appreciate the ward staff's problems; and the ward staff also approved the scheme and felt they had gained an increased understanding of the role of the teacher.

What of the Eighties?

Is it in the type of teaching described above, involving as it does collaboration and communication between teachers, ward staff and students that the best possibilities for improved integration of theory and practice will be found? Such teaching is not dependent upon any one method of formal organisation of the nurse education and training programme, but can operate equally well in the traditional or the modular programmes. What happens within nursing education and training in the 1980s will depend upon the continuing understanding and commitment to the 'new scheme' objectives by all in education and service. Only thus can a climate conducive to learning be attained in both school and ward. The facilitation of integration, which is active learning by the student, will make demands upon the teachers, who must move out of the relative security of the college and into the wards and endeavour to help the student apply theory to practice; it will make demands upon the ward staff who must not only cope with, but encourage the thinking, questioning student; and it will make demands upon the student to become actively involved in the process of learning to think about nursing. Strohmman (1977) pointed to the necessity to shift the emphasis in nursing education from the doing to the thinking aspects of learning.

Fundamentally integration means thinking:

"integration (synthesis) must take place in the head
(intellectual processes) of the student".
(Halliburton, 1976, p.53)

Brotherstone (1960) has said:

"There is a general human unwillingness to disturb the quiet sleep of traditional practice. Thinking is often a painful process, and most of us prefer to abstain". (pp.24-25)

If integration of theory and practice in nursing is inseparable from the process of thinking - perhaps this is why integration has eluded us all in nursing for so long.

CHAPTER 3

LEARNING

Learning to nurse is learning to care - learning to care for people; whole people - not people en masse, not 'bits' of people, such as a head injury, an amputated limb, a gastric ulcer; but whole persons, individuals of different appearance, with different ways of behaving, with often vastly different experiences of life as a result of which they have different problems and accomplishments, sadnesses and joys, fears and faiths. Learning to nurse means learning to cope with unpredictability, because people, sick or well, are unpredictable, they are liable to change.

"Prediction is hard, but change is certain". So wrote Hockey (1980) with reference to nursing. A little earlier in the same paper, entitled 'Challenges for Nursing', she had described the challenge for teachers of nurses as the necessity that they educate for care. Within a comprehensive definition she included education for empathy, for respect of the individual, education in the application of theory to practice, in decision making, in manual skills and in "education for change". A tall order indeed, and the other side of the coin depicted in the first paragraph above, from which it can be deduced that nursing involves activities in the three domains of behaviour described by Bloom (1956), i.e. the cognitive, affective and psychomotor domains. If one accepts the views given above, then learning to nurse is concerned with the gaining of knowledge and the development of intellectual skills and abilities

(the cognitive domain), it is concerned with the development of attitudes, values and the ability to adjust adequately in order to cope with different situations (the affective domain), and it is concerned with the development of skilled and dexterous manual techniques (the psychomotor domain).

Is learning to nurse therefore appropriately described as an education or as a training? The General Nursing Council (Scotland), in their most recently issued directive to colleges of nursing, place "Schemes of Training" on the frontispiece (General Nursing Council (Scotland) 1978) and the word 'training' appears predominantly within the text, although the 1973 syllabus commences with the phrase - "the education and training of the nurse ..." (General Nursing Council (Scotland) 1973, p.2). Is learning to nurse therefore neither one nor the other, but both? If it is both, should there be emphasis upon one or the other, upon education or upon training? That there exists in the minds of most people a distinction between these two concepts is implied in the manner in which the two words are used in our daily language. We commonly hear of vocational training and general education, or of professional training and liberal arts education. Glaser (1962) considered both education and training were a part of the instructional process, thus concerned with the modification and development of student behaviour, but whereas the training component was concerned to minimise individual differences as for example in teaching students to perform uniform behaviours such as adding, or reading, the educational component was concerned with maximising individual differences, that is accepting and exploiting the fact that some students will add more

quickly, read more expressively, as a result of other factors quite extraneous to the training situation. Glaser continued to explain what he considered as the more usual distinction between education and training in terms of "the specificity of the behavioural end-products" (p.4). When an end-product can be precisely specified in particular student performance then instructional procedures can be designed to build in such behaviour, i.e. to train the student. When the end-product behaviours are too complex to specify exactly, or when the behaviour which results in successful accomplishment cannot be known in many instances, then the student is expected to transfer his learning to the performance of the behaviour it was found difficult to analyse. To help him do this, he must be educated.

Viewed in the terms outlined by Glaser there is no doubt that learning to nurse involves problems of both education and training. There are specific behaviours, analogous to those mentioned by Glaser - the student nurse must learn to calculate drug dosages, to accurately complete a fluid balance chart, she must learn about aseptic technique in order to handle forceps, handle a syringe, change an intravenous infusion flask, but the application of these techniques will involve very different behaviour depending upon the people, the patients involved. The application of aseptic technique in the catheterisation of a patient, already anaesthetized and in the near sterile atmosphere of the operating theatre will require quite different behaviour from the successful application of the same technique in catheterizing an elderly lady with severe rheumatoid

arthritis in bed in a ward (or her own home). The latter task requires the student to maximise her creative ability to perform her nursing skills, to apply her knowledge. MacMillan (1980) differentiated education and training in an article which began "You're not paid to think, just get on with the job". She equated education with a "whole person" approach, the student thinking things out for herself, whereas training was essentially task-oriented and did not embrace the "whole person" concept. Although MacMillan is referring to the student, it is the application of a person's approach in the carrying out of nursing which might be said to be the educational component in learning to nurse.

Bendall (1975) writing on the subject of learning in Raybould (1975) appeared to distinguish between education and training in terms of the different teaching methods which were predominantly associated with the learner's status as a student or as an apprentice. Training she equated with learning by doing the job under the supervision of someone already trained (the apprentice) and education with attending lectures, discussions, seminars, whereby knowledge was imparted (the student).

Vickers (1973) states "no sharp line divides the education of the individual generally ... from his preparation for a specific vocation". He does, however, see dilemma and conflict between the demands, within any educational system, for testable skills and knowledge and for less testable but more fundamental skills and attitudes, i.e. between the overt and the covert curriculum - in that "the best way to teach the second is not always the quickest way to

teach the first". Again this dilemma would seem so relevant in nursing, in that the best way to teach in order to promote transfer of learning is not always the quickest way to 'cover the content of the syllabus' or indeed to prepare the students for the most easily testable, i.e. knowledge as required to pass the examination for qualification to register as a trained nurse. It is also in nursing relatively easy to test the step by step performance of a skill such as the giving of an injection, in the classroom, and into a 'dummy' or - equally insensitive - into an orange, but problematical to define and test all that is implied in the successful accomplishment of that skill with a patient.

Thus there are three areas of uncertainty for the teacher of nursing - the learning process itself - its possibilities, its limitations and its individual variety; the society, the National Health Service and the requirements of the Syllabus for Nurse Training within which he or she must operate; and the future in nursing - not just nursing as it may be in the next decade, because trainee nurses are all too soon 'fully-fledged', but nursing in the year 2000, which is when many of today's trainees will be the leaders, the decision makers, in nursing. However, although it is important to bear in mind that learning to nurse takes place within the context of all these areas of uncertainty, it is the process of learning which is of central importance to this part of the literature review.

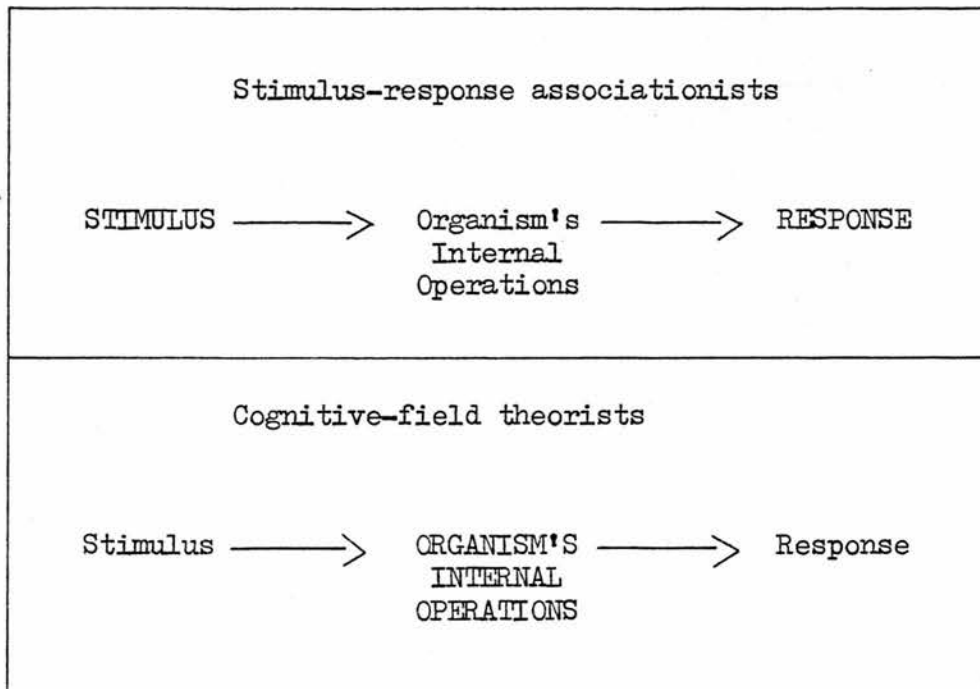
Just as no single theory of learning can account for all learning, so there can be no single theory which can entirely account for all learning in relation to nursing. There is a formidable and

growing mass of literature on learning theory, which has become a distinct area within the subject matter of psychology. At the turn of the century, and through into the 1940s two major schools of thought predominated in the psychology of learning. These were the stimulus-response associationists and the cognitive-field theorists (Goodwin and Klausmeier, 1975, Roueche, 1975).

Stimulus-response theory viewed learning primarily as the establishment of bonds between certain stimuli and certain responses. It was concerned with observable elements in the learning process, with behaviour change which could be seen to have occurred in response to a specific stimulus. The emphasis was upon the measurable, upon strictly controlled laboratory conditions, and, although there was an acceptance by leading proponents of this school of the existence of 'internal mental operations' within the mind of the learner, these operations were almost totally ignored. They were unobservable, therefore unknown and unsuited as scientific data (Goodwin and Klausmeier, 1975). Inevitably, from such a perspective, man was viewed in a somewhat passive role, reacting to a determining environment (Bigge, 1971). In contrast, in cognitive-field theory, man was seen as purposive and interacting with his environment. The Gestalt school, as the cognitive-field theorists came to be known because of their stress upon the total situation or 'Gestalt', stressed that the individual's internal cognitive operations were of primary importance in learning, and relegated the mere pairing or associating of a stimulus or response to a secondary

position. Although these two schools would appear to be far apart and differing fundamentally in their view of learning, Goodwin and Klausmeier consider the difference to be more one of emphasis, and their relative positions they depict graphically, as shown in Figure 4 below.

Figure 4 Different emphases by stimulus-response and cognitive-field theorists on elements in learning process
(From Goodwin and Klausmeier, p.179) 1975



Cronbach (1977) also refers to a difference in emphasis only, in what he terms the "behaviorist-humanist dialectic" (p.27). He considers the two lines of thought complementary - the former analytical and precise, the latter integrative and broad. Of the behaviorist, he states:

"Strict behaviorism places exceptional emphasis on what can be seen, and so, on what can be recorded objectively. Reasoning is cautious, and conclusions are limited to observable behavior. The strict behaviorist speaks only about what a person does. He avoids reference to the mind, the feelings, or any other inner state". (Cronbach, 1977, p.19)

Of the humanist:

"The humanistic psychologist prefers the very language the behaviorist avoids. His psychology is particularly concerned with inner states, feelings, aspirations, the self. The humanist sees each person as a self-directing, integrated being, evolving in a unique direction as he interprets his experiences. Although the humanist psychologist, like any other, seeks to ground his reasoning in thorough observation, the subject himself is a key observer". (p.23)

The concepts of the behaviourist - conditioning, both classical and operant, reinforcement, behaviour modification - are as well-known to students of educational psychology as are many of the names. Thorndike described 'trial and error' learning, and the important reinforcing effect of a satisfying response, using a hungry cat in a cage. Pavlov contributed a great deal to knowledge of conditioning with his experiments with salivating dogs. Watson, whom Hills (1979) called the father of the behaviourist movement, drew heavily on Pavlov's work and became convinced that learning was a process of building conditioned reflexes through the substitution of one stimulus for another. Skinner, with his now famous box, variously occupied by a rat, a pigeon or a dog, has long been concerned specifically with the fundamental importance of reinforcement in learning.

Although many of the early experiments of Gestalt psychologists were also conducted with animals, for example Kohler's studies of insightful learning in chimpanzees, members of this school were much more concerned to describe human behaviour in its natural setting. Their key concepts were couched in terms such as understanding, perception, discovery, and insight, and they were interested in the wholeness of the learning experience, within the environment as the learner saw it at the time. This 'life space', as Kurt Lewin termed it, was entirely an individual perception. Two individuals in the same physical environment, say a classroom, could be in very different psychological environments (Munn, 1966, p.539), and purposively interacting with their own individually perceived environment in order to pursue their own both short and long-term goals in what seemed to be the best way to the learner at the time.

It is interesting to see the basic concepts of these two movements persist into the sixties, although by that time there was a certain merging of the two extreme views into what Cronbach (1977) termed an intermediate position. This, his own position, was the cognitive-developmental style which took account, in more equal balance, of both objective and subjective factors in learning. Entwistle and Hounsell (1975) place learning theories along a continuum ranging from behaviourist to humanist (pp.176-177), from tight control, objectivity and measurement, to freedom, subjectivity, exploration. These writers also place methods of teaching or instruction on a similar control/explore dimension and suggest that

it may thus be possible to identify some of the theoretical ideas underlying different forms of teaching.

Quite clearly at the control end of the continuum in the sixties were Skinner, and, although not so extreme, Gagné. Skinnerian views are seen in what McKeachie (1975) termed the "technological revolution in education" - the teaching machine and programmed learning. There can be few schools of nursing which were not swept into the then current craze for this step by step learning - the second step contingent upon a correct first step, in fact reinforcement to the extreme. It was a development certainly not unsupported by research - in nursing and elsewhere (Balson, 1969 and Guimei, 1977). Many programmes were written by nurses for nurses. Isaacs and Hull (1975) working together in Luton School of Nursing, were particularly prolific writers of programmes, though not all of their work reached publication and therefore general circulation. Although in working through a programme, the learner was actively involved, the main controlling factor was external, within the programme and based upon knowledge of results. But teaching machines have all but disappeared - their failure due, according to McKeachie, to the fact that their proponents did not take seriously enough the research literature on subjective factors such as motivation in learning (p.46). In addition research evidence was beginning to sow seeds of doubt about the place of knowledge of results in learning. Sturges (1972) and Kulhavy and Anderson (1972) showed that knowledge of results made little difference, might in some circumstances even be detrimental to learning. A further

potent influence on the demise of the pre-eminence of externally controlling factors in learning was the writings of Abraham Maslow.

Maslow believed that "human nature has been sold short by the dominant psychological theories" (1968, p.687), with their emphasis on extrinsic learning and what he felt was an inevitable result - the "poker-chip milieu" (Maslow, 1975, p.160) of the university where students responded to grades and examinations as chimps to poker chips. Writing in 1970, he set out a comprehensive theory of motivation, to explain the 'why' of human behaviour. He posited seven levels of need as directing all human behaviour - physiological, safety, love and belonging, esteem, self-actualization, needs to know and understand, and aesthetic needs. These needs were hierarchical, in the sense that normally, lower order needs, which he referred to as deficit needs, would be satisfied before higher order or growth needs could be met. His is a dynamic concept, however, in that no individual was permanently at one level in all circumstances, but his view of education was of helping a person grow towards realising his full potential. Maslow is perhaps best known for this emphasis on self-actualization, on being or becoming the person we potentially can be, and thus for his emphasis on the importance of the intrinsic learning experience, which is not only highly personal, but conjoins the emotional and the cognitive. Maslow wrote, only two weeks before his death in 1974, "the thrust of what we are learning in humanistic psychology is the extent of individual differences within the species" (Maslow, 1974, p.151).

The implications for education generally, and nursing education in particular, lay in the acceptance of all the individual differences among students, and the vital importance of helping each student to gain a sense of accomplishment, to encourage creativity and discourage regimentation, to help the student towards meeting his growth needs. Maslow's view of the teacher was therefore not of one who is a shaper of persons, but one who helps a person discover what is already within him, a role which he acknowledges is very difficult and not within the capabilities of all - but even in this he suggests acceptance of individual differences within teachers:

"in any group of teachers there will be some who will be comfortable with a Summerhill* approach and some who will not ... I see no reason for not having within conventional school systems the experimental schools".
(Maslow, 1974, p.165)

His philosophy, in regard to meeting the needs of self-esteem and self-actualisation, takes on another dimension when applied to nursing, where the interaction is not only the teacher/student dialogue but also the nurse/patient dialogue. Any method of teaching and learning nursing which takes place at the bedside has the potential to provide a sense of accomplishment and thus meet growth needs not just for teacher and student, but also for the patient receiving care. In

* Summerhill Academy was a very progressive school in Aberdeen, Scotland, founded upon principles and beliefs about education similar to those of Maslow (Jordan, 1979)

such a situation, the patient, often someone temporarily deprived of normal opportunities for self-actualization, for self-esteem, is in many instances enabled to meet his needs in these respects by teaching the student, indeed both student and patient may meet the higher order need - 'to know and understand' more about health and disease. Conversely, the issues of human dignity and self-respect, so integral to good nursing care, are likely to evade all but the most perceptive of students if nursing is taught primarily in a practical room in a controlled but unrealistic situation - "you simply do not ask questions about ultimate human values if you are working in a ... lab" (Maslow, 1968, p.686).

The place of the emotions and the personal involvement of the student in the process of learning, which Maslow, and a contemporary humanistic psychologist Carl Rogers, have stressed, are, in the opinion of the researcher, particularly apposite to the process of learning to nurse. Rogers' cri de coeur was for freedom to learn, that the student should be allowed to develop his/her own ideas and to participate responsibly in the learning process. Rogers divided learning into two general types, along a continuum of meaning. At one end he placed the learning of nonsense syllables and contended that much in the curriculum is equally meaningless for many students today:

"Such learning involves the mind only. It is learning which takes place 'from the neck up'. It does not involve feelings or personal meanings; it has no relevance for the whole person".
(Rogers, 1969, p.4)

It is salutary to reflect whether Bendall's (1973) evidence of recall of nursing procedures which bore no relationship to the actual application of such nursing procedures in the wards might not be an indication that much of the formal curriculum of nursing as taught in the colleges of nursing is learning from the neck up and as such rather meaningless to many of the students. She stated:

"It can be postulated that what was, in this project, recalled had been learned by rote; and what was applied had been learned by discovery". (p.134)

The contrast, at the opposite pole of the continuum of meaning which Rogers describes, is "significant, meaningful, experiential learning" (p.4). The elements of this type of learning, are (1) the quality of personal involvement, i.e. the whole person, in both his feeling and cognitive aspects, takes part in the learning event. Such learning is also (2) self-initiated, (3) pervasive, and (4) evaluated by the learner, in terms of whether the learning is leading toward what he wants to know, whether it illuminates the dark area of ignorance he is experiencing. It is such learning which would seem to be of the essence in learning to nurse. Rogers' principles of learning, abstracted from his own experience, the experience of colleagues and from research, are outlined below:

He contends

- (1) "human beings have a natural potentiality for learning
- (2) significant learning takes place when the subject matter is perceived by the student as having relevance for his own purposes

- (3) learning which involves a change in self organisation - in the perception of oneself - is threatening and tends to be resisted
- (4) those learnings which are threatening to the self are more easily perceived and assimilated when external threats are at a minimum
- (5) when threat to the self is low, experience can be perceived in differentiated fashion and learning can proceed
- (6) much significant learning is acquired through doing
- (7) learning is facilitated when the student participates responsibly in the learning process
- (8) self-initiated learning which involves the whole person of the learner - feelings as well as intellect - is the most lasting and pervasive
- (9) independence, creativity, and self-reliance are all facilitated when self-criticism and self-evaluation are basic, and evaluation by others is of secondary importance
- (10) the most socially useful learning in the modern world is the learning of the process of learning, a continuing openness to experience and incorporation into oneself of the process of change". (Rogers, 1969, pp.157-163)

Rogers' principles of learning were the foundation upon which this research experiment in nurse education was proposed and subsequently designed. They seem particularly apposite to nursing education and training, in which the rationale must surely be to build upon, and around, the students' natural desire to learn about nursing, and where better for student nurses than in the ward with the patients? Rogers points out that students are eager to learn, and curious, unless their curiosity is blunted by the system of education, and it may be just such a 'blunting' process which is seen in the change which in some cases takes place between the eager introductory Block students'

questioning and the less than enthusiastic learners who return to a second period in the college of nursing. Learning, as he states, is not always easy, can indeed be painful, but given suitable conditions the students' potential and desire for learning can be released.

With regard to his second principle, nursing can hardly be in a more advantageous position, as there must be few students who enter into the course simply aiming to 'get by' - the majority are learning to nurse because they really want to learn how to care for people in need, therefore the process of giving that care is seen as highly relevant to their purposes, and should result in significant learning.

The conflicting values and standards between school and ward are relevant to Rogers' third principle of learning. Perhaps it is inevitable that the somewhat idealised self-image of most 'fledgling nurses' will be threatened on the first encounter with reality in the wards. Perhaps, as Hutty (1965) has said, some of the confusion and difficulties which first year nursing students experience arise because of the students' own failure to adapt - "they tend to be inflexible in a real situation as opposed to an ideal one" (p.146). Whatever the reasons, the fact that a threatening situation exists is well known and well researched in nursing - there is considerable evidence that what is expected of the student is different in the two places. The learning which arises from this dilemma has been noted to be unproductive, both in terms of students' attitudes to learning and in regard to standards of patient care (Hunt, 1971). It would seem quite possible that such early experiences may have more far-reaching effects upon the students' view of learning as a life-long process in nursing, an integral part of her professional development

as a nurse. It would therefore seem incumbent upon the profession to act by endeavouring to 'ease' the student into the threatening situation with the help of a teacher, in somewhat the way Taylor (1979) described had taken place in Bolton.

The importance of the learning climate in both ward and college is seen when reference is made to Rogers' fourth and fifth principles. Harding (1979) contrasted two metaphorical, but very realistic, ward environments in which 'external threats' were respectively minimal and maximal, and in more serious vein, both Fretwell (1978) and Ogier (1980) have examined the learning environments of the practice areas for nurses. Heath (1979) describes a climate conducive to learning as one in which "the learner can take risks (in the sense of trying out new behaviours), admit to difficulties and problems, give and receive feedback and cope with allied stress". The attaining of such an environment is not easy, in particular in a busy ward, and unless staff, teachers and students are able to be mutually supportive the new environment may constitute a threat in a different way. To place a student in direct experiential confrontation with practical problems, with ethical problems and with personal issues is Rogers' sixth principle, one which he considers one of the most effective ways of promoting learning. It is this principle which is central to the research experiment herein reported, that student nurses be confronted, and involved in coping with the day-to-day problems of nursing - problems and situations which they would experience throughout their nursing training, and that they learn ways of nursing by doing nursing. Indeed all the other principles are

subsumed within the participative, active learning situation in which the experimental group student is placed. Although under supervision, she is free to carry out nursing care orders in her own style, to think through appropriate solutions to individual patient's problems, and to evaluate her decisions and her work in a way which is not possible within a task-oriented work environment. Most of all, the principle of learning to learn was important. Nursing, if it is to survive as a profession, must develop individuals who can not only face the challenge of change, but can capitalise upon it and see the potential where it exists for the improvement of standards of patient care.

As might be expected, the role of the teacher in Rogers' view is not dissimilar to the role Maslow put forward; only the terminology is different. Rogers describes the teacher as a "facilitator of learning" - one who is responsible for setting the mood or climate of the learning experience, and who is able to permit learners a sense of freedom to work as they wish, which means accepting that some will be dependent and need direction while others will want much less guidance. The facilitator should not only make as wide a range of learning resources available as is possible in his circumstances, but should actively involve him/herself with the students as they learn, i.e. be a resource person. It would seem a very demanding and difficult role as he must also be capable of realising his own limitations, in that freedom can be granted to students only to the extent that the facilitator is comfortable with it - no easy task indeed, as Boydell (1976) pointed out very clearly

when contrasting the role of the traditional versus the participative instructor. Boydell identified one of the early problems, in setting the climate for such autonomous learning, as related to the difficulties learners experienced in defining their own needs - "most learners arrive expecting all the characteristics of a 'traditional' course" (p.52). He was here referring to adult learners, not young school children and his statement could be equally true of learners in nursing. There is a connotation of passivity, and a certain peace and orderliness in the traditional conception of learning which is absent from the turbulent changing scene of meaningful, experiential learning advocated by writers such as Rogers and Boydell. The latter described "experiential learning" in terms which denoted active involvement of the learner in making sense of what he had learned by internally sorting things out for himself so as to gain insight or learning.

"The essence, then, of experiential learning is:

- (a) problem situation;
- (b) sorting things out;
- (c) action planning - implications of what has been learned". (p.25)

Such could be said to be the essence of individualised patient care, or equally, on smaller scale, the thinking approach to any task within patient care. It could also constitute a description of the extremely topical concept in nursing - the process of nursing.

Boydell noted four components in the 'learning from work experience' system, the individual, the formal learning structures,

the opportunities to learn and the learning climate and these are, significantly, areas of concern, and of action, in nursing today.

However, the concern of this chapter is with learning, and quite clearly, individual students will differ in the extent to which they are able to learn from their experiences, a fact of which many present day 'facilitators' are aware. Boydell equates the characteristics of the effective learner with those of the self-actualising individual - "therefore, in order to improve the extent to which individuals are going to be able to learn from their experiences, they must be helped to acquire these self-actualisation characteristics/abilities". (p.68)

But - all individuals are so different, and the importance of individual differences in learning have been alluded to previously in this text. Students bring with them to the learning scene, their differing abilities and perceptions and expectations. Ausubel, in the frontispiece of his book on "Educational Psychology : A Cognitive View" (1968) stresses the importance of recognising and working with such individual differences:

"The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly".
(Frontispiece)

Ausubel is concerned to explain meaningful learning. He identified two dimensions or stages of the learning process. The first was concerned with the ways in which information to be learned was made available to the learner, and the second with the ways in which the learner dealt with the information. Ausubel and Robinson (1969)

consider information can be made available in two ways - either the entire content to be learned is presented, given to the student in final form, which they call 'reception learning', or alternatively, only part of what is to be learned is given to the student, and the remainder he must find out, actively seek, by himself. This they term 'discovery learning'. In the second stage, what the learner attempts to do with the information in order to recall it later, may also take two forms. The student may simply attempt to memorise the new material, or he may try to relate the new material to what he already knows, in which case, in Ausubel and Robinson's opinion, meaningful learning occurs.

As the relating process can be applied to material received by reception or discovery learning, it would appear that meaningful learning is not the function of any one particular teaching method or approach. Although such learning is a very individual process, it can be aided, facilitated by the provision of 'subsumers' and 'advance organisers'. These writers consider that in meaningful learning new information is assimilated into the learners' cognitive structure by a process of subsumption, i.e. the new fact or idea is related to existing material in such a way that both are modified and both are given meaning. Through subsumption, new material is anchored to the existing material in the individual's cognitive structure and this anchoring gives the new information stability, i.e. resistance to forgetting. Thus, meaningful learning is dependent upon what is already known, upon a sufficiency of 'hooks' on which to hang the new information (James, quoted in Munn, 1966), p.397.

Ausubel contends that if an existing set of relevant ideas is not present in the learners' cognitive structure, the only alternative he has is rote learning (Ausubel, 1975, p.94).

To encourage meaningful learning, the teacher should provide suitable advance organisers, i.e. introductory material at a very general level, whose relevance to subsequent learning should be made explicit to students. The function of such organisers is to bridge the gap between what the learner already knows and what he needs to know before he can successfully learn the task in hand, or alternatively to provide subsumers, or hooks, to aid the assimilation of meaningful learning. The structuring of the learning experience in the research experiment was such that new and general information about the disease process, and medical and nursing problems of patients with gastro-intestinal conditions was presented to students prior to their learning of the nursing care of such patients. Thus what were, in the main, lectures by medical and nurse teaching staff, were intended to act as subsumers and advance organisers which would promote anchorage of subsequent specifically relevant material still to be presented.

One of the main purposes behind the promotion of such meaningful learning was that it should be capable of use, of transfer from one situation in nursing to another. Such transfer of learning is a prime purpose of much formal education and it is said to occur when a person's learning in one situation influences his learning and performance in other situations. That such transfer does not occur automatically or easily is evidenced by the

universality of the debate about lack of integration of theory and practice, which is, in part at least, a debate about a learning problem - the inability of students to relate knowledge gained by instruction to actual work performance.

Transfer may be negative or positive. It is negative when learning or the performance of a task interferes with the learning or performing of another task - a concept akin to that of pro- and retro-active inhibition, and it is positive when learning in one situation is helpful to learning or the solution of problems in a different situation. It should be noted that neither positive nor negative transfer can occur if the student does not perceive the learning in the first situation as in any way related to the second situation. This is one of the points made by Wong, in discussing the difficulties experienced by nursing students in transferring classroom learning to clinical practice. She states:

"ideal transfer demands the students' conscious realization that transfer is possible". (And later) Students need to be committed to the belief that particular facts learned in the classroom study are pertinent in other situations". (Wong, 1979)

Gagné (1970) identified two kinds of transfer which he considered were of importance in education. Lateral transfer he considered took place when an individual was able to perform tasks which, though not identical to a previously learned task were very similar to what had been directly learned and of approximately the same level of complexity, whereas vertical transfer implied a process of building upon past learning in order to attain knowledge and understanding of

more advanced concepts and higher-order principles. Although Gagné felt that not a great deal was known about the innate, or internal and individual factors in the promotion of both types of transfer, he considered both were promoted if the initial learning was practised in as wide a variety of situations as possible, and if basic principles were thoroughly learned before proceeding to more advanced learning.

In these views, the elements of earlier theories about transfer of learning are evident. The earliest theory, prominent for many centuries, was the formal discipline theory. It was contended that general exercise of the faculties of the mind, in particular in studying such subjects as Greek, Latin and Mathematics, would result in a strengthening of the individual's ability to think and reason. Elements of this theory are extant today, but Thorndike, of stimulus-response fame, produced conclusive evidence in the early twenties, after research involving the records of more than 13,000 high school students, which disproved the formal discipline theory (Thorndike, 1924). He replaced it with his own, the identical elements theory, which, as might be expected from his adherence to the stimulus-response concept of learning, assumed that identical elements must be present in both the initial learning situation and the one to which transfer occurred. Although this was a much narrower perspective, it did result in the introduction into school curricula of many more practical and socially useful subjects, for example typing and shorthand, woodwork and machine work. However in its very precision lay its downfall, in that it was then, and is even more so today, very

difficult to forecast the precise skills and subjects which students will need for their future work. At the same time as Thorndike propounded his theory, there were others who emphasised a contrasting interpretation of transfer named generalization theory (Judd, 1939). Judd was perhaps the best-known advocate of the latter theory. He believed, as did many others, that the important condition for transfer was for the student to learn general rules or principles, which could then be transferred or generalized to new situations. Judd's theory, and a similar though more comprehensive view, termed transposition theory, were very close to the Gestalt view of transfer. However the difference lay in that the two former failed to take account of the learner's desire to use an insight he had already gained, and this was a vital element in Gestalt transfer theory. Bigge (1971) sets forth some of their beliefs:

"A person is in the best frame of mind for transfer to occur when he is aware of acquiring meanings and abilities that are widely applicable in learning and living ... A person must also want to solve new problems, or approach new situations in the light of the insights gained through previous experience ... For transfer to occur individuals must generalize - perceive common factors in different situations (and) comprehend them as applicable and appropriate to both, and thereby understand how the generalization can be used ... Transfer of learning to new tasks will be better if, in learning, the learner can discover relationships for himself, and if he has opportunities to apply his learning to a variety of tasks". (p.273)

Thus we return yet again to the concept of learning as an active process, a process of discovery which Bruner (1975) stressed and which J. Rogers (1977 and 1978) and Champion (1974) consider particularly

suited to adult learning, albeit not an easy process for learner or teacher. According to J. Rogers (1977) "many teachers of adults ... are frightened by the implications of discovery learning":

"A teacher who likes to feel in complete personal control of everything that happens in his classroom an authoritarian teacher, maybe even a nervous teacher may reject discovery methods. Similarly, there will always be students who want to be told". (p.170)

The role of the teacher in promoting active learning, promoting transfer of meaningful learning in adults is seen by Fisher (1976) in regard to the field of health education, as "a co-operative effort on the part of the teacher and the learner, each contributing the vital parts to the learning process". This role of the teacher as one who supports his students is seen by Perry (1975) as relevant in situations where the knowledge to be taught is contextual and relative, rather than consisting mainly of facts, with their connotations of right or wrong. In fact, he sees as a difficult instructional moment for students, and also for their teachers, the point at which the students' conception of knowledge as a "quantitative accretion of discrete rightnesses" changes to a conception of knowledge as "the qualitative assessment of contextual observations and relationships" (pp.144-145). From this point onwards, the students' task becomes more integrational and that of the teacher less atomistic. There seems little doubt that much of the knowledge required for nursing is contextual and relative. Perhaps in the very early stages, there may be, at least in the mind of the student, an over-abundance of

facts - what Henderson (1966) has called "an early lethal dose of technology" (p.58). If this dose is not diluted for the beginning student with opportunities to see the facts applied in practice, put together to form a whole in the care of a patient, her progress as a learner may be hindered for a long time to come. Could it be that it is the 'difficult instructional moment' which Perry describes, which occurs for many student nurses, on their return to college from practical experience, to undertake their second period of theoretical experience, and which can give rise to discontent and difficulties for both student and teacher. It may be that this is a critical stage of development for the student which is neither well-understood, nor, consequently, well-managed by the teachers in nursing, as a result of which, for many students, their perception of learning as a passive process of assimilating knowledge of right and wrong, good and bad in nursing continues throughout training, and does not develop and change, to become an active, integrational process, in which all knowledge and indeed values are seen as relative. It is only from this point on that critical thinking can progress - the type of thinking which is basic to the problem-solving approach to nursing care relevant to individual patient needs. Perry emphasises the importance of the teacher's task in presenting uncertainties and disagreements within a subject area to the students, and the use of small group tutorials, individual and group project work, and other such non-directive measures involving a co-operative relationship between teacher and student and active learning on the part of the student. Only in this

way can a student develop to the stage where he accepts a commitment to learning as an ongoing, unfolding activity, in fact a life-long process, with what Marton has termed a view of learning as "something they do" and not just "something that happens to them" (Marton, 1975, p.130).

Of recent years, the focus of research into learning, especially learning in higher or further education, has been upon the ways in which students process information presented to them for learning. According to Gagné (1971) such information processing has become the framework within which modern theories of learning have been formulated. Pask (1969), who has worked a great deal in this area, began some of his experiments by simply setting a learning task before a group of sixteen students in his laboratory, and then observing what they did with it. This close observation, and an ingenious teach-back testing technique (Pask and Scott, 1972), which has more than a hint of the Skinnerian about it, led them to depict two main types of learner - the "holists or global learners and serialists or step by step learners" (p217). The latter group "learn, remember and recapitulate a body of information in terms of string-like cognitive structures where items are related by simple data links ... (and) are intolerant of irrelevant information unless, as individuals, they are equipped with an unusually large memory capacity. Holists, on the other hand, learn, remember and recapitulate as a whole" (p.218). The writers also identified two sub-categories of holist - those 'irredundant holists' whose image contained only relevant and essential

constituents, and 'redundant holists' whose images contained material derived from data used to enrich the curriculum, i.e. somewhat irrelevant items. Pask, who had set up linear teaching programmes based upon the two different learning strategies, also experimented by 'matching' these programmes with the two different learning styles. In 'matched' groups, serialists were taught using serialist programmes, and holists with holist programmes, and in 'mismatched' groups, serialists were taught using holist programmes and vice versa. The results of these, and many similar subsequent experiments, Pask reports and summarises in tabular form in 1976, and these findings unequivocally support his contention, made 4 years before, that learning is more effective when students and teaching methods are matched:

"the experiments show, very clearly indeed, that the rate, quality and durability of learning is crucially dependent upon whether or not the teaching strategy is of a sort which suits the individual".
(Pask and Scott, 1972)

Thus, he states, not that no learning will take place if styles and strategies of learning are mismatched, but that learning will be less than it might be. Indeed he had pointed out in 1969 that any well-defined teaching strategy tended to be more efficient than completely free learning, and here again he tends more to the behaviourist view, but if an imposed strategy was in competition with the student's learning style, his full learning potential might not be realised.

The implications for education are that a mix of teaching methods is essential if both types of student are to be catered for and to learn effectively. Ideally, by means of a 'conversational system' such as Pask described, the student could be encouraged to talk about how he went about learning a task, and then exposed only to appropriately matched teaching methods, be they human or computerized. However, Green (1974) who entertains such a matching possibility in a comprehensive study of student nurses' curricular preferences in a baccalaureate degree programme in nursing at the University of San Francisco in the United States, concludes that to group together students with similar learning preferences - and attendant teaching methods - could be restrictive rather than helpful to the development of effective learning, especially if it were to be the predominant approach in a curriculum. Students can learn from sharing experiences which are appreciated in different ways by their peers, thus broadening their own interest in and appreciation for different methods of learning and teaching.

Marton and Säljö (1976), in Scandinavia, contemporaries of Pask in London, have also studied differences in process and outcome in learning, but specifically in relation to the content which was to be learned. Their work, they considered, was concerned with "meaningful learning in the true sense of this term" (p.10), because they sought out what meaning different students attached to identical passages or content to be learned. They stated:

"different students obviously learn different things from one and the same text and their knowledge about various scientific principles, methods and ideas varies as regards what is learned instead of merely differing as regards how much is learned".
(Marton and Säljö, 1976, p.7)

Such qualitative differences in outcome they consider very likely to reflect corresponding differences in process, or the way people set about learning. Their premise is that there are basically two levels of processing - deep-level, in which "the student is directed towards the intentional content of the learning material" (what is signified), i.e. what the author wants to say, or principles; and surface-level in which "the student directs his attention towards learning the text itself" (the sign), i.e. a reproductive conception of learning which means the student is more or less forced to keep to a rote-learning strategy. Superficially this may seem just an extension of understanding versus rote, but it may be more than that, in that the meaning assigned to the same content was different for students who used the different levels of processing. As a result of further experimentation, which they admit they found complicated to analyse, Martin and Säljö (1976, a) showed the influence of tests and examinations on the students' levels of processing. The levels were not immutable, in that students would alter them in anticipation of a particular type of recall or test. It was fairly obvious that most students anticipated an emphasis on detail in tests, and modified their processing accordingly. In general it appeared that anticipation of an objective test focused their attention on details - 'signs', whereas an essay or oral test appeared to suggest general

principles or main points-'what is signified'. Miller and Parlett (1974) categorised students in terms of their behaviour in regard to seeking out cues or hints about forthcoming examinations. Many students appeared to consider that success in examinations was obtained simply by hard work and seemed unaware of any benefits to be gained in 'picking up hints'. Such students they termed "cue-deaf". Others were aware that it could be helpful to be perceptive and receptive of any clues - they were "cue-conscious", and still others deliberately sought out staff and in general acted very positively in their search for information which might be helpful in passing examinations - they were "cue-seekers". Such information as they could glean strongly influenced their preparatory study and work. It has of course been known for some considerable time that students are influenced by what they anticipate in examinations (Silvey, 1951). Indeed, although Miller and Parlett's work was done with final year Honours students in University, there must be few teachers, in nursing or general education, who are unaware of the phenomenon of cue-seeking. A brief glimpse at the very well-thumbed folders containing copies of previous examination papers, provided they remain on the shelves to be seen, would corroborate evidence of cue-seeking.

The inherent danger of the examination system, that if trivia are examined then trivia will be learned, is brought into focus again with Marton and Säljö's work. The dependent variable may be, for many students, the independent variable. Marton (1975) states - in regard to his work - "the idea is simple enough: in order to help

the students understand, we must first understand their way of thinking about the topics with which we are concerned" (p.136). How do they think about nursing? Of one thing we can be sure, they will all think slightly differently, but, again with Marton and Säljö, "it is fundamentally important to recognise the link between the level of processing adopted and the level of understanding reached" (Marton and Säljö, 1976, a, p.125). Many students, in nursing as elsewhere, are capable of using 'deep' or 'surface' strategies. If the current demands of the examination system are such that students, on the whole, adopt a surface approach to the information processing of the various subjects in their curriculum, then the important meaning may be lost - the analogy in nursing is clear.

CHAPTER 4

MEASUREMENT AND EVALUATION

Student nurses, in common with students the world over, as indeed with students through the ages, are examined, tested, measured and assessed. Increasingly, of recent years, their education and training programmes have been, and are evaluated.

This chapter constitutes a brief overview of measurement and evaluation in education. Although similar in meaning, the two terms are not synonymous. Evaluation is used, in general, with a more global connotation, encompassing measurement within its sphere. The former is also a much more recent arrival on the educational scene, which was dominated, especially in the early part of this century, by an emphasis on the measurement of differences between individuals. Stanley and Hopkins (1972), and many other writers, equate measures with tests - tests of achievement, intelligence, interest, aptitude - and the measurement process with the construction, administration and scoring of such tests or examinations. Evaluation, they consider to be a related procedure concerned with interpreting such scores, saying whether they are good or bad for a specific purpose - a summing-up process in which value judgments play a large part, as for example in grading or promoting students. Caro (1977) sees evaluation as having two dimensions - judgmental, with regard to the effectiveness generally of a given programme, and informational, in regard to such matters as student performance and wastage rates within the programme.

Early this century the emphasis was on testing and student evaluation, and according to Caro, educators were relatively late in developing a concern about programme evaluation. Cronbach (1977) states - "evaluation is not just testing ... (it) is the process of judging whether or not the goals of schooling are being attained by the individual, the class, or the school system" (p.683). Parnell (1973) states it rather more comprehensively:

"Measurement is the handmaiden of instruction.
Without measurement, there cannot be evaluation.
Without evaluation, there cannot be feedback.
Without feedback, there cannot be good knowledge of results. Without knowledge of results, there cannot be systematic improvement in learning". (p.2698)

The next part of this chapter is about tests, or examinations (the terms are used interchangeably) and the final part is about evaluation.

Tests and Measurement

The decision to write about objective tests and essay type tests in this section is deliberate. Student nurses spend a great deal of their time taking such tests, and presumably a certain amount of time preparing for them. Their teachers take time constructing tests and marking them. Part of the evaluation of this research experiment was dependent upon scores on objective tests and essays. Finally and most importantly, no student nurse can become a registered general nurse unless she has successfully completed the Final State examination set by the General Nursing Council. In England and Wales, since 1977 this has incorporated an essay-type test and an objective test. In Scotland it is of an essay format. Qualification as a

registered nurse is not entirely dependent upon written tests. The student nurse must also obtain satisfactory ward assessments and reports, but this particular form of assessment was not dealt with in this research nor is it the subject of this literature review.

Measurement and evaluation are inseparable from the process of learning, and it is fascinating to study the almost parallel progress and changing emphases in these two closely related subject areas. Just as the historical origins of learning are lost in antiquity, so too are the origins of testing and measurement. An elaborate system of civil service examinations existed in China several centuries before Christ (Du Bois, 1966). The ancient Greeks used testing as a part of their educational process and the Socratic method of interspersing instruction with oral testing still is used today in many classrooms. The researches of Haley (1977), although dependent on an oral transmission of historical facts, strongly suggest that Kunta Kinte, and his kafo mates, in mid-eighteenth century in a small village deep within Africa were a part of an organised system of education which culminated in an oral and written examination for these young students of the arafang.

The modern era of a more scientific precision in measurement is presaged by the writings and work of Fisher, Galton and E.L. Thorndike, who, among many others at the turn of the century, brought about a relegation of the oral examination - its place taken by the written test and, even then, a few of these were objective tests. The very first known use of the objective test was by the English schoolmaster,

the Reverend George Fisher in 1864 (Stanley and Hopkins, 1972). It is an interesting aside that in 1978 Allen and Murrell, writing about 'cognitive evaluation', i.e. examination of nursing students, state - "there is some glimmering of hope that examinations are being dragged into the twentieth century by the General Nursing Council who have the intention of producing examination patterns which include both objective and essay questions" (p.16).

Following on from the work of the early pioneers of testing, two very broad groups of tests could be distinguished. The standardised tests, of which there are now so many that massive compendia are produced regularly, and whole departments in universities exist purely in order to deal with test-related matters, had their origins in the intelligence tests established by Binet in 1904 in France. These tests have developed to include not only measurement in the cognitive domain, but also in the affective and psychomotor domains. A great variety of 'instruments', as such tests are often called, exist to measure achievement, motivation, interests, aptitude and manual dexterity. In tandem with standardised tests, and just as extensively used, have been the tests and examinations devised by teachers concerned to regularly assess the progress of their students. These tests, which have considerable impact on the daily lives of students in all types of courses, remain for the most part, unpublished, perhaps why they have been termed "fugitive instruments" (Goodwin and Klausmeier, 1975, p.493). Textbooks, and courses, instruct teachers in all matters relevant to the compilation, scoring and use of such tests.

So much emphasis on testing must be to some purpose. Vernon (1940) states "examinations have far too great a burden to bear" (p.276). Intelligence tests, vocabulary tests, are frequently used to predict future ability to cope with and succeed in a variety of educational settings and courses. Teacher-made tests, as opposed to nationally standardised tests, regulate pupil entry to certain courses and classes in school, which in turn regulates the pupil's preparation and submission for national examinations which in turn has considerable influence upon his or her future career prospects. The General Nursing Council (Scotland) use a standardised test to permit entry to nurse training for prospective students who do not have the requisite Ordinary or Higher Grade certificates.

Popham (1978), in inimitable style, distinguishes between "sort-'em-out-and-spot-the-best" tests, and "criterion-referenced measurement", which latter type he considers "the most exciting measurement contender to trot down the testing trail" (p.8) in recent years. He states:

"When a testing system is directed toward the isolation of examinees' relative standings with respect to each other, it is perfectly satisfactory as long as all one needs to know is who is better (or worse) than whom. But if one tries to apply such a relatively oriented testing system to settings in which one must know precisely what it is that examinees can or can't do, then such a testing system comes up short. That is where the educational testing situation is today". (p.9)

That too would seem to be where the testing situation in the system of nursing education is today.

The credit for creating a solution to the test dilemma, Popham gives to Glaser, who introduced the expressions norm-referenced and criterion-referenced measurement (Glaser, 1963). The former discerned an examinee's relative standing, i.e. graded him in some way, the latter identified his mastery, or non-mastery, of 'specific behaviours'.

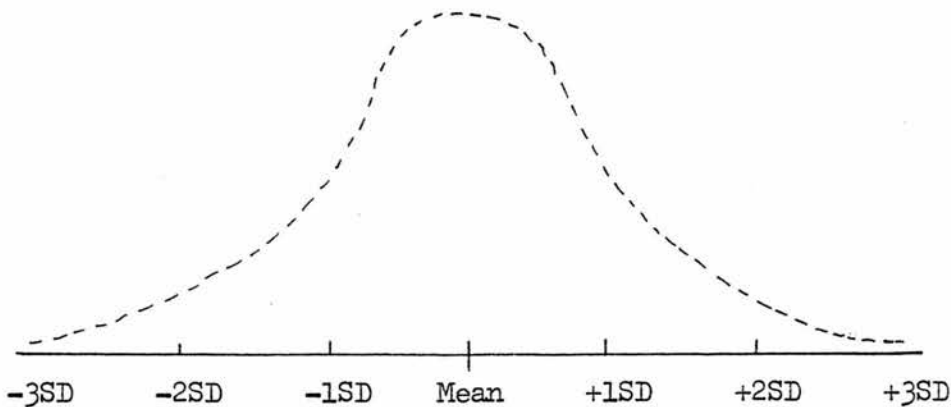
Criterion-referenced tests were a natural development from the rising interest in programmed learning and the necessity to firstly specify precisely-worded behavioural objectives (cf. Mager, 1962) and then to test whether or not these objectives had been achieved by the learner. Thus the relative standing of students vis-a-vis each other faded in significance, to be replaced by an absolute measure as to which objectives the student had, or had not attained. Ebel (1979) explains the criterion as the attainment of the objectives of the particular learning experience, whereas the norm is the achievement of some specified group of students on a test. Both types of tests have essentially the same job to do, i.e. to measure achievement in learning. The individual test questions used in the two may well be identical, but the purpose of the norm-referenced test is to indicate a student's degree of success in learning and of the criterion-referenced test to ensure that certain things will be learned (Ebel, 1979, p.11).

McGaghie (1978) discusses the same concept in regard to medical education. Mastery learning he equates with competence as defined by the educational objective - and he further stated that different levels of mastery or competence existed and should therefore be

distinguished and tested at the different stages of the learning process - a matter of current concern and relevance for nursing assessment. McGaghie considers examinations to be among the least understood and most misused tools of education, used mainly to "grade on the curve" (p.69) a clear reference to norm-referencing, rather than to indicate mastery or otherwise of competencies necessary to safe practice.

The notion of a normal curve is basic to any consideration of norm-referenced tests. Individual students are placed in position on a scale, usually compiled from the scores of a 'norm' group, i.e. other students who have taken the same test, or, in the case of some national and standardised tests, on the scores of individuals considered similar in age, I.Q., or other category. A normal distribution is shown below in Figure 5.

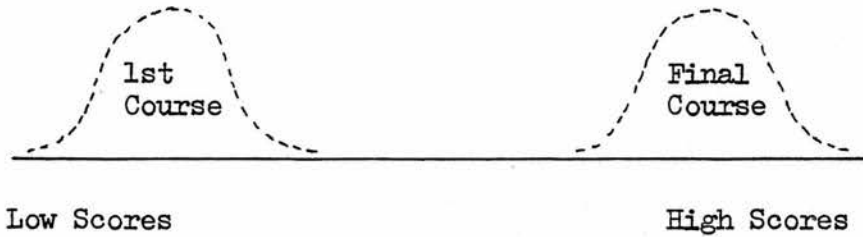
Figure 5 The 'Normal Distribution'



Note: Deviations from the mean are marked off in units of standard deviation (SD). 68% of the area under the curve lies between +1SD and -1SD from the mean

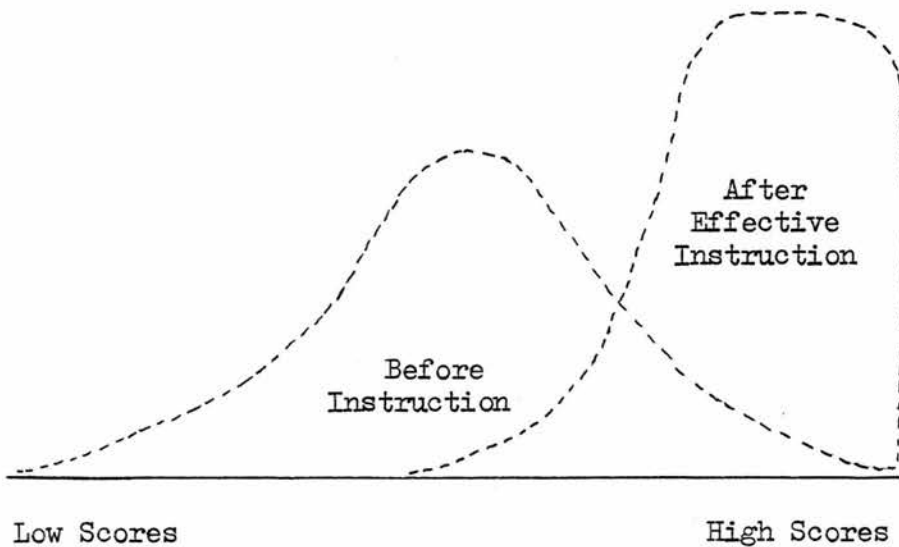
As most educational variables have been shown to be distributed normally in the population, early test constructors aimed to produce tests which retained that normal distribution. Such tests, administered following a specific learning experience, gave evidence of progress by simply shifting every student further up on a continuum - see Figure 6 (adapted from Popham, 1978). In other words, students entered normally distributed and went out, at the end of their learning, normally distributed.

Figure 6 A Continuum of Proficiency (Adapted from Popham, 1978)



However, that entire conception was threatened, if not upended in criterion-referenced testing and the step-by-step processes of programme learning, where clear objectives have been set, instruction has been geared to the specific achievement of these objectives and the test tests that achievement or otherwise by the testee, i.e. the absolute not the relative. The typical pre- and post-instruction curve, if instruction has been effective, then assumes a shape quite different from the normal curve, and similar to Figure 7 below. Although it is possible that all three Figures relate to standardised scores, it is nonetheless interesting to compare the curve in Figure 7 with the findings on Page 467 as related to the objective test administered in this research, and the findings in relation to the essay type of test, and to conjecture just what it is the two different types of test may be measuring ...?

Figure 7 Distribution 'Before and After Effective Instruction'
(Popham, 1978) p.13



Criticisms of tests and testing are, and always have been, rife. Tests are said to measure only superficial, unimportant aspects of achievement; to 'label' students as bright or dull, thus in either case distorting their expectations and diminishing their efforts; to place students under stress, exposing them to unnecessary experience of failure; to destroy confidence; to kill the joy of learning; to carry cultural and middle-class bias, and to force teachers into a restrictive position described as 'teaching to the test' (Ebel, 1979). The latter disapprobation is of a teacher spending considerable time in preparing students to handle specific questions likely to be included in tests, at the expense, it is inferred, of more educationally desirable goals, such as encouraging freedom in learning, discovery, and problem-solving. However, the foremost problems and criticisms of tests of all types are in regard to their reliability and validity.

Pilliner (1973) defines these two key concepts very clearly, and enlarges upon his initial definition thus:

Reliability is "the extent to which a test gives consistent results. There are various methods of assessing reliability. In the parallel form method two equivalent forms of the test are constructed and administered to the same people. In the test-retest method the same test is given twice to the same people on different occasions. In the split half method people's scores on half the items of the test are compared to their scores on the other half". (p.52)

Validity is "the extent to which a test actually measures the entity which it was designed to measure. There are various types of validity. A test is said to have face validity if the items look as if they measure the right thing. It has content validity when it samples adequately the domain which it is supposed to measure. It has predictive validity if it may be

used to make accurate predictions of some future performance related to the trait being measured. It has concurrent validity if it correlates well with other tests measuring the trait, and construct validity if it may be shown experimentally that it measures a particular construct". (p.53)
(The italics are the author's)

The twin concepts of reliability and validity are frequently at the root of debates about the two most commonly used tests of achievement, both in general education and in nursing education, i.e. the objective or multiple-choice test and the essay-type of test. These two types of test are often also considered to represent almost the opposite poles of an objective/subjective continuum.

To the extent that any test score reflects the private, subjective, unverifiable impressions and values of any one particular scorer, it must be deficient both in meaning and usefulness to either the student or the institution requiring evidence of his achievement. As the name would indicate, there is considered to be more objectivity in multiple-choice tests than in essay tests. The former can test a wider range of objectives and knowledge; questions are generally much more precisely formulated, thus less ambiguous of interpretation; 'bluffing' in answering is reduced (not eliminated, as guessing is always possible); scoring is completely reliable, and, especially if done by computer, not subject to human vagary. The fact that subjectivity plays its part in the selection of content to be examined in an objective test, and in the fact that students may come to such tests in a variety of moods and motivation, is almost disregarded in the general approval of the reliability of the marking

and the fact that the individual test items can be subjected to various types of item analysis.

It is the issue of reliability in marking which is most often raised by critics of the essay type of test. The definitive work in this respect is that of Hartog and Rhodes in 1936 in Britain. In two books, published in the same year, they thoroughly investigated the marking of essay scripts, and the whole subject of variability in such marking, and showed that, no matter which method, i.e. analytical (marking key) or impression marking, was employed, marks of individual examiners varied widely. Not only did different examiners differ in their standards of marking, but individual markers differed when they re-marked a script they had marked on a previous occasion. Hartog and Rhodes studied marks awarded for scripts submitted in English examinations, and also scripts submitted in subjects such as Chemistry, Mathematics and foreign languages. It is for this reason that their comments and findings would seem to be equally applicable to the marking of scripts in nursing examinations. These early writers suggested the use of teams of markers, whose marks could be aggregated, then averaged, as one way to reduce unreliability of marking and its consequences in the erroneous failure or passing of candidates. This system of teams of markers was adopted in the marking of essay scripts in this research project.

Some years later, Finlayson (1951) and Wiseman (1949) wrote on the subject of reliability in essay marking, repeating and elaborating upon some of the earlier experiments of Hartog and

Rhodes. Finlayson argued that reliability of essays was not just a matter of consistency of marking, but included the variability of the examinees from day to day, and variability in the essay topics, whether in fact different topics could be considered as measuring the same ability day by day. Wiseman, who was discussing the marking of English composition essays, appeared to be in favour of general impression markers rather than analytical markers. With the latter he felt that the best essay might not be at the top of the list because the total Gestalt was more than the sum of its parts. It may seem that this present discussion is not particularly relevant to the examination of nursing, and yet the problem of many markers of Final State scripts is whether to score each detail, i.e. use a marking key, or to take a general impression, i.e. the total Gestalt. Some of the Final State examination questions lend themselves to the analytical framework approach to marking, whereas others, which for example, ask examinees to discuss the care of a terminally ill patient, lend themselves much more to a Gestalt approach in marking.

In general, the view of these two main types of test above discussed, is that whereas the objective test can test a wide range of knowledge linked to specific objectives, the especial advantage of essays is their potential for testing "the student's abilities to organize, integrate and synthesize his knowledge, to use his information to solve novel problems and to be original or innovative in his approaches to problem situations" (Thorndike and Hagen, 1977, p.263). Mehrens and Lehmann (1978) make very similar claims, while

pointing out that simply writing a question in essay format does not guarantee that such qualities will be tapped. The major difficulties which are inherent in phrasing essay questions in order to tap such abilities as above referred to are recognised by many educators. However, most of the debate is taken up with the as yet unresolved problem of how to assess the student's answer in a less subjective way.

The close subjective link between question and answer was amusingly, yet tellingly, recounted by Stalnaker, in a scholarly, somewhat prosaic publication on the subject of educational measurement. Stalnaker (1951) wrote:

"Years ago, one of the possible theme titles on a College Board English paper was "The Vanishing Horse". The examiners had in mind an essay of a more or less economic kind on the disappearance of horses with the coming of the motor car. But the readers found that not a few students accepted the title as a challenge to create a fairy story, and one theme with an improved title, "Rudolph, the Vanishing Horse", will never be forgotten by those fortunate enough to peruse it. Needless to say, it was found to be almost impossible to grade on the same scale used for the sober accounts of the disappearance of quadrupeds as prime movers". (p.520)

One would tend to consider nursing examinations so very different from the above, in that they require much more precise answers, as a result of asking much more precise questions. Yet, if we encourage a problem-solving individualised approach in the practice of nursing can we expect, indeed look for, an essentially factual sameness in replies to questions, especially if we use essay questions for presumably the very purposes which Thorndike and Hagen have put forward?

Consider what may be an adequate answer to the under-noted questions, set by teachers in two different colleges, for end of course examinations for students who participated in this research:

(a) "A young woman, recently engaged, is in your ward recovering from surgical treatment for ulcerative colitis. Describe the special care required for this patient in whom ileostomy has been performed. What psychological problems may present in this patient and how could you as a nurse, help overcome these problems?"

and (b) "Describe the management of a patient with ulcerative colitis following surgery for this condition".

Is the answer which will certainly pass, and, if grading is the system, will gain better marks, a sober and accurate list of appropriate procedures and observations in post-operative care; or is it an imaginative account, entitled in the first case - "How the nurse helped Mary and Bill face their future", or alternatively "Facing Life Together, with a Stoma as well" - and in the second "Was there a Stoma, and if so where, what type and why?" It is interesting to speculate how a Final State examiner would have marked the two different types of script - whether a marking key or impression marker would have scored the imaginative or the prosaic higher.

The problem is of course neither so clearly dichotomous nor so extreme as has been depicted, but it is possibly difficulties similar to this which led the General Nursing Council (England and Wales) to change over to an objective type of test for the Final State examination prior to Registration. The reasons Holden, reported by

Thompson (1979), gave for the change over were in order to cover a wider range of topics within the syllabus of training, to attempt to overcome question-spotting which leads inevitably to 'pat' answers, but especially because it was virtually impossible to achieve any measure of reliability in the marking of essay questions. He contended:

"that markers agree on the order of superiority of a batch of papers, but disagree widely in the actual marks they give - which is critical around the pass mark of a pass/fail exam". (p.29)

Holden's interview in the nursing press was occasioned by the outcry which the switch to multiple choice tests from essays had engendered - a torrent of complaints which came not only from student nurses, but also from their teachers. The General Nursing Council opinion that the change brought about a fairer system of examination was quite clearly not shared by many of the examinees.

Just what it is either type of test is measuring, no one is quite sure, and all concerned have their own subjective views. The advantages which many writers impute to the essay would certainly seem to equate with the abilities many consider necessary in nursing.

Dr Pilliner (1977) stated:

"The 'essay' question should be directed at measuring attributes which objective or semi-objective techniques cannot measure satisfactorily ... It has been argued that objective and semi-objective techniques are capable of measuring higher cognitive abilities than is generally recognised. Nevertheless, it is difficult to counter the claim that good essay writing demands the deployment of abilities difficult, if not impossible, to assess by any other means, and therefore that if it is desired to assess these abilities, the essay must be the instrument to use, raising, though it does, problems of subjectivity in assessment". (p.32)

At least in nursing, written tests are not the only measure of nursing competence, although such tests occupy an important place. The choice and use of different testing techniques is closely related to the ends those techniques are designed to serve, which is of course related to the conundrum of what it is we wish to measure in nursing examinations. Pilliner (1977), in the same Report which was quoted above, stated:

"What might be called the 'truth' about an educational system can most readily be discovered by a hard look at the examination procedures it engenders". (p.14)

That 'hard look' could well be said to be taking place in nursing education today, but - as said St Augustine around the year AD400 -

"For so it is, O Lord my God, I measure it;
but what it is that I measure I do not know".
(St Augustine's Lament)

Evaluation

Evaluation is concerned with the making of value judgments, not, as Suchman (1977) pointed out, regardless of an informed basis for such judgment, but making use of scientific method to collect data concerning the degree to which some specified activity achieves some desired effect. At present, in nursing literature, the word is predominantly used in connection with the final stage of the nursing process, i.e. the stage at which the student (or trained nurse) should stand apart and assess the worth of her nursing intervention. Although evaluation in this sense was a part of the learning experience of the experimental group students in this research project, it is

evaluation in its wider sense which is the subject of the next few pages, evaluation as concerned with programmes, curricula, or units of learning experience. This is the view of evaluation adopted by the Joint Board of Clinical Nursing Studies, in their "Course Evaluation Package" issued in 1978:

"in evaluation the spotlight is on gathering information about, and judging the course, rather than the individual student as is the case in assessment ". (p.1) (Authors' italics)

Green and Stone (1977) define evaluation not dissimilarly:

"Evaluation is the systematic documentation of the consequences of programmes and the determination of their worth in order to make decisions about them". (p.4)

Green and Stone, in questioning the purposes of evaluation, allude to its many uses: is it to measure (test), to prove (present evidence), to improve (change), to judge (determine value), to advocate (take a position), to illuminate (discover facts or 'the truth'), to establish merit (justify worth)? That it may, at differing times, be some or all of these things depends to a certain extent upon the people to whom it is addressed, or, in some cases, who have requested it, for example the policy makers, the teachers, the students. This very broad view of the possible functions of evaluation is in line with the views of Miller and Parlett (1974), advocates of the illuminative evaluation approach - the approach adopted within this research. The characteristics of illuminative evaluation they consider to be that it is problem-centred - beginning with issues and concerns as defined in real life settings; it is

practitioner-oriented - its main function to provide information for educators; it is cross-disciplinary; methodologically eclectic and heuristically organised. By the latter statement, the writers mean that as a study unfolds, the researcher progressively focuses and redefines the areas of inquiry as crucial issues are uncovered.

It is interesting that all four authors referred to above advocate such an all-encompassing approach - what might be called the approach of the seventies - and which contrasts so sharply with the so-called Tylerian approach of the forties, when the emphasis was on the evaluation of specific and behaviourally stated objectives (Tyler, 1942). According to Harlen (1976), a line of development in evaluation strategies can be traced - "the changes to more widely based data gathering being brought about by dissatisfaction with results from information gained more 'scientifically' but more narrowly" (p.37). Meleis and Benner (1975) consider that the dynamic changes occurring in higher education today have made necessary a similar dynamism in designing evaluation procedures, and that traditional procedures are no longer adequate. Because evaluation should be responsive to the changing needs of the situation two different types should be considered. They define and compare these two, i.e. process and product evaluation. Process evaluation is a continuous, ongoing evaluation, undertaken as a programme, especially a new and innovatory programme, is in progress, and providing feedback to the educator, to enable her to adjust her teaching strategy or content if thought necessary. Its purpose is

to facilitate prompt decision making. Product evaluation is concerned with outcomes. It measures end-products, such as learning gains, and should more appropriately be used when a programme is sufficiently developed to warrant testing. Its purpose is to judge the efficiency and efficacy of a programme, and its use facilitates comparison of the outcomes of two different programmes. While both are important, used inappropriately, the writers consider these two types of evaluation may not only fail to guide decision making but misguide it, i.e. product evaluation used too soon may cause the abandonment of a programme before it has been developed, and process evaluation cannot adequately compare different programmes or answer questions about efficacy or efficiency. The latter type of evaluation, however, has no point unless the results are translated into changes or corrective measures.

The foregoing is very similar to Rowntree's (1974) view of the respective roles of macro- and micro-evaluation. The former assesses the whole, with the aim of benefitting students in some future learning situation, whereas the latter assesses parts of the whole, with the aim of improving on-going teaching for the present students.

It was just such feedback of evaluative information into a developing programme, or during the intermediate stage of the evolving of a new teaching strategy that Scriven (1967) described as formative evaluation. Summative evaluation was his term for the assessment of a fully-operating programme, in its entirety. Scriven also differentiated between the roles and goals of evaluation. Goals

he saw as judgments of the worth or success of the programme in achieving that for which it was designed. However, in his opinion, evaluation did not end at that point - it had to be put to use. Its role was therefore to aid in decision-making - as to whether a programme or curriculum should continue, be changed, or cease. This writer further suggested that a programme's effects should be measured independently of whether stated goals were achieved. His goal-free concept of evaluation therefore included the assessment of side-effects or unintended outcomes, as well as of anticipated consequences. How well does the course achieve its goals had become the slogan, Scriven wrote, instead of how good is the course "but it is obvious if the goals aren't worth achieving then it is uninteresting how well they are achieved" (Scriven, 1967, p.52). Evaluation of the stated goals he termed intrinsic evaluation, and included in the ambit of this type of evaluation, the course content, grading procedures and teacher attitudes. The effects of all these upon the students, as seen perhaps in differences between pre- and post-tests, between control or experimental groups, on any number of criteria, he called pay-off evaluation. Of pure pay-off evaluation he was very critical, considering its appeal lay in the seeming precision of its results, especially when these were compared with the seeming 'messiness' of results from a thorough intrinsic evaluation. It is interesting that Scriven, writing some five years later, in 1972, has come to stress the unintended outcomes as often of more significance than the goals as such, indeed that for the evaluator to draw any distinction

between them was irrelevant. He drew an analogy between the testing of new drugs in medical research, and testing the outcomes of a new educational programme, and suggested that the investigator should be 'blinded' as in drug trials, i.e. the goals of the programme should not be disclosed to him. Thus, he considers, the investigator will look more carefully for all outcomes, unbiased by whether they were intended or not. Scriven stressed it was the evaluation which should be goal-free, not the curriculum planning. Green and Stone (1977) considered that perhaps the most important aspect of the discussion which followed Scriven's exposition of goal-free evaluation was that it alerted the evaluator to both sides of the coin. Once alerted it was possible that his evaluation design would be such as to be sensitive to both planned and unplanned effects.

Katz (1978) also used the analogy of the drug trial in his "Guidelines for Evaluating a Training Programme for Health Personnel", in which he states that the evaluator should ask not just does the drug - in this case, the programme work, but how does it work, how long is it effective and what are the side-effects. He too emphasises the wholeness of approach which utilises not just traditional evaluation, i.e. have the objectives of the course been met, but also takes cognisance of the context in which the programme operates, the problems and issues it encounters, the unintended outcomes it produces and what elements facilitate or impede its success. Katz comments upon the uniqueness of every evaluation, and considers that the methodology and overall approach will change with

each programme evaluated, as will the role of the evaluator. He, or she may in some cases be viewed as simply a data collector, in others as an agent of change.

This association, in the minds of many, between evaluation and change is but one of many features of evaluation which make it seem synonymous with research in education, in particular with action research. Weiss (1972) and Overton and Stinson (1977) discuss 'evaluation research' thus clearly linking the two. Nisbet (1974) considered evaluation an extension of educational research, sharing its roots and using its methods and skills. A definition of educational research which Nisbet and Entwistle (1973) had given a year previously makes the link more explicit:

"educational research consists in careful, systematic attempts to understand the educational process and, through understanding, to improve its efficiency. This shift of emphasis from 'understanding' to 'improvement' is likely to be disputed by many who are active in what they claim to be wholly respectable educational research which does not aim at improvement - such as historical studies or comparative education". (p.113)

Thus it would seem that evaluation, one aim of which is certainly improvement, may be equated with not 'wholly respectable research', but research nonetheless. Peters and White (1973), both philosophers, are precise:

"Basic research aims at the development of explanatory theory, action research is concerned with 'on the spot' improvement of current educational practices". (p.100)

This particular definition seems very close to Scriven's concept of formative evaluation, indeed Scriven uses the two terms - research and evaluation - apparently interchangeably:

"formative evaluation - this kind of research is often called process research". (Scriven, 1967, p.51)

It would seem at times almost simply a matter of semantics, evaluation and research - product and process, summative and formative - Cooper (1976) wonders whether Scriven's stark division into summative and formative is helpful as even revision of a developing programme is bound to have a great deal in it to help anyone making a summative judgment. There is evidence, in the increasing number of evaluative studies carried out in the field of nursing education, of the use of both types of evaluation, and of a certain blurring of the edges between the two. There is also considerable variety of approach, and of scale, in such studies.

Many of the Royal College of Nursing studies of nursing care and research reports are in fact micro-evaluations of the worth of certain curriculum content and teaching strategies in terms of the needs of nursing practice, although the word evaluation may not be present in their titles - in particular the work of Hunt (1974). Birch (1975) and Lamond (1974) are apposite. There are countless other relatively small-scale studies, formative or process in ethos, such as those of Hauf (1975) and Pensivy (1977) which are of value in improving on-going teaching strategies. Tibbitts, Nicholas and McKay (1978), in a very careful and statistically-based study, sought to distinguish the relative effectiveness of five different

teaching methods in nursing, their criteria of effectiveness solely the students' test scores, both immediately after instruction, and on short and long-term retention, i.e. three weeks and eleven weeks post-instruction. Hopkins and Wright (1978) on albeit smaller and simpler scale, reported a similar evaluation of teaching methods in basic nursing education and Ogundeyin (1980) looked at the effectiveness of self-instructional units in post-basic nursing education. Bendall's (1973) work on the effectiveness of the examination system is somewhat akin to process evaluation, in that it examined a part of the whole, ongoing system of nursing education and training. This evaluation was very influential in bringing about change in the final nursing examination system in England and Wales.

More breadth of approach is seen in the evaluations of entire programmes in nurse education and training. One of the earliest innovatory nursing programmes in this country, which took account of both goals and unintended outcomes of the intervention was the Glasgow experiment, evaluated by Scott Wright (1961) and previously referred to. Both Scott Wright and Pomeranz (1973), who "evaluated by research" (p.19) the experiment at St George's Hospital in London, used several criteria to measure the effects of the experimental programmes, not only upon the students, but upon the other staff involved in the whole undertaking. A little later than the Glasgow experiment, but on the other side of the Atlantic, Allen and Reidy (1971) undertook, and reported, an extremely comprehensive evaluation of the first five years of the first diploma level nursing programme

in Canada, which took place at the Ryerson Polytechnical Institute in Toronto. This study was quite explicitly termed evaluation research and was designed "to permit a flexible approach to an exceedingly complex situation" (p.3), and to be 'practitioner-oriented', i.e. to provide information and insight for those involved in the process of nursing education, by examining a wide range of criteria. House (1977) in an article, the title of which linked the terms evaluation and research, also stressed the need for the nursing profession to examine more criteria than simply examination results before pronouncing a nursing course worthwhile or otherwise, and proceeded to do so in a subsequent article (House, 1977a), taking account of such matters as student satisfaction with their training, student effectiveness as nurses, achievement motivation, and attrition rates, amongst other factors.

Many of these studies, by including student opinion of various aspects of their education process, highlight the importance of such opinion in evaluation. Beck (1978) considered the point of evaluating achievement was lost if the student did not share in the process and Dagsland (1965) felt evaluation to be the right of the student. Logan and Grosvenor (1972) would seem to be in agreement with both writers referred to above, and indeed with the developing trend in educational evaluation which is directly to involve interested parties.

In many of the studies above referred to, evaluation was not planned into the programme from the outset, as Taba (1962) suggests is necessary. While this is possible, and increasingly done, with

new and innovatory programmes, the importance of evaluation of established programmes should not be underplayed. The trend, presaged by the Glasgow experiment, and by the Briggs Report a decade later, and itself in a sense an example of a nationally commissioned evaluation of the ongoing system of the preparation of nurses, is to judge the value of nurse education and training against its ability to meet the changing needs of people and society for nursing. Allen (1977) states that "the criteria by which we judge anything reflect the prevailing values of the times" (p.9) and suggests that the critical attributes or criteria for programme development in nursing education today are relevance, relatedness and accountability. She defines these concepts thus:

"Relevance - The extent to which the goals, activities, and outcomes of the nursing educational programme are a response to the needs of a particular community or country ...

Relatedness - The extent to which the parts of the nursing programme, i.e. curriculum, teaching of nursing, practice of nursing and research, and administration, influence each other in developing programme goals and in shaping their achievement ...

Accountability - The extent to which the programme teaches the student nurse that the primary responsibility in nursing is to the patient. (Similarly in teaching, the primary responsibility is to the student)". (pp.10-11)

It would seem that as the literature, and the techniques of evaluation have proliferated, the modus operandi has become more and more complicated. The very comprehensive approach to evaluation, such as is described by Miller and Parlett, is seen by Cox (1979) as an attempt to "get away from the dangers of reducing a complex process like education to a set of simple behavioural objectives", an approach

which she warns may be so all-encompassing a description of one situation as to lead to difficulties of application of what has been learned to another situation. Illuminative evaluation would certainly seem to represent the furthest swing of the pendulum from the somewhat simplistic view represented by the early work on evaluation of Tyler and Mager. However, in spite of the fact that De Landsheere, writing in 1979, criticised Mager as seeming to have forgotten that education concerned the whole person, he (De Landsheere) considered that the concept of objectives is essential to the concept of education, a view which would appear to be shared by Cox, above referred to. De Landsheere explained that to educate means to guide - to guide and nowhere are mutually exclusive - to lead just somewhere is not sufficient - "the destination of education is by nature positive ... there can be no 'correct' evaluation without clear objectives" (pp.79-81). There is no doubt that the destination of education in nursing is positive, and that it can only benefit as a result of both small-scale studies capable of evaluation in terms of relatively simple behavioural objectives, and much larger-scale evaluations of programmes the objectives of which are more complex and which will change and evolve as society's needs for the nurse and nursing change and evolve.

PART II

RESEARCH DESIGN AND METHODOLOGY

CHAPTER 5

THE EXPLORATORY SURVEY

Introduction and Definition of Terms and Abbreviations

In accordance with the approach of illuminative evaluation, and prior to the commencement of detailed planning of the experiment, a small survey was conducted in colleges of nursing and midwifery for the purpose of providing the researcher with background descriptive data about the general organisation of the colleges, and their individual interpretations of the training programme.

DNE	Director of Nurse Education - in administrative charge of a college - and in this paper always a Registered Teacher of Nurses
A/DNE	Assistant Director of Nurse Education - a post available only in the larger colleges
SNT	Senior Tutor - the teacher equivalent of the Senior Nursing Officer or Salmon No.8 Grade (HMSO, 1966)
RNT	Registered Teacher of Nurses also referred to as a 'Tutor' or 'Nurse Tutor' and the teacher equivalent of the Unit Nursing Officer or Salmon No.7 Grade
RCT	Registered Clinical Teacher, also referred to as 'Clinical Teacher'
Learner	All trainees for the Registers or Roll of the General Nursing Councils
The programme	The basic nurse education programme leading to Registration as a General Nurse (Scotland)

E.C. programme	The experimental comprehensive programme leading to a pre-registration option period in which the learner, having had a basic comprehensive preparation, can choose to prepare for registration on one of three Registers - RGN, RMN or RNMD. This programme was given at one of the colleges in the survey and the experiment
RGN	Registered General Nurse
RMN	Registered Mental Nurse
RNMD	Registered Nurse for the Mentally Defective
RSCN	Registered Sick Children's Nurse
EN	Enrolled Nurse
Ward staff	This term denotes Ward Sisters (W/S) and Staff Nurses (S/N). When post-experiment results are reported, the term may also include Enrolled Nurses (E/N)
Student Block	} Both these terms are defined on Pages 5 and 6 of the Introduction

Between late December 1977 and early February 1978, four colleges of nursing and midwifery were visited, and semi-structured interviews conducted with the following staff:

- College A - 2 interviews - with DNE and 2 SNTs
with 2 RNTs
- College B - 2 interviews - with DNE and 1 SNT
with 1 RNT
- College C - 2 interviews - with DNE
with 1 SNT
- College D - 1 interview - with DNE and 3 SNTs

The Objectives of the Survey

Firstly there were objectives concerned with the gathering of background data on aspects of the current position in nursing education. Information was obtained about:

1. the formal organisation of colleges of nursing and midwifery
2. the ratio of teaching staff to learners in each college - and this was compared with the published figures in the GNC Report
3. individual college solutions to integration of theory and practice in the general training programme
4. the tutor as a teacher in the wards - fact and opinion
5. links between college and hospital, i.e. teaching and service staff.

Secondly, there were objectives directly concerned with the conduct and development of the research project. These were to help the researcher:

6. practise the skills of interviewing
7. use a tape recorder in interviewing and observe the effect upon respondents and upon subsequent attempts at analysis of the data
8. develop possible research instruments, e.g. to use some of the responses in a questionnaire
9. clarify her thinking about the structure of the embryo experiment and crystallise the objectives
10. ascertain who, if anyone, expressed interest in taking part in any future experiment, and would have appropriate Blocks in college at a time suitable to the research fellowship timetable.

Procedures

The sample of colleges was very small. Only four colleges were chosen and as there was no intention to generalise from the results of the survey, but simply to use these results in meeting the objectives above listed, no attempt was made at random sampling. All four colleges were representative of colleges providing the apprenticeship form of general nurse training, the programme in which the research experiment would be carried out. They might be termed a "convenience" or "purposive" sample (Abdellah and Levine, 1979, p.333) in that all were within a reasonable travelling distance of the researcher's base in Edinburgh.

During later stages of the research, and while looking for additional colleges to take part in the experiment, data from a further four colleges became available, but as these did not materially affect the details herein reported they have not been added to the analysis.

Data were obtained using a semi-structured interview schedule.

Newson and Newson (1965) consider "all interviews can be placed somewhere on a continuum between the completely structured and the completely free" (p.20) from highly structured in which the interviewer asks prepared questions and simply crosses out alternative responses, to completely unstructured when the interviewer decides himself which questions to ask. The focused interview (Merton and Kendall, 1946) provides a plan or focus to guide the interviewer's questioning, and these writers advocate its use when the interviewees are known to have been involved in a 'particular concrete situation' (as in this case

the nurse education programme). Most of the questions are open-ended but it is possible to ensure that a given set of topics can be dealt with. This procedure might be said to be mid-way on Newson's continuum of structure, and it was this type of instrument which was desired by the researcher. This was developed, and a pilot version used with four colleagues of the researcher, who were also teachers of nurses. Following some minor amendments, the version shown in Appendix II was used throughout the survey and in subsequent interviews with Directors of Nurse Education and their staff.

The tapes of the interviews, and the notes made in cases where the tape recorder was not used, were transcribed by the researcher. Content analysis, at the "manifest level" (Fox, 1976, p.260) was carried out, again only by the researcher, and the following report compiled. It is recognised that reliability is highly suspect when only the researcher was involved in the analysis, but again the fact that the results had limited use was a factor in permitting the risk of subjectivity in the analysis.

Findings - in relation to Objectives

1. Formal Organisation

Number of Courses

A number of questions related to formal organisation in the colleges, i.e. how many training programmes were catered for and how staff were deployed therein. Table 1 shows the involvement of the four colleges visited, in the various programmes and courses inherent in the General Nursing Council (Scotland) Phase I Comprehensive Training.

TABLE 1 Number of Programmes /Courses provided in Survey Colleges

Training Programme or Courses	Colleges			
	A	B	C	D
RGN	*	*	*	*
RMN	*	*	*	*
RNMD		*	*	*
RSCN			*	
Post-registration RGN	*	*	*	*
" RMN	*	*	*	*
" RNMD		*	*	*
" RSCN			*	
8 week secondment - general	*	*	*	*
" psychiatry	*	*	*	*
" mental deficiency			*	*
" paediatrics			*	
4 week secondment - obstetrics	*	*	*	*
" community				
EN	*	*		*
Leading to Registration -				
Post-certificate orthopaedics	*		*	
" ophthalmics	*		*	
Post-enrolment	*			*
Courses other than Phase I or				
Experimental - i.e.				
Orthopaedic Certificate	*		*	
State Certified Midwife	*	*	*	*
TOTAL NO. OF PROGRAMMES/COURSES	13	12	17	13

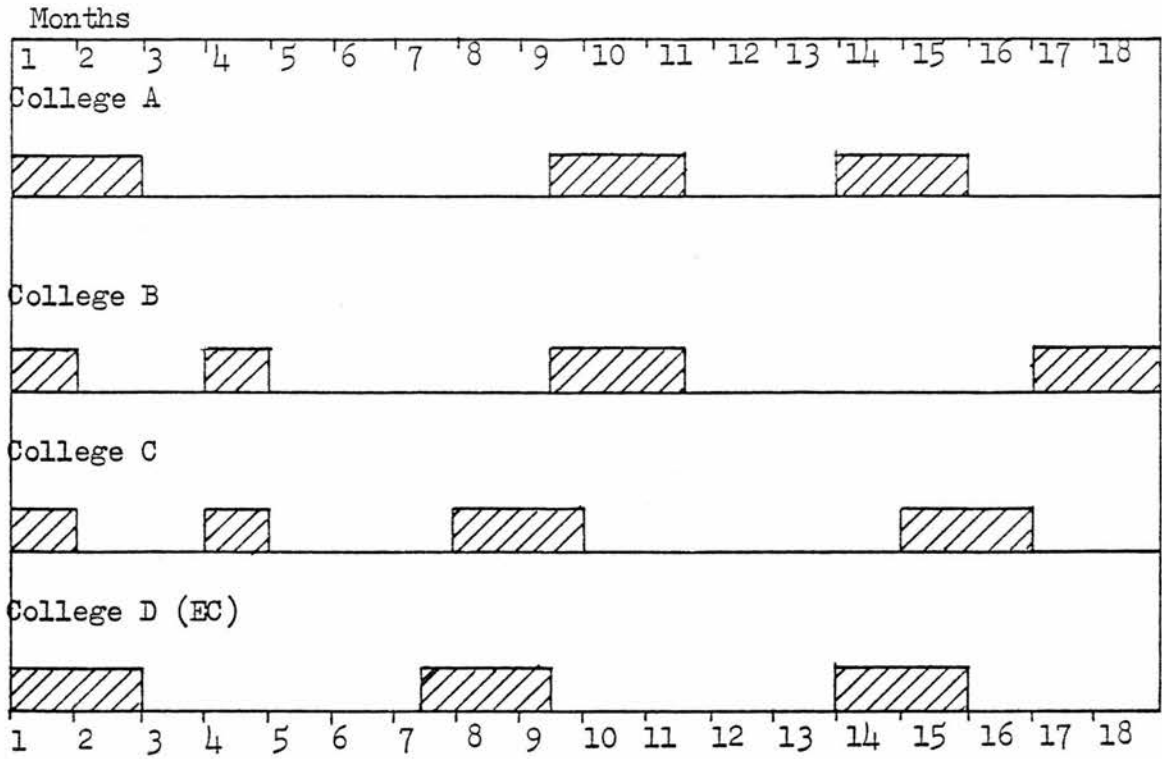
Thus, in the four colleges visited, out of a possible total of twenty courses, College B provided twelve, Colleges A and D thirteen and College C seventeen.

It is relevant to note that the programme in which it was hoped to experiment was but one of many being run in each college. Such a plethora of different programmes and groups of learners moving through colleges may be an important variable influencing teachers in planning any regular commitment to ward teaching, especially if such teachers are not only teaching, but also are responsible for the administration of Blocks. Uneven flow of learners through the college may make it difficult to forecast availability of staff for any one group of learners. Planning of the location and timing of any experiment would have to take into account the number of concurrent courses in that college at that time.

Arrangement of the Programme leading to General Registration

Question 2 dealt with this point, and the pattern adopted by the four colleges in complying with the GNC regulations was as follows:

Figure 8 Arrangement of Study Blocks in the Programme



In two colleges the Introductory Block was split into two 4-week periods with experience in a general medical or surgical ward intervening. There was slight variation in the timing of the Blocks, but in all colleges the 24 weeks were completed by the eighteenth month of training.

In all colleges, additional weeks in Block were given as follows:

College A	-	1	extra	week
"	B	-	2	extra weeks
"	C	-	2	" "
*	"	D	-	3 " "

(* College D provided the EC programme - see Page for further study day equivalent)

These additional weeks of theory all occurred in the third year of training, usually in the pre-registration period, i.e. the latter half of the third year, and all contained some management classes. In College C a week was given to revision and the Hospital Final examination, and in College D, one week gave 'in depth' study of material relevant to the general, psychiatric or mental deficiency field, for students in the EC programme.

Pattern of Intakes to Programme

Continuing to look at the general nurse training programme, the next questions were designed to elicit the number and dates of intakes of students in the programme, and in the following table this information is combined with the expected number of students in each intake.

TABLE 2 Pattern of Intakes to Programmes

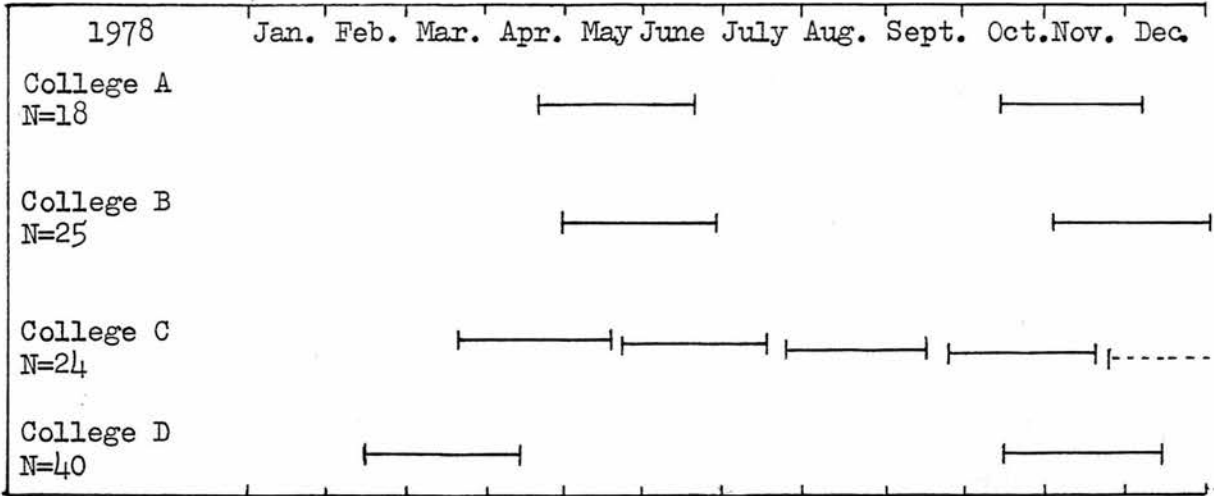
	Colleges			
	A	B	C	D
Intakes per year	2 (3 proposed)	2	6	2
Dates of Intakes	Jan. Sept. (poss. April)	Apr. Sept.	Jan. Mar. May July Sept. Nov.	Feb. Aug.
N. in each Intake (may include small N. of post-reg. students)	18	25	24	40

There was sufficient information available at this point to enable a plan to be drawn up of when different Blocks would be in college, which could then be related to the research timetable. When discussing organisation of the programme, respondents had indicated the broad content area of the various Blocks, and from this it was noted that the second 8-week period of theory in most colleges contained the lectures on medical and surgical conditions and medical and surgical nursing which was the area in which it was hoped to experiment. It was also possible at this point to know approximately how many students were likely to be in a Block.

Timing of Medical/Surgical Blocks

Figure 9 below gives the timing of medical/surgical Blocks in the four colleges during 1978. It should be borne in mind that these Blocks will very often be but one of a number of Blocks in college at a time and it is the overall commitment which is likely to affect teachers' workload, and the fluctuating staff/learner ratio - both factors relevant to the researcher in planning the proposed experiment.

Figure 9 Dates of Medical/Surgical Blocks in four Colleges



The student numbers in each Block, and the timing of consecutive medical/surgical Blocks in individual colleges are likely to be important factors in judging possible numbers for control and experimental groups and in deciding whether control and experimental groups should be from one intake of students, or from consecutive intakes.

Deployment of Tutors within Colleges

One factor which would have an effect upon the number of teaching staff, i.e. SNTs and Tutors available at any one time and to any one group of students, is the formal organisation of the staff. In three colleges, administration for each intake was undertaken by a Senior Tutor and classroom teaching shared between the SNT and Tutors. Responsibility for the intake might rest with one 'team' headed by an

SNT, but teaching tended to be shared throughout the various Blocks by all available members of the college staff. In the other college, a quite different organisation pertained. The teaching staff were divided into three separate 'teams', again headed by an SNT, but here responsibility for the administration of each intake rested with a Tutor, who remained in charge of the theoretical component for all students in that intake throughout their training. Teaching was shared to some extent, but this tended to be restricted to other members of the team, and there was very little inter-team movement of staff. This system led to 'peaks and troughs' in activity, extremely busy times being followed by quieter times.

Deployment of the Clinical Teacher within Colleges

In all four colleges, the clinical teachers did occasional teaching in the classroom, generally as a recognised specialist in certain spheres, e.g. one RCT worked in the theatres, and came into college to teach Theatre Nursing; another worked in the paediatric wards and gave formal classes in college on nursing care of sick children. In two colleges, the RCT was based in the college and in two she was based in the hospitals.

General Policy and Communications

Questions 19 to 21 sought to look at the flow of communication and methods of decision making in the colleges. Quite considerable differences existed in this regard, and it was not possible to see, in

such a small sample, whether these were a function of the size, and in some cases the spread of the college over a number of sites, or related to any particular philosophy in the leadership. All four colleges were structured on the Salmon system, but the line authority and communication inherent in this system was somewhat blurred in the three smaller colleges where there tended to be more work-sharing by consensus than was seen in the large college where there was fairly strict division of work into the three teams. In the smallest college, all staff met together every two weeks to discuss school policy and work allocation generally, but in the other three colleges a weekly team meeting of the SNT, tutors and clinical teachers was the means of communication.

Policy in regard to the appointment of new teaching staff showed that no colleges advertised for, or particularly sought, 'specialists' in any particular branch of nursing, except insofar as Registration on, for example, the Mental Register, was preferred for those teaching mainly, or entirely, in that programme.

2. Ratio of Teaching Staff to Learners

The Annual Report of the General Nursing Council (Scotland) gives the ratio of teaching staff to learners, and in 1978 this was 1 : 19 (General Nursing Council (Scotland) 1978a). Figures for the colleges visited were obtained from each Director and are as shown below:

TABLE 3 Ratio of Teaching Staff to Learners

Staff	Colleges			
	A	B	C	D
Director of Nurse Education	1	1	1	1
Assistant DNE	-	-	1	-
Senior Nurse Tutor	2	3	7	3
Registered Nurse Tutor	3	6	27	6
Registered Clinical Teacher	5	3	23	9
TOTAL STAFF	11	13	59	19
TOTAL N. OF LEARNERS	200	374	1005	420
RATIO OF STAFF TO LEARNERS (excluding DNE and A/DNE)	1:20	1:31	1:18	1:23

There is clearly considerable disparity of ratios across these four colleges. Three findings particularly relevant to the proposed experiment emerged from the interviews in regard to these figures. Firstly, the ratios quoted are not strictly comparable, due in part to the way in which the question was asked, and in part to the individual Director's perception of her college. Three of the colleges did not give the numbers for midwifery staff or learners in their replies. The other college did include these numbers, and also staff and students engaged in Orthopaedic Certificate training. Neither the Orthopaedic Certificate nor the Midwifery Certificate are GNC programmes, and the GNC Report does not include these particular learner numbers in its calculation of the ratio, although they are included in the calculation in Table 3 above. Secondly, in only one college were staff and students undergoing the entire theoretical component of the programme under

one roof. Ratios quoted for colleges which comprise widely scattered groups of staff and students are misleading. Both staff and learner numbers in one section of the college may differ markedly from those in another, and geographic and professional factors may make it difficult if not impossible for teachers to 'help each other out'. Thus we may have a 'paper ratio' which is unrelated to the reality of the working situation. In each college, one or more potential additions to staff were pending, i.e. were on Courses preparing them for Registration as a Nurse Teacher or as a Clinical Teacher. It was possible that staff numbers would rise, providing there were no resignations.

Thirdly, it was not possible to differentiate the ratio of staff to students in the general programme, mainly because staff taught in a number of programmes and courses for seconded students, but also because intakes to the programme included post-registration students. However, ratios which were slightly more pertinent to the research proposed were obtained from two colleges. In College B, the general programme and the Enrolment programme were taught by a total of 9 staff and included 204 students - a ratio of 1 : 23. In College C, the programme was taught in one section of the college and there were 515 students and 29 staff - a ratio of 1 : 18.

3. Individual College Solutions to Integration of Theory and Practice
The Programme in Relation to the Individual Student

Questions 7 and 8 in the interview guide brought the focus from the general organisation of the programme in to the point where it is interpreted for each individual student, and looked at how theoretical instruction was spaced in relation to practical experience.

In all four colleges, students were given their individual programme at the commencement of training and this they followed throughout their training. They knew from this when they would have theory, what type of ward experience they would have and when, periods of secondment to other hospitals and disciplines, and annual leaves. Each student remained with the group she began with, unless extensive sick leave or other exceptional circumstances made this impossible.

The range of practical experience which the GNC require the trainee general nurse to complete (see Appendix I) and the necessity to maintain a semblance of even flow of students to the service staff make it impossible to give each student in an intake an identically ordered experience of the different types of ward. Inevitably, for some students, practice will come before theory, for others it may follow theory, and for others it will "sandwich" theory. This can be seen by taking the information referred to previously, that of the Block in which the student receives for example her general surgical lectures and looking at this in relation to several individual student's training plans, denoting practice in a general surgical ward. This the researcher was able to do.

In College A - the subject was dealt with in the second eight week Block, during weeks 34 to 42. By week 34, all students had had 12 weeks surgical experience, and none would return to a general surgical ward for at least 44 weeks after leaving Block. At differing times between 44 and 88 weeks after the surgical Block, all students would spend 12 weeks in general surgery, but for some students, it would be 74 weeks after the relevant theory before they could return to put it into practice.

In College B - again the subject was dealt with in the second eight week Block which occurred at a similar stage as in the previous college. By this time all students had had 8 weeks surgical nursing experience and within 32 weeks after leaving this Block, a few students would work for 8 weeks on a general surgical ward. The remainder would complete the required 16 weeks at some time between 42 and 90 weeks after the relevant theory.

In College C - general surgery was dealt with in the second eight week Block which occurred during weeks 27 to 35 of training, by which time all students had had 8 or 9 weeks surgical experience. Within the next 19 weeks, a majority would have spent 9 or 10 weeks in a general surgical ward, though for a few, this experience would not occur until 70 weeks after Block.

College D - the experimental comprehensive course - had a quite different emphasis and objectives, and was not strictly comparable with the above three colleges. Here half the students would have had surgical nursing experience or medical nursing experience prior to their 'medical and surgical' Block, and the remainder would

commence such experience within 20 weeks of leaving Block. In the pre-registration period of this programme, when the student decides which Register to work towards, a week of directly relevant theory precedes ward practice.

From the above, it is apparent that, although Blocks are intended to provide theoretical teaching which is particularly relevant to the practical experience which is to follow, what may appear in formal terms to be integration of theory and practice for each intake of students, cannot be interpreted as applying for each individual student in the intake - some will be more fortunate than others, in this respect.

Policy in regard to Integration of Theory and Practice

Questions 10, 11, and 12 made direct reference to this subject, and all subsequent questions in the interview produced answers which from time to time were related to integration. There seemed to be no explicit policy, but here one respondent quoted the tutor's job description - where under the heading of professional functions the following appeared:

"Classroom teaching, demonstration of nursing practice in the classroom and clinical areas and the correlation of theory and practice".

Another respondent stated that tutors in her college were expected to spend part of their working time in college and part in hospital, as were clinical teachers. The policy was that the tutor should spend approximately 80% in college and 20% in hospital and the clinical teacher 20% in college and 80% in hospital.

Replies relevant to the subject of integration were categorised under the following headings:

Integration in

- (1) implicit terms, as a general aim or philosophy;
- (2) organisational terms, formal, in regard to programme and staff;
- (3) educational terms, curriculum content and teaching methods; and
- (4) communicational terms, links between education and service personnel.

Integration as a General and Implicit Aim

"Integration is inherent in all teaching - the aim of it all. We have no stated policy, but there will be no success if theory is taught with no relevance to practice".

This reply from one respondent articulated what seemed to the researcher to be an underlying theme in a great many of the replies.

Integration in Organisational Terms

"This is theory, followed by practice in the clinical area ..."

"In a modular-type programme the link is more clearly seen".

A number of replies cited the training programme for each intake, but as is evident in this paper, integration was very haphazard in this respect. The exception was in College D where in the pre-registration period theory immediately preceded practical experience. In addition in

this college each student was given the equivalent of 24 days theoretical component throughout the pre-registration period, in the form of 6 hours per week of "Recordable Instruction". While the student was giving service in the wards, a variety of teaching methods, and of teachers from both service and education staff, were employed in providing this instruction in direct relation to the work being done.

Integration in Curricular Terms

Most responses came in educational terms, and related to the curriculum content and the teaching strategies used. In many cases these involved education staff communicating with ward staff, so there is a merging of categories (3) and (4) in some cases. Practice in the wards while the student was in the Introductory Block, visits to wards and departments in later Blocks, the use of ward objectives, care studies and research projects were mentioned, and the relating of both nursing and biology lectures to the patients in the wards seemed to be common practice. One respondent mentioned the patient-centred teaching and examining as one possible source of conflict between theory and practice for the student nurse, and this is discussed later.

All three colleges in the Phase I programme felt that after the Introductory Block, integration was not satisfactory. They related satisfaction up to this point with two factors - (i) that students were taken from Block to work on the wards and carry out basic nursing procedures, and (ii) that supervision by Clinical Teachers

of students in the first and second ward experiences tended to be more regular. In the Introductory Block in one college, practically all the nursing classes took place on the wards, and the SNT, Tutors and Clinical Teachers went on to the wards to work with and/or supervise the students. The other colleges relied upon the Clinical Teachers and the ward staff more in this regard. At this early stage of training, emphasis seemed to be on the tasks and skills of basic nursing. Technical procedures and total patient care or communicational skills were not mentioned explicitly. In later Blocks, no college took students out to work on the wards in direct relation to theoretical classes, although all sent students on visits to specific areas, e.g. to the x-ray department, or to see specific procedures, e.g. traction for orthopaedic patients. One respondent commented:

"I question the value of so many visits from Block -
I feel no very active learning takes place".

The amount of time allocated to such visits seemed to vary quite considerably in the different colleges.

The use of ward objectives was felt to help integration by the two colleges who had experience of them. In one, the objectives were compiled by the college staff in relation to what had been taught in each Block. The objectives were issued to all the wards, so that ward staff knew what the student could be expected to do at the various stages in her training. In the other college, the opposite occurred - with the help and encouragement of the college staff, ward sisters had compiled objectives for their own wards.

In this case, areas to which the student returned more than once, i.e. general medical and general surgical wards, there were separate lists of objectives graded for each experience. The early experience had a task emphasis but there was a tendency towards emphasis on patient-centred nursing in the objectives for the more senior experience.

Another device freely used was that of requiring the students to write nursing care studies, or essays, directly linked to patients they were looking after in the wards. Only one college required two care studies to be done while the student was in Block. For this purpose she went out from Block for approximately 30 hours, and gave care to two different patients, usually one in a medical ward and one in a surgical ward. Some students would be fortunate to find they were allocated a patient whose condition related to lectures they were receiving at the time, but this would not apply for every student. In part this lack of direct relation of theory and practice lay in the fact that allocation of the student to the patient was done by the ward sister who did not, as a rule, know what theory the student was receiving and in part to the fact that allocation was dependent upon the ward population at the time. Where, and when, a Clinical Teacher was available, she would be involved in both choice of the patient and supervision of the student carrying out the patient care study. A third care study was required by the above college while the student was part of the service staff. In the other three colleges care studies were always done while the student worked on the ward - with the stated

aim of stimulating the student to relate her ward work to theory. College staff would correct such work and discuss it with the student. On only very few occasions did a Tutor supervise a student on the ward in regard to case study work.

One college required students during the pre-registration period to submit a small research project, an exercise which could be interpreted as aiding integration of theory and practice.

There was considerable variation in regard to the number of pieces of such work a student might be required to produce during her training - this varied from 1 to 7 between the four colleges.

The Communicational Aspect of Integration

This aspect was clearly a part of the reason for the questions 13 to 16 which related to the Tutor's opinion of her role outside the college. In reply to the question as to whether it is a part of the job of the Tutor to be on the wards, opinion was divided. In two colleges, there was consensus amongst those interviewed that the Tutor should be on the wards, both teaching and liaising. In the other two colleges, hesitation was expressed:

"well ... it ought to be ... in an ideal world ... but in reality one has to keep up to date with professional knowledge, reading, teaching, construction of test items, correction of papers and counselling of students".

This comment came from a respondent in the college where Tutors were required to undertake the administrative responsibility for an intake. In a college where the SNT took this administrative

responsibility, a Tutor expressed the opinion that 'the system' was not geared to enabling the Tutor to work on the wards - and cited the hierarchical authority structure which pertained in both college and hospital.

4. The Tutor as Teacher in the Wards

The wording of question 14 was somewhat ambiguous, as it said "do you think it is a part of the Registered Nurse Teacher's job to be on the wards?" Most respondents took this to mean working on the wards, and talked of their role vis-a-vis the other ward teachers, i.e. the Clinical Teacher and ward sister. A few saw clearly defined roles for each. The Clinical Teacher and ward sister should be the bedside teachers, imparting skills, demonstrating procedures, and in the case of the ward sister, two respondents felt she had a special role in teaching at report-time (a) by giving clear, concise reports and (b) by explaining about ward management and the organisation of staff in caring for a number of patients. The Tutor, it was said, should be prepared to give group tutorials on the wards, and support to the more senior nurse in planning her work and in making the link between theory and practice. One respondent said that the Clinical Teacher was the specialist and should teach in depth, the Tutor could not do this, she had to be a generalist. One Director said emphatically that she was convinced there was no difference in the role of the Tutor and the Clinical Teacher in regard to ward teaching, both should be equally capable of teaching on a one-to-one basis or in small groups.

Two respondents mentioned the possibility that the ward sister and/or the Clinical Teacher might see the Tutor on the wards as a "threat", and be deferential to her, and some thought that the Tutor might be a support to both these grades in their teaching role. Whereas there seemed to be a clear division of role between the Clinical Teacher and the Tutor in regard to college work, there appeared to be considerable blurring of role in regard to ward teaching. One respondent stated:

"We need more Clinical Teachers, but preferably only one grade of Nurse Teacher, so that then one could choose to work mainly in the clinical area or mainly in the college, but not exclusively in one or the other".

None of the Tutors or SNTs interviewed had any regular pattern of ward work - see question 13. Most said college commitments came first and ward work, if any, was fitted in when possible after these. On the occasions when they did go out, some went to any ward where students were working, others to one ward only; some followed students out while they were in Block (usually Introductory Block) and others went out only when their students were not in Block as this was when they had more time. Of the 7 SNTs and 3 Tutors interviewed, 2 SNTs and 1 Tutor never went to the wards - the others went on occasions.

In discussion with the Tutors as to their preference if they were to teach on the wards - would they prefer to take students out from Block or go to students presently part of the ward staff - opinion was again divided. Comments in favour of taking the student out from Block were:

"While the nurse is on sister's staff, her attention is always divided, there are tensions for both teacher and student (patient not mentioned!) and both tend to be clock-watching, whereas if I bring the student from Block, then it is in my time and I am helping the ward out, not hindering the progress of ward work".

"If you take the student with you from Block, then you know you have her, and can be sure of doing what you want to do".

Cogent arguments were advanced for not taking the Block student, but the student working on the ward, as then there is continuity for the student who knows the patient; for the patient who is being cared for by one nurse he knows and therefore only one stranger; the nurse is secure in the ward environment she is familiar with; the Tutor can help the student link a lot of theory with what is presently being done in the ward; but especially it was felt the quality of patient care would be better when the nurse was part of the ward staff and knew the patient.

Tutors were then asked if they would prefer to work on just one ward, or go to several. It was felt one or two wards was optimal, so that both education and service staff would get to know each other, but that when education staff took Introductory Block students out to carry out basic procedures, they should go wherever the experience was available for the students.

5. Links between College and Hospital

In all colleges there were formal provisions for meetings between the Director of Nurse Education and District and/or

Divisional Nursing Officers. Also in all colleges, the Clinical Teachers attended meetings of service staff, usually at Unit Nursing Officer level, and from time to time Tutors would attend these. Informal links with service staff were mentioned in all colleges - in the coffee lounge, or dining room, both groups might meet. A number of respondents mentioned the role of the Tutor as a liaison between education and service, to the benefit of both parties. The remainder of the interview dealt with particularly subjective material, i.e. opinions in regard to the relationship between theoretical teaching and ward practice, and the relationship between college and hospital.

The Relationship between Classroom Teaching and Ward Experience

Question 22 sought opinion as to the relationship between classroom teaching and ward experience. Responses ranged from very satisfied to dissatisfied - one college which appeared to have strong links with the hospital, where education and service staff met at lunch-time, and where the junior students in the Introductory Block were taught most of their nursing in the wards felt relationships were good and teaching was realistic. One college felt dissatisfied and out of touch with the hospital, and the other two felt satisfied with the relationship at certain stages of the training programme, but wondered if they were too complacent.

Question 25 was linked to the question of realistic teaching - this question asked if students voiced complaints about discrepancies between school teaching and their ward experience. Most respondents

stated that in all groups there were one or two students who felt this, but that it was not a noticeable feature.

Still on the subject of realistic teaching, question 23 quoted a statement contained within the then recently issued GNC Discussion Document on the proposed modular type training programme. Although the statement was in fact made in regard to the psychiatric module of the training programme, respondents were asked to consider its implementation within their own field - "that the people they (the students) are to care for should be a real presence during the theoretical introduction" (General Nursing Council (Scotland) 1977, p.19). Several respondents interpreted this statement to mean taking students to the wards from Block, as in Introductory Block and the later visits. It was also felt that patient-centred teaching rather than disease-oriented teaching was what was intended. There was quite a lot of confusion as to what it might really mean, and two respondents said that it certainly ought not to mean exposing the patient to a whole class of students, as in the medical model of ward teaching. One respondent mentioned the difficulty student nurses experience already in relating the patient-centred teaching to the predominantly task-centred work she is required to do on the wards.

A number of respondents felt it was the students' responsibility to make the integrating link between theory and practice, and that she should make use of the ward objectives and ask questions of ward and teaching staff. However, the alternative view was also expressed, i.e. that the ward sister and teachers should take the initiative in this, to guide and help her.

Several comments made by respondents from all of the colleges seemed to indicate their awareness that teaching and practice were at variance with each other.

"We teach private nursing, individualised patient care - in the wards it is task-oriented and this leads to conflict between theory and practice for the student".

"We teach individualised nursing - on the wards it is mass nursing".

"The difficulty is that nursing is so task-oriented and we teach total patient care. This is where the nurses see the difficulty in relating their theory and practice. They are 'set' to do a series of tasks - if they were 'set' to care for 4 or 6 patients and give total care, they would be more able to think why this patient needs cajoling, while the next does not, and this would stimulate their interest in learning".

Some other reasons given for what seemed a generally accepted problem in integrating theory and practice were:

"The GNC require the theory to be over by about 18 months, and then there is the secondment - so a lot of theory in the first year is not followed by practice".

"We have no common policy worked out between the wards and ourselves in regard to what we should be teaching".

In informal discussion at the close of the interviews with three Tutors in two of the colleges, the researcher asked why it was that, apart from Introductory Block, the three seldom went to the wards to work with students, and also what, in their opinion, might be reasons why other Tutors seldom taught on the wards. They gave a number of possible reasons, as undernoted:

- The 'system'
- "the system does not let you go in with any regularity"
- "the system permits you not to go in ..."
- "there is not enough time - yet that is not really true, it's the system, having to check with the ward and ask permission".
- Professional insecurity
- "Tutors are out of the way of doing things in the wards"
- "It might be easier if the wards did patient assignment"
- "Younger Tutors have more incentive to go in - when you are older you are further away from ward work and it is more difficult"
- "The more you are away, the more unrealistic your teaching becomes"
- Personal relationships
- "It is so easy to 'tread on toes!'"
- "The service staff seem to feel threatened by the Tutor's presence"
- "Ward staff are defensive and see the Tutor as a critic"
- Ward aspects
- "The wards are so busy, especially the surgical wards - it's easier in the psychiatric wards where time is not so vital"
- "When you get to the ward, you may find they cannot spare the student"
- "Some of the hospitals are not in the same town or area of town as the college".

And in the college where the Tutor had administrative responsibility for an intake of students throughout their training - the comment "You are much more tied to the college when you are actually running the Block".

The Remaining Objectives

All the objectives of the survey were met. A great deal was learned, both factually in relation to colleges other than the one in which the researcher had worked, and personally, in coping with the complexities of analysing the data, some of which were directly relevant to the study, and some of which were more relevant to the purpose behind the study, i.e. that the researcher learned about the research process.

The first two sets of interviews were taped. In the third college visited, there was some hesitation about the use of the tape recorder, so the matter was not pursued. In the fourth college, it was decided to continue the taking of notes, rather than suggest the use of the tape recorder, in order that the researcher could also gain experience in this method.

Many of the responses to the interview questions were of use in tool construction, and also in aiding the formulation of the objectives of the experiment. With regard to the final objective, an explanation of the principles of the proposed experiment, still, at that point, tentative in the researcher's thoughts, was given to the Director of Nurse Education at the close of the interview. She was asked whether she would be interested to hear further details, when they were available, and subsequently consider whether she would wish her college to participate. The reply was favourable in each case. Thereafter, the researcher requested, and obtained, a copy of the overall plan of Blocks in college throughout 1978. This information was essential not only so that the researcher could work

out dates of suitable Blocks and match this with her own research timetable, but also so that she could note other Blocks in college at the time when an experiment might be proposed, from which could be inferred the teachers' workload. This latter point was important as the experiment was based on the principle of control and experimental groups, each requiring their own teachers. This meant in effect, two Blocks within one for the short period of the experiment with concomitant demands upon teaching staff.

General Discussion of the Usefulness of the Survey

The survey seemed to confirm, certainly did not refute, the existence, within nursing education and training, of various problems related to integration of theory and practice in nursing.

It is doubtful if it would have been possible to plan and carry out the experiment without first having some up-to-date knowledge of the similarities and differences in the various college resources and plans, by means of which staff arrive at the solution of how to achieve the common end, i.e. Registration for the student nurse.

Although all colleges in this survey met the GNC requirements for the training programme, a very individual picture emerged in regard to each college. Differences, predictably, were due to intake timing, student and staff numbers, but also, and less obviously prior to this investigation, they were due to the fact that several colleges comprised a number of completely separate institutions with buildings some distance apart - in two cases in two different towns. It seemed therefore most important to investigate local conditions thoroughly

before making even tentative decisions as to where to request permission to experiment. Although the willingness of teachers to participate in any experiment was crucial, in the case of a 'far-flung' college, an apparently satisfactory ratio of staff to learners, on paper, might be far from the reality in different parts of that college, for example in the part concerned to provide general training. Also to be considered, was whether college and hospital were together on site, or near to each other. In the interests of anonymity in the results, and also in order to enlarge the choice of colleges to approach in regard to their inclusion in the proposed research, it was considered advantageous for the researcher to visit, and interview, staff in a small number of additional colleges.

As a part of the total research approach, that of illuminative evaluation, the survey information provided invaluable background data in regard to the physical, organisational and educational milieux into which it was hoped to introduce the innovatory teaching/learning method in nursing, and prepared the way for the next stage, which was the detail of the design of the experiment and the construction of the tools or research instruments.

CHAPTER 6

DEVELOPMENT OF DESIGN AND THE EXPERIMENT

The research was designed to evaluate the results of an experiment in the implementation of a planned programme of concurrent theory and practice in relation to one subject in the General Nursing Council (Scotland) syllabus for the preparation of student nurses for the qualification of Registered General Nurse.

The Objectives of the Research

Subsumed under the general aim of facilitation of integration of theory and practice in nursing were a number of 'level 2' educational objectives (see Page 23/24). With the exception of objectives 11(c), (d), 12 and 13 below, these were all affective objectives, Davis (1971) and Krathwohl (1964) the measurement of which was undertaken in a manner described in the section on questionnaire development (see Page 190).

1. to help the student nurse integrate theory and practice in nursing;
2. to increase communication between teaching staff and ward nursing staff;
3. to lessen the gap between the ideal and reality in nurse education;
4. to bridge the gap between education and service;
5. to better prepare the student nurse for her ward work and responsibilities;
6. to diminish stress for the ward teacher by making the student nurse supernumerary;

7. to diminish stress for the teacher by giving a measure of control in the choice of patients and consequently a measure of predictability of teaching;
8. to diminish stress for the student nurse by making her supernumerary while she was giving care and being taught on the ward;
9. to improve ward staff's understanding of what a student nurse can do at various stages of training;
10. to improve standards of nursing by supervising the student nurse in giving planned and individualised patient care;
11. to provide an effective learning experience, i.e.
 - (a) to stimulate students' interest in their studies;
 - (b) to enable students to take part in class discussions;
 - (c) to demonstrate learning by means of gain scores on an objective test devised especially for the purpose;
 - (d) to demonstrate retention of learning by means of scores on the above test;
12. to establish whether differences existed between students taught by the experimental method and those taught by the traditional method in terms of test scores; and
13. to establish whether differences existed between scores of all students in the sample on the objective test referred to above and scores on college-set essay examinations of similar subject matter.

Objectives 11(c) and (d) and objectives 12 and 13 were 'level 1', i.e. of high specificity, and these were also cognitive objectives. They were closely related to the entirely course-specific cognitive learning objectives listed in Appendix III. The latter were expressed in the more generally accepted format for end-of-course objectives, i.e. they were behaviourally-stated, readily measurable objectives, yet even here the researcher considered it relevant to include affective objectives. These were - that at the end of the experimental course the student nurse would:

- A. be aware of the different methods of providing patient care in terms of organisation by task assignment and patient assignment;
- B. be aware of, and value, the concept of individualised patient care, i.e. the provision of nursing care according to the individual needs of the particular patient, whatever method of organisation was current in the ward in which she was working; and
- C. incorporate the concept of individualised patient care into her own system of values, so that it became characteristic of her way of nursing.

The final objective of the research was to document the opinions of all three groups of participants in the experiment, i.e. the students, ward staff and teachers, as to "what it was like to be participating in the scheme" (Parlett and Hamilton, 1972, p.9).

The Research Approach

The appropriate research approach to such a wide-ranging study was deemed to be that of illuminative evaluation, and the alternative rather than the traditional paradigm (Parlett and Hamilton, 1972).

Entwistle (1973) stated:

"as far as educational research is concerned, the paradigm of the hypothetico-deductive method is an ideal rarely achieved. The complexity of (students') behaviour in the classroom often leaves research workers still at the stage of hypothesis hunting. Elaborate theories with accurate prediction lie in the future". (p.18)

As this research took place not only within the classroom, but also within the wards, hypotheses were not used in the evaluation of the experiment for the following reasons:

- (a) hypotheses imply an objectivity and a cause-and-effect relationship which was not wholly justifiable, either in this research or in most educational research;
- (b) very many extraneous variables, for example related to the students' cognitive strategies and the different patients who helped provide the nursing care content of the course, would have intervened between the independent variable, i.e. the teaching/learning method, and the dependent variables, i.e. the opinions of the participants and the test scores of the students; and
- (c) hypotheses tend to place the emphasis upon the readily quantifiable, in this case the test scores, and, although these were a necessary part of the outcome measurement in this research, they were not paramount. The scores were but one small part of the whole, and it was the whole which was the concern of this evaluation.

The Independent Variable or 'Treatment'

The independent variable was, in essence, a method of teaching nursing. A planned teaching/learning unit of concurrent theory and practice of nursing took place within the normal theoretical component of the basic general nurse education and training programme. During the hours allocated to the nursing lectures for one subject in their curriculum, students spent part of their time in the wards, under the supervision of their teachers from college, giving total nursing care to patients who had been chosen because their conditions related directly to the subject matter of the course. For the remaining hours, the students returned to the college, to participate with the same teachers, in a seminar or tutorial in which they discussed the nursing care they had been giving, relating it to their patients' needs and to the relevant textbooks and lecture material.

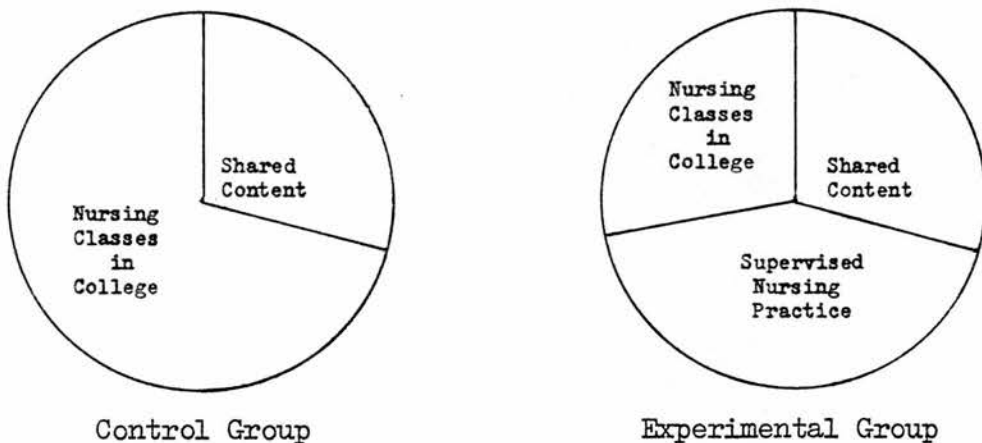
The independent variable was therefore a college and ward-based method of teaching/learning, but it also included three factors which

were inseparable from the intervention and must be considered a part of the treatment. These were the introduction and use of a handout in the form of a 'nursing care plan' note-taking framework, with accompanying instructions (see Appendices IV and V) the accent upon the concept of individualised patient care; and the use of the patient, rather than the task assignment pattern of organisation of nursing work.

All of this took place within various colleges of nursing and their associated hospitals. In the Pilot Study College, and in four of the five Main Study Colleges, the experimental teaching method took place within the course of an eight week Block, towards the end of the students' first year of training. In one college in the Main Study, it was carried out as part of the final Block, in the students' third year of training, and just prior to the six month pre-registration period. With the sole exception of the last mentioned college, the experimental method was experienced by only part of each class of student nurses, i.e. each class was divided into control and experimental groups. For the identical number of hours that the latter group experienced the altered method of teaching nursing, the control group received teaching based upon the same content, and utilising the same cognitive objectives, but entirely college-based. The precise methods of teaching were not dictated by the researcher, but were those usually utilised by the teachers. All the teaching was carried out by the teachers of the college concerned, and those teaching the experimental group did not teach that particular subject to the control group, nor did the

opposite occur, i.e. control group teachers did not teach nursing to the experimental group. Students were in separate classrooms for this subject. However, any other course content, for example medical staff lectures, films or visits to appropriate departments, was shared by students in both groups. The essential difference between the control and experimental groups is summarised in Figure 10 below:

Figure 10 Essential Difference between Control and Experimental Groups



The Dependent Variables

The dependent variables were:

- (1) the opinions of the students of the experimental group, their teachers and the ward staff involved, about the experimental teaching method, and also in regard to the achievement or otherwise of the objectives of the experiment;
- (2) the opinions of the students of the control group and their teachers as a result of their experience of the experiment; and
- (3) the scores from the students on the objective tests and the essays.

The opinions were obtained by means of questionnaires, specific to each of the five groups of respondents above-mentioned. As these questionnaires were devised especially for the research, their development and the procedures for their analysis are described in a separate chapter. The test development and validation and matters related to the essays are also described later in this Part of the thesis.

Other Data Collected

Other data which were collected, as they were considered relevant to the general description of the context within which the experiment took place, were:

- (1) opinions of students, college teaching staff and ward staff as to certain aspects of the nurse education and training programme. These opinions were again obtained by means of specifically designed questionnaires;
- (2) information about student nurse study patterns - obtained by means of a daily study diary kept by each student during the course of the experiment;
- (3) records of classes given and teaching methods used by teachers of both control and experimental groups; and
- (4) records of experimental group student and teacher movement throughout the various wards during the experiment, and of the diagnosis of the patients chosen to take part.

The Task

The activity in which all students in the study participated was the learning of the content, or the subject matter of the course. This task Tuckman (1978) described as the "vehicle for introducing treatments" (p.321) as it was neither an independent nor a dependent variable. The subject matter for the experiment was concerned with

general medical and surgical nursing, in particular with the nursing care of patients with diseases of the gastro-intestinal tract. The General Nursing Council (Scotland) Syllabus (1973) outlines the course content as undernoted, under the general heading - "Medical and Surgical Nursing":

"In the study of all diseases and disorders the undernoted should be included where relevant:

Cause and/or predisposing factors - congenital, occupational, social, economic
Symptoms and signs
Aids to diagnosis
Treatment and nursing care
Observations and records to be made by the nurse
Normal course of the disease - signs of the onset of complications
Rehabilitation
Planned convalescence
Follow up and after care
Resettlement in suitable work
Measures used in prevention of disease.

Systemic Diseases - Under each system are noted some of the common diseases and disorders which should receive special study: (a) medical, (b) surgical.

Digestive Tract and Abdomen

General: Abnormalities of appetite, swallowing, digestion and absorption. Vomiting, diarrhoea and constipation. Abnormalities of faeces

Specific conditions: (a) Peptic ulcer. Inflammatory diseases of the alimentary tract. Cholecystitis. Hepatitis and jaundice. Pancreatitis
(b) Appendicitis and peritonitis. Peptic ulcer. Intestinal obstruction. Tumours. Congenital abnormalities. Gallstones. Hernia". (General Nursing Council (Scotland), 1973, pp.9,10,11)

The above therefore constituted the task for students in both control and experimental groups.

Patients suffering from disease of the digestive system accounted for the highest number of discharges from hospital per 100,000 population in Scotland in the year 1977 (Information Services Division, 1978), and Gribble (1977) drew attention to the very high hospital admission rate for patients with such diseases south of the Border. The majority of these patients are nursed in general medical or surgical wards and thus constitute a fair proportion of the students' nursing work. Not only are a sufficient number of such patients likely to be available for an experiment in nurse education such as envisaged, but especially because of their high numbers it is important that the student should have a thorough understanding of their care.

The Task in the Context of the Block

Within the above curricular framework, each individual college of nursing was free to make its own interpretation. Essential to the acceptance and implementation of the experiment was that the researcher be aware of these individual differences and that the design of the experimental method be sufficiently flexible to take account of these differences, without any loss of control over the integration of theory and practice, the direct link between what was being taught in the college and what was being practised in the wards by the experimental group students.

A typical Block day, see Figure 11, contains five or six periods, each of from 45 minutes to 1 hour in length, during which students receive teaching on a variety of subjects, from nurse teachers, and

visiting lecturers. The latter are predominantly medical staff, but include many others, such as, for example, the pharmacist, microbiologist, Chaplain, psychologist, physiotherapist, and representatives from social and voluntary services. In some colleges, a week, or a number of days, will be devoted to one predominant theme or subject, but it is a more common practice to adopt a more eclectic approach to the timetabling. A week in Block therefore may include two, three or more different subjects, e.g. microbiology, anaesthetics, renal and gastro-intestinal lectures. The medical staff lectures on these subjects would be preceded or followed by related biology and nursing lectures, given by the nurse teachers.

The organisation of the timetable is the responsibility of a nurse teacher, either a Senior Tutor or the teacher in charge of the student group, and the teaching methods employed are normally entirely at the discretion of each individual lecturer.

The Experiment in the Context of the Block

The way in which the experiment fitted in to the system of timetabling is shown in Figures 12 and 13.

Days	PERIODS						
	1	C	2	3	L	4	5
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							

Figure 11 - Typical Block Day/Week (includes several subjects)

1 - 5 = Class Periods
 C = Coffee Break
 L = Lunch Break

Days	PERIODS						
	1	C	2	3	L	4	5
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							

Figure 12 - Control Group Day/Week during Experiment (Hatched area = Nursing care of patients with gastro-intestinal disease)

(Clear area = normal Block Programme - mixture of subjects - all students together)

Days	PERIODS						
	1	2	C	3	4	L	5
Monday							
Tuesday							
Wednesday							
Thursday							
Friday							

Figure 13 - Experimental Group Day/Week during Experiment

(Hatched and clear areas as above)

(Cross-hatched area - where student was on supervised ward practice)

For the control group students, the teaching of gastro-intestinal nursing occupied the first two periods and the last period of the day, and for the experimental group students, this teaching took place during the first three periods of the day - the first two in the wards, and the third, in the college. The experimental group began and finished their day earlier than the control group, for reasons which were in part ward-related, and in part due to concern for the control group, in that it was considered more acceptable on educational grounds, to break the control group students' experience of the subject matter, as three consecutive periods of gastro-intestinal nursing might have proved somewhat 'indigestible'.

For the remaining periods of the Block day, students from both groups shared whatever content was organised in their timetable. This might have included medical staff lectures on diseases of the gastro-intestinal system, or might have been about another subject altogether.

Design of the Experiment

The design chosen for this experiment is one considered by Campbell and Stanley (1966), and many others (Pilliner, 1973), Burroughs, (1975), as the best available for educational research which takes place, not in the controlled, artificial setting of the laboratory, but in the untidy reality of the classroom. The latter type of educational research, Pilliner states, is likely to convey more conviction and have maximum relevance to the needs of both

teacher and student, but it entails problems related to the control of extraneous variables, or interfering influences which can tend to obscure or confound the effects which are of particular interest. Such influences Campbell and Stanley refer to as threats to the validity of the experiment, both the internal validity, in that the research results can be accepted as being a function of the experimental treatment, rather than of other uncontrolled variables; and the external validity, which affects the question of generalisability of the results. Among the factors which these authors consider jeopardise internal validity are (1) history, events other than the experimental treatment occurring between a pre- and post-experiment measure, (2) maturation, processes within the subjects operating simply as a function of the passage of time, e.g. growing more tired, growing hungrier as coffee-time approaches, (3) testing, the effects of taking a test upon the scores of a subsequent testing, (4) instrumentation, changes in scorers or scoring, (5) statistical regression, occurring where groups have been selected on the basis of extreme scores, (6) selection bias and (7) experimental mortality, i.e. differential loss of respondents from the comparison groups. External validity or generalisability of results may be threatened by the possibility that the pre-testing may alter subjects' responsiveness to the experimental situation, i.e. that the results may be those of groups "warmed up by the pre-test" (Campbell and Stanley, 1966, p.17) and therefore not generalisable to an unpre-tested population. There is also the problem of any interaction effects from selection bias and the experimental treatment,

and the threat of the well-known 'Hawthorne effect' (Roethlisberger and Dickson, 1939), i.e. the reactive effects of the experiment per se.

Bearing all of this in mind, the design which was decided upon for this experiment was the pre-test/post-test control group design - what is termed a true experimental design.

This design can be diagrammed as shown in Figure 14 below:

Figure 14 Pre-test/Post-test Control Group Design

R	O ₁	X	O ₂
R	O ₃		O ₄

(Campbell and Stanley, 1966, p.13)

R = indicates groups chosen by randomisation
O = indicates an observation or measurement
X = indicates a treatment or independent variable

The above design was adapted in this study in two ways. Firstly, a retention of learning observation or measurement was added. This was made when the subjects next returned to Block, a period of some three to six months after observations 2 and 4 in the diagram above. Secondly, the experiment was replicated on four occasions, following its first use in the pilot study, and later use in the first of the main study colleges.

The adapted design used in this research is shown in Figure 15 below:

Figure 15 The Design of the Experiment

Groups	Pre-experiment Stage	Experiment Stage	Post-experiment Stage		Retention Stage
E	O ₁	X	O ₂	Intervening Nursing Experience	O ₃
C	O ₄		O ₅		O ₆

E = experimental group
C = control group

It is therefore this adapted design which is referred to throughout the research as the experiment design.

As can be seen from the above Figure, two groups were employed in the design - the experimental group who received the treatment, and the control group who did not receive the treatment.

It is perhaps misleading to depict the comparison between the groups in the above design as between 'X' or 'no X'. Campbell and Stanley point to the over-simplification of the position which is suggested in the diagrammatic representation. In the case of this nursing education experiment, the control group students were taught the same course content as the experimental group students. It was the experience of the integrated college teaching and ward practice of related nursing which represented the 'X', the absence of that experience which represented the 'no X'.

The experiment design controlled for all the sources of internal invalidity although it was recognised that, by the addition of the third set of observations following the intervening practical experience, the factor of history may have been less well controlled. However, to counteract this, testing of both groups was always

carried out simultaneously. Most importantly, the long intervening period, of varied experience, between the treatment and observations 3 and 6, constituted a serious threat to the validity of the final stage of the experiment. Experimental mortality was also very slightly increased due to the passage of time.

The use of the pre-test, which was one limit to generalisability of the results, was considered justified, and indeed very important in this experiment. One of the problems in nurse education is to control the amount and type of practical experience and ward teaching each student nurse receives - quite apart from the use she may make of such opportunity. The limitations to generalisation posed by the pre-test was mitigated by the fact that testing is a regular feature in nurse education, and also by the fact that no one of the students, at the time of pre-testing, knew of the experiment which was to follow for some of them, therefore none was aware of the significance of the test.

The problem of selection bias was dealt with as far as possible, by the use of the replicate sample design. In all, six colleges of nursing participated, one in the pilot and five in the main study, and there was no reason to suppose that these colleges were unrepresentative of the colleges of nursing in Scotland. In two colleges where staff were approached in regard to taking part in the experiment, the teachers felt unable to participate. One of these colleges was patently in the midst of an acute staffing crisis.

Matching and Random Allocation of Subjects to Groups (cf. 'R' in Figure 14)

A critical feature of the experiment design was the allocation of subjects to experimental and control groups by a process of randomisation, which was preceded by matching the subjects on a variable considered relevant - in this case knowledge of the subject matter of the course and of related but more general nursing.

Burroughs (1975) stated:

"There is a single correct procedure for matching. (Students) are matched on such variables as are selected. Then each matched pair is taken and one of the (students) allocated at random to one group and the other (student) to the other group. The matching comes first and the grouping comes second rather than the other way round". (p.64)

This was exactly the procedure adopted in this experiment. The difficulty of controlling the variable of prior relevant experience and knowledge was overcome by the administration of the pre-test, i.e. the specifically designed and validated multiple-choice test (O_1 and O_4 in the diagram in Figure 15) which tested that knowledge, and yielded scores on which subjects were 'paired' or matched. The method was as follows:

The multiple-choice test (see Appendix VI) was administered to all eligible subjects as a pre-test - prior to any teaching of relevant subject matter in that particular Block. Care was taken to administer this test as closely as possible to the commencement of the actual experiment, yet prior to any teaching of relevant course content. Each student completing the test was given an identification number and her score on the test obtained by computer marking.

1. As soon as the scores were available, the students were placed in rank order - of top score - 1st in class down to nth with the lowest score. Tied scores were dealt with at all times in accordance with the standard statistical procedure (Burroughs, 1975), i.e.
 - (a) adjacent ranks along which the tie occurred were added, e.g. if following the 4th student in the class, the next 2 scores were the same, 5 and 6 were added, to equal 11;
 - (b) the mean of this sum was allocated to each student who tied, i.e. a rank of 5.5 to both;
 - (c) the student next in order of scores received the rank 7.
2. Folded slips containing each student's identification number were put into a 'hat'. The statistical design for much of the test data was based on randomised blocks or pairs, therefore if a class contained an odd number of eligible students, the first step was to extract a number from the 'hat' and thus a student from the pairing. That student was assigned to the control group, and was not matched or paired with any student in the experimental group.
3. The students were then paired, in their rank order, i.e. 1st with 2nd, 3rd with 4th and so on. As the n of pairs who could take part in the actual experiment had always been decided previously (see text of initial meeting with directly involved teachers), the next step was to extract any excess pairs from the class group, e.g. in one college, 13 pairs were present but only 12 pairs were required. Folded slips of the numbered pairs went into the 'hat', and one was taken out - both members of that pair were assigned to the control group.

4. All remaining student identification numbers were placed in the 'hat', and the first one of each pair to be drawn was allocated to the experimental group, thus automatically allocating her partner to the control group.
5. Finally, any spare pair of students was then treated exactly as in step 4 above and these students were available in case of any 'drop out' before the experiment began. Once it began, any student 'dropping out' meant the loss of her partner also, i.e. the pair, in terms of the randomised blocks analysis of the test score data, although not in regard to the remaining test score data and the qualitative data. In fact at no time was a reserve pair required.

The Dependent Variables and other Data in relation to the Design and Stages of the Experiment

There were five separate tests which all students, with the exception of those in College III, completed. The 100-item multiple choice test was administered three times:

- (1) as a pre-test - immediately before any teaching of the subject matter, and without prior warning to the students that a test was to be taken. (O_1 and O_4 in Figure 15)
- (2) as a post-test - on completion of the course, either on the same day or on the first class day after completion of the course. Again no student knew the identical multiple choice test was to be taken, although all knew they were to sit the usual 'end of course' test. (O_2 and O_5 in Figure 15)
- (3) as a retention of learning test. When students next returned to Block, an interval varying from 3 to 6 months in the different colleges, they took the test for the third and final time. No student was aware beforehand that she was to take any test. (O_3 and O_6 in Figure 15).

The college-set essays were administered twice:

- (1) as a post-essay - on completion of the course and, if both essay and test were to be completed on the same day, then the essay was always written prior to the test. It was normal practice in all four main study colleges for students to sit a test on the course subject matter, therefore all students were aware that the post-essay would take place, and knew when it was to occur, as it was timetabled. (O_2 and O_5 in Figure 15)
- (2) as a retention essay. As explained in (3) above, without prior warning of the testing session, all students re-sat the same essay. This was always taken before the test. (O_3 and O_6 in Figure 15)

Observations 1 and 4 also included the data from the questionnaires issued pre-experimentally to students, college teaching staff and ward staff, as did observations 2 and 5. Observation 3 included data from the questionnaire issued to experimental group students.

At the experiment stage, all students were asked to keep a daily study diary, both control and experimental group teachers kept a note of the classes they had given with the teaching methods used, and the researcher kept a note of student and teacher movement through the wards, and of the diagnosis of patients given care by the experimental group students. From all these records data are available.

Data Analysis

The opinion questionnaires and the diaries were analysed using the Statistical Package for the Social Sciences (1975) and the SPSS Update Manual (1977), and programmes written by the researcher.

Apart from the calculation of a Kendall Coefficient of Concordance (Siegel, 1956) with regard to student teaching method preference, statistics were not used in the analysis of the questionnaire or diary data, as they were not considered relevant. Scores on the multiple choice test were calculated by a short programme added to the Rasch Item Analysis Model (Wright and Mead, 1977) which had been used for the item analysis when the test was constructed and validated. Scores on the essays were obtained by the issue of the scripts to three neutral markers, all of whom were General Nursing Council for Scotland examiners, and, in the case of the post-essays, also to the teachers of the college concerned. Statistics were used in the analysis of the test and essay scores. Measurement of central tendency, and of dispersion, Pearson product moment correlations, sign test, t-test and analysis of variance were carried out using the Statistical Package for the Social Sciences (1975). Significance testing was deemed appropriate as generalisation of the results to the population from which the sample was drawn, is possible, albeit to a very limited extent.

Analysis took place across colleges, with the exception of results from College III. When between college differences were relevant, these were reported, as were any within college differences, although the latter were less frequently found.

CHAPTER 7

THE SAMPLE

The Student Nurses

The population, from which the sample was drawn, was student nurses currently undertaking the GNC (Scotland) course of education and training leading to registration on the General Register, by means of the traditional college of nursing and hospital-based programme.

A total of 119 students constituted the sample. (This represents 3.8% of the total number of student nurses in training in 1978 (GNC 1978)). They were from five colleges of nursing in Scotland. All these students were undertaking education and training for the qualification of Registered General Nurse, and all were in that part of the theoretical component of their programme which included the subject matter of the experiment. As, normally, a class of student nurses will contain some students who have previous experience of training, the following distinctions must be pointed out in regard to stage of training. The majority of the students in the sample were encountering the subject matter of the experiment for the first time, i.e. they were all in their first year of training and undertaking the above course as a first and basic education and training in nursing. These students were eligible for inclusion in control and experimental groups for all outcome measurements. A few students were previously trained, previously enrolled, were re-sitting part of their course, or were

graduates of a non-nursing Degree programme which contained material relevant to the subject matter of the experiment. These students, although included in the control group, contributed to the outcome measurements in terms of the opinion questionnaires and diaries only. The exception to the above, is the students of College III. These students were undertaking the experimental comprehensive programme of training and were in their pre-registration period. They were therefore at a later stage of training (two and a half years), and they were included in order to measure the effect of the experimental method in these different circumstances. Although the allocation of students to the experimental or control groups, as previously described, was random, the selection of an intact class of students was not. This selection was dependent upon the researcher's choice of college, and the presence of these students in the appropriate Block in that college at a time which was suitable to the researcher's timetable. In all but College I, students were given the opportunity, by the researcher, to opt out of participation in the experiment if they so wished. In the case of College I, the Director of Nurse Education had stated that participation was obligatory for all students in the target class.

The Selection of Colleges

The colleges were carefully chosen to be as representative as possible of the nineteen colleges of nursing and midwifery in Scotland. Two were large colleges, attached to teaching hospitals

in the major cities, two were much smaller in size, and situated, one in a county town and the other in a rural area, and one was of medium size, and conducted the experimental comprehensive programme. This was situated in a moderately sized coastal town. The selection of the colleges was governed by their accessibility from Edinburgh - the furthest was fifty miles distant from this, the researcher's base; and by the presence in each college, at a time suitable to the researcher's timetable, of a Block in which the subject matter of the experiment was taught. Selection was also dependent upon the willingness to participate of the staff of the college. As previously stated, there was one college in which this participation was not forthcoming, and another in which extraneous circumstances, related to staffing, made participation impossible.

The five colleges represented 26% of the total of nineteen colleges of nursing and midwifery.

The Teachers

No teacher was selected at random to take part in the experiment. All were on the staff of the five colleges. In each college the initial choice, by the researcher, of a suitable Block in terms of (a) the appropriate course content and (b) the timing vis-a-vis the research timetable, dictated which teachers were likely to be available. As all colleges operated the 'Salmon-type', team system of formal organisation, then those teachers who were members of the team responsible for the chosen Block were all involved in the

experiment, either as teachers of the control or the experimental groups. The availability of any additional teachers required from other teams (this was necessary in only one college), depended to a certain extent upon the number of other Blocks in the college and thus individual teacher's work commitments during the period of the experiment, as well as of course being influenced by absence of any teacher on annual leave or study leave. In only one college was it possible to allocate teachers to the control or experimental group teaching by randomisation.

Teachers of both control and experimental groups were from RNT and RCT grades, and insofar as the teaching of the subject matter of the experiment was concerned, i.e. medical/surgical nursing of patients with disease of the gastro-intestinal system, no teacher taught both groups; control group teachers remained with the control group for that particular subject each day, and experimental group teachers remained with the experimental group. It was quite likely that at another time of the day, and for another subject, teachers would be involved in teaching the entire class.

Nineteen teachers were involved in the experiment, eleven in teaching the experimental group students, and eight with the control group students. This number represents 3.7% of the teachers in post in Scotland in 1978. However, when those teachers, the other staff members in the five colleges, who completed the pre-experimental opinion questionnaires are included, this number rises to 72, 14% of all teachers in post.

The Ward Staff

Fifty-eight ward sisters, staff nurses and enrolled nurses of general medical and surgical wards were directly involved in the experiment. Their choice was as a result of their having in their ward, at the time of the experiment, patients whose diagnosis and condition made them suitable for inclusion in the numbers of those to whom the experimental group students gave care, and also was dependent upon their being the nurse in charge of the ward on a day when the experimental group students and their teachers were at work therein. The total of fifty-eight included staff from the pilot study college, the only situation in which pilot study data was included in the main analysis. When all other ward trained staff of general medical and surgical wards in the seven hospitals in which the main study experiment took place are included in the number of those who completed the pre-experiment questionnaires, this number rises to 224. It was not possible to ascertain what proportion of medical and surgical ward trained staff this figure represented.

The Hospitals

The hospitals which provided the practical experience for the experimental group students were those which normally did so for the colleges in the study. There were seven in all because, in two of the colleges, it was the practice to utilise two different hospitals in order to obtain the requisite practical experience for their students.

The Patients

In all 110 patients were given care by the experimental group students, and thus they were also participants in the experiment. Patients were chosen, following consultations between the researcher and the ward staff, when their diagnosis and condition were considered suitable for the experimental group students' needs in terms of learning experience. The question of patient consent was a matter of considerable concern and this is dealt with on Page 226, as is the question of evaluation by the patients of the care they received from the experimental group students.

CHAPTER 8

THE DATA COLLECTION AND OTHER RESEARCH INSTRUMENTS

All data collection instruments were developed specifically for the study.

The Questionnaires

Obtaining the views of participants, although fraught with hazards of reliability and validity of results, is crucial to the evaluation of an educational innovation. Many writers (Oppenheim, 1968), (Moser and Kalton, 1977) describe the advantages and disadvantages of data collection by means of the questionnaire. The questionnaire was chosen as an appropriate instrument to obtain both factual and opinion data from students, teachers and ward staff because (1) it can yield data at both surface and sub-surface levels (Fox, 1976), (2) the total sample numbers were large relative to the fact that one trainee researcher was carrying out the data collection, and (3) the impersonal nature of the instrument, together with the opportunity each respondent had to remain anonymous, made it possible to assume a greater degree of frankness in response than would have been possible with a face-to-face technique such as the interview.

There were ten questionnaires, four of which were administered pre-experimentally and dealt with respondents' background in nursing and factual data and opinions in regard to nurse education and training generally. These were:

1. the student nurse questionnaire which contained 16 questions of which 7 were open-ended; see Appendix VII
2. the ward sister and staff nurse questionnaire which contained 22 questions of which 9 were open-ended; see Appendix VIII
3. the Registered Nurse Teacher questionnaire which contained 26 questions of which 14 were open-ended; see Appendix IX
4. the Registered Clinical Teacher questionnaire which contained 21 questions of which 11 were open-ended; see Appendix X.

Five questionnaires were administered post-experimentally:

5. the experimental group student questionnaire which contained 11 questions of which 8 were open-ended; see Appendix XI
6. the control group student questionnaire which contained 4 questions all of which were open-ended; see Appendix XII
7. the ward sister and staff nurse questionnaire which contained 9 questions of which 8 were open-ended; see Appendix XIII
8. the experimental group teacher questionnaire which contained 21 questions of which 19 were open-ended; see Appendix XIV
9. the control group teacher questionnaire which contained 8 questions all of which were open-ended; see Appendix XV

One questionnaire was administered at the retention stage of the experiment:

10. the experimental group student follow up questionnaire which contained 4 questions of which 2 were open-ended; see Appendix XVI.

Background data from all students, in relation to practical experience prior to the experiment and also in the period intervening between the post-experiment and the retention stages were available from the frontispiece of the multiple choice tests administered pre-experimentally and at the retention stage (see Appendix VI and XVII).

(a) Pilot of Questionnaires

All questionnaires were subjected to pilot investigation. The student pre-experiment questionnaire was given to twelve student nurses in general training and at the stage of training of the majority of the respondents. Following the use of these questionnaires in the pilot study a number of changes were found to be necessary and this questionnaire was re-piloted, this time with 27 student nurses of similar stage of training. A pilot version of both the teacher questionnaires was completed by four research co-workers, all of whom were qualified nurse teachers, and three ward sisters completed the pilot version of the ward staff questionnaire. Pilot versions of the post-experiment and retention questionnaires were completed, in the case of the student questionnaires by four students from Edinburgh University undergraduate degree programme and, in the case of education and service staff questionnaires by six post-graduate students of the University's Nursing Studies Department. For all questionnaires, there were some necessary changes, for example, more space for comments; rewording of certain questions in the interests of clarity or, in the case of

two questions, in an attempt to eliminate a low response rate; clearer response 'boxes', and the insertion of instructions as to the mode of response alongside every question. In this latter regard, questionnaires from the Centre of Educational Sociology, University of Edinburgh (1977) proved a very useful guide. Finally, a coding column was added to all questionnaires. This included provision for an identification number which was inserted on each questionnaire prior to issue, simply in order that the researcher could check returns.

(b) Structure of Questionnaires

The structure of all pre-experiment questionnaires was similar. Each began with factual questions, related to work experience. These were pre-coded questions, intended to be easily and quickly completed - 'settling-down' questions, for example:

"In which type of ward do you work?" - alternative responses given were - "Medical", "Surgical" or "Other : please specify". (Ward sister and staff nurse questionnaire)

This type of question gradually gave way to some which were entirely open-ended or which included an open-ended part, and to the occasional forced-choice type of question. All such questions dealt with opinions on possibly rather controversial topics, for example:

"Who do you think should take the main responsibility for giving ward teaching (to student nurses)?"
(Ward staff and teachers' questionnaires)

Space for signature was provided on ward staff and teacher questionnaires, but to sign was not obligatory. Age was not

requested as this can be a sensitive subject for respondents, and it was not particularly relevant to this study. Of more importance was length of experience in nursing, and age is not necessarily indicative of that, as so many staff leave nursing, and return at later dates to take up posts as trained ward or teaching staff. Thus questions such as "length of time as ward sister/charge nurse" were preferred, and used (see RNT questionnaire).

All post-experiment and the follow up questionnaires began directly with opinion-seeking questions in regard to the effect of the experiment. It was recognised that there was a considerable risk of invalidity in responses to all these questionnaires, arising from the tendency of respondents to rate favourably. Hockey (1976) and Goldthorpe et al (1970) among others, comment upon this hazard, and there can be little doubt that it was present in this particular study. Students in the experimental group, for example, no doubt felt pressure to respond favourably to the very first question in their questionnaire - "Did you enjoy the experimental method of teaching/learning?" - with its pre-coded responses "Very much - moderately - not very much - not at all". The inclusion of that question was considered justified by the researcher as it seemed a most natural question with which to begin, but the highly subjective nature of much of the questionnaire data must be considered a limitation of the study.

A rating scale was developed in order to obtain respondents' evaluation of the objectives of the experiment. The objectives

were listed and respondents asked to indicate on the six-point scale - see below - to what degree they considered each objective had, or had not been achieved. A tick was to be placed in the appropriate 'box'.

Example objective:

"Increase communication between teaching staff and ward nursing staff"

Positive			Negative		
+++	++	+	-	--	---

In an attempt to seek out any possible inconsistency in response, on the premise that unreliability in response would prejudice validity, a 'check' question on the evaluation of the objectives was inserted - see question 1 in the experimental group teachers' questionnaire in comparison with question 20. In the event, no ambiguity of response was discovered. The affective objectives for the experimental teaching/learning method (see Appendix III) were measured with the aid of questions 10 in the experimental group students' post-experiment questionnaire and question 3 in their follow up questionnaire.

(c) Coding and Categorisation of Open-ended Questions

A considerable number of open-ended questions were employed in this study. It was realised that, in the coding and analysis stages, this would involve a great deal of work in scrutinising the responses and in categorising. Conversely, if responses were restricted by pre-coding, much richness and freedom of comment would be sacrificed. In coding the open-ended questions, it was the researcher's practice firstly to read over all responses to

one question. Thereafter, a minimum of 33% of these responses were transcribed on to individual cards and allocated to categories suggested by the response content and of relevance to the research topic. This process was repeated for each open-ended question. Where tried and well-known categories were appropriate, these were used, e.g. in categorising responses to questions 12, 14 and 15 in the student nurse pre-experiment questionnaire, the Nuffield Job Analysis (1953) categories of basic, technical and affective nursing were utilised. The minimum number of judges who should code the same question, in order to know whether the code is understood and used consistently, is said to be two (Tuckman, 1978 and Warwick and Lininger, 1975). Each open-ended question in this study was coded by three judges, the researcher and two others, who were in each case also trained nurses. Four post-graduate research students, a practising nurse teacher and a nurse administrator made up a small team of judges. Inter-code reliability was assessed using the conventional method of estimating the percentage of judgments on which the three coders agreed over the total number of judgments. If coders did not agree on the categorisation of at least 75% of responses to a question, or if categories were found to be very little used, or not mutually exclusive, then they were re-examined, adjusted and the judging process repeated. Several writers have called in question this percentage agreement method of establishing inter-coder reliability. Scott (1955) and Cohen (1960) pointed out that it was biased in favour of the smaller number of categories,

i.e. it was easier to find agreement by chance if there were just two categories rather than five. However as there were very few dichotomous categorisations in this study, it was considered an acceptable method in this case.

The Objective (Multiple Choice) Test : Construction and Validation

A 100-item objective test was devised by the researcher specifically for the experiment (see Appendix VI). It was designed to be used on three separate occasions, but in identical format, as a pre-test, a post-test and as a retention of learning test, and to be used throughout all colleges involved in the research experiment.

The purposes of the test were two-fold. Firstly, it was required to produce a sufficient spread of scores from the student nurses in each class so as to make 'matching' possible. Secondly, its purpose was to examine the students' knowledge of the subject matter of the course on medical/surgical nursing of patients with gastro-intestinal disease. The course content is outlined in the GNC (Scotland) syllabus (1973) and in the specific cognitive learning objectives formulated by the researcher see Appendix

(a) The Structure of the Test

Collins et al (1976) point out that the educational objectives for a course must be determined prior to planning the test, and thereafter the first step is to take the decision as to what is to be measured. This stage is followed by the listing of the appropriate topics and areas to be examined, and these should be weighted according to their importance.

TABLE 4 Components of the Objective (Multiple Choice) Test

Components of the Objective (Multiple Choice) Test	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation	Topic Totals
<u>A. Entering Knowledge</u>							
Basic nursing	1	12	3	-	-	-	16
Anatomy	6	-	-	-	-	-	6
Physiology	12	-	-	-	-	-	12
<u>B. Course-specific Knowledge</u>							
Causes of disease	-	-	2	-	-	-	2
Signs and symptoms	1	3	4	5	-	-	13
Aids to diagnosis	-	3	4	-	-	1	8
Medical treatment and nursing care	-	4	3	-	1	-	8
Surgical treatment and nursing care	-	8	4	1	1	3	17
Onset of complications	-	-	1	1	2	-	4
Rehabilitation/prevention	-	-	4	-	-	-	4
Knowledge of terminology	-	7	-	-	-	-	7
Applied biology	1	-	2	-	-	-	3
<hr/>							
TOTAL ITEMS FOR EACH EDUCATIONAL OBJECTIVE	21	37	27	7	4	4	100

As can be seen from Table 4 the educational objectives which this test was intended to examine were both low-level cognitive learning (Collins et al, p.17), which is similar to the first or simplest level in Bloom's (1956) taxonomy, i.e. knowledge; and also high-level cognitive learning, i.e. comprehension, application, analysis, synthesis and evaluation. As Schneider (1974) pointed out, items to measure these latter, more complex learnings, are difficult to construct. There is also the problem, referred to by both the previous writers, of the difference between the intended behaviour, in setting a question; and the actual behaviour of different students in tackling and answering that question. The tester cannot ever quite know the experiential background of the testees, therefore although two students may appear to be doing the same thing in answering a question, one may be answering from memory, having met the identical problem in class, or in the ward on a previous occasion, while the other may never have met it before and must reason by applying general principles. There are many questions to which the above problem would apply, in this objective test. However, bearing the above in mind, the test appeared to the researcher, and to a researcher-colleague who was also a qualified nurse teacher, to include 21 items which measured knowledge, 37 which measured comprehension, 27 application, 7 analysis, 4 synthesis and 4 evaluation.

As spread of scores on pre-test was desired, the test contained material referred to as 'entering knowledge' (see Table 4), i.e. knowledge which students could be expected to have acquired prior to

to the course, as a result of Introductory Block teaching, and their first practical nursing experience on the wards. As the test was also intended to assess knowledge gained as a result of the teaching of the specific course content it contained items related to that specific knowledge. There were 34 items of entering knowledge and 66 items of specific knowledge. There were three main subject areas - 57 questions dealt with nursing, 21 with biology and 22 with disease. The topics, within the general topic of gastro-intestinal nursing, ranged widely. In the first 77 questions, 'patients' were presented as a focus for the questions (a) a young girl admitted with acute appendicitis, (b) a middle-aged mother with cholecystitis, (c) a man in his thirties with peptic ulcer, and (d) an elderly gentleman with carcinoma of rectum. Sections I to IV of the test contained the questions in regard to these four 'patients'. Section V contained questions which were not specifically patient-oriented. All five sections were of multiple-choice items, which were explained, with examples, on the second page of the test frontispiece. Section VI contained matching items and these were explained, with examples, directly prior to the items.

(b) Validation of Test

Tuckman (1975) considered that for a test to be a 'good test' it should be appropriate, i.e. measure outcomes consistent with its objectives. His concept of appropriateness seemed akin to validity. The main concern, in creating this test, was with validity - that the test should measure what it was intended to measure. Collins

et al (1976) suggest determining validity of the test in two ways - by (1) logical rational analysis, i.e. the relationship or relevance of the test items to the purpose of the test and (2) statistical comparison with outside criteria thought to be related to the test. For this they recommend the use of product moment correlation. These two steps in evaluating the validity of the test were utilised.

With regard to (1) above, after compilation of the test - using textbooks and articles on (a) nursing (Scherer, 1977; Gillies and Alyn, 1973; Mosby, 1977; Robbins, 1975) and (b) test construction (see above and below referred to, also Hubbard and Clemans, 1961) - the rough copy of the 100-item test was submitted to five nurse educators together with information on course content and objectives. They were asked to comment on the appropriateness of questions, wording of questions and distractors, and correctness of distractors and answers. Following their perusal, a number of changes were made and the test prepared in pilot form for use with students.

With regard to (2) above, the first stage was to administer the test to 155 student nurses. Thorndike and Hagen (1977) state "validity must always be evaluated in relation to a situation as similar as possible to the one in which the measure is to be used" (p.69). The students who took the pilot version of the test were, as far as possible, representative of the students in the sample, at the pre- and post-test stages. They were in training in colleges of nursing within reasonable travelling distance of

Edinburgh, and care was taken to avoid choosing a class, or college, which might 'contaminate' the main study sample. Forty-eight students, from three colleges, had not had the course subject matter, thus represented the pre-test stage. Forty, from two colleges, had just completed the relevant subject matter, thus represented the post-test stage. Forty-four students were undertaking the experimental comprehensive training programme, and these students had had six hours of relevant subject matter in a previous Block. All of the above students had been approximately six months in training. The other twenty-three were senior or pre-trained students, who were in Block prior to taking their State Final examination, and had been in training two and a half years.

It is recognised that these numbers are very small indeed, and would in no way be sufficient for validation of any multiple choice test to be used nationally. In spite of foreknowledge that it would not be possible for the researcher to achieve an adequacy of numbers in the validation process, it was felt essential to subject the test to the standard validation techniques, and to bear in mind the very small numbers when making any subsequent statements in regard to the validity of the test. The students were given one hour to complete the test. The hour began after they had completed the test frontispiece, and had read the instructions on the second page. Students were informed that they were 'testing the test' - and asked to jot down, on a slip of paper which accompanied the test, the numbers of any questions which (a)

they found difficult to understand, (b) they thought gave a clue to another question and/or (c) they thought contained a clue within the distractors. They were assured that their results would not be submitted to their own college, but were purely for the purposes of research, and that the test was intended for use at a later date as part of a research experiment in nursing education. Students were given the opportunity of self-addressing an envelope so that they could know their own scores, if they were interested in so doing.

There was a mixed reaction to the tests, and opinions were very divided as to the use of such tests in nursing. Some students commented that there was less 'nursing' tested in objective tests, compared to essays. Other comments were - "You can't waffle" ... "You must know your facts" ... "You have to be very accurate". Altogether three questions were found to contain 'clues', and these were partially rewritten. None were not understood.

The results of the validation of the test, in terms of students' scores and time taken to complete the test by the students in the different colleges are shown below in Table 5. In Figure 16 the scores from students in the groups equivalent to pre-test and post-test stages in the experiment are shown. In scoring the tests, no correction was made for guessing, as experts are not in complete agreement as to the usefulness of such an exercise (Thorndike and Hagen, 1977, p.253).

Figure 16 Objective Test Validation : Scores of Pre- and Post-
test Groups

STUDENTS

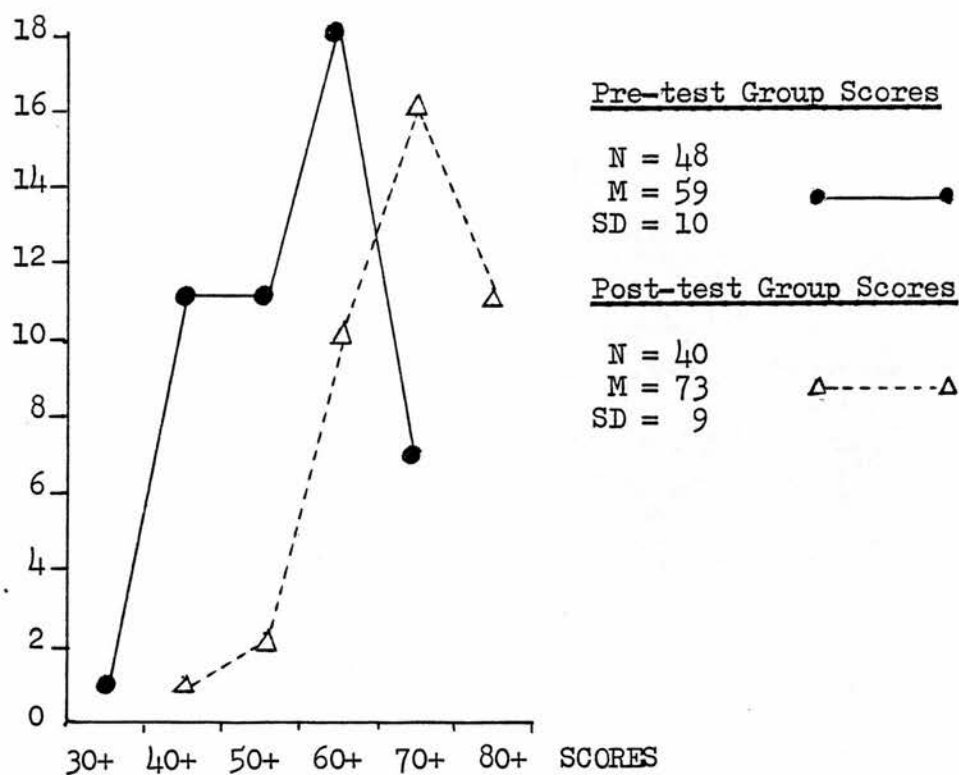


TABLE 5 Validation of Objective Test - Scores and Completion Times for Students by Stage and College

College	Student N	Experiment Stage Represented	Range of Time taken to Complete Test (Minutes)	Scores Obtained		
				Range	Mean	Standard Deviation
A	19	Pre-test	42 - 58	42-74	55	10
B	8	Pre-test	43 - 55	38-74	54	13
C	21	Pre-test	45 - 58	46-77	63	7
D	20	Post-test	35 - 58	59-85	74	8
E	20	Post-test	35 - 56	45-87	72	10
F	44	- +1	28 - 60	37-81	57	10
G	23	- +2	30 - 45	68-87	77	5

- +1 - Students in experimental comprehensive training (six months in training, six hours of relevant subject matter taught)
- +2 - Senior students, 2½ years in training, and pre-trained students.

The next step was to carry out item analysis of the test, and this was done using the Rasch Item Analysis Model (Wright and Mead, 1977 and Wright, 1977). Each item was analysed in terms of its difficulty and discrimination power, and point biserials were obtained. Although, on these statistical grounds, a small number of items might have been rejected, after discussions with the supervisor concerned, these items were retained. This was because, on educational grounds, these items appeared satisfactory, and also because to withdraw them might have upset the balance of the whole test, for a perhaps putative belief in the efficiency of the model and its accompanying computer analysis. It was also desired to retain the 100-item test in the interests of reliability, as no other estimation of this aspect proved possible in the time available, and as Collins et al. point out, reliability is increased as the items increase in number, within the limits of

practicability. Validity was further checked by correlating the students' objective test scores with the average of all scores obtained by them on previous college tests, the majority of which, it transpired, were of an essay format. There were only a few tests of objective format in certain colleges. Table 6 below gives the correlation coefficients within colleges.

TABLE 6 Pearson Product Moment Correlation : Average of Previous College Tests with Objective Test

College	Student N	Experiment Stage Represented	Correlation Coefficient
			r
A	19	Pre-test	0.75
B	8	Pre-test	0.56
C	21	Pre-test	0.42
D	20	Post-test	0.33
E	20	Post-test	0.64
F	44	*1	0.62
G	23	*2	*3

*1 and *2 - see notes 1 and 2, Table 5
 *3 - previous scores not available

It appeared from all the above results that the test was behaving in the required manner, in that a very satisfactory spread of scores was obtained from all groups, and there was clearly a higher average score from the students who had been taught the specific course material, than from those who had not had that teaching. The correlations also were considered to be satisfactory, and thus the test was made ready in its final form, for use in the experiment.

The College-set Essay-format Tests

With one exception, all colleges required students to write an essay-format test at the end of the course subject matter (see Appendix XVIII). This essay was therefore not an instrument specifically designed for the research, but it was used as a method of data collection. The material included in each test was not influenced by the researcher in any way. Experimental and control group teachers collaborated in the compilation of the paper. College teachers also corrected the scripts from these essays in the usual manner, but the researcher had photocopies of the scripts made and sent to neutral markers.

The content of the questions varied from college to college, within the overall subject area of the care of patients with gastro-intestinal disease.

The Choice of Neutral Examiners

The choice of three neutral markers to correct the college-set essays was made by the researcher. There were two factors governing the choice. Firstly, the examiners should be qualified practising teachers of nurses, and currently involved in the correction of General Nursing Council (Scotland) Final State examinations. Secondly, they should not be involved in the research experiment, nor, so far as it was possible to ascertain, know any of the students of the sample. The researcher wrote to three teachers who fulfilled these conditions, and with whom she was acquainted, to explain the study and to ask if they would be prepared to correct

scripts. All three agreed to do so. Initially, this task was unpaid, but following the granting of an extension to the researcher's Scottish Home and Health Department Research Training Fellowship, and the consequent enlargement of the size of the sample, an honorarium was funded by the SHHD for each examiner.

The Students' Diaries

Throughout the course of the experiment, in all colleges, students were asked to keep a daily study diary (see Page 2 of Appendices XIX/XX). As the area of concern in this research was teaching and learning in student nurse education, and the particular focus was upon the effect of an experiment which involved students in an active learning experience, it was of interest to know to what extent students took responsibility for their own learning. One way in which this responsibility might be judged was to examine the students' study habits. Mace (1968, p.7) defined study as "self-directed education". The diaries, it was hoped, would provide an illustration of students' behaviour in terms of study, during the period of the experiment in the various colleges.

There were four main questions to which answers would be sought:

- (1) what proportion of time in Block was officially designated as study time;
- (2) was that time actually used by the students for the purpose for which it was intended;
- (3) how much self-initiated study was done by the students; and
- (4) what were the preferred methods of study?

There are well-documented difficulties, as there are advantages in the collection of data by means of diaries.

Oppenheim (1968) states:

"Diaries come into their own particularly when we are dealing with information that is not likely to be remembered accurately for a period of time and needs to be recorded immediately". (p.217)

Diaries were considered particularly appropriate to this part of the data collection because the information the students were expected to recall was not dissimilar as day followed day, and therefore their memory of events was most unlikely to be accurate over time. It is also important, when using the diary as a means of obtaining information, that the dates for diary completion be chosen with care, in order to avoid abnormal and therefore unrepresentative working conditions. It was not possible to do this in the circumstances reported here, and the diaries therefore depict the very abnormal conditions of the experiment. However, the 'experimental effect', if present, could be expected to lead to an increase, rather than a diminution, in studying, due to motivation from possible inter-group rivalry or simply to Hawthorne effect. There was the possibility of further distortion of information due to dishonesty in replies. Two strategies were adopted to attempt to diminish this (a) students were specifically asked to answer honestly and this request was reinforced daily as it was printed in capital letters in the preamble to the study diary. The need for honesty was explained by informing all the

students that the information they submitted would be reported as depicting students' study behaviour, and it was important that that should be an accurate report, albeit from a very small number compared to all the student nurses in Scotland; (b) the researcher promised all students that their diaries were confidential and at no time would any individual student's response be divulged to college staff, or otherwise exposed. One further limitation of the diaries was that they represented such a very short space of time in the students' theoretical component, or Block. The duration of the experiment in the different colleges ranged from 4 to 6 days, and in four colleges this period spanned a weekend.

A diary collection record sheet, which was also an attendance record, was completed daily by the researcher (see Appendix XXI).

Forms Required for Record Keeping

(a) Diagnosis of Patients given Care by Student Nurses in Experimental Group

Student and teacher movement throughout the hospital wards during the experiment, together with a record of all patients who had been given nursing care, was noted daily on a pro forma (see Appendix XXII).

(b) Available Patients Information

A form was designed on which the researcher recorded, from the ward Kardex, information about all patients likely to be suitable to receive care from the students in the experimental group. The patient's diagnosis, name, ward number and any particularly relevant

details were recorded, and this information used in the researcher's subsequent discussions with ward staff and the experimental group teachers, in order to arrive at the final choice of patients for each day. Once this was done, a tick was placed alongside the 'allocated' patients (see Appendix XXIII)

(c) College Staff and Ward Staff Name Lists

In order to record delivery and return of the questionnaires, a list was made of all the names and identification numbers, and any special information in regard to off duty was entered, again to facilitate issue and return of the papers (see Appendices XXIV/XXV)

(d) Record of Classes

Both experimental group and control group teachers kept a daily record of classes given, but only with regard to the subject matter of the experimental course. For the control group teachers, this entailed stating the main subject of each class given, and the teaching method used. The experimental group teachers listed the seminar subjects, and also any other gastrointestinal subjects they chose to teach using an alternative method, which was also stated (see Appendices XXVI/XXVII).

The Nursing Care Plans

Nursing care plans, previously referred to as an integral part of the 'treatment' or independent variable, were devised as a guide for both the experimental group student and for her teacher. These plans, together with the 'Guide to the Use of the Nursing Care Plan Forms' (see Appendices IV and V) were intended to facilitate

note-taking by the students, as most were unused to extracting relevant information from patients' case notes and the Kardex. As the nursing care they gave in the wards took the place of classroom lectures, it was considered that most students would gain a certain peace of mind from making notes from which to read and study. The nursing care plan was also intended to help them make use of the learning objectives with which they had been issued and to encourage the students to try to link theoretical teaching with ward practice of nursing. Finally, for a majority of the students in the experimental groups in the different colleges, this was a first experience in patient assignment and individualised nursing care, and the care plan was therefore a means of structuring their thinking and planning of the nursing they were to carry out, of suggesting the necessity to reason why, to evaluate and to think ahead in giving nursing care, and of focusing upon the concept of care related to individual needs. It was thus an important part of the experimental teaching method.

CHAPTER 9

THE PROCESS OF IMPLEMENTATION

This chapter describes the organisation of the experiment. The procedures are detailed for each of the four stages, i.e. the pre-experiment, experiment, post-experiment and retention stages. In all except the retention stage, three separate groups of nursing personnel were involved - the teachers or college staff, the ward sisters and staff nurses or hospital staff, and the student nurses. At each stage, information was both given to, and received from members of all three groups - a process of communication, negotiation and explanation on the one hand and a process of data collection on the other. Inclusion of a college depended not only upon the consent of the college and later of the hospital staff and of the students, but also upon the occurrence of an appropriate Block in college at a time which fitted to the researcher's timetable. If the college had been included in the earlier survey, data were already available in regard to the timing of Blocks. If the college had been selected by the researcher following her perusal of the Directory of Schools of Nursing (DHSS, 1977), then information as to the Blocks was obtained at an initial interview with the Director.

Pre-experiment Procedures

The first contact, in each college, was with the Director of Nurse Education, and this was followed by meetings between the researcher, the Director and her teaching staff. Subsequently the

researcher met with the Divisional Nursing Officer of the hospital, and her administrative and ward staff, and finally the student nurses who were to be directly involved in the research were contacted.

Meeting with the Teachers

As soon as it could be arranged, following the initial meeting with the Director, at which permission had been granted to go ahead with the experiment, the researcher met with the teachers responsible for the Block in which the experiment was to be carried out. At this meeting the details of the experiment and what it would involve for the teachers were explained, any questions they raised were discussed and the researcher then formally asked whether the teachers were prepared to participate - an essential question as it was the college teachers who did the teaching, not the researcher. Thereafter, consent achieved, the teachers and the researcher discussed carefully the basic organisational framework into which the experiment would be fitted in the unique milieu of each college. Essential points which required consideration and action at this preliminary stage of the planning were concerned with (1) timetabling details (including the number of hours allocated to the nursing content of the subject), (2) the student numbers in the class, (3) availability of teachers for both control and experimental groups, and (4) availability of practical experience, i.e. the number of general medical and surgical beds and the accessibility, in terms of proximity, of the hospital to the college. Details discussed therefore were as follows:

(1) The Block Timetable

(a) What were the proposed dates for the gastro-intestinal system nursing lectures, and where were these placed in relation to medical staff lectures? Was it possible for the nursing content to follow closely upon the medical staff lectures, and to ensure both were complete by the end of the experiment? In some cases this was easily arranged, in others some alterations were made in order to achieve the desired dates and ordering of subject matter.

(b) The number of hours and the course content were examined to ensure that a minimum of twelve hours were devoted to the teaching of nursing. This figure would lead to four mornings spent on the wards, an arbitrary minimum decided on by the researcher as constituting a viable experiment time.

(c) The ward experience should take place on consecutive mornings - where any impediments to this had been already planned into the timetable, e.g. visiting lecturers, previously arranged Department visits, these should be resited. The placing of the requisite hours, in the timetable, was decided and it was ensured that none other than gastro-intestinal nursing lectures occupied the last hour of the afternoon for the control group on the days when the experimental group students were in the wards. Thus the latter group could start and finish their day one hour ahead of the control group students (see Figures 11 to 13 on Page 168). The exact time of the morning start for the experimental group students and their teachers was also decided at this point, and was related to

the normal starting time of the day duty shift on the wards. However, there was sufficient flexibility in the arrangement so that, should the ward sisters subsequently wish to delay the arrival of the students and their teachers on the wards by fifteen minutes, this would be possible. It was ensured that two separate classrooms were available to the two groups whenever these were required, i.e. when gastro-intestinal nursing was to be taught.

(d) Insertion of research-required time, at the appropriate positions in the timetable, was also done at this stage. In all, six sessions were necessary. The pre-test required one hour, and had to be completed before any of the relevant lecture material was given, preferably immediately before such material, or with as short a time interval as possible. The pre-experiment opinion questionnaire was inserted prior to any explanation by the researcher to the students about the experiment and the linking of theory and practice in their nursing education. Half an hour was allocated to this, and a further half hour was required subsequently for a full explanation of the experiment to the students, and the intimation to them of their random allocation to control and experimental groups. The day prior to the experiment, the first of the divided classes was scheduled. This was a one hour period of preparation in which both groups, separately, would receive an introduction to the subject matter of the course. The experimental group teachers and their students would use the nursing care plans, the guide thereto, and the learning objectives for the first time at this session, and final arrangements for the next morning on the wards would be made. The

control group teachers and students would also use the learning objectives for the first time during their own session. A one hour period for the post-test was next to be fitted in to the timetable. This always followed the college-set essay test, and whenever possible was sited in the period immediately after the essay. The college-set essay, although an integral part of the evaluation of the research experiment was not considered to be a 'research-required hour' as it was a normal part of the Block programme in all colleges. Finally, and occupying only fifteen minutes on the last day of the experiment, usually after both tests had been completed, a short period was set aside for the students in both groups to complete the post-experiment questionnaires.

(2) The Student Numbers

The number of students in the class who were undertaking the subject matter for the first time as part of their basic RGN training, and thus were eligible for inclusion in control or experimental groups, was ascertained. The total number of eligible students decided the number of randomised pairs, and influenced the decision, by the researcher and the teachers, as to the size of the experimental group. The ratio of students to teacher, while on supervised ward practice had been decided upon previously, by the researcher, and was one teacher to four students. Thus each experimental group was composed of multiples of four.

(3) The Teacher Numbers

The minimum number of teachers required was dependent upon the size of the experimental group, with its ratio of 1 teacher to 4 students, and an additional, and equal number, to share the teaching of the control group. When sufficient staff were available, a reserve teacher for each of the two groups was requested by the researcher, to act as an understudy, and to take the place of an absent teacher.

(4) Availability of Practical Experience

The number of general medical and general surgical beds, and wards, was ascertained - this gave some indication of the numbers of suitable patients likely to be available to the experimental group students. The proximity of such general medical and surgical experience was checked. In order not to cause disruption to college timetabling for either group of students, it was necessary that experimental group students should require no more than fifteen minutes to return to college from the supervised ward practice. Finally, at this first meeting of the researcher and the teachers who were to be directly involved in the experiment, the learning objectives were presented and discussed. The views of the teachers as to the suitability of the objectives for use with both control and experimental groups were obtained and in all cases were favourable.

Following discussion of and agreement on all the above matters the next step was to meet with all of the college teaching staff, with the primary aim of informing them of the research experiment. Opportunity was given for questions and discussion, as the details of the research were explained. If it was necessary to request additional teaching help, for example as an understudy, this was done at this time. The teachers were informed that the Divisional Nursing Officer would be contacted, but that the students were not to be consulted until permission to go ahead had been received from the hospital staff.

At this meeting all staff were informed that questionnaires would be issued to them by the researcher when she returned to begin the experiment. In these questionnaires they would be asked to give their opinions on matters related to nurse education and training, but it was stressed that their response was not obligatory.

Introduction of Experimental Group Teachers to the Experimental Teaching Methods

All subsequent meetings arranged in the college were between the researcher and the experimental group teachers, and were devoted to the preparation of the teachers for the experiment and the teaching methods it involved. Following the first of such meetings, which was in the nature of a workshop, any further sessions were arranged only if desired by the teachers. The learning objectives, nursing care plans and the guide thereto were given to the teachers at the first preparatory meeting in each college, and these,

together with the undernoted recommendations of the researcher in regard to the conduct of the experiment and the teaching approach, were worked through.

1. Once the students, and their teachers, had received the report from the ward staff about their patient(s), the teacher should spend a short time with the students, so that together they could decide what were the priorities for each morning, which patients should be cared for first, whether students required special supervision or demonstration of any care they had been requested by the ward staff to carry out. This should all be planned, before students and teachers introduced themselves to their patients, in order to allow the morning to run smoothly for all the students and especially for the patients.
2. Students were likely to require help and guidance as to what to observe in the practical setting, and also to make the link between their theoretical teaching and their work with the patients. The stress should be on specific theory in relation to gastro-intestinal nursing care, although previously learned theory in relation to basic care should be included.
3. An essential part of the experiment was that students should also have time, and guidance, in making notes and extracting relevant material from the Kardex and the patient's case notes.
4. The discussion time, during the seminar following the period of ward practice each morning, should be used to encourage students to relate theory and practice in regard to their own patient and his care. This could be best achieved if teachers worked with the

students they had supervised that morning, guiding them to make the appropriate integrating observations, which process could be facilitated by the students' completion of their nursing care plans.

5. The researcher would endeavour to find different types of patient, with similar conditions, although perhaps at different stages of their illness. By so doing, it was hoped to enable students to appreciate that the same 'label' in terms of diagnosis, did not mean the same treatment or nursing care. They should be encouraged to compare their own patient's care with those of their classmates, and so come to a knowledge of the principles of nursing care in patients with gastro-intestinal conditions.

6. The aim should be to have students see patients as individuals, to give them individualised care, in relation to their needs, and to see that as compatible with any type of ward organisation. Students should be encouraged to view their patient as a person with a life outside the hospital and his present illness, to take time to talk with him, to use any extra time to communicate more with him.

7. Students should be encouraged to ask questions.

8. Part of each day's seminar should be devoted to teaching of relevant subject matter which was not available in direct relationship to patient care on that day, and teachers were advised to plan such sessions, together with deciding which of them should teach. The ratio of one to four should be unnecessary for such, possibly more formal teaching.

9. Finally, as it had transpired that teachers were, for the most part, unfamiliar with nursing care plans, and a little unsure of the teaching approach although unanimously in approval of it, the researcher suggested that, prior to a second meeting, the experimental group teachers should each work through a nursing care plan, in relation to an imaginary patient, and this could be discussed, and any difficulties or questions dealt with.

Thus was the all important matter of the experimental teaching method introduced to those who were to use it. Although the researcher intended to influence the approach to the teaching, the fact that the college teachers carried out all the teaching without further supervision, or the presence of the researcher in the experimental group classroom did mean that there was no effective control over that important variable. It is contended that in the real world of the classroom it is not possible to control teaching and the human teacher.

Meetings with the Hospital Nursing Staff

Negotiations with the hospital nursing staff began with a meeting between the researcher and the Divisional Nursing Officer of the hospital, or hospitals, concerned with the provision of the appropriate practical experience for the students. At this meeting the experiment was fully explained and the Divisional Nursing Officer asked whether she was prepared to have her hospital participate in the research. The fact that the college were

prepared to take part was known to the Divisional Nursing Officer, but the researcher stressed that the participation of the hospital although crucial to the experiment, was not a foregone conclusion. Following this preliminary meeting, which in each case had a successful outcome in that permission was given to carry out the experiment, the researcher prepared the information sheet (see Appendix XXVIII). This sheet contained the details of the experiment as it would affect the ward staff, and it was used as the basis of information-giving and discussion at the next meeting with hospital staff. This was arranged by the Divisional Nursing Officer, and was between the researcher and the ward sisters or charge nurses of the general medical and surgical wards. All the wards which normally provided general medical and surgical experience for the students were represented at that meeting, if not by the nurse in charge, then by her deputy. Unit Nursing Officers for these wards were also present. The information sheet was handed out to everyone at the commencement of the meeting, so that as the researcher explained what would be involved in their participation in the experiment, the staff could follow each step, and ask questions if they wished. Information about the number of students likely to come to the wards, their stage of training, exactly when they would come on duty and when they would leave, and exactly what they would do when there, was given. The procedure for the choice of patients was explained, as was the matter of who would take responsibility for the patient while the Block nurse was caring for him, and also who would be

responsible for the supervision of the student. The ward staff retained the information sheet, so that they could refer to it as necessary, and also so that the sisters could go over the information with their ward staff.

On two occasions, the Divisional Nursing Officer offered to approach the ward staff and explain the experiment, but the researcher considered it most important that she personally explain the research and the experiment to the ward staff, for three reasons - (1) to try to ensure no alteration of the information, which to some extent is inevitable when a message is given by an intermediary, (2) to obtain face to face contact from the outset with the staff with whom the researcher would work during the experiment, and (3) to present as clearly as possible, the opportunity for any ward sister to decline to participate. Although it was accepted that there would be considerable pressure to participate, as all ward sisters knew the senior nursing service staff had agreed to the study, it was felt there would be more freedom for dissent, or doubtful acceptance, if the 'unknown' researcher were to put the question. In all but one college the researcher was alone with the ward staff. In the other, the senior and unit nursing officers were present. In two colleges suggestions were made by the Divisional Nursing Officer that potentially 'difficult' wards might not be used for the experiment. However, it was considered important not to avoid such areas, and it was explained that research done only where attitudes were considered to be receptive would be of little practical use to the

profession. Thus, at no time, was any general medical or surgical ward omitted from the study if it contained patients who were suitable for inclusion and for providing nursing care for the experimental group students. At the close of the meeting the researcher explained, in the same way as with the college teachers, about the questionnaires.

Meetings with the Student Nurses

On three occasions before the experiment began, the researcher met the whole class of students who were to take part in the research. At the first meeting, the researcher introduced herself with a very brief description of her background in nursing and the information that she was currently engaged in research into nurse education. This meeting took place immediately prior to the first medical staff lecture on the subject matter of the course, and was for the purpose of the administration of the objective test. The test was handed out to the students, with the explanation that it was a part of the research project, and a request for the co-operation of the students in completing it. They were informed that the test had nothing at all to do with their college, and that their marks would not be divulged to their teachers, nor put into their records, but were solely for the purpose of the research. Students were asked to complete the frontispiece details, and then to read the second page, which contained the sample test items and the explanation of completion details. Anything which they did not understand at that point was clarified. Students were then asked

to work steadily through the test, assured that they were not expected to know all of the answers at this stage of their training, and asked to try to resist the temptation to make an outright guess at any answers. They were told to leave blank those questions to which they really did not know the answer and, if corrections were made, to make them very clearly. Fifty-five minutes were allowed for test completion. The test was collected as it was completed by the students and later that same day, the frontispiece was detached and retained. The remaining sheets were identified with the correct student number and the answers transferred to the computer programme aforementioned as expeditiously as possible, as it was on these scores that the random allocation of students to control and experimental groups took place.

The purpose of the next meeting was to ask the students to fill in the pre-experiment questionnaire, for which half an hour was available, and which was used to the full by most of the student respondents. The researcher explained that the questionnaire sought their opinions about their education as a nurse, that there were no right or wrong answers, but it was important to the research, and to the profession, to know what the students thought. Although their name was asked for at the head of the questionnaire, it was explained that this was necessary so that a code number could be inserted, but that at no time would any individual student and her answers ever be identified. All replies would remain confidential, a matter for which the researcher would be responsible. In each

college, the researcher was alone with the students, and it was made clear to the students that participation was not obligatory. However, far from reluctance, their response was unanimously one of interest and willingness to complete the questionnaires. Specific instructions were given that they should try to answer every question. It was pointed out that in a few questions, two alternative responses were all that were given. In such cases, they should try to choose the response which came closest to their opinion.

The last meeting in which the whole class met together with the researcher before the experiment took place was the occasion when the experiment was fully explained. The identical information sheet which had been prepared for the ward staff was given to all the students. They retained this, and it served as a focus for the discussion. The fact that there would be the two groups, of experimental and control students was discussed and explained, although the details of how the allocation had been done was not divulged until the post-experiment meeting with the students. As carefully as possible, the researcher made it clear to the students that they could decide to opt out of direct participation in the research if they so wished, although in fact they would remain in class with the control group students, as would other class members not eligible for inclusion because of their previous experience of the course material. It was also explained that it was necessary to obtain the students' consent to participation before the announcement of allocation to control or experimental groups was

made, in the interests of the validity of any results from the experiment.

On the weekday prior to the commencement of the experiment, the researcher met the experimental group students, with their teachers, and in the first ten minutes of the class, gave out the nursing care plans, guides thereto, the learning objectives, and the diaries and discussed their use briefly. Arrangements about a rendezvous point for the first morning of the experiment were made, together with information about patient allocation, if this was available at that point. Students worked in pairs throughout the ward practice, making the decision about their co-workers themselves. Dependent upon the amount of care required by the various patients, students might share one patient during a morning session, or have one patient each, helping each other as and when necessary in the giving of the morning care. The question of supply of sufficient of the above-mentioned forms, and where they would be most suitably kept throughout the experiment, was also dealt with, and the researcher then left the students and their teachers to commence their first class on the subject matter of the experiment. The researcher then joined the control group class and their teacher, and explained about the shared learning objectives, and the supply, completion and collection of the control group diaries.

The Selection of the Patients

On the day prior to the experiment, whether a weekday or a Sunday, the researcher visited all the medical and surgical wards of the hospital, and using the Kardex and case notes, listed all suitable patients. This list, with brief comments, was then checked with the ward sister or staff nurse on duty, and any special circumstances which would contra-indicate the allocation of any patient to the students in the experimental group were noted. When this task was completed, the researcher contacted the experimental group teachers, and together they made the choice of patients who would receive care the next morning. Finally, the researcher returned to the wards to leave a brightly coloured card on the Kardex, which stated which patient(s) the classroom nurses would care for the following morning. In most cases, the teachers also visited the wards, to consult the casenotes and the Kardex. It was not routine to meet the patient at this time, nor to inform him that he would be given care by two classroom nurses on the following morning.

The task of obtaining this initial information about the patients occupied from less than one hour in one hospital, to a maximum time of five hours in the largest hospital in the study. Throughout the course of the experiment, it was never again necessary to make a formal list of suitable patients; this information was up-dated regularly and informally, as the teachers and the researcher met with the ward staff and patients day by day.

Issue and Collection of the Pre-experiment Questionnaires

A list of all college staff was obtained from the college office, and from the hospital senior nursing officers a list of the ward sisters and staff nurses of the general medical and surgical wards. This latter information was often given in the form of photocopied off-duty lists, which proved a very helpful method for the researcher and a very simple and speedy method for the service staff providing the information. All questionnaires were issued, with a covering letter (see Appendix XXIX) and in an envelope addressed by the researcher. The hospital staff questionnaires were delivered by hand as the researcher toured the hospital on the day prior to the experiment collecting information about the patients. They were left at the Nurses' Station for those staff not on duty when the researcher visited the ward. Completed questionnaires were collected from the Nurses' Station, or directly from the respondents again when the researcher was in the wards each day. College staff questionnaires were handed to staff on the first day of the experiment, and were either collected later by the researcher, or were left on her desk by respondents. The presence of the researcher on the wards and in the college, together with the fact that, when in a ward, she generally asked if there were any questionnaires ready for collection, no doubt contributed to what was a high response rate.

Accommodation for the Researcher

In each college, accommodation was required, and made available to the researcher. A number of the papers connected with the research required safe-keeping, and in some cases the researcher had a personal office, in others, a desk which could be locked.

The Question of Patient Permission and Confidentiality of Information

In a few instances, usually when a chosen patient was alert, reasonably fit and had noticed and shown an interest in the fact that the researcher, or the experimental group students and their teachers were in the ward, he or she was approached, the proposed plan for his care the next morning explained, and his permission and co-operation requested. In most cases, however, prior explanation was not given and permission was not sought. There were two reasons for this. Firstly, ward staff considered that patients rarely, if ever, knew who would come to give them their morning care the next day, and were unaccustomed to having any choice in the matter. Secondly, as a result of experience during the pilot study, when patients had been informed prior to the event, and their permission requested, it was discovered that, for some, this was an anxiety-provoking experience. However carefully the explanation was given, by the researcher or the ward staff, a few patients, having had the night to think it over, had come to the conclusion that there was something seriously wrong for them to have been singled out in this way. It was therefore decided to abandon the routine of informing

the patient, and requesting permission. As it transpired, the fact that students were with their patient for one to two hours ensured that the patients were aware that they had been chosen, which fact then became much more a matter of interest, and for some patients a matter of pride, rather than of anxiety.

The researcher met, and talked with every patient who received care from the experimental group students, and always an attempt was made to obtain the patient's evaluation of the care given. Again, during the pilot study this had been attempted in a somewhat structured way. Shields (1978) and Hale (1974), both from the other side of the Atlantic, wrote of their work in obtaining patient opinion of the nursing care they had received. Hale devised a "patient satisfaction scale" (p.35) on which degrees of satisfaction with nursing care received could be assessed on a five point scale ranging from highly satisfied to dissatisfied. A very much simplified version of this scale was used during the first days of the pilot study, in an attempt to encourage patients to evaluate the care they had received, but this proved very foreign to them, somewhat embarrassing, and was abandoned as most unlikely to yield valid results.

The researcher, and the students with their teachers, were privy to much confidential information about their patients, and were also making notes which were taken out from the ward. Students were cautioned about this matter, and no patients' names appeared on their care plans. In addition, students were asked to ensure their care plans did not lie unattended by the patient's bedside, or

elsewhere in the ward or college. The researcher did have names, diagnosis and ward numbers on her form listing the available patients, and this was kept very carefully.

The Day-to-day Organisation of the Experiment

Each day, the researcher added to the list of available patients, conferred with ward staff and with the teachers and students of the experimental group, and finalised the choice of patients for the next day. She then ensured that ward staff knew exactly who the experimental group students would take care of the next day, removed any out-of-date coloured card from the Kardex and replaced it with a current version, if applicable. Each day, also, the researcher visited patients who had been given care by the experimental group students, and spoke with them. Daily record keeping by the researcher included a careful note of each student's experience, in terms of the diagnosis and condition of the patients to whom she had given care. As this information accumulated for the individual students in the experimental group, careful attention was paid to the types of learning experience being provided. The researcher and the teachers endeavoured to choose as balanced, and as wide a range of relevant practice as was possible for each student.

Teacher and student movement throughout the different wards was also recorded daily, as was the ward usage throughout the experiment. At the end of each day, and before experimental group students left college, they knew who their patient was for the next

day, which ward he was in, which teacher was their supervisor and where they should meet the next morning. Student nurses in both groups completed study diaries and these were collected daily by the researcher. This provided a valuable daily contact with the control group students. Stocks of diaries, and of nursing care plans and continuation sheets for the experimental group students were replenished daily. Teachers daily completed their record of classes given, but this information was not collected by the researcher until the completion of the experiment. Finally, on the researcher's regular ward and college visits, questionnaires were collected and checked off on the list.

As the experiment drew towards a close, the post-experiment opinion questionnaires for the ward staff, teachers and students were prepared. In the former two groups, envelopes were addressed, and care was taken to ensure only those ward staff who had been in charge of the ward on days when the experimental group students had been giving nursing care received post-experiment questionnaires. The off-duty sheets aforementioned proved most useful. If a ward sister or staff nurse was to be off duty on the last days of the experiment, her questionnaire was handed out before she left for days off. In a very few cases, it was necessary to provide a stamped addressed envelope for the return of the questionnaire, but otherwise these were collected by the same methods as were employed with the pre-experiment questionnaires.

Post-experiment Procedures

At the close of the experiment, teachers in both groups received their questionnaires, as did the remainder of those ward staff who had been involved directly with the negotiations over the provision of patients to the experimental group students. These questionnaires were issued, with a covering letter (see Appendix XXIX) and collected by the researcher, in much the same manner as previously described for the pre-experiment questionnaires.

For both control and experimental group students, the college-set essay and the multiple choice test were taken, if not on the day the experiment ended, then on the first working day thereafter. Instructions for the former were given at the head of the test paper, and were little different from normal practice in the various colleges. There were only two specific instructions to the students (a) that they should not put names on the papers, but use their research number, which was handed out to each student at the commencement of the session, and (b) that they should use black biros for the script, and if they preferred it, pencil for any diagrams. It was explained that the papers would be photocopied, hence the necessity to use the black biros with which they had been provided by the researcher. The objective (multiple choice) test was presented to the students without prior warning. They did not know that they were to take the identical test for a second time, as it was thought that foreknowledge of that event might have led to deliberate attempts by the students to recall question items

after the first administration of the test, thus distorting subsequent results.

Instructions and timing of the test were similar to those of the first administration, as was the method of marking. The essay scripts were photocopied, and one set of scripts sent, by post, to each of the three neutral markers, together with a covering letter (see Appendix XXX) and a copy of the test paper from which the name of the college had been removed. The original scripts were then returned to the college, as the post-essay was marked also by the college teachers, and it was their mark which was used in the college records. The scripts were normally returned to the college on the day following the examination, to ensure that as little time as possible was lost between the taking of the essay test and the marking and issue of results to the students.

The last task the students carried out at the close of the experiment was the completion of their post-experiment questionnaires, and again these were introduced in a similar manner to previously, in that students were asked to be frank in their expression of their opinions, informed that there was no right or wrong reply to any question, and assured of confidentiality. In each college, an informal session was arranged with the control and experimental groups before the researcher left, at which students were free to ply the researcher with questions and engage in discussion on all aspects of the research.

During the completion of the tests and questionnaires, the researcher was the only person present in the classroom with the students.

It remained for the researcher to thank all concerned for their co-operation, and to arrange with the teachers for a mutually convenient date for the last stage of the experiment, the retention of learning assessment. This return was not intimated to the students at this point.

Retention Stage Procedures

The final stage of the experiment normally took place when the class of students was next in college or Block. Shortly before this previously arranged return date, negotiations recommenced with the teachers, in order to finalise times and the classroom venue. On two occasions, some class members were undertaking practical experience on the required afternoon, and their recall to the college was arranged by the teachers, in co-operation with their service colleagues. All students therefore became aware, shortly prior to the event, that they were to meet with the researcher again, but were not told of the reason. This was most important, in order to ensure that they did not study for the tests. The differential preparation which might have resulted from prior knowledge of the testing session would have constituted a very important interfering variable.

On meeting with the students, the researcher announced the programme for the afternoon, said that it would occupy approximately

two hours, that it was positively the last stage of the research in which they would have an active role to play, and requested their co-operation. In this introductory talk, it was explained that the two tests taken at the end of the experiment were to be re-taken, in identical form. The essay was to be written first, followed by the objective test, and then, for the experimental group students only, the short follow-up questionnaire was to be completed. In order to reduce the anticipated, and natural anxiety of the students, they were reassured that it was a normal process for people to forget a certain amount of what had been learned, asked to try not to worry about how much they felt they might have forgotten, and to work steadily through the two tests. These were timed as before, and again black pens were issued and used. Research numbers only appeared on the essays. Names did appear on the slightly amended frontispiece for the objective test, which was required in order to obtain important information about each students' intervening practical experience, betwixt post-experiment and retention stages. The process for correction of scripts and objective tests was as before with one exception. College teachers were not involved in the marking of their students' scripts. Students were told of this prior to taking the tests, again in the interests of reducing possible anxieties.

At the close of this the final part of the research, all students were given the opportunity of receiving their results from all the tests they had taken. They were told this would be done, if they wished, by means of a personal letter sent to them by the

researcher (see Appendix XXXI). Finally, they were reassured that there was no more testing to be done, and that the researcher hoped to return, but this time to report, and discuss with them, the results of the research.

Limitations of the Research Experiment

There are many constraints relevant to interpretation of the findings from this particular experiment, and some of these are detailed below:

- (1) the treatment took place over a very short space of time;
- (2) there was no control over the way in which the various teachers in either group would present the material to be taught;
- (3) the patients were all different - the only common denominator was that they suffered from some form of disease of the gastro-intestinal system, but otherwise they differed from each other in countless ways. Some were very much more ill than others, their individual needs were naturally different, and the various technical nursing procedures which they required were also different;
- (4) the sample numbers were very small, although the students did represent five different colleges of nursing;
- (5) all methods of testing, and in particular the use of essays, are controversial in terms of both reliability and validity;
- (6) in an attempt to isolate the treatment effect, no advance notice of testing was given at the pre-test or retention stages. Although this eliminated the effect of differential preparation and study time amongst students in the sample, it cannot be considered to be a natural prelude to most evaluations of the effectiveness of teaching;
- (7) the location of the treatment, for the experimental group, and of the normal course teaching for the control group, between the pre-test and the post-test, offers no guarantee that these are the sole influences in the gain scores observed;

- (8) the long intervening period of practical experience between the end of the experiment and the retention testing, and the variation of the content of that experience for each student, cannot but constitute threats to the reliability and the validity of the findings, and especially to the results from the retention stage of the research experiment;
- (9) finally, all concerned in the experiment, the ward staff, the teachers and not least the student nurses, were aware that they were taking part in something special, something out of the ordinary, and that they were being observed. The ubiquitous Hawthorne effect must be considered when viewing the results both from the control and the experimental groups. Indeed it should be borne in mind as of possible effect in all results of the study.

CHAPTER 10
THE PILOT STUDY

A pilot study was carried out in the summer of 1978, in a large college of nursing and its associated teaching hospital. The purpose of the pilot study was to provide the possibility for a complete trial run of the experiment in all its stages, to allow the administration of the various newly constructed data collection instruments, and to give the researcher experience in attempting the subsequent analysis of the data.

The college chosen, the training programme, and the students in the pilot sample were all representative of those it was intended to include in the main study. The students, 21 in all, were undertaking their basic RGN training, and were in their second eight-week period in Block or college. They were approaching the end of their first year of training. Eight were in the experimental group and 13 in the control group. Two trained nurse teachers taught the control group, and a trained nurse teacher and a clinical teacher taught the experimental group. The college suffered an acute shortage of staff (staff to learner ratio during the experiment was 1 : 28) and it was agreed prior to the commencement of the pilot study that should it prove necessary, the researcher would undertake a certain amount of teaching with either group of students. In the event, it did happen that the researcher taught control and experimental group students at different times of the two week experiment. This was an experience which proved

most useful in future planning of the main study, in that it brought the researcher much closer to the comments, criticisms, difficulties and enthusiasms of the students than would have been possible otherwise. However it was an added task which might have proved more difficult to incorporate into the day had the researcher not had the help of a fellow research student during the course of the pilot study. The fellow student was studying research process, and also the system of nurse education in Scotland, and was interested to take part in the pilot work. Her presence was agreed by the college staff, and the assistance and support which she provided during the pilot study was considerable.

The subject matter of the course in this particular college occupied a total of 49 hours, 44 of which were 'nurse teacher taught'. While the control group spent these hours in the classrooms of the college, the experimental group spent seventeen hours on the wards with their teachers, during eight mornings, and the remainder of the time in college, with the same teachers, in seminars and lectures. The pattern in which the lectures for each day of the experiment linked to the diagnoses of the patients given care by the experimental group students is shown in Appendix XXXII.

Pre-experiment opinion questionnaires (pilot version * were issued and returned from 41 ward staff, 16 teachers and the 21

* Pilot versions of questionnaires may be obtained from the researcher on request

students. Post-experiment questionnaires were completed by 8 ward staff, 4 teachers and the 8 experimental group students. It was only after the experience of the pilot that it was decided to issue a post-experiment questionnaire to control group students. Six months later it was also possible for the researcher to return to the pilot college and carry out the retention stage of the experiment.

It was thus possible, in the pilot study, to carry out the complete experiment, to test the data collection instruments, and then to analyse the data. Categorisation of responses was done, and a tentative coding frame drawn up which enabled a coding column to be added to each of the questionnaires. The essays and the objective tests were marked, and the scores subjected to statistical analysis in the manner planned for use in the main study. A detailed report was written and, following the retention stage, a report-back session held with the education and service staff and the students concerned.

The experience of the pilot study proved invaluable. It permitted the logistics of the experiment to be worked through. A system of daily organisation was evolved which ensured that students and teachers met at the correct ward, and at the correct time each morning, and that ward staff, teachers and students knew which patients were to receive care from the experimental group students. The timing of the researcher's visits to the wards, to check the Kardex and notes, and to facilitate the smooth running of the experiment was thought through.

Many of the forms required for record keeping were developed as a result of the experience of the pilot study. The importance of the daily charting of each student's experience in terms of patient care was realised, and that particular form devised. The method of recording student and teacher movement through the wards; the method and the forms for recording the issue and collection of the questionnaires, and the precaution of the brightly coloured card affixed to the ward Kardex were all developed during the pilot study days. A loose leaf notebook for recording information about available patients was replaced with the more structured form with space for ward location, diagnosis and relevant comments.

As a result of the researcher's experience of teaching the experimental group students, a number of small, but important changes were made. To begin with, although students always worked in pairs, each student had her own patient, and students worked together or apart depending upon the condition of their patients and their needs for complete or partial assistance. It was found that in some cases, the students had very little time left after completing the morning care for their patients, to look at and make notes from the Kardex and case notes. A more flexible policy of patient allocation was adopted, and depending upon the condition of the patient, there were times when two nurses shared one patient. It was realised that this could improve both the quality of the learning experience for the students and the quality of the nursing care for the patient. Problems of co-ordination of the supervision for the

four students were noted. A short 5 to 10 minute conference between the teacher and her four students was instituted, immediately after students had received the morning report on their patient. At this brief meeting, priorities for care were decided, and student needs for supervision were made known. This small innovation not only proved helpful in the smoother organisation of the morning care, but demonstrated to the students the benefits, to themselves and their patients, of a short time taken to plan and assess priorities and to think, before beginning work. Discussions at this morning moment, and in the seminars back in college, highlighted difficulties with the nursing care plans. Evaluation proved particularly difficult for students, and help was given. It is unlikely that many of these matters would have come to light had the researcher not been involved in teaching the experimental group for four mornings in the second week. The information gained was used in planning the preparatory sessions for the teachers in the main study colleges.

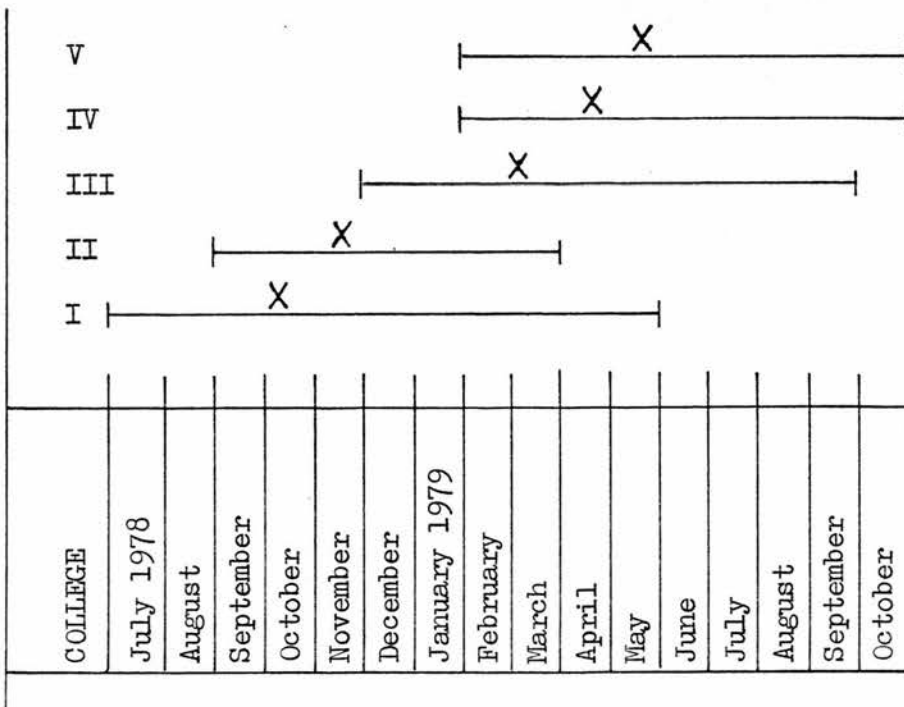
Apart from the modifications above-mentioned which were made to the structure of the experiment, the experience gained during the pilot study made it an indispensable preparation for the main study.

CHAPTER 11

THE MAIN STUDY

The main study was conducted in five colleges of nursing and their associated hospitals. Its timespan, from the first negotiation with the Director of Nurse Education of College I until the retention stage in College V is shown in Figure 17 below, and was from 20th July 1978 until 22nd October 1979, a period of 16 months.

Figure 17 Timespan of Main Study and Date of Experiment in each of the five Colleges of Nursing



Key: Line denotes time from first negotiation with Director of Nurse Education to date of retention stage in each college.
 X = position of experiment in each college

The precise manner in which the experimental design was incorporated into the individual college learning milieux is described below.

College I

College I was the largest college in the study. It was also one of the largest in Scotland, situated in a major city in the eastern part of the country. The college was on the same site as the teaching hospital which provided most of the general medical and surgical nursing experience for the students, and in close proximity to a very much smaller hospital which also provided such experience. Both these hospitals were used during the experiment. The total number of teaching staff in post in the general area of the college during the period of the research was 30, the total number of learners undertaking general training was 503, and the ratio of staff to learners, excluding the Director of Nurse Education was 1 : 17.

The first approach to the Director was made on July 20th 1978, the first contact with the service personnel was on September 4th, and with the students on September 25th. The last contact was on May 2nd 1979 with the Retention Stage. The experiment took place over eight working days, on six of which the students in the experimental group spent from 7.30 a.m. until 9.30 a.m. in the wards and from 10 to 11.30 a.m. in seminar and other classroom teaching, a total of 21 hours on the medical and surgical nursing of patients with gastro-intestinal disease. The class contained 27 students,

all of whom were in their first year of training - 12 were in the experimental group and 15 in the control group. Two registered teachers of nurses and one registered clinical teacher taught each of these groups.

A strike of National Union of Public Employees affected the hospital throughout the period of the experiment. The strike caused a reduction in the number of admissions of all patients, but this was most obvious in the medical wards. Due to the high and steady flow of emergency admissions to the hospital, there was an adequate supply of patients for the students in the experimental group. However, it was because of the strike that the decision was taken to involve the medical and surgical wards of the adjacent hospital. On the last two days of the experiment, one teacher and four students worked in this smaller hospital approximately two hundred yards from the main hospital, and it was of interest that there were no organisational problems attached to this slight alteration of the original plans.

This was the only college in which absenteeism occurred during the experiment. It occurred in both groups of students - four out of the twelve experimental group students were absent for one day, or a part of a day, during the six days of the experiment. Four of the fifteen control group students were absent, one for part of a day, two for a day, and one for the last three days of the experiment. This latter student was lost to the sample numbers.

In this, alone of all the colleges, the Director had asked the researcher not to offer any choice to the students as to whether or

not they participated in the experiment. In the Director's opinion, as the teaching staff had taken the decision to participate, the students were obliged to take part.

The details of the experiment in College I are portrayed in the Figures and Tables below.

Figure 18 College I : Synopsis of Implementation, Progress and Conclusion of Experiment

1978		┆	
July 20th	(1)		Initial interview with Director of Nurse Education and Senior Tutors
July 21st	(2)		First meeting with teachers directly involved in experiment
August 22nd	(3)		Meeting with all college staff
September 4th	(4)		First meeting with Divisional Nursing Officer. Also teacher preparation
September 7th	(5)		Meeting with medical and surgical ward staff
September 25th	(6)		Teacher preparation
September 29th	(7)		Administration of pre-test to students
October 3rd	(8)		Teacher preparation
October 9th	(9)		Administration of pre-experiment questionnaire to students and announcement of allocation to groups
October 10th	(10)		Initial selection of patients
October 11th to October 20th	+ (11) +		EXPERIMENT (Includes day before ward practice and day after when post-experiment tests and questionnaires were administered)
1979 May 5th	(12)	┆	Retention of Learning assessment and follow up questionnaire

Figure 19(a) College I : Position of Experiment in Students'
Training Programme

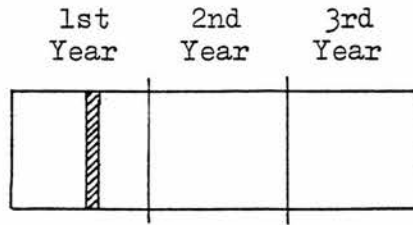


Figure 19(b) College I : Position of Experiment in Block
Programme

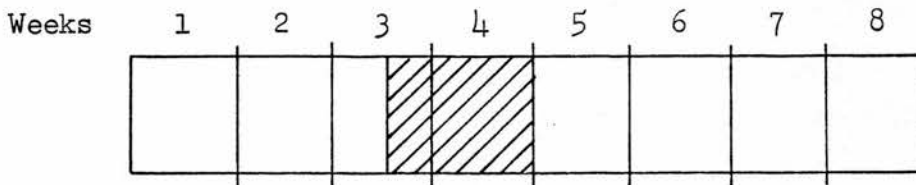
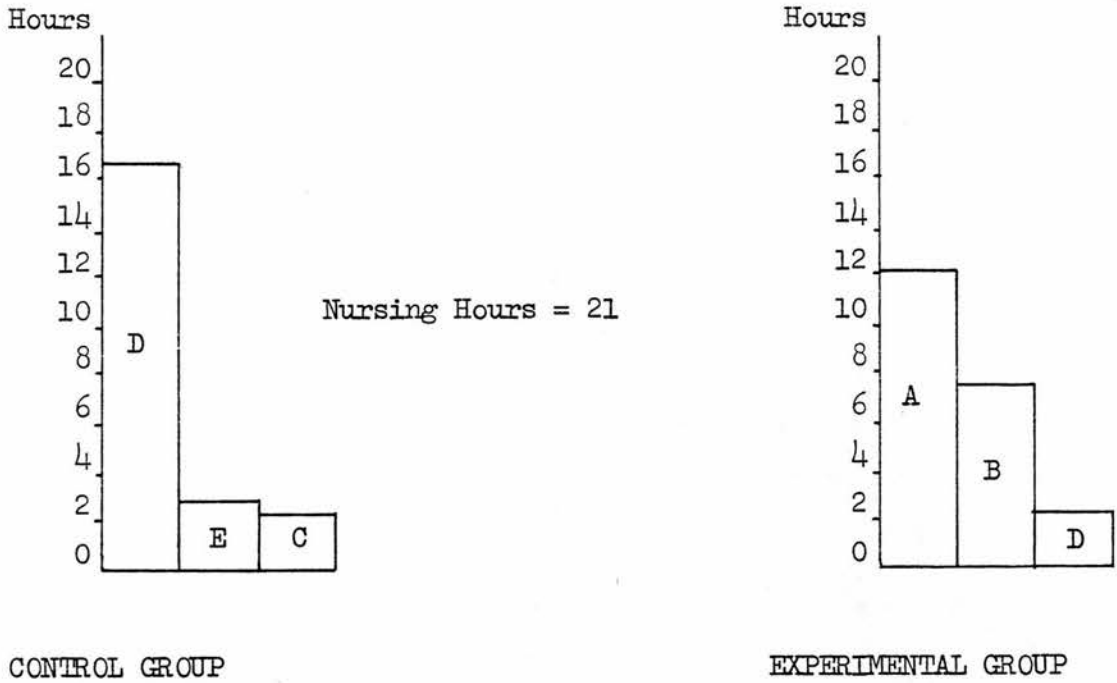


Figure 21 College I : Teaching Methods used for Nursing Content
Control and Experimental Groups



Key: A = Ward practice and tutorial
B = College tutorial/seminar
C = Practical class with demonstration
D = Lecture with time for questions/discussion
E = Guided study

TABLE 7 College I : Use of Wards during Experiment

Experiment day	WARDS												
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
1	*	*		*	*							*	*
2	*	*		*	*		*	*					
3		*	*	*		*	*	*					
4	*	*	1*	**		*							
5	*				*	*	1*		**				
6					*		*		1**	*			1*
No. of student hours per ward	16	16	6	20	16	12	14	8	14	4	4	4	2

N.B. Low use of medical wards due to strike action by porters and resulting reduction in number of elective medical admissions

Key to wards: Wards I to IX - Surgical
X to XIII - Medical

* = student pair
1* = 1 student only

TABLE 8 College I : Movement of Students through Wards

Experiment day	STUDENT PAIRS					
	A	B	C	D	E	F
1	I	II	IV	V	XI	XII
2	I	II	IV	V	VII	VIII
3	VI	IV	VII	III	II	VIII
4	VI	IV	IV	III	II	I
5	IX	VII	V	I	IX	VI
6	IX	XIII	V	IX	VII	X
No. of different wards per pair during experiment	3	4	3	4	4	5

TABLE 2 College I : Movement of Teachers through Wards with Student Pairs

Experiment day	Teacher X		Teacher Y		Teacher Z		No. of Wards per Experiment Day
	In Ward	With Pair	In Ward	With Pair	In Ward	With Pair	
1	I & II	A & B	XI & XII	E & F	IV & V	C & D	6
2	I & II	A & B	VII & VIII	E & F	IV & V	C & D	6
3	II & III	D & E	VII & VIII	C & F	IV & VI	A & B	6
4	I & II	E & F	III & IV	C & D	IV & VI	A & B	5
5	IX	A & E	I & VII	B & D	V & VI	C & F	5
6	IX	A & D	X & XIII	B & F	V & VII	C & E	5
Total N. of wards and student pairs							
	4	5 pairs	9	5 pairs	4	All 6 pairs	

College II

College II was one of the smaller colleges of nursing, and was located in the eastern part of the country. The college was situated in a pleasant house on the outskirts of a busy county town, and approximately half a mile from the hospital in which the students obtained most of their medical/surgical experience, and which was used in the experiment.

The total teaching staff in post at the time of the experiment was 11, the total number of learners 200, and the ratio of staff to learners, excluding the Director of Nurse Education, was 1 : 20.

The first approach to the Director was made on October 3rd 1978, the first contact with the Divisional Nursing Officer on October 24th, and with the students on October 30th. The date of the retention stage was March 3rd 1979. The experiment took place over six working days, on four of which the students in the experimental group spent from 7.45 a.m. until 9.45 a.m. in the wards followed by one hour in seminar in college following their coffee break. A weekend intervened after the experiment and prior to the post-experiment tests. In this college only surgical nursing and the associated conditions were taught in this particular Block, and medical lectures followed in the next Block.

The class contained 10 students. One was previously enrolled, and therefore not eligible for the control or experimental groups. There were 4 in the experimental group and 5 in the control. One registered nurse teacher taught each of the two groups.

This was the smallest of the experimental groups, and it was the shortest experiment. All of the 3 surgical wards, each with both male and female patients, were used. The National Union of Public Employees' strike, which had affected the first hospital involved in the research, was also in progress in this hospital throughout the experiment. Although it did affect the admission numbers to some extent this was not sufficient to cause problems of availability of suitable patients for the two pairs of experimental group students.

The details of the experiment in College II are portrayed in the Figures and Tables below.

Figure 22 College II : Synopsis of Implementation, Progress and Conclusion of Experiment

1978		
October 3rd	(1)	Initial interview with Director of Nurse Education and Senior Tutors
October 24th	(2)	First meeting with Divisional Nursing Officer and Senior and Unit Nursing Officer
October 30th	(3)	Administration of pre-test to students, and pre-experiment questionnaire. Preparatory meeting with teachers
November 1st	(4)	Preparatory meeting with teachers
November 3rd	(5)	Meeting with surgical ward sisters
November 8th	(6)	Preparation of teachers and announcement of allocation of students to groups
November 12th	(7)	Initial selection of patients
November 13th to November 20th	+ (8)	+ EXPERIMENT (weekend intervening) Post-experiment tests and questionnaires
1979		
March 3rd	(9)	Retention of Learning assessment and follow up questionnaire

Figure 23(a) College II : Position of Experiment in Students' Training Programme

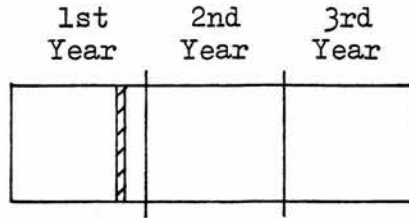


Figure 23(b) College II : Position of Experiment in Block Programme

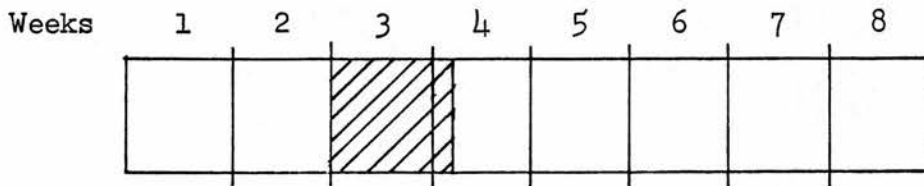
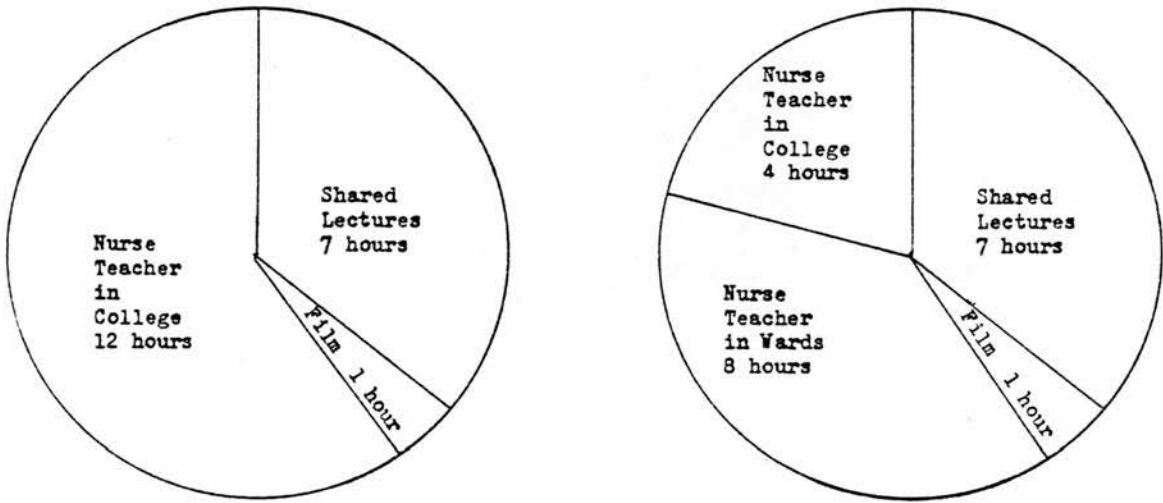


Figure 24 College II : Control and Experimental Group Experience of Course Content

Care of Patients with Gastro-intestinal Disease

Total Hours on Subject - 20



CONTROL GROUP

EXPERIMENTAL GROUP

Shared lectures (medical staff)

- spread over 7 days
occupied 7 hours = 35% of course

Shared film

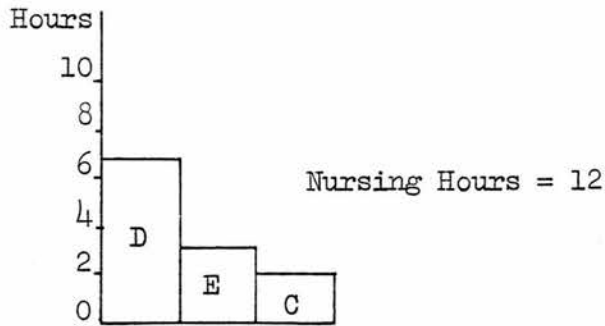
- occupied 1 hour = 5% of course

Nursing lectures (nurse teachers)

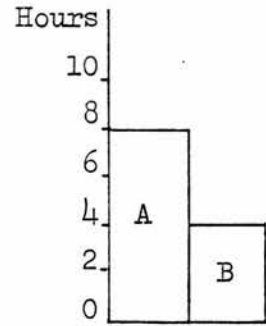
- spread over 6 days
occupied 12 hours = 60% of course

Experimental group - 8 hours in ward practice 40%)
4 hours in college teaching 20%) 60%

Figure 25 College II : Teaching Methods used for Nursing Content
Control and Experimental Groups



CONTROL GROUP



EXPERIMENTAL GROUP

Key: A = Ward practice and tutorial
 B = College tutorial/seminar
 C = Practical class with demonstration
 D = Lecture with time for questions/discussion
 E = Guided study

TABLE 10 College II : Use of Wards during Experiment

Experiment day	WARDS*		
	I	II	III
1	**		
2	*	*	
3	*	*	
4		*	*
No. of student hours per ward	16	12	4

* All surgical wards

TABLE 11 College II : Movement of Students through Wards

Experiment day	STUDENT PAIRS	
	A	B
1	I	I
2	I	II
3	I	II
4	II	III
No. of different wards per pair during experiment	2	3

TABLE 12 College II : Movement of Teachers through Wards with
Student Pairs

Experiment day	TEACHER	
	In Ward	With Pair
1	I	A and B
2	I & II	A and B
3	I & II	A and B
4	II & III	A and B
Total No. of wards with student pairs	3	2 pairs

College III

In a number of respects College III differed from the other colleges in the main study. This was the college in which the experimental comprehensive programme of nurse education and training was conducted. The students who took part in the research were undertaking this training, and were in their third year, about to begin their final six months or pre-registration period. As their course of training until this stage had been very broad-based, it was intended that in this six month period students should gain a more in-depth knowledge of one particular type of nursing. Students were free to make their own choice as to what type of nursing this should be, and those preparing for the qualification of Registered General Nurse were given three options - medical nursing, surgical nursing or trauma nursing. Immediately prior to their final six months, they entered college for 2 weeks of Management theory followed by one week devoted to specific theoretical preparation for their chosen practical experience. The Director of Nurse Education and the Senior Tutors had suggested to the researcher that this latter week would be, in their opinion, the most appropriate stage of training for the experiment to take place in the experimental comprehensive programme.

From the researcher's point of view, it seemed advantageous to include this college, the programme, and the students at this later stage of training, in order to test whether the experimental teaching method was sufficiently flexible to fit the different circumstances,

and yet preserve the core concept of directly linked and relevant theory and practice of nursing. The experiment in this college therefore took place within a surgical pre-option week.

College III was of medium size, and the main buildings of the general area of the college were situated in a coastal town, on site with the general hospital providing medical and surgical nursing experience. There was, however, a very much smaller part of this college, which was attached to a small general hospital, in an inland town some 15 miles distant from the main college site. This smaller college and hospital were also involved in the teaching of the pre-option week students.

The total number of teaching staff in post during the period of the research was 23, the total number of learners 420, and the ratio of staff to learners, excluding the Director of Nurse Education was 1 : 19.

The first approach to the Director's deputy was made on December 18th 1978, the first contact with the service personnel in the two hospitals to be involved in the research were on February 19th and 20th 1979, and the first meeting with the students was on March 22nd. The retention stage took place on September 3rd and 4th 1979.

The experiment occupied the mornings of four days of the pre-option week for students who had chosen surgical nursing. There was no control group - all students in the surgical pre-option week took part in the experiment and were on the wards from 7.30 a.m. until 9.30 a.m. on four mornings. This totalled 8 hours out of 12 notionally allocated to gastro-intestinal material in the Block.

In reality, the subject matter taught during the pre-option week was very much at the discretion of the teachers, and their students, within the general ambit of surgical nursing, and it was not possible to adhere strictly to any specific time allocation for the various subjects. What was however measurable was the amount of time spent in ward practice, as a proportion of the total time in Block, and that is shown in Figure 28 below.

The surgical pre-option student group numbered 11, although only 9 students were present throughout the whole period of the experiment. Two students were not present for the pre-experiment test - one was 'snowed in' and could not reach the college on the date of the testing, and the other was a pre-trained student who joined the group on the first day of the pre-option week.

The experiment actually took place, simultaneously, in the two areas of the college - 7 students were in the main part of the college and the larger hospital, and 4 students were in the smaller college and hospital. This necessitated the researcher not only negotiating with two groups of service staff, but also travelling between the two parts of the college each day during the course of the experiment. Apart from the administration of the pre-test and pre-experiment questionnaires, the two groups were not together. It was, in effect, two simultaneous experiments.

Two registered clinical teachers normally taught the pre-option group students, and they each did so during the experiment. In addition, in the main college and hospital, a registered nurse

teacher took part and taught in both wards and college. As there were 7 students in this main college group, one student always worked alone, assisted by the teacher when necessary. The teacher/student ratio was therefore also slightly different from that pertaining in all other colleges.

The details of the experiment in College III are portrayed in the Figures and Tables below.

Figure 26 College III : Synopsis of Implementation, Progress and Conclusion of Experiment

1978 December 20th	(1)	Initial discussion with Deputy to the Director of Nurse Education
1979 January 17th	(2)	Further meeting with Director's deputy
February 2nd	(3)	First meeting with teachers directly involved and others in their teaching team
February 19th	(4)	First meeting with Divisional Nursing Officer, Hospital IIIA
February 20th	(5)	First meeting with Senior Nursing Officer, Hospital IIIB
February 23rd	(6)	Teacher preparation
March 7th	(7)	Meeting with surgical ward staff and unit nursing officer, Hospital IIIA
March 15th	(8)	Meeting with surgical ward staff, Hospital IIIB
March 22nd	(9)	Administration of pre-experiment questionnaire to all pre-registration students, and of pre-test to surgical pre-option students
March 23rd	(10)	Teacher preparation
March 25th	(11)	Initial selection of patients - both hospitals
March 26th to March 30th	+ (12) +	EXPERIMENT (includes day prior to ward practice commencement)
September 3rd	(13)	Retention of Learning assessment and follow up questionnaire
September 4th	(14)	Retention of Learning assessment and follow up questionnaire. (Students attended college in two groups - hence repetition of final stage)

Figure 27(a) College III : Position of Experiment in Students' Training Programme

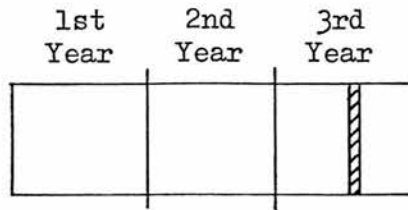


Figure 27(b) College III : Position of Experiment in Block Programme

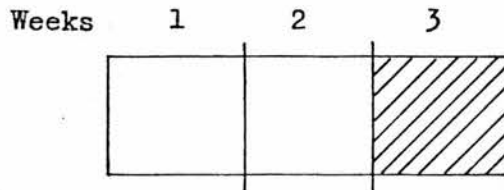
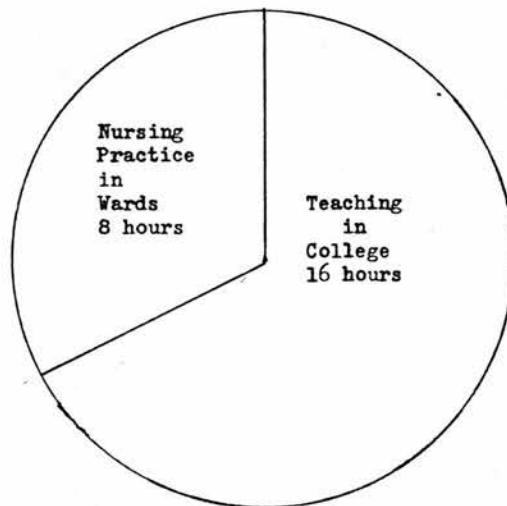


Figure 28 College III : Surgical Pre-option Week - Total Teaching Hours - 24



The most frequently used method of teaching during the experimental week was the tutorial. There was very occasional use of the more formal lecture, always with opportunity for student participation. Liberal use was made of visual aids, especially of items of equipment which students would require to use on the wards, and these students were encouraged to handle. Printed hand-out material was also used

TABLE 13 College III : Use of Wards during Experiment

Experiment day	SURGICAL WARDS						
	Hospital IIIA				Hospital IIIB		
	I	II	III	IV	V	VI	VII
1	*	**	1*				**
2	**	*	1*		*	*	
3	**		1**		*	*	
4	**		*	1*	*	*	
No. of student hours per ward	28	12	14	2	12	12	8

1* = 1 student always worked alone, as odd number in group, i.e. 7 students in Hospital IIIA

TABLE 14 College III : Movement of Students through Wards

Experiment day	STUDENT PAIRS					
	A	B*1	C	D	E	F
1	I	III	II	II	VII	VII
2	I	III	II	I	V	VI
3	I	III	III	I	V	VI
4	I	IV	III	I	V	VI
No. of different wards per pair during experiment	1	2	2	2	2	2

Students A to D - in Hospital IIIA, E and F in Hospital IIIB
*1 = 1 student

TABLE 15 College III : Movement of Teachers through Wards with Student Pairs

Experiment day	Teacher X		Hospital IIIA		Teacher Y		Hospital IIIB		No. of Wards per Experiment Day
	In Wards	With Pairs	In Wards	With Pairs	In Wards	With Pairs	In Wards	With Pairs	
1	I & III	A & B*1	II	C & D	VII	E & F			4
2	I & III	A & B	I & II	C & D	V & VI	E & F			5
3	III	B*1 & C	I	A & D	V & VI	E & F			4
4	I & III	A, C & D	IV	B*1	V & VI	E & F			5
<hr/>									
Total N. of wards and Student Pairs	2	3.5	3	3.5	3	2			

Note: *1 = 1 student

College IV

College IV was of medium size, situated in a major city in the western area of the country. The college was in a purpose-built building, spacious, light and airy, on the same site as the hospital which provided the medical and surgical nursing experience for the students during the research. Total teaching staff in post in the general area of the college during the experiment was 12, the total number of learners 358, and the ratio of staff to learners, excluding the Director of Nurse Education was 1 : 33.

The first approach to the Director was made on February 7th 1979, the first contact with the service personnel was on March 9th and with the students on April 6th. The final retention stage took place on October 11th. In this college, the experiment occupied 7 working days. The first class in which both groups were prepared separately took place on a Friday, the ward practice for the experimental group from Monday to Friday of the next week, and the post-experiment testing was completed the following Monday. Experimental group students spent from 8 a.m. until 10 a.m. in the wards on five mornings, followed by one hour, from 10.30 to 11.30 a.m. in the college - a total of 15 hours. The class contained 31 students. 8 were in the experimental group, 16 were in the control group and 7 were either previously trained or were resitting part of their course. Two registered teachers of nurses taught the experimental group, and one registered nurse teacher and one experienced surgical ward sister, an unqualified teacher, taught the control group.

The details of the experiment in College IV are portrayed in the Figures and Tables below.

Figure 29 College IV : Synopsis of Implementation, Progress and Conclusion of Experiment

1979	┌	
February 7th	(1)	Initial interview with Director of Nurse Education
February 28th	(2)	Meeting with Director and directly involved teachers
March 9th	(3)	First meeting with Divisional Nursing Officer. Meeting with all college staff
March 20th	(4)	Meeting with medical and surgical ward staff, unit nursing officers and senior nursing officers
April 6th	(5)	Administration of pre-test to students
April 9th	(6)	Preparation of teachers. Administration of pre-experiment questionnaire to students
April 13th	(7)	Announcement of allocation of students to groups, followed by first of divided classes
April 15th	(8)	Initial selection of patients
April 16th to April 23rd	+ (9) +	EXPERIMENT (includes day after ward practice when post-experiment tests and questionnaires were administered, but not day prior to ward practice)
October 11th	(10)	Retention of Learning assessment and follow up questionnaire
	└	

Figure 30(a) College IV : Position of Experiment in Students' Training Programme

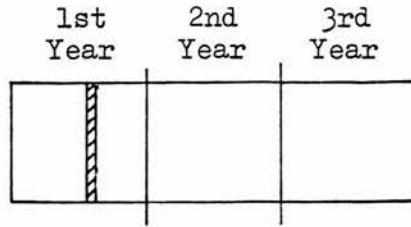


Figure 30(b) College IV : Position of Experiment in Block Programme

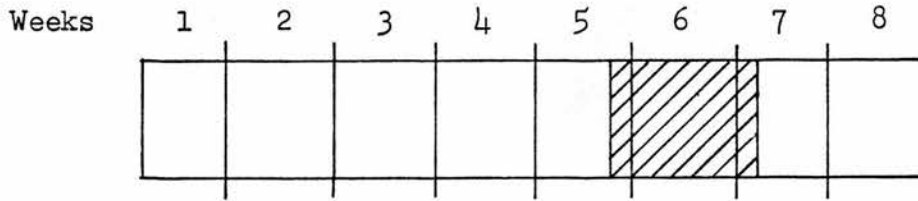
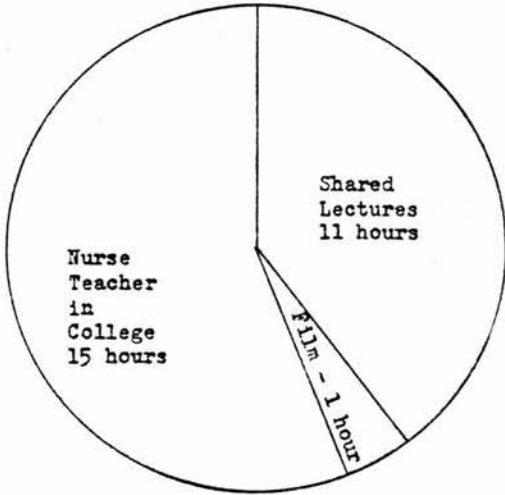


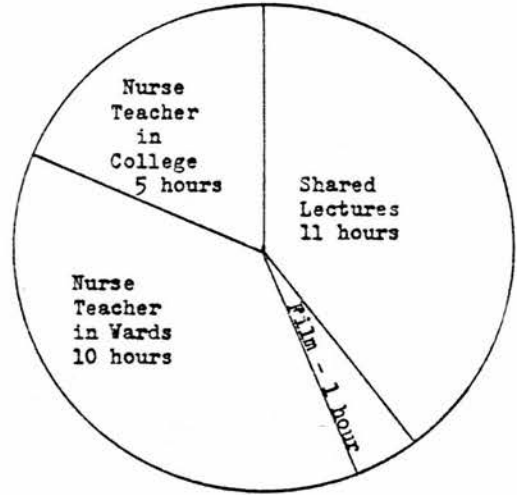
Figure 31 College IV : Control and Experimental Group Experience of Course Content

Care of Patients with Gastro-intestinal Disease

Total Hours on Subject - 27



CONTROL GROUP



EXPERIMENTAL GROUP

Shared lectures (medical staff)

- spread over 10 days
occupied 11 hours = 41% of course

Shared film

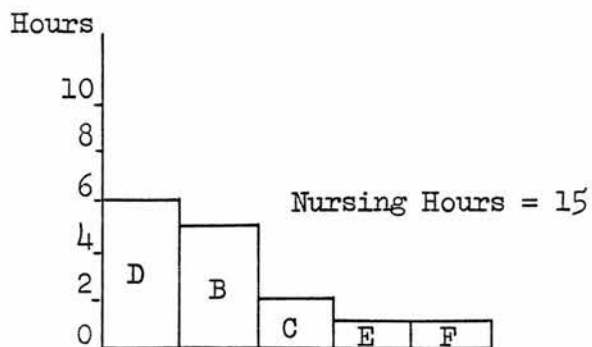
occupied 1 hour = 4% of course

Nursing lectures (nurse teachers)

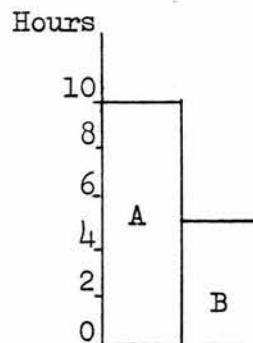
- spread over 5 days
occupied 15 hours = 56% of course

Experimental group - 10 hours in ward practice 37% }
5 hours in college teaching 18% } 55%

Figure 32 College IV : Teaching Methods used for Nursing Content
Control and Experimental Groups



CONTROL GROUP



EXPERIMENTAL GROUP

- Key: A = Ward practice and tutorial
B = College tutorial/seminar
C = Practical class with demonstration
D = Lecture with time for questions/discussion
E = Guided study
F = Practical class with demonstration and opportunity to practise

TABLE 16 College IV : Use of Wards during Experiment

Experiment day	WARDS					
	I	II	III	IV	V	VI
1	*	*		*		*
2		**	**			
3	*		*	*	*	
4	*		*	*	*	
5		*	***			
No. of student hours per ward	12	16	28	12	8	4

Key to wards: Wards I to III - Surgical
IV to VI - Medical

TABLE 17 College IV : Movement of Students through Wards

Experiment day	STUDENT PAIRS			
	A	B	C	D
1	VI	IV	I	II
2	II	II	III	III
3	V	IV	III	I
4	I	III	IV	V
5	III	III	II	III
No. of different wards per pair during experiment	5	3	4	4

TABLE 18 College IV : Movement of Teachers through Wards with Student Pairs

Experiment day	Teacher X		Teacher Y		No. of Wards per Experiment day
	In Ward	With Pair	In Ward	With Pair	
1	I & II	C & D	VI & IV	A & B	4
2	III	C & D	II	A & B	2
3	I & III	C & D	IV & V	A & B	4
4	I & III	A & B	IV & V	C & D	4
5	III	A & B	II & III	C & D	2
<hr/>					
Total No. of Wards and Student Pairs	3	4	5	4	

Note: 1 teacher taught only in surgical wards
 1 teacher taught in both medical and surgical wards

College V

College V was the last college in the main study, and a relatively small college, situated in a rural area within a twenty mile radius of one of the major cities. College and general hospital were on the same site. The total number of teaching staff in post during the experiment was 12, the total number of learners 214, and the ratio of staff to learners, excluding the Director of Nurse Education was 1 : 19.

The first approach was made to the Director on February 13th 1979, the first meeting with the Divisional Nursing Officer was on April 3rd and with the students on May 7th. The final retention stage took place on October 22nd. The experiment took place over 7 working days. Again in this college the ward practice for the experimental group occurred during Monday to Friday of one week, with the first divided class taking place on the preceding Friday afternoon, and the post-experiment testing not being completed until the Tuesday of the post-experiment week. This was due to the intervention of a public holiday on the Monday. Experimental group students spent from 7.30 a.m. until 9.30 a.m. in the wards on five mornings, and from 10 to 11 a.m. in seminar sessions in the college thereafter. The class contained 21 students, eight were in the experimental group and there were 13 others, two of whom had previous experience of the course content.

Two registered teachers of nurses taught the experimental group, and one registered nurse teacher and one registered clinical teacher taught the control group students.

The details of the experiment in College V are portrayed in the Figures and Tables below.

Figure 33 College V : Synopsis of Implementation, Progress and Conclusion of Experiment

1979		
February 13th	(1)	Initial interview with Director of Nurse Education
February 21st	(2)	First meeting with teachers directly involved in experiment
February 26th	(3)	Teacher preparation
March 19th	(4)	Meeting with Senior Tutor and Doctor in charge of course of medical staff lectures
April 3rd	(5)	First meeting with Divisional Nursing Officer
April 11th	(6)	Meeting with medical and surgical ward staff and unit nursing officer
May 1st	(7)	Teacher preparation
May 7th	(8)	Administration of pre-test and pre-experiment questionnaire to students
May 10th	(9)	Teacher preparation. Allocation of students to groups, and explanation to both groups, separately, re experiment routine
May 20th	(10)	Initial choice of patients
May 21st to May 25th	+ (11) +	EXPERIMENT (ward practice days only included)
May 29th	(12)	Administration of post-experiment tests
October 22nd	(13)	Retention of learning assessment and follow up questionnaire

Figure 34(a) College V : Position of Experiment in Students'
Training Programme

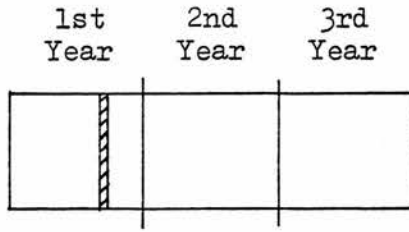


Figure 34(b) College V : Position of Experiment in Block
Programme

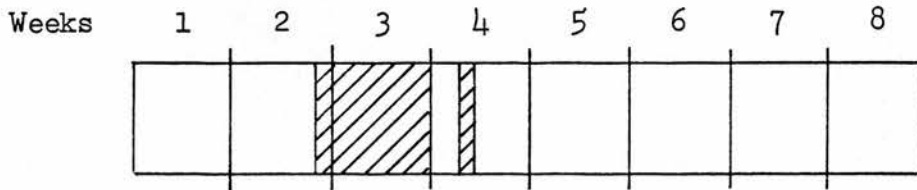
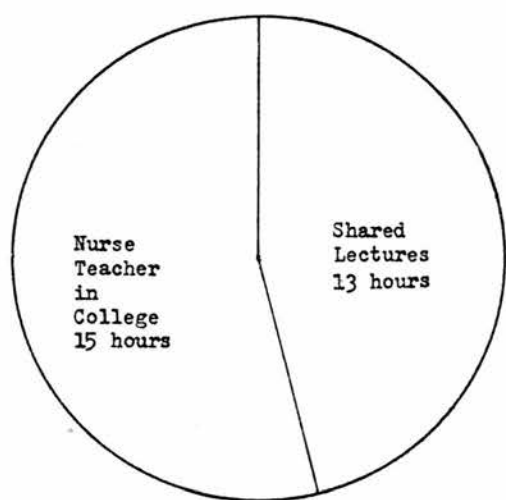


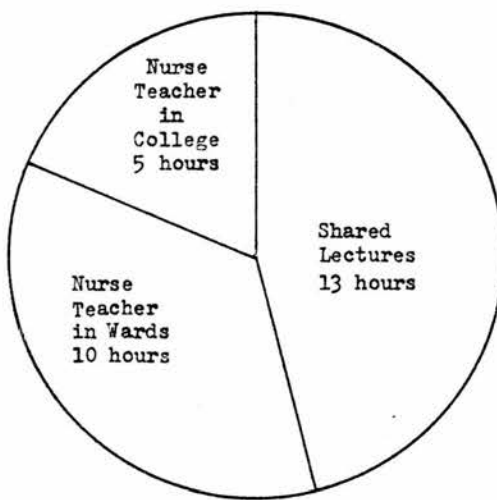
Figure 35 College V : Control and Experimental Group Experience of Course Content

Care of Patients with Gastro-intestinal Disease

Total Hours on Subject - 28



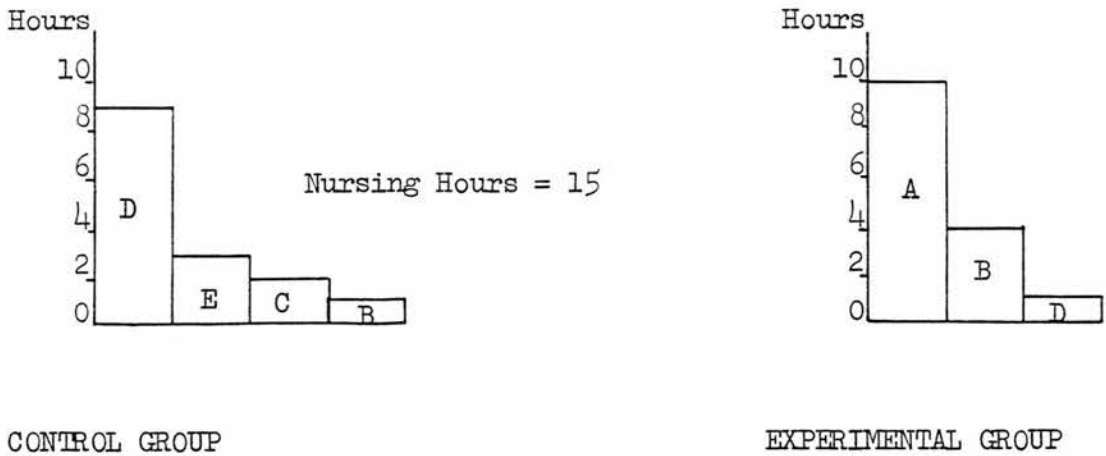
CONTROL GROUP



EXPERIMENTAL GROUP

Shared lectures (medical staff)	- spread over 10 days	
	occupied 13 hours = 46% of course	
Nursing lectures (nurse teachers)	- spread over 6 days	
	occupied 15 hours = 54% of course	
Experimental group - 10 hours in ward practice	36%	} 54%
5 hours in college teaching	18%	

Figure 36 College V : Teaching Methods used for Nursing Content
Control and Experimental Groups



Key: A = Ward practice and tutorial
 B = College tutorial/seminar
 C = Practical class with demonstration
 D = Lecture with time for questions/discussion
 E = Formal lecture

TABLE 19 College V : Use of Wards during Experiment

Experiment day	WARDS					
	I	II	III	IV	V	VI
1	*	*	*	*		
2		*	*	*	*	
3	*	*			*	*
4	*	*	*	*		
5	*	*	*	*		
No. of student hours per ward	16	20	16	16	8	4

Key to wards: Wards I to IV - Surgical
 V and VI - Medical

TABLE 20 College V : Movement of Students through Wards

Experiment day	STUDENT PAIRS			
	A	B	C	D
1	II	III	IV	I
2	II	III	IV	V
3	II	V	VI	I
4	IV	I	II	III
5	II	IV	III	I

No. of different wards per pair during experiment	2	4	4	3
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TABLE 21 College V : Movement of Teachers through Wards with Student Pairs

Experiment day	Teacher X		Teacher Y		No. of Wards per Experiment day
	In Ward	With Pair	In Ward	With Pair	
1	III & IV	B & C	I & II	A & D	4
2	III & IV	B & C	II & V	A & D	4
3	I & II	A & D	V & VI	B & C	4
4	III & IV	A & D	I & II	B & C	4
5	III & IV	B & C	I & II	A & D	4

Total N. of wards and Student Pairs	4	4 pairs	4	4 pairs
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